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WAR AND THE MIGRATION OF TROPICAL DISEASES

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The second world war differs in one fundamental respect from any previous conflict recorded in history—the enormous potential hazard of disease to which populations may and probably will be exposed. This will probably not reach its peak during the period of actual warfare, rather in the period of population readjustments following the cessation of hostilities. War and pestilence are no new partners. On many occasions disease, far more than the operations of armies, has determined the outcome of campaigns and the course of political history. Armies on many occasions in the past have in fact functioned as traveling reservoirs of infection from which endemic and epidemic diseases have been widely spread through the civilian populations with which they have come in contact. The resulting outbreaks, however, have been more or less restricted to the zone of military operations. As the science of epidemiology has developed, the application of control methods has progressively limited dissemination. The distribution of typhus fever in the first world war is a striking illustration. Widespread in highly epidemic form in the Balkans, western Russia and Poland, it did not reach the armies of western Europe despite the fact that they too were heavily louse infested.

The problems presented by the second world war are far more complex. The theaters of operations comprise the greater part of the world's surface excepting the continents of North America, South America and Australia. The war to a great extent must be fought in the tropics and the subtropics. Immense numbers of nonimmunes are being mobilized in hyperendemic areas and subjected to the added risk of the limitation of effective control measures unavoidable in the face of combat conditions. To the classic military diseases of the past, the dysenteries, the enteric fevers and typhus, must be added many of the diseases contained within the category of tropical medicine. The magnitude and ultimate significance of the problem presented by latent infection and the carrier state among military and naval personnel cannot be evaluated. The similar problem presented by refugee peoples in mass emigrations from war devastated areas cannot even be estimated.

SCOPE OF TROPICAL MEDICINE

Two questions immediately arise. What is tropical medicine and to what extent does it differ from medicine in the temperate zone? Secondly and much more pertinent are not tropical diseases by definition restricted to the tropics and therefore at most of only limited significance outside the hot and humid zones?

Although no completely satisfactory definition has been reached, tropical medicine may be said to comprise a special group of diseases more prevalent in or restricted to the warmer regions, many of which are caused by protozoan or metazoan parasites, many of which require particular intermediate hosts or special insect vectors and some of which at least are limited by special factors of climate.

The limitations imposed by such special factors as intermediate hosts, insect vectors and climate, however, are of less importance in a consideration of the possible spread of tropical diseases than are the local levels of sanitation and personal hygiene. Many so-called tropical diseases have in point of fact, worldwide distribution. Malaria in endemic and even epidemic form occurs wherever suitable anopheline mosquitoes have access on the one hand to human sources of infection and on the other to nonimmunes. Such anophelines are indigenous deep into the temperate zones and clinical malaria exists in northern Europe, the British Isles, the northern United States and Canada. For the most part it is a relatively benign disease in these regions, especially since the serious tropical type caused by *Plasmodium falciparum* has not been imported in sufficient concentration. Plague, both bubonic and pneumonic, has occurred throughout the world and in epidemic form both in the tropics and in Manchuria in the midst of winter. Outbreaks have occurred in the past in various of our coastal cities. In its sylvatic form it is endemic among wild rodents on the West Coast and the Mountain states and has extended east across the continental divide. Leprosy, widespread in the tropics in the past, was distributed widely over northern Europe and Scandinavia. Between the years 1826 and 1873 four pandemics of cholera spread this disease from Asia to Europe and North America, producing epidemic outbreaks which involved most of the United States. During the first world war the disease occurred in Russia, Austria-Hungary, Germany and Italy. The freedom from yellow fever which we have enjoyed since the last outbreak in New Orleans in 1905 has caused many to lose sight of the fact that highly fatal epidemics have occurred in the past as far north as Philadelphia, New York and Boston. And the most important vector mosquito, *Aedes aegypti*, is widespread throughout the tropical and temperate zones. The rickettsial diseases are likewise no respect-

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eis of geographic or climatic limitations. The Rocky Mountain spotted fever group, including São Paulo fever and *fièvre boutonneuse*, are widespread in both the tropics and the temperate zone. Typhus fever is ubiquitous in its occurrence wherever conditions favor louse infestation and in certain areas is transmitted by the rat flea and certain ticks as well. Because they have long been recognized to be prevalent in the tropics, amebic and bacillary dysentery have been classified as tropical diseases. Recent experience has shown that climate is not a limiting factor and that these conditions become endemic and even epidemic when sanitary installations and exposure permit contamination of food and water and transmission from infected to uninfected individuals. Even such a strictly tropical disease as filariasis produced by the *Wuchereria bancrofti* has existed in an area in the vicinity of Charleston, S. C. It is abundantly evident therefore that the implied limitations of climate on the distribution of tropical diseases are not valid and that many serious conditions may be translated from the warm climates where they are normally endemic to other areas where they have been nonexistent, or at most, uncommon.

POSSIBLE EFFECTS OF THE WAR

The worldwide spread of this war and its vast repercussions on certain population groups seem to be creating an artificial and wholly new situation peculiarly favorable for a mass migration of tropical disease and the establishment of new and important areas of endemicity. Several important factors contribute to this possibility.

Many millions of combatants will inevitably be massed throughout the tropical and subtropical regions of Africa, the Near East, Burma, Malaya, China and the islands of the Southwest Pacific. Under peacetime conditions their protection against infection would constitute an enormous problem in the fields of public health administration and sanitary engineering. In time of war, for many, it becomes impossible of accomplishment. The combination of combat conditions with the modern technic of mobile mechanized warfare inevitably reduces the measures of protection against disease to those which are applicable to the individual. This in turn necessarily entails increased exposure to infection. Preventive medicine has made great strides in the field of immunization, and these advances are being applied as rapidly as the development of knowledge makes them available. We have, for example, "vaccines" against typhoid, paratyphoid, tetanus and yellow fever the protective values of which are well established. We have vaccines for plague, cholera and typhus the efficacy of which remains to be evaluated. We have no method of immunizing against the dysenteries, malaria, leishmaniasis, trypanosomiasis and a host of other conditions to which these men inevitably will be exposed during the course of their military duties. Since we cannot prevent exposure, since scientific knowledge does not afford the means for immunization and since therapeutic measures for diseases such as malaria, typhus, the dysenteries, leishmaniasis and trypanosomiasis, among others, do not invariably, and in some instances even usually, eradicate the infecting organism, latent infection and the carrier state must be anticipated among many exposed individuals. Again armies will become mobile reservoirs of infection.

Such a "seasoned" army, in the logic of war, must carry the fighting to the enemy. It must invade occupied countries and establish itself among indigenous populations greatly weakened by malnutrition and semi-starvation. Observations of the civilian population of Madrid during the Spanish Civil War permit one to draw what is probably a reasonably accurate picture of the plight of the Axis dominated peoples in many areas. By the end of 1937 the Madrid diet consisted mainly of bread, rice, small amounts of dried pulses such as peas, beans and lentils, and a little animal protein. In 1938 the animal protein was much further reduced. The greatest incidence of deficiency diseases occurred at the end of 1937 and in early 1938. As would be anticipated from the diet limitations, neurologic disturbances appeared first and persisted from October 1937 throughout the period of siege. Pellagra presented two incidence peaks, in the spring of 1938 and again in the spring of 1939. Famine edema became a serious problem after November of 1938. The limited reports available from Axis dominated regions indicate an enormous incidence of serious malnutrition among the civilian populations. Such populations provide peculiarly fertile soil for the implantation of diseases previously not endemic among them.

The tremendous developments in aviation and the constant air transport between widely separated theaters of war provide an obvious means for the translation of disease to new areas. The speed of such travel permits the transportation of infected individuals within the incubation period of many infectious diseases and, lacking effective safeguards and constant vigilance, may well give rise to situations of immense gravity. It would be difficult to visualize a greater calamity than the importation of yellow fever to India.

These extended lines of communication and the varied means of transport create another epidemiologic possibility, illustrations of which are not lacking in the past. The importation of a necessary animal reservoir is an old story in the spread of plague about the world. The conditions in occupied areas especially those in which extensive bombing and ground combat have occurred, are such as to favor great increase in the rodent population and to set the stage for such diseases as plague, murine typhus, tularemia and leptospirosis.

In similar fashion, importation of a necessary vector previously absent, or an unusually efficient vector, can completely alter the ecology of a disease in a particular region. The accidental importation of *Anopheles gambiae* from West Africa to the east coast of Brazil is a striking illustration. Malaria previously endemic and with low mortality rapidly became epidemic, accompanied by high mortality. Furthermore, the translation of a potential vector from one endemic area to another may be accompanied by alterations of its biologic activity or habits of such a nature as greatly to enhance its importance as a disseminating agent for disease. Such variations have been shown to exist for anopheline mosquitoes in different areas. In some regions *Anopheles albiparvus* bites man and is a carrier of malaria, in others it ignores man and is harmless. Moreover, such definite and important differences in the feeding habits of an anopheline have been observed in relatively closely adjacent areas. *Anopheles aquasalis* (*tarsimaculatus*) is a man biter and a vector of malaria in Trinidad. It is said to ignore man and to be harmless

in Panama. The reasons for such variations are not understood, yet the problems which they present in connection with mass importation of malaria into an area in which it has not previously been a major problem, and consequently thoroughly studied, are great. Control of mosquito breeding constitutes an essential part of a malaria control program. In areas where the conditions are such that ample breeding places exist, it is frequently impossible to undertake the control even of all the anopheline species. Efforts must be concentrated on the one or two important vectors. It is obvious how complicated the problem might become following the importation of an anopheline, unimportant in its area of origin which in the course of adaptation to the new environment acquired the characteristics of a competent and efficient vector of malaria.

A further possibility, not as remote as it might seem on casual inspection, lies in the potential adaptation of a strange genus in a nonendemic area to an imported disease producing agent transmitted in another region by a different species within the genus, by a different genus within the family, or even an insect belonging to an altogether different family. Such a possibility is augmented by the widespread geographic distribution of certain important insect families, particular members of which are known to transmit certain tropical diseases. Among them are the Argasidae, the soft bodied ticks, the Psychodidae, the phlebotomus or sand flies, the Simuliidae, the black flies, black gnats, buffalo gnats or coffee flies, the Chironomidae, gnats, punkies, no-see-ums, the Triatomidae, the cone nosed bugs, the Trombididae, the mites and chiggers, and the Culicidae. Members of these families in various parts of the world are responsible for the transmission of a variety of diseases, important among which are such conditions as Rocky Mountain spotted fever, *fièvre boutonneuse*, relapsing fever, cutaneous and visceral leishmaniasis, Carrion's disease, American trypanosomiasis, tsutsugamushi disease or Japanese river fever, filariasis, onchocerciasis, the blinding filarial disease, malaria and dengue fever, and certain of the virus diseases.

The transmission of yellow fever in different endemic areas provides a classic illustration of the successful adaptation of different insects to a single disease producing agent. In addition to the familiar *Aedes aegypti*, jungle yellow fever in South America is transmitted by *Haemagogus*. In West Africa nine species of *Aedes* and certain members of the genera *Eretmopodites*, *Culex*, *Mansonia* and *Anopheles* have been shown to transmit the virus by bite. The spirochete of relapsing fever in Africa is transmitted by the tick *Ornithodoros moubata* and in the United States by *Ornithodoros hermsi* and *Ornithodoros turicata*. In these ticks the infection is transmitted congenitally to successive generations. Relapsing fever is also transmitted by the human body louse *Pediculus humanus*. The Mediterranean form of the disease due to *Spirochaeta hispanica* is transmitted not only by an ornithodoros tick but by a rodent or hard shelled tick, and the body louse as well. One of the rickettsial diseases, *Q* fever in Australia is spread by the hard tick *Ixodes humerosa* and in the United States by the soft tick *Dermacentor andersoni*. Mites which are widely distributed over the world transmit endemic typhus in Manchuria and the tropical rat mite in this country has been shown to be a suc-

cessful experimental vector. Filariasis due to *Wuchereria bancrofti*, the common cause of elephantiasis has a worldwide distribution in the tropics. The larval worms have been shown to undergo complete development in a large number of mosquitoes which are indigenous to many areas outside the tropics. Common and efficient known vectors include *Culex fatigans*, *Culex pipiens*, *Anopheles variegatus*, *Anopheles rossi* and *Anopheles costalis*. A related infection, onchocerciasis is spread by at least five species of the genus *Simulium*. Recent studies of the encephalitides have demonstrated almost unlimited potentialities for wide dissemination, especially in view of the variety of vectors these viruses accept as transmitting agents. Hammon and his associates have shown that the St. Louis and western equine encephalomyelitis viruses are naturally transmitted by *Culex tarsalis*, *Culex pipiens* and *Aedes lateralis*. A reduvid bug, *Triatoma sanguisuga*, has been found naturally infected with the western equine virus in Kansas. Even more significant, perhaps, is the experimental demonstration that two species of *Dermacentor* ticks can be infected and that in these species transovarian transmission occurs to succeeding generations. The immunologic relationships between the St. Louis virus and the West Nile and Japanese B viruses and between Japanese B virus and the virus of Russian spring and summer encephalitis suggest easy, rapid and wide spread of these diseases.

In certain instances it is probable that importation of a disease agent might rapidly lead to establishment in a new reservoir host and permanent and widespread endemicity. Such host adaptation is as much a reality as is vector adaptation. Several tropical infections adopt a variety of animal hosts. Among these are included plague, which notoriously becomes endemic in a number of rodents, tularemia and brucellosis. *Q* fever and "nine mile fever," if not due to identical agents are closely related. The natural reservoir of *Q* fever in Australia is believed to be the bandicoot. The recovery of the organism in *Dermacentor andersoni* ticks indicates the presence of an animal reservoir in Montana. Reference has already been made to the variety of hosts, to which at least certain ones of the encephalomyelitis viruses adapt themselves.

AFTER DEMOBILIZATION

The late stages of the war with invasion of the Axis controlled regions and subsequent demobilization of armies and movements of civilian population groups constitute important factors in determining a widespread migration of tropical diseases. It is inescapable that members of army and navy personnel will transport foreign infections into areas in which they have not previously been endemic or important. Similarly it is highly probable that cessation of hostilities will be followed immediately by mass emigrations of oppressed civilian populations from many Axis occupied countries. Among many of these certain tropical diseases have long been endemic and others will probably have become established. Potential reservoir hosts and efficient vectors are readily available in many areas nonendemic in the past. In addition, efficient vectors may well be imported and new animal reservoirs established.

There is ample precedent for such possibilities. The vectors, moreover, are additive. If they become operative it is inevitable that they will considerably augment

the human reservoir or seed bed of disease and profoundly alter present geographic distributions. The consequent migration of tropical diseases may be extensive and will certainly exert a great effect on public health practice and the practice of clinical medicine in many parts of the world.

It would appear therefore that the United Nations must face and accept a grave medical responsibility in the oppressed areas. To the obvious and well recognized need for provision of foodstuffs and clothing to combat the malnutrition, semistarvation and destitution must be added the imperative need for effective control and treatment of disease. The control of tropical diseases may play a most important role in the successful discharge of these responsibilities.

DISCUSSION

Dr. HENRY I. MEYER, New York. It has been shown by Georgy of Cleveland that rats on a deficient diet in many cases are more susceptible to the multiplication of lice on their bodies, this may apply to man. Bessy and Pinkerton showed that rats on a deficient diet were more susceptible to endemic typhus virus and succumb much more rapidly than those on a normal diet. Professor Matherson of Cornell, an eminent entomologist, recently called attention to the fact that *Rhipicephalus*, one of the dog fleas which has been known previously only in South and Central America and in Texas, has during recent years extended apparently on dogs as far north as New York State and New England, this is one of the vectors of spotted fever. He also reported that a medical officer in the Army stated to him that he had seen airplanes landing on the Texas border from which insects in large numbers were discharged from the undercarriage when the wheels were let down for landing. This apparently is not a harborage of insects which has received great attention by immigration and army authorities in the transportation of insects from one country to another. It is also well known that *Xenopsylla cheopis*, the tropical rat flea which is the principal transmitting agent of the plague and of murine typhus, has been extending in this country from the Southern states northward into the Central states. This is probably the chief or only vector of endemic typhus or Brill's disease, even in New York City.

We already have in New York a number of cases coming from Africa of estivoautumnal malaria. It is possible that the strains of that parasite from Africa are more virulent than those that we have in the United States. We have the vectors of malaria in at least the suburbs of New York City and certainly all through the northern United States. It is easily possible that more virulent strains of *Endameba histolytica*, perhaps such as those occurring in the Chicago epidemic, which was water borne, will be imported from Africa to this country by our troops and be the seeds for extensive epidemics occurring under insanitary conditions of plumbing in this country. Finally, we have to think of the possibility of our enemies deliberately introducing infected vectors or at least vectors of disease into areas in which we shall be operating. The Japanese have already been accused of dropping plague infected fleas in China. It is interesting that the islands of the Pacific, which were under Japanese mandate before the war, are almost entirely free of *Anopheles* mosquitoes and therefore free of malaria, but it is possible that either by accident or by deliberate action *Anopheles* mosquitoes might be introduced into those islands when the Japanese abandon them, or that even Hawaii might be exposed to *Anopheles* and introduce malaria where it has been absent.

These are concrete illustrations of the potentialities of the spread of disease from the tropics to temperate zones. It is worth noting that this country itself is not without the possibility of spreading such diseases which come back in our combat troops, even to Central and South America.

EPIDEMIOLOGY OF INFLUENZA

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The long history of influenza scarcely warrants its consideration as a wartime disease. But, because of the great frequency of military operations and the numerous occurrences of influenza, little juggling would be required to show that outbreaks of the disease have synchronized with one or another of such disturbances. Nevertheless the severe outbreaks of 1830-33, 1836-37 and 1847 were not accompanied by major international strife. The pandemic of 1889-90, occurring in years of apparent Victorian tranquility, was however, associated with one of the greatest calamities of modern times—the birth of Adolf Hitler. Despite the fact that war and influenza had not been historically related, the appalling pandemic of 1918 in the last months of an exhausting conflict has served irrevocably to indicate that virulent influenza coinciding with the massive upheaval of a population through war may be more devastating than war itself. In a period of a few months 20 million people perished, 548,000 in this country alone, the number attacked was 50 times as great.

The profound impact of that devastation has left the impression on many sides that the pandemic of 1918 was the true picture of influenza. It is a peculiar situation in which the most unusual episode in the history of a disease would be considered the typical. It might be asked with greater reason whether the 1918 occurrence should be called influenza. Consensus of opinion, however, has concluded that in its major features the pandemic of 1918 resembled that of 1889-90 and the succeeding years as well as the later ones of 1920 and 1926. According to Jordan, the features on which these conclusions are based are "the agreement in high morbidity, measurable increase of pneumonia mortality and general clinical resemblances." Again "The chief distinctions between pandemic influenza and inter-pandemic influenza appear to be that the former is disseminated rapidly over a wide area while the latter is more limited in its distribution and appears to spread from point to point more slowly, if at all, that the effect on the mortality from pneumonia and tuberculosis, and on the birth rate is usually less marked than that of the pandemic disease, that the age-specific mortality rates are different and that the prevalence of the pandemic disease is not notably influenced by weather or seasonal conditions." The differences enumerated appear to be those of degree—quantitative differences of broad epidemiologic rather than of specific clinical or etiologic nature. Application of the same criteria to the pandemics of 1889-90 and 1847 reveals significant variations between them and the 1918 experience. If the latter, therefore, is accepted to be essentially the same disease as the other occurrences mentioned, it seems reasonable to include epidemics of the past ten years as well. Instead of classifying outbreaks of similar clinical and epidemiologic appearance as separate diseases according to severity and extent, influenza would be considered a disease possessing basic, essential characteristics, varying in amplitude and clinical severity.

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in different visitations and caused by agents of similar pathogenic properties which may differ qualitatively and quantitatively. This concept of the epidemiology of influenza tends to bring it into line with principles which underlie the ebb and flow of other epidemic diseases of man transmitted by the respiratory route. In addition, evidence gained through etiologic identification of the disease in recent years appears to fit that pattern.

RECENT EPIDEMICS

Ten years ago Smith, Andrewes and Laidlaw reported from England the isolation in ferrets of a virus from patients observed during an epidemic of influenza. In the late summer of 1934 their evidence was first corroborated by the recovery in this country of a strain of the same virus from a widespread epidemic of influenza in Puerto Rico and as the disease spread across the continent during the winter and spring, from cases in New York, Philadelphia, New Haven and Alaska. In July 1935 virus was isolated from an outbreak in Australia. Since that time investigations have extended to all parts of the world and many facts concerning the disease—now called influenza A—and the virus have been disclosed. Up to now each second year has witnessed the prevalence of influenza A.

In December 1936 a sharp epidemic of influenza A was identified in New York City and spread rapidly thereafter through the United States. At about the same time the disease was recognized and became widely disseminated through Europe, eastern Russia, China and Japan. Virus of the same type was recovered in laboratories operative in all these areas. Moreover, there was agreement among observers that the disease possessed the attributes which led unhesitatingly to the diagnosis of influenza. The onset was sharp, the epidemic climbed rapidly to a peak and subsided promptly, the incidence was high, though not accurately determined, and the case fatality was low. The clinical picture was relatively uniform with a moderate number of pulmonary complications. That the virus was virulent is shown by the fact that it was readily transmitted to experimental animals of various species. It seems warranted, therefore, to consider the epidemic of 1936-37 an example of a pandemic distribution of influenza.

In 1938-39 influenza A was again present in this country and in Europe during the winter season. It differed from the preceding prevalence in that the general incidence was slight and owing to the scanty distribution through the general population, the epidemic tendency was most evident in institutional groups under close observation. Nevertheless, patients presented essentially the same clinical picture as that seen in 1936-37. The mild character of the human disease was reflected in the low pathogenicity of the strains for experimental animals. In July 1939, however, Australia, which significantly had escaped the 1936-37 pandemic, witnessed a widespread moderately severe outbreak in the general population and influenza virus type A was readily obtained from affected persons.

Once more in 1940, influenza A was recognized in the West Indies and South America during July and August and somewhat later in Australia and Hawaii, whence it reached the western United States and spread progressively eastward in the winter of 1940-41. In England a scattering of cases was noted. The strains of influenza virus type A recovered in our laboratory

were of moderate pathogenicity, but those which were isolated in England and Australia were said to possess little virulence for experimental animals.

Thus from late 1938 through the early months of 1941 reports from observation posts in different parts of the world tend to indicate that instead of a number of unrelated mild occurrences there was a somewhat continuous prevalence of influenza A traveling in a circuit irregularly related to the colder seasons in the temperate zones but present in the summer months of subtropical areas.

In a period of five years influenza A varied in its appearance from a sharp pandemic distribution to what in terms of the larger geographic area might well represent an endemic state with intervening epidemics of moderate degree.

In addition to the five established occurrences of influenza A, two well distributed prevalences of respiratory disease were encountered which clinically and epidemiologically resembled the previously identified epidemics of influenza. The first of these was originally recognized in California in January 1936 and extended eastward through the United States. It was impossible, however, to obtain any evidence relating it to type A influenza virus. In the first months of 1940 a moderate epidemic was observed in the Southeastern states, but again etiologic studies failed to show a relationship with influenza A. Shortly thereafter as the disease appeared in New York, a new strain of virus was recovered which was adapted to animals with great difficulty and was shown to be quite distinct antigenically from influenza virus type A. It was called influenza virus type B. By serologic means it was then demonstrated that epidemics of 1936 and 1940 in the United States were influenza B. A strain of virus recovered at the same time by Magill has also been shown to belong to type B and the influenza of that year in other parts of this country has been clearly established as influenza B. In addition the disease was found to have appeared in the West Indies in the summer of 1940. Subsequently evidence has been obtained that the virus was circulating in Australia in 1938, New York in 1938-39, Minnesota in 1939, England in 1939 and Argentina in 1941.

The disease influenza B obviously has been worldwide in distribution. Moderately severe epidemics have been related solely to this type of virus, in other prevalences of a milder nature it has been causally related to the outbreak but not present in the majority of cases selected for study, still other outbreaks of influenza have been shown to be made up of interspersed cases of influenza A and influenza B. In addition, most observers have noted occasional instances of serologic responses to virus of both types, although no other evidence of simultaneous double infection is yet at hand. The variations in distribution of influenza B have extended therefore from nationwide outbreaks of moderate severity to those resembling a mild endemic disease.

No sharp clinical and epidemiologic differentiation between the two diseases is available at the moment nor has any well defined difference in the pathologic changes induced by the two types of virus been recorded. Immunologically they are however quite distinct. Infection with one elicits neither specific antibodies nor immunity to the other repeated inoculation fail to induce cross reactions between them. The anti-

gen which reacts in the complement fixation test, while common to dissimilar strains of the same type does not react with serum of heterologous type. From the point of view of immunity, therefore the two diseases must be considered independent factors in the epidemiology of influenza.

THE VIRUS AND IMMUNE REACTIONS

The relative inconstancy in virulence and pathogenicity of the virus of influenza A might well be considered sufficient to account for the modifications in scope of its recurrences if the different strains of the virus were serologically identical. But in 1936 Magill and I were able to demonstrate that this is not the case.

variants of such diversity that they can be distinguished by serologic and cross immunity tests have been identified. Throughout the studies the suggestion appears that strains present in the outbreak of one year more closely resemble one another than strains recovered in different years. That they are members of the same type, however, is shown by the fact that an adequate course of immunization or a full serologic response to one strain embraces practically all others. The type relationship is further demonstrated in that the antigen which participates in the complement fixation reaction is the same for all strains of type A but differs from that of type B strains. The extent to which antigenic variations of this degree may account for reappearances of the disease is not established, the likelihood must be seriously considered. The immunologic distinctions between the viruses of types A and B are, however, so sharp that the prevalence of one would be uninfluenced by specificity immunity to the other.

Despite the strain and type differences the characteristics of the disease produced remain so similar that the agents may be considered a pathogenic unit. Infection is induced by way of the respiratory tract, where, after an incubation period of twenty-four to forty-eight hours the epithelium of the respiratory passages is selectively attacked and destroyed following which the extensive pneumonia of the fully adapted experimental disease develops. That the severity of the disease may be decidedly enhanced by the addition of pathogenic bacteria has been clearly demonstrated by Shope's studies in swine influenza and the observations with human strains and hemolytic streptococci in ferrets. Recently Glover has reported that hemolytic streptococci were transferable by the air route to normal ferrets from animals infected with the two agents but not from ferrets infected with the bacterium alone.

The animal which recovers from the virus disease develops circulating antibodies to the virus and a stanch immunity which persists for a period of months and then wanes to leave a modified resistance. In this stage the animal responds to reinoculation with fever and nasal signs and the respiratory epithelium is again destroyed but the typical pulmonary lesions do not develop. On the other hand, animals which have been repeatedly inoculated develop a broader resistance which persists for a longer period of time and which, serologically, is effective against more divergent strains. There is reason to believe that the susceptible tissue is also modified so as to be more resistant to virus attack, under which conditions dependence on antibodies would decrease. The human subject responds to infection with the development of circulating antibodies and presumably with immunity. The duration of immunity

in man is not known, but presumptive evidence indicates that an acquired resistance exists for a year or two at least. Nevertheless the fact that a high percentage of individuals possess antibodies to virus of type A and that a large proportion of those who take sick have circulating antibodies at the time they become infected is a clear indication that antibodies acquired through previous infection with virus of the same type do not bestow an immunity of prolonged duration. It has been observed, however, that in general the antibody titers of patients in the acute stage of illness are lower than that of the average individual who does not take sick and the natural suggestion is that resistance is proportionate to the antibody level.

Inoculation of virus by routes other than respiratory does not, but for exceptional circumstances, produce disease. On the contrary, among experimental animals it results in the acquisition of resistance and the appearance of antibodies. In the human subject antibodies are also stimulated and the assumption is that resistance is thereby increased. This inference is supported to some extent by direct experimental infection of human subjects and the observation that those individuals in whom infection was induced constituted in the main those with the lowest titers of circulating antibodies.

MORBIDITY AND MORTALITY

The speed of development of an influenza epidemic and its rate of dissemination are attributable to the short incubation period of the disease and the numerous sources of infection afforded by frank cases, persons in the incubation period of the disease or in convalescence, and a relatively high proportion of subclinical infections. From patients in each of these stages virus has actually been recovered. Moreover, the incubation period of twenty-four to forty-eight hours has been thoroughly established by accidental and purposeful infection with virus. Morbidity is related to the infectiousness of the virus and to the number of susceptibles made available through births, migration and the increment of the population which has lapsed from immunity to relative susceptibility. Obviously, that proportion will vary inversely with the virulence of the virus. Using different strains of influenza virus type A for experimental infection of human subjects, Smorodintseff and his collaborators noted 10 per cent clinical disease, Chalkina 20 per cent, Burnet and Foley 20 per cent and Stokes and Henle 35 per cent. With a modified strain of the same type we failed to observe any clinical signs of disease, though serologic responses occurred in part of the test group. The varying incidence of the disease, therefore, does not of itself denote a different cause.

Contrary to common opinion, influenza does not most commonly affect adults. Where proper data are available the evidence shows that in the epidemics of 1918, 1920 and 1928 and the epidemic of influenza B in 1936 the highest attack rate occurs in the ages below 15 years and that thereafter a gradual decline in incidence takes place. If the presence at different ages of high titers of neutralizing antibodies to influenza A virus is taken as an index of recent infection, the same trend occurs. The fact that the majority of individuals, including children and adolescents, escaped infection suggests that the disease of 1918 was etiologically related to earlier infections which were responsible for the immunity.

On the other hand, age distribution of case fatalities in 1918 follows another curve. In children, among

whom morbidity was highest case fatality was lowest, in the higher ages, in which incidence was lowest the highest case fatality occurred, while in the intermediate years both high incidence and high case fatality were observed. Morbidity and mortality are therefore independent measures which may vary in different epidemics creating wide differences in scope and severity. The former depends on the infectiousness of the virus, the latter on the extent of the primary injury, the virulence of accessory bacterial agents—in brief on the severity of the pulmonary complications. They scarcely constitute bases for suggesting fundamental differences in the causation of the disease.

Pandemic influenza seems therefore to represent in most respects a modification of a disease caused by a virus similar to those at present identified rather than an unrelated infection arising spontaneously in a population. The influences which determine the transformation are not fully known. A number of complementary variables decide the character of an epidemic. A change in virulence, a modification in type or strain of the virus or the prevalence of pathogenic bacteria may, each or all, contribute to the effect and must be considered in preparing to meet such an event.

CONTROL MEASURES

Efforts toward control have centered to a large extent on the development of a satisfactory vaccine for subcutaneous administration. Although resistance can be produced in animals and antibodies induced in man by a variety of preparations, evidence of the protection of man against the natural disease is inconclusive. There are, nevertheless, suggestions that the severity of the disease may be reduced and the complications limited. This of itself would be no mean advantage. Even if it should be true, one is confronted with the problem of variations in the virus and the possible necessity of incorporating in the vaccine virus similar in composition to the one in circulation. For this reason it is necessary to be on the alert for earliest evidence of the nature of an outbreak. If the virus could be isolated quickly, its introduction into a vaccine would not be difficult. But the time relations are extremely important.

In addition to subcutaneous vaccination, the possibility of passive immunization by the use of serum intranasally is being explored. For this purpose serum can be collected beforehand or obtained from convalescents early in the epidemic period and used on other exposed susceptibles. Intranasal vaccination with virus itself offers another approach.

A different concept of control is presented in the form of physical or chemical barriers which serve to prevent the transfer of infectious material viral or bacterial. Of these the aerosols offer the greatest promise because of the simplicity of their application and their adaptability to a wide variety of conditions under which crowding and air contamination are extensive. The efficacy of sulfonamide compounds furnishes great confidence that the serious bacterial complications will be susceptible to treatment and that the attendant mortality can be greatly reduced.

It is not possible to discuss the experimental data concerning relative merits of the different procedures. These comments serve only to show that efforts are being made on various lines to seize the offensive. If one or more of the procedures should prove of value in controlling influenza in its current appearances the

probabilities are that the same principles will be applicable in combating the more severe prevalences of the virus disease. For these reasons efforts must be continued and intensified.

THE WARTIME PROBLEM

Any attempt to prophesy what may occur becomes a confession of inability to define the specific circumstances which determine the severity of an expected epidemic of respiratory disease. We have witnessed on all sides the dislocation of population through the mobilization of troops, the crowding of civilians into industrial areas, the introduction of large forces into distant lands and the maintenance of the peoples of overrun countries under abnormal conditions of food and shelter. Despite these violations of epidemiologic tenets the common infectious diseases have continued to decline without notable outbreaks. There is no assurance, however, that this state of quiescence of infectious agents will persist or that under continued physiologic stress the mechanisms of resistance will not be impaired.

Increasing penetration of areas with which inhabitants of the temperate zones have had little experience and the disturbance of native equilibriums induced thereby constitute major dangers. Such invasions may serve to stir up strains stabilized in a given environment which in fresh hosts may prove highly virulent. Theobald Smith has stated that "most epidemics or pandemics are probably due to strayed parasites from either near or more distantly related hosts or from an immune group to a susceptible group of the same species or race." The eruption of such a strain would find conditions for dissemination highly satisfactory by virtue of the speed of travel and the massing of groups of individuals, presumably more susceptible because of their relative freedom from disease in recent years. An occurrence of this nature would impose a serious strain on the morale of a nation concentrated on the winning of a war. A resurgence of bacterial infections of the respiratory tract should also be taken as a warning that with their aid even milder strains of virus might produce serious disease. Nevertheless it is possible in view of recent advances, to look forward with greater confidence to the control of an epidemic than has previously been the case.

There is a peculiar fatalism toward respiratory disease except for the severe visitations they are too commonly considered inevitable. The increased interest of the past twenty years is an expression of growing dissatisfaction with the discomforts and economic losses they entail in all parts of the world. If the apprehension which the threat of serious epidemics arouses could be directed into concerted and sustained investigations in the intervening years, definite improvement in the usual status would take place. Among other aims adopted for the postwar period might well be included freedom from respiratory disease.

None of the plagues have been extinguished. Should misfortune bring back certain conditions these plagues would reappear from some remote or near corner where they are slumbering in a resistant population. The final suppression presupposes a world organization of human society without wars and disarmed such as the most pronounced idealist of today can scarcely conceive but toward which human society must tend to survive in the struggle with animal and plant life, microscopic and ultramicroscopic. Theobald Smith said that in 1934

DISCUSSION

DR. WATSON G. SMITH, New York. Pandemic influenza is the most destructive of all epidemic diseases and the most devastating. It certainly is one of the most dramatic. This is paradoxical since the fatality rate in pandemic influenza is relatively low. But the disease is so infectious that the rate of incidence in the invaded community itself is very high. There is remarkable rapidity of spread of the disease and a high degree of communicability. In this it outranks all other contagion. The disease appears, as Dr. Francis has said, in great pandemic waves and interspersed with local epidemics. It may appear now here as it represents a group of diseases rather than a single disease. There is one striking characteristic of influenza perhaps the most striking of all and that is its unpredictability. We have really no definite evidence that indicates that pandemic influenza is the same or even closely related to interepidemic or epidemic influenza.

We have no definite evidence that an epidemic pandemic of influenza is pending. We have fairly good reason to believe that there will be no epidemic of influenza this season but we can be sure of only one thing and that is that sooner or later a pandemic of influenza will appear. We can be sure too that we are at the present time building a highly nonimmune population for influenza is not as prevalent a disease as we think. I was forcibly struck by this fact in the vaccination of some thirty thousand students at Ithaca with influenza vaccine, which was conducted this winter. We asked each one of these boys if they had ever had influenza or influenza-like disease. I was suddenly aware of the fact that these young men of this generation have not had influenza. Practically all the faculty remembered well of course the pandemic of 1918 and could describe their experience but the young men of this generation—and it is now of course a full generation being twenty-five years since the last great pandemic—have not had influenza.

It is rather what we do not know about this disease than what we know that is of great importance. What do we not know about influenza? Where does it come from? Why does it spread with such rapidity and virulence? Why does it stop? Certainly there is nothing that man has been able to do or to devise that would check the spread of the disease or lessen its virulence. Much information has been determined about epidemic influenza in the last twenty-five years. We have learned that the disease spreads through the air, but only for a short distance. Wells's studies have shown that in a closed air chamber the virus will remain suspended in the air for at least two hours without losing its virulence. There is some hope that there may be a reduction of intensity of exposure to the virus if the air may be sterilized in an enclosed building, as shown by Dr. Robertson in his air zone work, where large numbers of people are assembled, as in barracks or on transports, in theaters, office buildings, schools and the like. There might be some hope of checking the degree of exposure by this technic, but in the face of a great pandemic this method would have little usefulness.

The only real hope, obviously, of checking the spread of the pandemic would be the building up and the development of an immune population. In theory and by analogy this would seem quite feasible, but the great difficulty is that we have no certainty as to just what the cause of pandemic influenza is. It is my strong feeling that Dr. Francis is right when he says that in all probability it is closely related to epidemic influenza. One of the reasons I think so is that I was in a tropical community at the time of the last great pandemic. Those of you who have experienced influenza, the pandemic influenza in this country, have no conception of what pandemic influenza means in a tropical or in an isolated community. It sweeps the whole population before it, and the city in which we lived became a city of the dead. Not a wheel turned, not a factory ran, not a physician was on his feet. The place was devastated. It was like the story of the Great Plague, and all that one could hear would be an occasional wagon going by in the street with the old bell and the man shouting "Bring out your dead!" It was not at all as Dr. Francis indicated, it was not in relation to age distribution of the disease. The data that he mentioned

were collected in a temperate zone and in a civilized community. But in areas, isolated areas, where pandemic influenza struck, all ages were affected to a like degree. Once I visited the village of Okkak on the Labrador coast. When pandemic influenza struck that village it wiped it out. The Moravian missionary and his wife told me that they spent the winter there with a village of the dead. Where a community has had a certain degree of exposure in the temperate zone, a civilized community, a relative degree of immunity is built up. This makes one think that there is a mosaic of overlapping antigens which produces a relative degree of community immunity to epidemics.

We have new experimental techniques, we have new knowledge, particularly do we have a newer understanding of the nature of virus diseases. All this has developed in the past twenty-five years. Certainly we are ready to attack influenza intelligently when it comes. It probably will require at least one more great pandemic before the true nature of this disease can be determined. There is little reason to hope that any effective means of prevention can be developed before that time.

MALARIA AS A WORLD MENACE

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The subject of malaria as a world menace at the present time should not imply that this is a controversial topic. During more normal periods it is generally considered that malaria is the most prevalent of all diseases and probably ranks foremost as a cause of morbidity.

Many have prophesied the complete control, or even eradication, of malaria on the basis of the fact that the plasmodia and then vector, the anopheline mosquito, are vulnerable to attack at many points in their complicated life histories. But thus far the methods of malaria control designed to destroy or curb the larval and adult development of the malaria-carrying mosquito, the attempts to quarantine man from the mosquito and to prevent or cure the disease in man by chemical agents have not, singly or in combination, succeeded in removing malaria as a world problem. As Surgeon General Parran of the United States Public Health Service has recently stated, "outside of the mental diseases there is no other disease of comparable importance against which we have made less progress during my generation."

Accurate figures on its morbidity and mortality are not available, but a few of the more carefully prepared estimates furnish ample evidence that it is one of the great medical problems of our time. In India the director of the Malaria Survey reported in 1935 100 million cases resulting directly in a million deaths. A thorough study of a recent epidemic in Ceylon revealed that in a population of 5 million persons there were 1½ million cases, resulting in a mortality of seventy thousand. This epidemic occurred in a country in which the endemic rate ordinarily is not appreciably less than the epidemic rate. It is not unusual to read reports of malarial surveys in countries where the rate of infection is 100 per cent of the population. In the United States it is probable that there are a million cases annually, resulting in five thousand deaths, although inaccurate diagnosis and lack of proper vital statistics make this a very rough estimate.

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ASSOCIATION OF MALARIA WITH WAR

All the conditions which enable the disease to maintain this unenviable position are present during wars and in addition a new group of epidemiologic factors appear which greatly accelerate its acquisition and dissemination. There is such a close association between war and increased malaria that the term "war malaria" has become justifiable. This relationship with its disastrous effects can be demonstrated in practically any war, but the malaria of World War I furnishes all the needed examples. At that time the malarial problem was unusually severe in the Italian, East African, Mesopotamian, Palestinian and Macedonian theaters of operation. The British troops were in Macedonia early in 1915 and by June they had only 90 cases of malaria. However the number steadily grew and during 1916 they had at least 30,000 men down with the disease. By 1917 the number had increased to 70,000 and in 1918 they invalided home 25,000 of the more serious cases. In the same area the French had only 20,000 able bodied men in a force of over 100,000. As a matter of fact the commanding general informed the War Office that his army was hospitalized with malaria. Fortunately the Central Powers fared no better. In the other areas cited, the same situation prevailed and approximately 25 per cent of the personnel of the opposing armies were acutely ill with malaria a major portion of the time.

Malaria does not confine its effects merely to the war zones but invades the homes of the returning soldiers. Again in the last war secondary cases appeared throughout England, and on the North German coast at Emden there was an epidemic of 6,000 cases. In Russia one of the greatest malarial epidemics in modern times developed in 1923 among the impoverished civilian populations. The Red Cross reported 3 million cases in the republic west of the Ural Mountains. Some cases appeared in Archangel and, as Hackett states "for the first time, as far as we know, the King of Tropical Diseases set foot within the Arctic Circle." Thus we see illustrated from this brief account of malaria in the last war the two great problems, first the acquisition of malaria in epidemic proportions in the military forces, second and more important, its scattered transfer to the larger susceptible reservoir of civilian hosts.

Our experience in World War I did not impress us with the seriousness of the malarial problem because our troops were primarily concentrated in the non-malarious zone of northern France. Actually there were only thirty-six deaths officially credited to malaria from April 1917 to November 1919. The highest case rates came from noncombat areas and for the entire war there were only 88 per thousand from Panama, 25 per thousand in the Philippines, 4 per thousand in the United States and 0.4 per thousand in Europe.

In the present war we have already felt its grave effects. At the fall of Britain, for example it was estimated that 85 per cent of every regiment had acute malaria. Contrast this figure with the 25 per thousand in the Philippines during the last war and you can see the difference between combat and peacetime operations or, rather, the difference between the last war and the present one. More than 50 per cent of our men have contracted malaria during their relatively

short exposure in some of the islands in the Southwest Pacific. In Africa malaria has been one of our principal medical problems and many have already been invalided home because of repeated attacks. This is just a start and as time goes on we cannot expect that the malarial picture will wane.

FACTORS MAKING MALARIA AN IMPORTANT HAZARD

Let us analyze the various factors that make malaria the outstanding hazardous medical problem of the current and postwar period. Undoubtedly the most important factor is the location of the troops. Men have chosen some of the worst disease-ridden corners of the earth as theaters of combat. A major proportion of our troops overseas is in tropical areas in close contact with the huge native malarial reservoirs. If we ever approach the proposed figure of eleven million men in the armed services, which means practically one half of our adult male population and if the same proportions are to serve in the tropics as now then we can gain some appreciation of the probable consequences. The men will be located in Africa, the Middle East, China and the Southwest Pacific where cursory surveys reveal a major percentage of the civilian population affected with malaria. For example, in Liberia 90 per cent of the children under 5 years of age have positive blood smears, most of them harboring the gametocytes necessary to infect the mosquitoes. Many die before acquiring resistance to the disease. Even 70 per cent of the adults are continuously infected. These adults represent the survivors and have developed a tolerance for the disease, as they are in apparent good health yet maintain an intensity of infection that would incapacitate the white man. The rates cited in Liberia are not excessive for most of the other tropical areas. Not only are the large infected reservoirs available but also the other requisites for transmission, namely efficient vectors in excessive numbers. The most dreaded vector of all, *Anopheles gambiae* is particularly prevalent in Africa. It is a domestic mosquito and constantly migrates between the source of infection in the native huts and the barracks of the susceptible soldiers. In other places there is no lack of available vectors particularly in India, where there are probably twelve suitable species. The combination of infected reservoirs, accessible efficient vectors, climatic conditions favorable for year-round transmission and a ready supply of susceptible hosts can only result in a high incidence of malaria in our army. As mentioned previously, reports from the various war areas show that our forces are acquiring malaria at an excessive rate, probably more cases per day than we experienced per year in the last war.

ATABRINE AND QUININE

The administrative medical officers of our armed forces have realized the danger and for the first time are making serious efforts to curb the infection. Malarial survey and control units are being formed given special training and sent to the battle areas where the problem is most acute. In these combat zones control efforts will largely be limited to the use of nets, insecticides, sprays and suppressive drugs. In spite of the most efficient application of these measures it will be difficult to diminish the incidence appreciably. Even

in many static areas the problem is not easily solved in spite of the fact that the malariologists are applying every control method known. The medical officers are handicapped by certain deficiencies of their tools, particularly in prophylaxis and treatment. We now have available only atabrine for its suppressive effects of the clinical symptoms of malaria as the limited supply of available quinine must be used for treatment. Recently considerable emphasis has been given to the fact that atabrine does not prevent the inception of malarial infection but only its acute manifestations. Actually it is not a perfect suppressive drug. For example during a carefully controlled investigation in a highly endemic region of West Africa late last year Findlay found that there were 125 clinical attacks of malaria in 322 men, or 45 per cent, between July 1 and November 6 and all had taken the prescribed prophylactic dose of 0.4 Gm per week. With the exception of Corregidor and Bataan, where no drugs were available near the end, all of our excessive rates are occurring in men taking atabrine routinely. Quinine likewise is only a partially effective suppressive drug.

When used for their therapeutic effect neither atabrine nor quinine will eradicate an infection. They merely control the acute attack and if an individual succeeds in throwing off the infection, it is by the effort of his own defensive mechanism. Some attention has been given to a recent article entitled "Enter Atabrine, Exit Malaria." A more appropriate title would have been "Exit Quinine, Enter Atabrine," as atabrine is as effective prophylactically and therapeutically as the rapidly diminishing stock of quinine, but it will not cause an infection to disappear. It is clearly evident, therefore, that as yet we have no drug that will prevent or reduce the large volume of malaria that is constantly increasing.

FURTHER OUTBREAKS

If the damage were solely confined to the troops in the affected areas the problem would be serious enough to cause considerable apprehension. Unfortunately this is just the initial step in the chain of events that is likely to create a more serious disaster. The return of infected troops to hospitable territory is likely to result in the initiation of serious epidemics, especially in those places where control efforts are lax because of the absence or low incidence of malaria. We have already referred to the secondary eruptions which followed the last war. At the present time we can expect more serious outbreaks if for no other reason than the increased number of infected cases. In the United States during the past few years there have been minor spontaneous outbreaks of malaria in northern California, Iowa and Connecticut. The origin has occasionally been traced to infected fruit pickers who live a nomadic life in trailers and follow the summer seasons northward. Their environment is always a tropical one. More serious disturbances have probably not occurred because the infected persons have been too few in number. Sir Ronald Ross pointed out years ago that there is a critical ratio between the number of infected cases and mosquito vectors below which the infection would die out, or a relatively small change in the ratio might produce striking changes in the malaria incidence. Throughout the United States we have an abundance of *Anopheles quadrimaculatus*, the important mosquito

vector for this country. It thrives as far north as the Canadian border and thus the stage is all set for trouble. We have the susceptible population and the vector, and the disease seems to be on its way.

Although we have a good vector for malaria in this country and it will transmit any of three human plasmodia, there is also danger that new vectors may be introduced. It might be pertinent to question whether the mere introduction of another species would alter the picture. This can be answered by the events that transpired in Brazil in 1930, when *Anopheles gambiae* was accidentally introduced. There soon followed a malarial epidemic which cost at least 14,000 lives in one year with more than a hundred times that many cases. Both malaria and vectors were already present in the same region, but this introduced species of mosquito multiplied at a prodigious rate, as it had left all of its natural enemies behind. By its numbers, therefore, it had disturbed the normal equilibrium and supplied the flame needed to ignite the ready fuel. This mosquito would probably behave in the same way should it be introduced into this country because the climatic conditions in some of our Southern states are not too different from some of its natural habitats in Africa. This is only one of the hundreds of similar possibilities. The Hawaiian Islands and our West Coast, for example, have always been practically free from malaria but now they are the terminus for a huge air traffic originating in the Southwest Pacific, where the disease is rife. It seems quite unlikely that the islands can escape an epidemic that can result in a public health and economic disaster.

It may also be pointed out that it is unlikely that malaria can be a cause of much trouble in this country since the disease is already indigenous, particularly in the South. Unfortunately, the tolerance a population develops against a strain of malaria by virtue of repeated infections confers little immunity against strains from other areas. Experimental studies in cases of dementia paralytica show that an individual is immune only to that strain with which he has had previous experience. Strain or species specificity has often been noted in armies, particularly native troops who have acquired considerable tolerance to malaria in one area yet acquire multiple acute attacks when moved to other highly endemic areas.

The biologic behavior of a malarial infection aids in perpetuating the disease, as it has a tendency to produce chronic infections with frequent relapses. It is estimated that falciparum malaria, the most virulent species, has a relapse rate of approximately 20 per cent and that in spite of most vigorous treatment this percentage cannot be lowered. Vivax and quartan malaria relapse more frequently, and the infections may persist for years. As yet there is no vaccine that will immunize an individual against malaria. It is highly doubtful if an effective one will be discovered, because the disease itself produces only a state of premunition, which means that the host is immune only as long as he harbors the infection. Even then he can resist infection only to the homologous parasite. Actually it is possible for an individual to have the three human malarial infections in the same year or subsequent attacks produced by different strains of the same species. Thus the mass rehabilitation and dispersal of sick troops allow for the

establishment of epidemics over long periods even in malarious areas and there is no means of halting the spread by immunization procedures

ANGER FROM AIR TRANSPORTATION

Another epidemiologic factor confronting us for the first time and providing a means of breaking down existing barriers is the speed and volume of modern air transportation. We are living within sixty hours of any part of the earth. With the exception of the route to the British Isles practically all of our foreign air traffic is now originating in the malarious areas of the tropics—in the Southwest Pacific, South and Central America, the Caribbean area, Middle and North Africa, the Middle East, Russia, India and China. The airports in these places are usually located in the insanitary areas—frequently only a metal strip runway in a hacked out portion of the jungle. No matter how remote, they are usually surrounded by native villages whose occupants are being utilized as laborers and serve as sources of infection. Literally scores of these airports are being constructed, and the menace to the passengers, troops and large personnel necessary to maintain aircraft operations is a serious one. Many infections can be acquired and be transported back to malaria-free zones before the incubation period has elapsed and thus avoid detection. Another danger is the transportation of mosquito vectors which has already been known to occur in spite of the vigorous efforts to destroy them by spraying the planes with insecticides.

SUMMARY

We must conclude that the potential danger of malaria during the present war is a greater worldwide menace than ever before. How can we prevent this possibility from becoming a reality? For the present, more energetic application of accepted methods of control must be the rule. We need not accept past failures as inevitable, but a more widespread recognition of the danger can result in more effective control effort. The stimulus will come from the secondary outbreaks traceable to imported infections. At the first sign of such episodes an all out effort should be instituted by local, state and federal authorities. If this is done early, the danger of spread can be averted. The severe Brazilian epidemic cost the Brazilian government and the Rockefeller Foundation approximately \$2,500,000 to eradicate *Anopheles gambiae*—certainly a cheap price, at least when compared to the economic loss that would have resulted if that species of mosquito had not been destroyed, as it was spreading rapidly to new areas. It is an example of what can happen and what can be done and is a major achievement that will go down in the annals of preventive medicine.

The long-term policy must include more training centers and opportunities for fundamental research. These places must be available to the local as well as the foreign student. It seems inevitable that we shall continue to expand into the tropical areas rich in their natural resources long after the war has finished. If we do then we must accept the public health responsibilities and malaria will always be the foremost in the picture. Actually malaria may be one of the principal determining factors in deciding the failure or success of many of our postwar plans. Certainly we have every reason not to minimize its potential dangers now or at any time in the future.

NUTRITIONAL DISEASES AS A POST-WAR PROBLEM

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The postwar problem of nutritional disease must be considered from two points of view, the general nature and extent of the problem and its scientific and technical aspects. The former will be determined largely by economic, social and political factors and is difficult to gauge in advance. The scientific and technical problems can be defined with considerable accuracy.

The general nature and magnitude of the problem will be determined by four factors, first, obviously, the degree and duration of food shortages, second, the number of persons affected, third, the level of nutrition which at that time is considered to represent disease and, fourth, the extent to which responsibility for the nutrition of populations is accepted by responsible agencies.

DEGREE AND DURATION OF FOOD SHORTAGE

To some extent the state of food supplies at the end of the war may be forecast by the present situation. Destruction and diversion of food and interference with production, transport and distribution have lessened the normal supplies of the world and have caused or are threatening to cause shortages. Even nations which produce surpluses find themselves limited because their products are lent to or seized by others. To offset these unfavorable circumstances, certain measures have been instituted to relieve existing and threatened deficiencies, some of them even before the war began. Increased production is feverishly pushed in many countries, even in those actively engaged in warfare. Various controls, including rationing, not only conserve supplies but equally or more important from the point of view of nutrition promote more uniform and equitable distribution. New and hitherto unexplored sources of food are tapped. The effect of such measures is well illustrated by the notably successful results in England, where increased production, fairly satisfactory rationing and control have contributed greatly to maintain an adequate food supply and lessen the dependence on lend-lease and other imports.

NUMBER OF PERSONS AFFECTED

The situation of the world's food supply has been described by Bennett¹ of the Food Research Institute of Stanford University. It may be summarized according to this author somewhat as follows. In Nazi dominated Europe there is a food stringency which in some places is sufficient to cause nutritional disease. In the large segment under Japanese control, food supplies while they are probably deficient according to proper standards are no worse and possibly are better than before the war. In the United Nations area supplies may be limited in some items but in general are sufficient. These estimates refer of course to gross supplies and do not take into account distribution within populations a problem to be discussed later. Very similar estimates are expressed in more geographic detail in a

Read before the National Conference on Planning for War and Postwar Medical Services, New York, March 15, 1945.
1. Bennett, M. R. The Food of the Future. Food and Nutrition, 1945, 1: 1-2.
Read before the Institute of World Affairs, University of California, December 1945.

series of articles in the January issue of the *Annals of the American Academy of Political and Social Science*. Recent estimates by the U. S. Department of Agriculture are that Europe, exclusive of Russia, has suffered a decline of food supplies of only 2 to 3 per cent in the past year.² Personal information from private sources in German occupied territory indicates little change from a year ago. What the situation will be at the end of the war cannot be known at present. It seems safe to assume, however, that large groups of people will not only have an insufficient supply of food but will have been living under such conditions long enough to have developed significant if not gross nutritional deficiency disease.

It is probable that the greater number of these will be in enemy occupied or controlled countries. Depending on the course of the war, the number at the end of the war may be lessened if the policy is adopted of feeding populations as they are liberated. This would decrease the stocks of those countries furnishing the food but in turn would lessen the requirements in the immediate postwar period. At that time suddenly expanded demands may require large supplies and though they may be adequate, all the expanded production will probably be needed to meet them.

LEVEL OF NUTRITION

The third factor determining the size of the postwar nutrition problem is the level of nutrition which is considered as indicative of disease. This is a scientific factor of importance because it forms part of the basis for calculating the degree of deficiency and measuring the amount of relief needed. In practice, however, it is overshadowed by the fourth factor, which is social and economic. This level can be fairly satisfactorily defined much better even than before our entry into the war. One measure is the required daily allowances of the various nutritive factors for which the recommendations of the Food and Nutrition Board of the National Research Council constitute an authoritative and widely adopted standard. Another is the physiologic tests of nutrition which are available for several nutritive factors. What these standards will be at the end of the war is unknown, but the tendency in nutrition at present is to consider levels of nutrition pathologic and constituting disease which in the past would have been accepted as normal, and the discovery of new and more subtle deficiencies and means to detect them suggest that our concept of nutritional disease will be broadened and the size of the problem increased.

RESPONSIBILITY

The fourth factor is the extent to which responsibility for nutrition is accepted by whatever agencies may be concerned. Obviously this responsibility will extend in various directions. What peoples will it include and how many? What classes in a population? Will it be concerned with all or only special groups? An even more difficult decision as to responsibility remains. For what level of nutrition shall responsibility be accepted? Shall it be only the emergency relief of acute starvation? Shall it be a restoration of nutrition to the level existing before the war in the populations and countries con-

cerned or shall the task be that of establishing and maintaining nutrition at a level which is believed to be desirable by present day standards or those current after the war?

Some intimation may be had from the statements and the announced aims and policies of the heads of governments and of those who may have to do with this postwar problem. These have been well summarized by Bennett.³ Thus, the Atlantic charter implies a freedom from want of food for all men in all lands. Mr. Churchill holds out the hope of food with freedom to the peoples of Europe. Our Secretary of State stresses the need for swift and effective action to meet pressing human needs and the Secretary of Agriculture, Mr. Wickard, warns that to have a stable peace there cannot be widespread starvation in some parts of the world with surpluses in others. Free governments of conquered countries of Europe have announced the intention of securing food for postwar needs in liberated countries. Recently a director of foreign relief and rehabilitation for the United States has been appointed. Rehabilitation and relief must include food and nutrition. As Bennett has said, "The idea of providing adequate diets for all seems in the air." Finally, the recent plans of the National Resources Planning Board, as announced by President Roosevelt, leave no doubt of their intentions with respect to this country. A full and adequate nutrition for every one is the declared intention. It is apparent that, if responsibility is accepted to the extent which is implied, the task will be stupendous even for this country alone. It must in fact become a plan for the more distant future as well as for the immediate postwar period.

TECHNICAL AND MEDICAL ASPECT

Compared to the social and economic aspects, the technical and medical part of the problem is quite easily determined. First there is the procedure of measuring the deficiency, an assessment of the nutrition of any group which may be concerned. Such an assessment will determine the kind of deficiencies, their severity and the number of persons affected, not only for the population generally, but especially for the various classes of the population. While it might be possible simply to provide enough food of all kinds so that everybody or nearly everybody has enough, such a method is inefficient and wasteful. This is particularly true when large supplies of food must be transported long distances and distributed to large populations whose needs may vary in amount and kind. Therefore an assessment is needed. On such an assessment will be based not only the definition of needs but the proper application of relief, and such an assessment will be needed whether one is dealing with a short time relief problem or a permanent plan of nutrition betterment.

There exists at the present time procedures for the assessment of the nutrition of populations and individuals much superior to those of even a few years ago. These are physiologic tests which are capable, in some instances, of detecting and measuring slight deficiencies. However, much improvement is needed and one of the problems facing us is the development of additional and improved tests for the detection and measurement of slight deficiencies.

REQUIREMENTS

The problem having been defined on the basis of nutritional status and need and the degree of responsibility, the requirements for either temporary relief or a long time program of improvement can be deter-

² The Food Situation in a World at War
Lloyd, E. M. H. In the United Kingdom, *Ann. Am. Acad. Polit. & Soc. Sc.* 225: 83 (Jan.) 1943.
Richter, J. H. Central and Northern Europe, p. 8.
Bacon, Louis. Southwestern Europe, p. 87.
Whipple, C. E. Southeastern Europe, p. 88.
Volin, Lazar. The Russian Food Situation, p. 89.
Lidejinski, W. I. The Food Situation in Asia, p. 91.
Almonacid, P. N. The Other Americas, p. 93.
³ The Nashville Banner, March 5, 1943.

mined quite accurately. As far as immediate relief of the actual deficiency is concerned this can be accomplished quite easily and quickly provided supplies are available as far as adults are concerned. While time is needed for the repair of certain structural defects and in some instances, severe peripheral neuritis of thiamine deficiency for example, complete recovery may never occur in most instances the actual deficit can be made up quickly and body stores returned to normal. In all except very severe deficiency states this will promptly restore function and structure to an approximately normal state leaving complete restoration to follow at some later time. It is necessary however that adequate maintenance supplies be provided to prevent a relapse and insure complete recovery and this becomes of paramount importance for children if a permanent effect is to be prevented or lessened. There is thus introduced an important time-quantity factor. Small amounts of necessary food factors may cure nutritional disease slowly. Still smaller amounts may relieve but never cure. Unless restoration of body stores is accomplished, daily requirements may prevent the accumulation at any time of an amount large enough to relieve the deficiency. Only amounts large enough to restore body supplies to normal and meet current requirements will cause prompt relief and complete cure.

For many reasons it might be advisable to relieve the immediate deficiency of a population quickly by the administration of relatively large amounts of the necessary factors in concentrated form. Ease of distribution, advantages in transportation, great savings in time and personnel and a simpler administration could be gained by such a procedure. No such measures should be undertaken however except for immediate and temporary relief and with the expectation that supplies of food would replace such artificial methods.

For efficient and economical relief and correction of nutritional disease, such measures as are adopted should be varied according to needs as determined by an assessment of nutrition. For some individuals adequate supplies of usual foods may be all that is needed to cure their nutritional disease quickly. Others may require special treatment including hospitalization, the use of special food, vitamin products and the like.

One problem in emergency relief is the effect of increased supplies of one or two dietary essentials on the needs and requirements for others. A good example is the increased need for thiamine as caloric intakes are increased. Any increase in calories would increase the requirements for thiamine, and unless provided in a way which would carry with them increased thiamine might precipitate a deficiency of the latter. In the relief of deficiencies and nutritional disease therefore this phenomenon must be kept in mind and possible ill effects avoided. This is particularly important when attention is directed in the main to one or two nutritional deficiencies and treatment is by means of artificial preparations or special concentrates of food factors unsupported by an adequate general diet.

LONG RANGE PROGRAM

The problem of a long range program of nutritional betterment is much more complex than that of emergency relief. For simplicity I shall confine my remarks to the situation in this country with the understanding that they will apply to others with such modifications as may result from the social and economic factors I have mentioned.

To me it appears unlikely that any significant amount of serious nutritional disease will appear in this country as a result of the war. Rather it is probable that increased public interest, a better distribution of essential food among the various classes of the population through governmental control, rationing and increased purchasing power and the adoption of certain public policies in relation to food supplies and production will result in an even better state of nutrition in general than existed before the war. Such certainly seems to be the situation so far in England, where certain definite gains in nutrition of the general population seem to have been secured because of the war and despite the difficulties caused by the war. The problem will be to secure the potentially tremendous improvement over present day levels of national nutrition. What this level is no one can say accurately. Many statements and estimates are current, most of which are meaningless because they are not based on sufficient evidence or because they fail to take into account all the various factors concerned in the interpretation of assessments of nutrition. Nevertheless there are sufficient reliable studies to indicate that there is a large amount of nutritional disease in this country on the basis of standards now generally accepted. It is thus possible to secure a tremendous improvement in health. Medically it would mean the end of nutritional disease except for sporadic instances of conditioned deficiency. The gain in public health, vigor and accomplishment is difficult to estimate but would be great.

However, to attain the goal in nutrition which has been suggested will not be easy. To begin with public interest in nutrition may lag after the war without the striking reminder of severe deficiencies. The less dramatic gain in health as nutrition approaches the optimum will not be so apparent. Continued effort at public education must be maintained but the mistake must not be made of exaggerating nutrition. Other causes for ill health exist and attempts to make adequate nutrition a panacea will fail as do all panaceas. Also as Mead⁴ has stressed care must be taken in invoking the moral element in relation to food habits which in themselves constitute an important factor in nutrition. For the most part however, the postwar problems will be problems of opportunity. There will be required first of all a much greater production of food. There is every reason to believe that this will exist at the end of the war. Much of this increased production may be needed in the early postwar period for supplying those populations whose production and supplies have been deficient. With peace however production should be increased in those regions also and cooperative effort for this purpose is already planned by the United Nations.⁵ All this increase will be needed however if the goals of nutrition which have been set are reached. It has been estimated that even in this country it would be necessary to increase production of the more expensive foods 15 to 100 per cent to raise the dietary level of the poorest to standards of those who are even moderately well fed.⁶ It thus applies throughout the world the effect on world trade, commerce and industry is obvious.

⁴ Mead, Margaret. The Food of the Future. New York: Macmillan Co., 1943.
⁵ Marshall, C. P. The International Organization for Food and Agriculture. New York: United Nations, 1945.
⁶ Bureau of Food and Nutrition. Food and Nutrition Survey of the United States. Washington: U. S. Government Printing Office, 1945.

In addition to the production of increased amounts of food there is the problem of increasing the nutritive qualities of foods. Opportunities in this field are many, as is indicated by one example. Studies by the Department of Agriculture Regional Vegetable Breeding Laboratory at Charleston, S. C. showed a variation in the ascorbic acid of thirty-three varieties of tomatoes from 22 mg. per hundred grams to 10 mg. or less than half as much. Similar differences exist on a regional basis and for other foodstuffs and other nutritive factors.

With the great increase in food production goes the problem of food storage, preservation, processing and preparation. Equally great opportunities exist in the problems of preserving the nutritive qualities of food during its progress from production to ultimate consumption. Truly great losses occur in that process at present, and a solution for this problem will go far to ensuring an improved nutrition. A case in point is again vitamin C, an adequate intake as represented by the supply in the food in the original condition often fading to the point of a deficiency before consumption. One way to obviate such losses is, of course, to increase the original content as described, but this is wasteful and a more desirable procedure is improvement in the technology of food handling and processing and in the relatively simple measures of cooking and preserving.

Despite a great increase in production, however, there remains the problem of distribution. Not distribution in the physical sense of transport but equitable distribution among all classes of the population based on need. This problem is almost altogether a social and economic one, all the various aspects of which cannot be touched on here. It does have, however, scientific and technical nutrition aspects because of the methods which may be devised to solve it. It is possible that in the desire to extend the benefits of good nutrition widely and quickly artificial means may be adopted for providing some elements of nutrition which are difficult or costly to obtain in natural ways through adequate amounts of proper food. There are, for example, the procedures of enrichment and fortification of food or food products whose general nutritive standing does not warrant them. In the same category can be placed the indiscriminate use of vitamins and vitamin concentrates by the general public and certain legal restrictions, limitations and restrictions which may hinder as well as help good public nutrition. It would be very unfortunate in my opinion if they prevented or retarded progress in securing better nutrition with natural foodstuffs through the process of education and of technological and scientific development.

INDIVIDUAL NUTRITION

There remains to be considered the problem of individual nutrition, the study of which will remain the principal source of fundamental advance in this field. Although gross nutritional disease may cease to be a significant problem except for sporadic and conditioned deficiencies, the prevention of the latter as a complication of other disease is a very large problem. There will also be the influence of minimal nutritional disease on general health. New procedures for determining their effect and detecting their presence must be devised. The improved nutrition of the child will introduce new problems of demand and requirement

which must be studied. Although reliable evidence of the specific influence of nutritional deficiencies on other disease has been meager, newer studies on the relation of nutrition to cellular and humoral immunity make this a promising field for investigation. Similarly the relation of nutritive factors to the intimate details of metabolic and detoxification mechanisms are of particular importance in relation to various occupational exposures and the course and outcome of other disease.

In closing, it may be pointed out that the problem of nutritional disease is much like the problem of syphilis. Both can be eradicated or nearly eradicated. Scientifically the means are quite simple and quite clearly defined. It cannot be accomplished, however, without the cooperation of many agencies, scientific, medical and social, working together on an adequate plan with vision and with courage.

DISCUSSION

DR. C. G. KING, Scientific Director of the Nutrition Foundation, New York. The social and economic factors are more staggering as we approach them at present than the purely scientific factors. First, we should recognize as a nation that we do not have true food surpluses in the proper sense of the word if we are speaking in terms of the problem of adequate nutrition for our entire population. We have wrong balances, we have deficiencies of the commodities most needed, we have surpluses of other commodities. We surely do need long range planning and approach not only in our own nation but to the worldwide problems in nutrition. How much of our nutritional problem is properly classified as nutritional disease? It seems to me more broadly a problem of nutrition. When we get into the area of the degree of malnutrition that is most prevalent in America, there can clearly be a question of definition, of whether or not it is disease.

I should like, in the next few moments of my discussion, to cite the significance of approaching the overall community problem of nutrition. We have Sir John Orr's report that in Scotland, in the midst of the war upheaval, they were able to lower their infant death rate to 20 per cent below the prewar level, even though it had been rising steadily up to the beginning of the nutrition program in 1941. We have the report of Ebbs, Tisdall and their associates of Toronto of the great improvement in the health of infants and mothers by rather simple improvements in their food supplies. We have the reports of Dr. Hazel K. Stiebeling and her associates in the Department of Agriculture indicating that approximately half of our American population is distinctly below a level that would be accepted as satisfactory in their nutritional provision. We have the concept of nutrition and malnutrition presented by Dr. Kruse, which brings in the question of time and intensity and I think really opens up a somewhat new era in the whole approach to malnutrition.

Basically, I think that most lacking in the entire picture is the provision of clear, convincing evidence to the medical profession that the nutrition problem is one of major importance in terms of health. We have a lot of these reports based on limited surveys and studies, but I have a feeling that many of the men who are leaders in the medical education field especially still have a lot of reservation of just how significant in terms of public health is this problem of nutrition. We might approach it from the point of view of the relation that nutrition has to such widespread prevalence of dental caries, to the widespread prevalence of impaired eye function, faulty eye structures, to the neurologic disturbances which have in the past been so often attributed to alcoholism, strain and other stresses other than nutrition.

We have a great opportunity ahead if we can combine the point of view and the information that the research people, working in the laboratories with experimental animals, have in their attitude toward the problem of feeding animals for their best health with the point of view taught in approaching the problem of public health in our schools of medicine. I think

7 Auchter, Eugene C. Nutrition Begins with the Soil, The Food Front, A Series of Eleven Lectures delivered in the U. S. Dept. of Agriculture Auditorium, March 11 April 15, 1942, Washington, Government Printing Office, 1942.

it is a very fine thing that we have centers growing such as Dr Youmans is building at Vanderbilt and Dr Stire is building at Harvard Medical School. Out of those centers there should come an adequate training and appreciation of the human problems in nutrition analogous to the problems that the men in the laboratory have been developing over the past twenty years.

As specific indications of this carry-over, I think almost all biochemists have been impressed within the last two months with the work in Dr Rose's laboratory at Illinois and Dr du Vigneaud's laboratory here in Cornell Medical College showing that within twenty-four hours disturbances in the body's handling of protein can be severe by omission of only one amino acid. Within twenty-four hours Dr Rose then put his patients back into a positive nitrogen balance from a previously established negative nitrogen balance by changing only a few grams of one amino acid. The rapidity with which those swings take place, it seems to me, would impress any one interested in normal human physiology. What significance it may have in health is indicated, I think, in a preliminary way by Dr du Vigneaud's studies of methionine as one typical amino acid which greatly affects the function of such organs as the liver, kidney and muscles.

We need a worldwide approach to the problem because, as Dr Boudreau has so well pointed out, the stability and health of every population in the world is a matter of major concern to all other areas and populations in the world. The Nutrition Foundation was set up by the food industry to support primarily basic, fundamental research in nutrition, but they have another aspect of their program in promoting good sound education relative to nutrition. They have a determination to work, to see that the food supply at least can make its best contribution to public health.

THE SUPPLY OF DRUGS AND MEDICAL MATERIALS IN THE POST-WAR PERIOD

COLONEL CHARLES F SHOOK
MEDICAL CORPS, UNITED STATES ARMY

While our military, naval and marine forces are still facing the common enemy and while our merchant marine is still struggling against the hazards of the sea it is not only fitting but appropriate that industrial and professional leadership should gather for a review of its prospects and responsibilities.

War production is our present paramount duty and will remain so until the war ends. Nevertheless there is a future, that postwar period of adjustment which should be of vital importance to us today.

My subject, "The Supply of Drugs and Medical Materials in the Postwar Period," should be expanded to include all supplies and equipment essential to the maintenance of health. Many believe that postwar planning is premature. In fact, there are many who contend that the mere thought of peace problems now is a waste of mental energy. It is questionable whether the serious thinker will agree.

One of the precepts of the Army has been "In time of peace prepare for war." How well this has been accomplished has been demonstrated in every major war involving our nation. The Army, augmented by its civilian components has with the least practicable delay mobilized its manpower and its resources and proceeded to the task of defeating the common enemy in the quickest yet most economical manner. By that I do not mean cost in moneys but rather in the expen-

diture of critical manpower and materials. Such successful accomplishments could be made possible only by continued study into possibilities and the completion of plans of action. Success in any endeavor can never be accomplished without planning. Every one knows that the war is far from won. Our war budget should dispel all doubt on that point. Nevertheless it should therefore fall in line. "In time of war prepare for peace."

With the continued success of our allies, we Americans are becoming optimistic as to the future. The defeat of our common enemy appears more and more certain. Maybe not this year or even next, but our confidence has risen and we are positive as to the ultimate decision. Our many columnists, writers, economists and business executives, realizing the necessity for future planning, have begun to discuss postwar conditions. Experience is being brought out of the deep dark recesses of the past, and consideration for the future is coming to the front.

Our President has visualized this need as demonstrated in his establishment of the National Resources Board and the Defense Supplies Corporation. The former is charged not only with the husbanding of our resources but the proper utilization of them after the termination of hostilities. The Defense Supplies Corporation likewise protects our future by building stockpiles of critical materials and controlling their distribution to essential needs only.

As far as postwar planning is concerned, our Congress is naturally more interested in the international situation than domestic planning at this time.

AFTER THE FIRST WORLD WAR

Planning is dreaming, and any plan of action devised is influenced to a great extent by the personal element of the planner. Before any plan can be recommended for future action, it is best that the subject be developed by a description of the postwar period of World War I and its effect on the various industries involved in the production of health supplies.

With the sudden termination of hostilities on Nov 11, 1918 our government was confronted with one of its greatest economic problems. Industry was keyed to its maximum production, and vast quantities of supplies of all types and descriptions were in our warehouses, en route overseas, in the hands of our troops in France or awaiting shipment from the factory. With the cessation of hostilities we no longer required actual munitions of war or to a lesser extent large quantities of maintenance and operational supplies. This flow of supplies was so well organized that its momentum could not stop over night.

Each and every plant had its problems and difficulties and each and every type of commodity had its peculiarities. Some types of production were still required in large quantities for the operation of our peacetime army. By and large however, we had on hand, either in the United States or on the soils of our allies, millions of dollars' worth of supplies and equipment, soon to be declared as surplus.

Then, as today we had facing us the rehabilitation of most of Europe and to some extent the countries of our former enemies. The care of the sick and the wounded and the utilization of medical supplies and services acknowledge no race or creed. Humanity must be served and we in a grandiose yet probably not in such a controlled or planned manner turned over to our surplus supplies that were over-eas to a rehabilitation

program. Mr. Herbert Hoover, who had been in charge of the Belgian Relief from the time of the invasion wisely distributed many medical supplies in such countries as were believed worthy of assistance. At that time there were transferred to the American Red Cross approximately \$10,000,000 worth of drugs, surgical dressings and other surplus supplies. Much of the material was required for the continued maintenance of our army of occupation but a lot of it, sold in France to the French government, did find itself entering the channel of international business and competing against the patriotic industry which had produced it under the hardships of expansion depleted manpower or material handicaps. Those stores in England were purchased by the British government. I can find no record of these goods returning to the United States. A moderate amount of medical supplies was sold to Poland, Greece, Serbia and the newly created countries of the Ukraine. Only a small quantity of technical equipment was returned owing to cost of transportation.

Those stocks still in the hands of the manufacturer either completed or in the various steps of fabrication, were in many instances either taken over by the government as such or retained by the producer.

Large stocks were accumulated and transferred to the Surplus Products Board by which they were sold in job lots to the highest bidder, sometimes by direct sale and sometimes by auction. Warehousing was expensive, and the government was more than anxious to rid itself of this impediment. We still see evidences of our excess stocks of World War I in our many army and navy stores, where everything formerly used in the service can be procured for camping, hunting and other outdoor sports.

It has been stated that pushcarts on lower Broadway sold ointments in penny sales. (I question that the Food and Drug Administration would permit a repetition of this action.) Surgical scissors and even certain surgical instruments found their way to the general merchandise counter. Equipment passed through numerous hands to many various terminal positions.

With the advent of 1939-1943 stocks of World War materials began appearing over the country and at last the investor realized a possible market for his frozen asset, either through lend-lease or through the depleted civilian market.

Dressings, surgical instruments, including dies, jigs and forgings, field equipment and other nondeteriorating materials were made available. Some of the surgical instruments made an appreciable assistance to our allies under lend-lease.

With the return to the market of such large quantities of finished products the manufacturer began to feel its effect. Production lagged, world markets went to other countries because of lower labor costs. Only the hardiest of manufacturers were able to withstand all these reverses. Many good reliable concerns either closed their doors or came close to it with the usual attendant financial loss.

These conditions cannot be permitted to arise another time. Now that the various health supplies industries have expanded far and beyond their peacetime requirements, it is to their benefit if they start now to plan their postwar possibilities: new markets, new products, yes and even many new sources of supply with the continuation of new products encouraged by a wartime condition.

PRODUCTION FOR THE PRESENT WAR

The expansion of production from 1939 to 1943 has been quite exceptional. To meet the present war effort it was necessary that industry expand its production manifold. Production status depends on the law of supply and demand, the restrictions placed on production by the War Production Board and the availability of material and manpower. It has been said that the Army has overbought. Perhaps that is true in a few commodities where past experience was lacking and estimates of requirements had to be based on knowledge of similar items. Perhaps certain stocks are in excess, but remember, we have not as yet gone into an extensive fighting war where stocks are depleted over night. It is much better to have overprocured and be ready than to have an empty ladder in time of actual need. This war is not like its predecessor. Then we had but one front. Today we have nearly forty fronts and each must have its "pipeline" of supply filled.

Some industries required little or no expansion to care for the growing needs of our military and naval forces as well as our allies. Chief among these may be listed pharmaceuticals. Perhaps a tablet machine or an ointment mill has been added and perhaps a second shift has been required, but on the whole the pharmaceutical industry was able to cope with all our requirements and complete its deliveries in a satisfactory manner without appreciable expansion. The same may be said of several other industries allied to health supplies. There were, however, many instances in which expansion either in whole or in part was 200 to 300 per cent and even 500 per cent. True, the latter is the exception rather than the rule and involved materials or equipment either new to production or especially peculiar to warfare. These would include the expansion of such chemicals as the sulfonamide compounds, atabrine and essential vitamins, together with surgical instruments, diagnostic instruments, sterilizers and X-ray machines.

POSTWAR PRODUCTION

On the termination of hostilities industry geared to a maximum production will not materially slow down its machine but will continue for some time.

Where will postwar production be required?

1 The equipping of educational institutions whose supplies and equipment have been materially curtailed during the emergency.

2 The replenishment of depleted retail stocks as well as an established inventory in the wholesalers' warehouses.

3 A return to the normal type of fabrication and the discontinuance of makeshift and substitute production.

4 Increased sales to professional men leaving the services and returning to civilian practice. In a recent poll by *Fortune*, 55 per cent of business executives anticipate a greater volume of business than even 1939.

5 The completion of hospital projects and the replacement of worn out or obsolete equipment. This phase will by no means be a minor one. Our hospitals have shown their patriotism through the continued usage of old unsatisfactory equipment and the practicing of rigid economy. Their financial balance is probably the best in history, and it will be their first desire to invest in durable goods.

6 Proper and supervised utilization in the hospitalization program of our Veterans Administration, the equipment going into a hospital program and the main-

tenance supplies over a general distribution. This procedure was used after World War I.

7 It can be visualized also that an organization similar to the Civilian Conservation Corps may be established to care for discharged soldiers needing positions training or even rehabilitation. The CCC required hospitals and dispensaries, which means supplies and equipment.

8 Stocks in the territorial limits of the United States would be available for transfer to other government agencies, the American Red Cross, the rehabilitation program and certain nonprofit operated hospital groups. Also the stock level of supplies in established army hospitals and dispensaries could be raised.

CONCLUSIONS AND RECOMMENDATIONS

In the transition from war to a peace economy there are certain conclusions and recommendations to be made.

1 An act by Congress or a ruling by the President under his War Powers Act that manufacturers who filled government contracts should be permitted to repurchase any surplus materials remaining in the hands of the government after the cessation of hostilities.

2 The suggestion to Congress that an appropriate war reserve of nondeteriorating supplies and equipment be stored for future eventualities whether they are for war, flood, fire or other disasters. We should never again deplete our war reserves.

3 From 1924 to 1941 the War and Navy Departments operated what was known as a procurement planning division. Their plans were laid to determine what would be wanted in time of emergency, how much would be required and where it was to be obtained. A similar setup is recommended to any individual or group of individuals charged with the rehabilitation program. Time is essential here. The personnel to be chosen is important, but the prime factor is the proper recognition of health supplies and industries involved. We know the countries we must aid and we know the type of materials they will require but have we any idea as to quantity? I question that any answer is available at this time.

4 There will undoubtedly be a recession in prices after the war. The retailer should be encouraged to watch his stock and not overload. Better and more substantial products will soon be on the market at better prices. Good business will watch the market closely. A price protection legislation will be as essential after the war as now, probably in the form of duty on exports.

5 The various industries involved in the manufacture of health supplies should become realistic. While many concerns have already set up postwar planning boards all facilities should begin to study their future status in a community suddenly removed from wartime production. Research should be geared to new products, new markets both domestic and foreign and new fields of production.

6 On the termination of hostilities surplus stocks of maintenance supplies will immediately become evident. This is not true of equipment. Our hospitals and dispensaries will be required until after the Army has been demobilized to its authorized peacetime status. If history repeats itself, such equipment will not be declared surplus for about two years. This period should be carefully studied and steps taken to alleviate the effect on industry.

7 I cannot encourage my next recommendation too emphatically. That is the continued use of industry advisory committees to advise and assist the various

government agencies in the timely and judicious handling of surplus stocks of medical supplies. A special subcommittee should be formed for just such a purpose.

In closing, let me reiterate, planning at this time for the postwar period is essential and proper planning will avoid many of the difficulties evidenced after World War I. There will be ample medical supplies and equipment available for the rehabilitation program with the possible exception of biologic products, vitamins and certain pharmaceuticals required in the treatment of diseases peculiar to a particular foreign country. To assure further the availability of supplies required overseas it will be necessary that industry have at least an idea whether or not its products will be required in such program. With proper supervision and control of our medical supplies on the termination of hostilities I cannot visualize any great interference with our economic setup.

DISCUSSION

LIEUT COL H F CURRIE. In his presentation Colonel Shook mentioned one factor in the channeling of drugs and medical supplies that has been of great interest to me, and one which I think should be given further consideration—rehabilitation. The present war is unusual in that more people are involved than ever before and destruction of materiel and humanity is shocking in its magnitude. Immediately after fighting ceases, our nation will be faced with a dual responsibility: first, Europe, North Africa and the Japanese controlled countries must be policed to prevent a reactionary crime wave and violence because of hunger and unrest. Second we must initiate, supervise and supply needed material for the rehabilitation of those nations whose level of civilization has been lowered by the Axis. In this we can be defeated by two factors: hunger and disease. Large quantities of drugs and medical supplies will be needed. The policing of the aforementioned countries with widely dispersed naval and military units will require many medical installations and frequent replenishment of their medical supplies. This will utilize stocks of supplies then on hand. More important, however, adequate medical care must be established in the countries now being dominated by the Axis forces and this will call for large stocks of drugs and medical supplies.

Because our present production of these supplies is regulated by a carefully planned army supply program, projecting the monthly need of medical supplies through 1943 and 1944 there is less likelihood of a tremendous surplus of supplies than after World War I.

The second problem medical supplies for the purpose of rehabilitation, affords an opportunity for our nation to render a great service to humanity and at the same time assist our drug and medical industry in maintaining a constant rate of production during the postwar period. This can be done by utilizing the excess production made available by decreasing army and navy requirements. Immediately after the war military requirements for production will be sharply decreased. Plans must now be made for conversion of this excess capacity of the drug and medical industry to the needs of our rehabilitation program which will continue for years thus allowing a gradual transition from war production to peacetime production. Such a program must be instituted immediately and must be guided by persons who know the industry who are familiar with procurement of medical supplies and above all who have a broad and sympathetic knowledge of the problem facing us in the postwar period. Such action will be of material aid in maintaining a sound economic structure in our drug and medical industry and if properly planned and applied the production of drugs and medical supplies will continue at a fairly uninterrupted pace on the cessation of hostilities.

In conclusion let me impress on you the fact that the present war is far from won. We have a hard fight ahead of us. In our drug and surgical industry first consideration must be given to giving our fighting forces all they need. If we can there will be no need for postwar planning.

MAJOR HOWARD F. BAIR I take it that Colonel Shook's paper is more directly aimed at industry than it is at medical service in general and I know because I have heard some of you express yourselves to that effect, that many of you in the audience, representing industry, are concerned with what will happen to the enormous quantities of materials which the government is today purchasing. I think it is only natural that you should be concerned because the quantities in many ways seem fantastic—and yet I for one speaking as a former member of the surgical supply industry, feel that that concern is needless. You have heard several sound recommendations from Colonel Shook as to certain protective safeguards that should be set up for industry and you have heard Colonel Currie say that worldwide rehabilitative necessities will use up these materials. I think it may safely be said that what the industry needs is a constructive, rather than a protective outlook. Right now, sitting here, you are bothered that such large quantities of material will be thrown on the market that your industries will be badly crippled. I believe that fear to be groundless. In the first place, we must all agree with Colonel Currie that there may be no surplus products because of the world's needs. But suppose these things do not come to pass and suppose there are large quantities which the government would decide not to keep but to throw on the market. I submit that even this would not be harmful. Colonel Shook has discussed what happened to surplus materials that were thrown on the market after World War I, but I submit that the greatest growth in the surgical, pharmaceutical and laboratory industries the world has ever seen occurred in this country from 1920 to 1940, in spite of the merchandise which the government sold at auction. Indeed, it would be easy to argue that at least some of the growth occurred because of the goods thrown on the market—but as for that, there is no time. So, I think industry needs to get rid of these fears, first because domestic and worldwide demands will be too great and, second, because large quantities will be kept by the government (as Colonel Shook has indicated) and, third, because even if some substantial proportion should reach the local market, disaster will not result.

There are two other points which Colonel Shook has made, which I think worthy of elaboration. He has indicated that price control legislation will be as essential after the war as now. If he will allow me to disagree, I hope that will not come to pass. To begin with, there is no actual price control legislation in this country other than price ceilings and the fair trade laws permitting the manufacturer to set his own resale price. Any further extension of price control legislation, particularly in this field, would be likely to stifle growth. The entire health supply field is expanding. The close of the war will see the industries participating in this conference standing on the threshold of new avenues of exploration and growth. Those who feel that price protection is necessary for the exploration of these avenues do not understand that all economic history has proved that a free market encourages developmental research and improvement.

The last point is this matter of conversion to peacetime production, which Colonel Shook has discussed so elaborately. In this connection there is one point which seems to me is well worth making. He has indicated that some of your industries required little or no expansion to convert to war. True, he has said that others have had to expand as much as 500 per cent, but he has further indicated that on the termination of hostilities it will not be necessary for industries materially to slow down. I wonder if we all realize how different your situation is from most others. Ordnance, aviation and shipbuilding to a large extent were created out of thin air. A great many war industries are producing not wealth but engines to destroy wealth. When the war stops they must cease operations nearly 100 per cent. The wealth of our country lies in our ability to produce material useful for peacetime better living. If our industries here assembled have expanded, then so much the better—for you have expanded for the production of wealth creating materials, not for the production of destruction and debt.

No one can foresee the shape of things to come, none of us can see what economic patterns our country will adopt in the postwar period, but we do know that a large part of our population, and a much greater part of all the populations of the

world, have been underprivileged healthwise, and so it would seem very ill chosen pessimism, indeed, to worry because your industries may be geared up too heavily for our present horizons. I, for one, have no doubt that we shall see many new horizons before we are much older.

COL. C. F. SHOOK I think I should like to clear up one thing, and that is some control over supplies. After the last war, if I am not mistaken, and I think most of the surgical instrument people will agree with me, there were great inroads of German instruments into this country as the result of cheap labor. The German government gave a bonus or wrote off certain amounts of money so that they could compete with our duty. That is what I was referring to in financial regulation. I believe that, as our present laws stand, anything manufactured in the United States can come back duty free. We don't want to see those instruments, as in the last war, where we paid \$175 for an operating case come back and be sold for \$17 and then go out on the market for \$50. But it did happen in the last war.

POSTWAR NEEDS FOR MEDICAL AND OTHER TRAINED PERSONNEL

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I am not a physician and therefore, here in the presence of physicians must speak with humility and with a certain self-protective caution.

I am not a prophet and therefore may not presume to lift the curtain of time that separates the world of the present from the world of the future.

I am not a protagonist and therefore possess but little of the crusader's zeal for the winning of followers of ideas fashioned to save either a part or the whole of mankind.

I am not a member of the immediate family of Pollyanna and therefore am not exposed to the hazard of a soft optimism.

I am not a pessimist and therefore am not armored against a dynamic faith in the intelligence and disposition of men to proceed promptly to salvage good from the evil and destructive days in which we are.

I am, however, commissioned to represent in this place the professions of learning the preparation for which requires time and talent and tasks of those who would learn for a purpose. This commission obligates me to serve as a coordinator of the physician, the prophet, the protagonist, the family of Pollyanna, the pessimist and, perchance, the patriot. Not, let it be hoped, that sort of coordinator who, according to one of my waggish Washington associates, merely transforms "organized chaos into regimented confusion."

SIGNIFICANT TRENDS

These whimsical reflections do not divert me from the discouraging observation that there are too many ifs and whens and hows and whys and wherefores as to both the present and the future to permit either logical or acceptable answers to the several obvious questions raised by the particular title which this conference has assigned to me. A multitude of uncertainties and variables of ever changing force must be dealt with. Most of all there must be a constant awareness of the gravest of risks, that is, the current tendency to oversimplify the solution of the difficult war problems of the realistic today and yet more difficult postwar problems of the indefinitely remote tomorrow. It is

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altogether too easy to reach conclusions compounded of hopes and speculations, seasoned with a mere sprinkling of facts, instead of following the trail of clear facts, trusting that these do not lead to a point too far from our chosen goals

Within the prescribed limits of twenty minutes it is impossible to do more than to "spot" for each of the two phases of the trained personnel problem—the "medical" and the "other"—certain of the trends and facts of today that appear to have significance for the postwar period

NEED FOR MEDICAL PERSONNEL

The first half of the subject matter suggested by the title directs us to the postwar needs for medical personnel. You will receive my forecasts as the products of the observations of a mere layman. While they may not run easily in the time worn ruts of the profession of medicine, they do represent serious meditation on matters of far reaching concern to the ways of life of a people who instinctively know that nature has written important sections of their charter of liberty. And nature demands that they have care for what nature has given.

It seems self evident that the postwar needs of medical personnel will be determined principally by

- 1 The length of the war
- 2 The number of the wounded and permanently disabled returned from the battle fronts
- 3 The extent of the casualties of medical men serving with the armed forces
- 4 The nature and amount of the accumulated effects of the reduction of medical service for the civilian population during the continuance of the war
- 5 The available supply of the newly trained personnel coming from the medical schools during the period of the war and after
- 6 The social philosophy adopted for the utilization of medical services in the interest of national health

Under the most favorable circumstances as to the duration of the war, the number of casualties and the efforts to speed up the training of both men and women with the minimum qualifications for the practice of medicine, we shall find that there are too few doctors to serve our needs even when these needs are measured in terms of the pre-Pearl Harbor days rather than those represented by the demands for the hospitalization and rehabilitation of the wounded in battle and by such proposals for enlarged medical service to the American people as those announced last week by the National Resources Planning Board. The statement "It is essential that public provision be made for meeting the needs of our people for more adequate medical care. Toward this end the federal government should stimulate, assist or undertake constructive action to provide such care for the millions of our people whose need cannot be fully met from their own resources" will provoke many a sharp controversy during the days ahead, within and without the profession of medicine. However, the issue may not be brushed aside by those having any part of the responsibility for the leadership of postwar medicine.

UNIVERSAL MILITARY TRAINING

Here I am tempted to digress and to call attention to one possible and entirely new factor that may have a tremendous influence on the amount and character of the postwar needs for medical service. Here I fear I am for the moment assuming the role of a protagonist.

If the nation is sensible in its foresight for the days after the war, adequate provision will be made for what

has come to be called universal military training of our youth. In spite of the idealism with which we are mobilizing and energizing our powers for victory, this idealism must not lead us to any self delusion as to the necessity of guaranteeing the continuance of that victory by a quality and a quantity of trained military power that will not be found in any peace pact.

Each generation of American youth has a right to the opportunity to be prepared for its civic jobs. As human nature is, individually, racially, nationally, defensive war is likely to remain as one of the civic jobs for free men.

If and when we have such a plan for the continuous mobilization and training of American youth, it follows that new and greater drafts will be drawn on the profession and institutions of education of the nation. Thereby the standards of national health, national security and national unity will be established and realized.

EXPANSION OF TRAINING FACILITIES FOR MEDICAL PROFESSION

During the past six or eight months I have had opportunity to know the limitations of our medical resources. Already approximately one third of the medical manpower (dental, one fifth) has been absorbed by the armed forces. As the war continues there is a strong possibility that there will be available to the civilian population not to exceed one half of the peacetime medical services. The pressing question is what are we going to do about it?

It is my seasoned judgment, taking into account the estimated effects of war service on the available supply of medical personnel, the demands for medical service to those returning from the battle fronts, the new standards of medical care for the American people, that the time is already here when serious consideration should be given to plan for the expansion of the training facilities for the medical profession either through the enlargement of the capacity of existing institutions or by the creation of additional institutions.

One further item must be included in the inventory of postwar medical problems. This is the recruitment and development of young men and women possessing those rare qualities essential for medical research. Of the many disastrous permanent losses of the war, that of the diversion and thwarting of scientific abilities of the oncoming generation may not be discounted.

OTHER TRAINED PERSONNEL

The present assignment includes not only medical but also other trained personnel for postwar needs. Consequently I now deal briefly with certain other fields the effective occupation and cultivation of which require thorough and more or less prolonged technical preparation. Modern civilization as we have come to know it in this generation and as we are able to foresee it for the coming generation is more and more dependent on people possessed of hopes. But hopes are but thinly insubstantial unless resting on the firm base of health and highly trained skills with which to participate in productive work and to share in its rewards.

The war has transformed this country into a great training school. All over the land are to be found training centers for the Army, the Navy, the Air Force and the collateral services. The great war industries, acting independently or in cooperation with government agencies, have instituted programs for the teaching of unnumbered thousands of men and women their small specialized part of the business of making the machine

of war. As an illustration of this the work of the Engineering, Science, Management War Training Program of the Office of Education may be cited. In the past two years over 900,000 men and women have received training in the fields of engineering, physics, chemistry and production supervision. The report for November 1942 shows that 156,000 students were in these special war courses for that month.

The Army, the Navy, the Air Corps and other branches of the armed services are today in the first stages of one of the greatest of the educational undertakings of the war. Authorizations have been made whereby the armed forces are entering into contracts with nearly five hundred American colleges and universities wherein during the coming year, some three hundred thousand men and women in uniform will receive training essential to fit them to perform the work needed by the armed forces. Including medicine and dentistry the greater part of this training is of a technical nature. The impact of this enterprise on the professions of medicine and dentistry may not be disregarded.

TECHNOLOGICAL TRAINING

During recent decades we had to think ourselves as a people schooled in the ways of science and machinery. Only the inexorable demands of scientific mechanized warfare have convinced us how short we were of scientists and of workers skilled in the designing, making and servicing of the multitude of units of the machines of war. Since 1939 the nation has discovered beneath the peacetime surface of things its tremendous pool of human ability requiring but brief and intensive periods of training for high productive use in the small as well as the large war industries. The unprecedented accomplishments of these industries furnishes convincing testimony that to some degree we as a nation had reached that educational goal described three centuries ago by Milton "to perform skilfully and magnanimously all the duties of peace and of war."

Modern warfare is destruction raised to the *n*th power. This is a bit of tautology. Less trite perhaps to say that, from the point of view of discipline and the development of the productive skills of the nation, the war displays a constructive side. I am persuaded that unless it has a catastrophic duration the war will result in greatly increased attention to matters affecting the vitality and health of our people. Likewise we shall come to see that we cannot afford to neglect the task of training all for a place in the organization for an economic productivity that is technological in nature.

There are many amateur seers today divining the future by gazing into their own private crystal globes. Not a few of these are uttering dire forebodings as to the future of all our technical education as this is affected by the war. Their principal fear is centered in the effect of the streamlining of the established schemes of professional instruction designed to produce not merely trained minds but also educated men. Under the urgencies of the war all importance must be attached to the essentials of needed technical performance. Time is the relentless tyrant during the days of war. A resolution transmitted to me by the Board of Direction of the American Society of Civil Engineers is significant.

That this board recommends to the governmental agencies concerned that provision be made for enrolling and retaining in college a sufficient number of engineering students of superior qualifications under such conditions as will permit them to complete substantially the time proved engineering curricula, to meet the war and postwar needs for recruitment of the engineering profession.

This crucial issue I am not permitted now to argue. I am optimistic enough to believe that all forms of higher professional and technical education are to gain something through their war experiences. The war is compelling us to do more and more with less and less in a shorter and ever shorter time. It is conceivable that in the postwar period we shall discover that under the compulsion of peace we can continue to do more and more with less and less for the greater and ever greater benefit of those who learn that the nation may live.

TRENDS IN SCIENTIFIC RESEARCH

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The responsibilities of medicine and the medical sciences in the conduct of warfare are ancient and well known. To many they consist of the measures taken to prevent disease and the proper care of sick and wounded. If however, one contemplates for a moment the vast expansion of the techniques of modern war and the necessity for their use in practically all known parts of the world, the almost indefinite extension of the function of the medical sciences quickly becomes apparent. The modern soldier must be adapted to his task by physical fitness, mental aptitude and endurance. In many instances the physiologic mechanisms of the body are not geared to the unusual stresses imposed. The number and variety of diseases to which he is exposed have greatly increased because of the geographic extension of the areas in which he must serve. Types of war wounds and other injuries are more varied and complicated as a result of the multiplication of the instrumentalities of warfare. In order to foresee and successfully solve the many problems which are arising, a well planned and integrated organization of medical science and practice has been developed.

THE NATIONAL ACADEMY OF SCIENCES

In 1863 Abraham Lincoln provided for the establishment of the National Academy of Sciences. One function of this body of scientific men has been to give advice to the government concerning problems of national importance. In the very beginning of its activities the National Academy of Sciences organized committees to consider and advise in questions of military and naval significance. In time of peace its various activities were continued and extended. In 1916, at the approach of war between the United States and Germany, President Wilson foreseeing the need of a coordinated organization of the scientists of the United States, stimulated the creation of the National Research Council, a quasi governmental body under the general administration of the National Academy and made up of the leading scientists of the nation. During the period of the war the National Research Council was principally concerned with scientific problems related to the prosecution of the war. As with the National Academy, the peacetime value of such an organization quickly became apparent and its activities were extended to the survey and stimulation of research in all the sciences comprised within its field. The range of interest is broad, and numerous committees have been set up whose principal fields of activity lie within the

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mathematical physical, chemical, mechanical biologic and social sciences. Of more particular interest to us at the present moment is the Division of Medical Sciences. The immediate concern of this division is problems of medical interest but close cooperation is maintained with all other branches of science.

THE DIVISION OF MEDICAL SCIENCES

At the outbreak of the present world war the Division of Medical Sciences under the chairmanship of Dr Lewis H. Weed, placed its services at the disposal of the government. Liaison was established with the Offices of the Surgeon Generals of the Army, Navy and Public Health Service and steps were taken to provide advice in matters of current medical practice and to develop research projects in those fields that were urgently in need of further elucidation.

At first the number of problems considered was relatively small but as the immensity of the struggle became clear it was realized that extensive provision should be made to deal with all problems within the whole broad field of medical practice and research. The medical personnel of the entire country was carefully scanned by competent individuals, and groups were selected and organized into committees. These committees are made up of specialists in the many fields of medical science, are equipped to formulate the best medical practice of the day and have the scientific training and knowledge to discern important problems in need of further investigation and to organize the technical procedures necessary to their solution.

At present there function under the auspices of the National Research Council eleven main committees on the following medical subjects: General Medicine, Surgery, Neuropsychiatry, Aviation Medicine, Industrial Medicine, Sanitary Engineering, Shock and Transfusions, Treatment of Gas Casualties, Chemotherapeutic and Other Agents, Drugs and Medical Supplies, and Information. Under these main committees smaller subcommittees have been formed to consider such specific conditions as different types of infectious disease, cardiovascular disorders, problems of nutrition, surgical infections, burns, injuries to blood vessels, nerves and the skeletal system, shock, blood substitutes, psychiatric problems, war neuroses and venereal diseases, also such special problems in aviation medicine as oxygen and anoxia, sudden changes in the forces of gravity, decompression sickness, suitable types of clothing and the medical aspects of a variety of other important questions.

In 1941, while the National Research Council was in process of expanding its organization, the President of the United States established by presidential order the Office of Scientific Research and Development. Previous to this time there was already in existence and in action the National Defense Research Committee comprising a large group of scientists charged with the responsibility of making available scientific knowledge and personnel for the study and development of the instrumentalities of war. The new order added to this group a Committee on Medical Research and brought the two together under a single office. As at present organized, this office has for its director Dr Vannevar Bush, president of the Carnegie Institution of Washington. It consists of two committees: the National Defense Research Committee under the chairmanship of Dr James B. Conant, president of Harvard University, and the Committee on Medical Research whose chairman is Dr A. N. Richards, vice president of the University of Pennsylvania in charge of medical affairs.

The duties of the Office of Scientific Research and Development are to advise the President with regard to the status of scientific and medical research relating to national defense and the measures necessary to assure continued and increasing progress in this field to serve as the center for the mobilization of the scientific personnel and resources of the nation, to coordinate aid and when desirable, supplement the experimental and other scientific and medical research activities relating to national defense carried on by the Departments of War and Navy and other departments and agencies of the federal government, to develop broad and coordinated plans for the conduct of scientific research in the defense program to review existing scientific research programs, and to advise with respect to the relationship of the proposed activities to the total research program, to initiate and support scientific research on the mechanisms and devices of warfare with the objective of creating, developing and improving *instrumentalities, methods and materials required for national defense*, to initiate and support scientific research on medical problems affecting the national defense, to initiate and support such scientific and medical research as may be requested by the government of any country whose defense the President deems vital to the defense of the United States and to serve as the central liaison office for the conduct of such scientific and medical research for such countries and to perform such other duties relating to scientific and medical research and development as the President may from time to time assign or delegate to it. A sufficient budget is provided annually for the adequate carrying out of these purposes.

The Committee on Medical Research was charged, under the Presidential order, with the responsibility of making effective those parts of the order relating to medical affairs. Advantage was immediately taken of the existing organization and plans of the National Research Council and the chairmen of the main committees were appointed consultants to the Committee on Medical Research. Existing medical projects were reviewed and plans were made for making the fullest use of the new opportunities for gathering knowledge and initiating research on problems related to the conduct of the war. At present the cooperation of scientific bodies, universities, medical schools, commercial biologic and chemical laboratories and many individuals has been enlisted for the exploration and investigation of the many medical questions arising from the war effort. Problems are formulated by the different committees of the National Research Council, extended and coordinated by the Committee on Medical Research and the aid and suggestion of many individual scientists throughout the country is sought and encouraged. Contracts for the prosecution of the work are entered into with the government and funds are provided for the expenses of the investigation and wherever necessary for the salaries of the scientific workers engaged on the projects. Many scientists are giving a large proportion of their time without remuneration other than the satisfaction that comes from the study and solution of important and interesting medical problems. At present more than a thousand investigators are giving a part or all of their time to this work and more than three hundred projects have been set up for study.

SOME SPECIFIC PROBLEMS

This large group of medical scientists is well equipped in training, knowledge and experience to investigate and in many instances to solve the physiologic and

medical problems that have developed as a result of the multiplication of techniques and situations of modern warfare. I have already indicated the wide range and variety of investigative problems that must be considered. It would no doubt be of great interest to present in detail the character of the questions to be answered and the progress that already has been made in the direction of their final solution. Unfortunately, sufficient time is not available to cover the entire field and the confidential nature of some of the problems makes public discussion of them inadvisable at the present time. I shall therefore present only briefly some of the more important work that has been undertaken.

All are familiar with the great stimulus that the universality of modern global warfare has given to the development and perfection of the airplane. Among the outstanding achievements of aviation engineers is the development of airplanes capable of attaining great altitudes and of flying at incredible speeds. On the other hand, man is not yet sufficiently adapted to meet the demands made on him by the mechanical genius of the engineer. Stresses are imposed that normal mechanisms cannot sustain. Methods, therefore, must be found to extend the range of adequate function of human physiologic systems.

At an altitude of 12 thousand feet owing to low barometric pressure, man begins to suffer from an insufficient supply of oxygen and signs of deterioration of physical and mental capacity become manifest. At altitudes of from 25 to 30 thousand feet the oxygen pressure falls to such a low point that life itself becomes impossible. For man to function adequately at such altitudes, increasing amounts of oxygen must be artificially supplied. At 40 thousand feet even the breathing of 100 per cent oxygen fails to meet the needs of the situation. The modern airplane, however, is capable of reaching heights considerably in excess of this level.

Attacking forces in the air reach their goal with great rapidity. Interceptor planes in order to meet this situation must attain altitude in the shortest possible interval of time. Again the genius of the airplane engineer has been equal to the need. The pilot, however, is subjected to a rapid diminution of atmospheric pressure. If the change of pressure is great, decompression sickness, the familiar bends of the deep sea diver, may develop owing to the formation of nitrogen bubbles in the circulating blood. The symptoms vary all the way from local pain to occasional incapacitating paralysis and deterioration of mental activity.

The speed of the modern airplane is responsible for a variety of sudden changes in the equilibriums of the body. These changes are capable of causing great disturbances of function. When the body is rapidly accelerated it is acted on by a powerful force whose effects are manifested in the different tissues of the body, particularly the soft supporting tissues, the bony tissues, the organs suspended within the body cavity, and the body fluids. As an illustration, sudden change of direction of a fast moving plane, such as occurs in dive bombing, results in increased gravity effects which cause a shift of the position of the fluids within the body, especially the blood. If this shift is toward the trunk and extremities, the blood pressure in the head drops and cerebral anemia results accompanied by diminished visual acuity, the so-called "blackout," and in some instances even by complete unconsciousness.

There are many other problems arising from the needs of aviation medicine. Among the more important are motion sickness with its accompanying nausea and

disturbance of the sense of static equilibrium, and fatigue resulting from observation and bombing flights of long duration. Practical questions of importance have arisen from the necessity of protecting aviators from cold and exposure encountered at extremely high altitudes where outside temperatures may be as low as -50°F .

From this short review one sees that the physiologic capacity of man is stretched beyond its normal limits and must be supplemented in order to meet the strain of modern war in the air.

Much thought has been given to the provision of facilities for meeting these new and complicated situations, and men skilled in the various related fields have been assembled so that the best possible knowledge and ability may be devoted to their investigation. A number of decompression chambers have been constructed and are in operation. The purpose of these chambers is to simulate at ground level the varying conditions to which the aviator is exposed. High altitudes can be achieved in short periods of time and the physiologic effects of rapidly diminishing oxygen pressure can be observed. By means of refrigeration extremely low temperatures are developed. Thus all the conditions that surround the flier can be exactly imitated and functional inadequacies precisely measured. Investigative groups assigned to work with these chambers consist of physiologists, chemists, physicists, physicians and engineers. Provision is thus made for the adequate study of the functional changes that result from oxygen want, rapid decompression, exposure to extremely low temperatures and all other aspects of altitude tolerance. The final purpose of these studies is the discovery of reliable means of supplementing deficiencies and counteracting untoward effects. In like manner mechanical devices have been arranged and personnel provided for the study and remedy of physical disabilities induced by sudden increases in gravity effects, by motion sickness and by prolonged exposure to low temperatures and fatigue.

Perhaps the most immediate danger to which the soldier is exposed is that of being injured in battle. The common types of injury are wounds, contusions, fractures and burns. Such injuries may involve any part of the body and may be single or multiple in character. Body cavities may be penetrated by bullets, shell and bomb fragments, destructive injuries to the central nervous system and peripheral nerves are not uncommon, and important blood vessels may be severed with the resulting danger of gangrene of the affected part. Burns of severe character are important features of modern mechanical warfare. Injuries of all these types are not uncommon occurrences in civilian life, and surgeons are continuously working on the perfection of methods for their care. In time of war, however, such injuries acquire especial importance and an unusual effort must be made to develop suitable and improved methods of treatment. Special studies have been inaugurated in each of the surgical fields mentioned.

In past wars uncontrollable bacterial infection of wounds has always been the principal cause of death. In recent years chemical and biologic agents have been brought to a high degree of usefulness in the control of such infection. The occurrence of tetanus has been diminished almost to the point of disappearance by prophylactic immunization of troops against this disease.

In order to study infection of wounds, special units have been set up in a number of large hospitals of the

country. Their purpose is to test the best methods of using the sulfonamide drugs and other chemotherapeutic agents. Ordinary civilian casualties are used in this investigation. These units are staffed by a variety of specialists, and careful bacteriologic records are kept for the purpose of noting the presence or absence of infection during the course of treatment. The rate of healing and the general progress of the injury toward recovery, the amount and character of the drug used and the method of application are all carefully recorded. Frequent discussions are held between the many workers engaged in this study, methods are compared and results are evaluated and as new and promising procedures are developed, critical trials are arranged to test their efficacy. At this point I may say that through the medium of the National Research Council continuous liaison with the armed forces is maintained so that new and useful methods quickly become available for field application.

Because of the unique characteristics of the mechanical warfare of today, burns have assumed a position of far greater importance than in previous wars. Just as units for the study of surgical infections have been set up, so at a number of places special groups for the intensive study of the treatment of burns have been organized. Burns occurring in civilian life are congregated at designated hospitals. Specially trained men compare the most modern methods of treatment and assess their value. Through the medium of frequent meetings comparison of results takes place, and as new techniques become perfected thorough testing is provided.

As an illustration of the rapid progress in chemotherapy it is interesting to describe in some detail the most recent development. In 1929 Dr Alexander Fleming, an English bacteriologist, discovered that a certain mold, *Penicillium notatum*, when cultivated in a suitable growth medium manufactures a substance which checks the multiplication of gram positive bacteria—the usual causes of suppurative processes and of septicemia or blood poisoning. This discovery was at first largely of technical interest. Within the last three years, however, its use has been extended with success to the treatment of human infections. At first only small and inadequate amounts of the material could be prepared. Intensive study of the processes of cultivation of this mold by scientists in governmental, university and commercial laboratories is resulting in the production of increasing amounts, so that the scope of its use in human disease is being rapidly extended. This substance is many times more active than the sulfonamide drugs and is useful against the same types of bacteria. It has the additional advantage of being effective against certain organisms such as the staphylococcus, a frequent cause of septic infection, a field in which the sulfonamides have proved to date to be of very limited value. There are indications that it may be of value even in gas gangrene, one of the most dangerous and resistant to treatment of infections encountered in the first world war. While still in the experimental stage, it is hoped that with improvement in methods of production this new and most effective substance may before long become widely available.

Before soldiers wounded on the field of battle can receive effective treatment varying periods of time are likely to elapse owing to transportation difficulties. To meet this situation treatment units are established as near to the lines of battle as practicable. Nevertheless time is lost as the result of the numbers of casualties

and the difficulties associated with collecting the wounded. In certain instances the wounds themselves are initially of very severe character. During this total period and for these and other reasons a serious condition of shock may develop. This is one of the major medical problems of warfare. In order to study methods of preventing and combating this serious condition, numerous investigations requiring the time of a large number of specially trained medical men have been organized. Important facts are being brought to light and improved therapeutic procedures are being developed. One of the newer and most valuable of these is the use of blood and blood substitutes. In recent years blood banks have been successfully organized in many civilian hospitals so that whole blood will be immediately available in case of emergency. As a substitute for whole blood, blood plasma has been found to be extremely satisfactory. With the cooperation of the American Red Cross, blood collecting centers have been set up throughout the United States. The blood after collection is processed and the plasma separated off. The plasma is then dried in sterile containers and packaged in convenient form with the necessary amount of diluent. The plasma can be reconstituted and made ready for use with a minimum amount of effort and delay. Because of its dry condition it withstands extreme variations in physical environment without loss of therapeutic value. Abundant reports from the front already indicate the life saving value of this material in controlling the dangerous effects of shock and hemorrhage. An extensive search for other blood substitutes is being actively carried on and certain ones of promise are already receiving preliminary trials.

As a by-product of the search for blood substitutes for the first time, many purified components of human blood are being prepared. The potential usefulness of these materials is only beginning to be explored. That it may be great seems likely, since blood carries most of the essential substances necessary to life. I may mention that a purified globulin has already been obtained which is capable of protecting exposed individuals against certain types of infectious disease.

Although the ancient plagues of armies are today much less prevalent and better knowledge exists for their effective control, nonetheless in the prospective likelihood of increasing social disorganization and demoralization their potential dangers cannot be overlooked. A number of investigations are therefore being fostered with a view to improving the methods of control and treatment of the most important infectious diseases. Special attention is being given to influenza and pneumonia. The nature of the infecting agents and their method of spread are being studied and several experimental investigations are under way whose purpose is, if possible, to provide a practical method of preventive inoculation. Intensive studies of typhus fever are being carried out and progress is being made in methods for controlling the insect vectors of this disease and in the development of a protective vaccine. Modern and recently developed techniques are being utilized for the improvement of protective inoculation against dysentery, cholera and bubonic plague, and the usefulness of the sulfonamide drugs in the treatment of these diseases is being explored. The epidemiology and control of streptococcal infection, one of the most important causes of death during the last war, is being studied both in the laboratory and in the field by a large group of experienced investigators.

In the realm of infectious diseases a unique organization has, with great foresight, been set up under the leadership of Col. James S. Simmons of the Office of the Surgeon General of the Army and of Dr. Francis G. Blake of Yale University. The particular responsibility of this group is the survey and care of the health of soldiers in the many military installations in this country. A number of commissions of specialists have been organized and funds provided for the expenses of their work. These commissions carry on investigations in different medical laboratories throughout the country and a certain number are always prepared at short notice to go into the field. In fact a certain number are continuously working on special problems in camps in different parts of the United States. The range of activity is very broad and includes investigation of such diseases as influenza pneumonia, measles, scarlet fever, rheumatic fever and other streptococcal infections, meningitis, virus diseases of the central nervous system and tropical conditions. Special attention is being given to the development of methods for disinfecting the air of barracks and hospital wards in order to limit the spread of infectious processes within these areas. The health of the armed forces has been unusually good during the period of mobilization and training. This is particularly fortunate, since epidemics arising in military establishments not infrequently spread to the civilian population.

INTERRELATION OF WAR AND POSTWAR PROBLEMS

Although my presentation has been fairly long I have covered but briefly only a portion of the many medical activities that are in progress as part of the war effort. The emergency has greatly sharpened our vision and has liberated large stores of energy and enthusiasm. These forces fortunately have both the direction and the means necessary to realizing their objectives. Scientific bodies, universities and governmental agencies are utilizing the opportunities to the fullest possible extent. Both immediately practical and fundamentally significant knowledge is being gained. Though I have made no specific mention of postwar medical problems, it must be obvious to all that medical questions arising from war are closely interrelated with those of postwar periods and that knowledge gained and applied in wartime is equally useful in times of peace.

DISCUSSION

DR. FRANCIS G. BLAKE, New Haven, Conn. Trends in scientific research, like trends in most of the activities of men, are greatly influenced by the social, political and economic setting in which such activities are carried on. This could be no better illustrated than is illustrated by the impact of the social setting of war on scientific research. While it may be true that the impact of war on scientific research has only accelerated a trend that had already begun to appear, it certainly has had ever greater influence on that trend. That trend is a trend toward cooperative investigation in research. This has become all the more necessary because of the increasing complexity of techniques, the necessity for the application of the techniques of physics and mathematics and chemistry and many of the fundamental sciences to the problems of medical research. Not only has it accelerated the trend toward cooperative research by teams of investigators, but, under the necessity of making the results of scientific investigations of immediate importance to the war effort available as rapidly as possible, it has resulted in a much more free and extensive exchange of the results of current research among those investigators who are carrying on work in a particular field, such as aviation medicine or infectious diseases or blood substitutes.

Directed research by committee organization may have some drawbacks—no one, of course, would deny that. Under the impact of the war, however, this type of research cannot be deplored, certainly, because there are immediate practical problems for which the armed forces must have prompt solutions. In fact, their demands for prompt solutions are often so urgent that they wish a solution or an answer before the scientific research is able to give a scientific answer. This type of research in the present setting of society, a competitive, internationally competitive, society is by no means to be deplored. It has other beneficial effects, I am sure, in perhaps bringing some investigators out of their pleasant and quiet ivory towers and making them really think whether the problems they were working on before were of true significance or only providing them with an opportunity not to meet and answer the real questions of life. Yet there is a danger in too much organized committee research, not for the immediate social setting of wartime but for the postwar period. That danger, I think, is perhaps not a serious one, but it is certainly true, or at least I would feel that it is true, that too much group and organized research may tend to delay the development of individual initiative and curiosity in investigation—the desire of the individual to answer a question by investigation, which he is unhappy about until he has answered it.

What the present trends in research will be in the postwar period, no one, I believe, can predict. It will depend, as I tried to indicate at the outset, on what the philosophy of society is in the postwar period, whether it is to be a completely organized and directed society or whether it will again become a society in which at least a reasonable amount of individual initiative may be exercised to answer the questions which intrigue those who are engaged in scientific research.

DR. LEWIS H. WEED, Baltimore. Medicine has a unique opportunity here to go ahead in a surprisingly accelerated fashion to meet the practical problems which military medicine presents, for there are problems in military medicine which civil medicine does not meet. Certainly, if one contemplates merely the field of aviation physiology, one realizes that while, during the last war, there was tremendous activity in the research laboratories relating to the problems presented by the airplane, that research, as far as the human element is concerned, practically became nil during the intermediate period. It has required enormous stimulation in order to get the necessary research programs under way. Military medicine will carry on in the postwar period because of the tremendous necessities that postwar Europe and the postwar world are going to present in the problems of infectious diseases, the problems of nutrition, the problems of migration of peoples. We have an opportunity during this period to create a new type of military medicine. I am very happy that the Navy has gone ahead and built its own research laboratory which will be devoted to the problems of navy medicine, not only during the period of the war, but as a continuing activity, bringing in civilian scientists and naval officers into this general program. A similar project is, I believe, under way in the Army. I hope that we shall in the next war have a body of fact which has come out of the researches, both in the Army and in the Navy Medical Corps, which will enable them to carry on in these problems of military medicine.

DR. A. N. RICHARDS, Philadelphia. I am grateful for the privilege of being given this opportunity because there is one thing, it has occurred to me, needed saying. Allusion has been made to it, but it could be amplified a little bit. A trend has been occurring to my knowledge and in my experience for twelve years at least, perhaps fourteen, which has resulted in a closer cooperation between university research institutions and commercial research institutions. The present emergency has intensified that cooperative effort, and it seems to me that it is of the greatest importance. Among the commercial organizations, particularly those that are represented in the list that you see on your program, there are abilities and funds which you see on your program, of ten years ago or twenty years ago was not realizing, which they did not altogether trust. I think that trust is being established on the basis of a tremendously admirable spirit in those industries.

HEALTH—A WORLD PROBLEM

F P KEPPEL, LL D
NEW YORK

Program committees are arbitrary people and I find myself put down for a topic I am not equipped to discuss. Please remember while I tell you what I can, that the choice both of topic and of speaker was not mine. For many years I have stood on the side lines of medicine and public health first as a university officer at Columbia, then in '17-19 in our War Department where I saw much of General Gorgas and the doctors he gathered round him from Popsy Welch down, then for two years with the Red Cross where I had the privilege of seeing something of its great work in Europe in '20 and '21. And then I was for nineteen years an executive of the Carnegie Corporation. In medicine and public health we were quite content to play second fiddle to the Rockefeller Foundation, but we did some things of our own. I hadn't realized how much until I saw an analysis of the Carnegie Corporation grants made by my successor and found that since its establishment \$12,000,000 has been spent for these purposes.

What I remember best was not the big grants but some of the smaller ones—the eight thousand dollars which had much to do with the discovery of insulin. Since then insulin has cost us twenty or thirty times as much for its purification. We gave Hopkins some money for general endocrine studies to be directed by Dr. Abel, who had retired from his professorship and was no longer a youngster. In the middle of the studies Dr. Abel's leg was broken in a street accident and he thereupon gave a demonstration of that devotion to responsibility which is one of the glories of your profession. When the leg was set and mummified in a cast, did he go home? No, he had himself moved into his laboratory, and the research went on without a hitch. Later on Lewis Weed, with very moderate financial help from the corporation, has done a great job to stimulate the spirit of research in dental education.

One particular part of our work touches world health conditions more directly. Mr. Carnegie set up a special endowment for the British dominions and colonies, and that brought us into contact not only with Canada but with Australia and New Zealand, with the Union of South Africa and with the colonies in tropical Africa and elsewhere. A good part of our money went into fellowships and travel grants. The men and women selected not by us but by local boards could go where they pleased, but we had a wonderful demonstration of the degree to which those lands turn to us for help in medical and health leadership—it's not for the record, but definitely more than they do to England. Believe it or not, they have a higher opinion of American education than we seem to have ourselves, and most of these grants were given to teachers to come to the United States, but grants for medicine and public health were a good second.

And now I'm on the side lines in Washington. One of my two jobs there is as a member of the War Relief Control Board with Ambassador Davies and Charles P. Tatt. Among other things we are doing what we can to help the American people to realize that government

aid through Lend Lease and otherwise is not enough, no matter how generous it may be. The good will offerings of individual Americans carry a message of love and understanding which must be measured not in terms of dollars and cents but in terms of spiritual therapy for the giver and for the recipient. And of course anything that reaches the individual in the suffering land—clothing, food, drugs and medical supplies—has its practical therapeutic value as well. The opportunities are now limited, but, as new territory is opened up by military victory, the opportunities will increase and so I am sure will the gifts from our people.

I have another job in Washington, as a member of a two man board of appeals set up by the President to pass on applications for immigration visas and in these days that is chiefly a question of the admission of refugees. Let me say at the outset that this is a question about which the American people are both ignorant and misinformed. There seems to be a widespread impression that great hordes of unwashed and ignorant foreigners are beating at our doors. The facts are that if every single application received in the year 1942 had been approved and if every single holder of a visa had been able to get here, the total would have been less than 10 per cent of the immigrations under the quota system in a normal prewar year. But less than half the applications are actually approved and a high proportion—I should say fully one half—of those who were granted visas have not been able to use them. You all know what happened when our consulates in southern France were closed last fall.

Let me tell you also that the proportion of these applicants who have had university training and professional or scholarly or creative experience is very high. I haven't the exact figures, but I believe they compare favorably with the proportion in the United States today. The anthropologists have stolen the word culture from the rest of us, but I am using it in the old fashioned way when I say these are largely people of culture. If you see pretentious and vulgar men and women who have bribed their way across Europe and across the Atlantic, and we all do see such people, remember that they are very much the exception and not the rule.

Now as to the relation of all this to world health. It has been my duty to go over more than twelve thousand of the dossiers of these applicants and it surely is an extraordinary series of human documents. They show all too clearly the physical effects of persecution and hardship. In case after case where a husband and wife had applied together the application had to be changed because one or the other had died in a concentration camp before the case could come up for consideration.

And let me tell you something else. We made a statistical study of the applications from Europe and we found that more than 40 per cent of these people had already moved from one sovereignty to another before the days of armed invasion or organized persecution. In many instances they had moved three and even four times before their applications were filed. The modern wandering of the tribes had started years ago.

For such people the question of physical health is bound to be tied up closely with that of mental health. I am sure you all feel this but perhaps I can confirm your feelings. Over and above the strain which each one of us is under in wartime these people have suf-

fered humiliation and insult and physical brutality. Their families have been torn asunder; they live not only in hardship but in uncertainty from day to day. Until they reach a haven of refuge they can make no plans for the future.

And now a final word on a somewhat embarrassing topic. As I said, a large proportion of the applicants are professional people. Among them are many members of the health professions—doctors, dentists, nurses, research workers. How can we use these people to the best advantage of the United States? In all these callings we have today both a numerical shortage and a serious maldistribution. In all these callings American men and women have left their jobs and the path of professional advancement in their communities to serve their country and have done it without an instant's hesitation. We all share in the responsibility to protect those jobs for them to return to. Can we have it both ways? Can we use these immigrants, many of them highly trained and still protect our own fellow citizens? It's not an easy question. May I in closing offer a suggestion which is wholly personal and unofficial? I'll put it in the form of still another question.

Might it be possible for the Manpower Commission as a temporary war measure to ask for the granting of special licenses to immigrant aliens the right to practice being restricted in each case to some community designated by the commission—some mushroom industrial center in the South, let us say—and the license to be good for the duration of the present emergency only? Think it over—and thank you all for having listened so patiently to my wandering remarks.

522 Fifth Avenue

WORK OF THE RED CROSS IN POST-WAR MEDICAL REHABILITATION

RICHARD F. ALLEN

Vice Chairman, American Red Cross

WASHINGTON, D. C.

For a person who has spent some three and a half years out of the last four years abroad usually in the midst of problems created by this war, attempting to bring some relief to the millions in distress, it is a great comfort to me to be here and to see this group of men and women who are giving serious consideration to postwar problems.

In every place I have been, I have seen groups of people meeting to discuss this problem. In most of the places I have been, they could not discuss the problem at banquets because of food regulations and sometimes because it was not safe for large groups of people to be together in one room. In London I had the great pleasure of participating in the discussion some eighteen months ago at the Royal Institute of Science, in a meeting where they discussed postwar problems. At that meeting were representatives of practically all the governments that are now making their headquarters in London because their countries are occupied by the enemy. Also represented at that meeting were the best brains and talent in Great Britain.

In France the discussions were rather on the quiet side. There wasn't much discussion of postwar problems before the fall of Paris, and after the fall of Paris of course, no groups of people could get together and

discuss freely the problems. But in the relations which I had over a period of many months with the leading health authorities and scientists in France I never met with them privately or in small groups that they did not discuss what we were going to do in postwar relief.

I was in Iceland and I was rather surprised—I don't know why I should have been—to hear the doctors and the scientists there discussing the same thing. And now I have just returned from North Africa, and one of the questions that always arose was what America was going to do about postwar relief. It is pitiful how they depend on us to do something about it. It will be a tragedy if we let them down. That is the reason why it is a great comfort to me to see this group of men here tonight considering some of these postwar problems.

I wish I could tell you what the American Red Cross is going to do in medical rehabilitation following this war. I don't know and I don't believe anybody else knows at the present moment. I do know that we shall do something. Just what that something will be it is hard to say. But when postwar relief gets under way there is no question in my mind that the American Red Cross will be taking a very prominent part in the giving of medical relief and in medical rehabilitation throughout the world.

The reason why I am so sure this is going to happen is that we have had more experience in giving relief throughout the world today than any other organization in the world. I will go back a little bit. I hope I won't bore you with getting into history. I will make it brief. I will go back and sketch rather hastily what was done immediately after the last war.

The American Red Cross rendered very unusual services to the Sanitary Corps of the United States Army during the last war. We had great quantities of medical and hospital supplies in warehouses both in France and in America. The Army at the end of the war also had huge reserves. In the spring of 1919 the Army gave \$25,000,000 worth of those medical supplies to the American Red Cross to be distributed throughout the countries of Europe which were being rehabilitated. Unfortunately, neither the American Red Cross nor any other agency had worked out a long-time plan. I think the emergency job we did was an excellent one. I think that a good many things which we started with the idea that they would be permanent fell short of the mark, although there are indications as you travel through Europe that many of the dispensaries, nurses' schools and hospitals which we established are still operating and are taking the leadership in those countries.

We distributed huge quantities of medical and hospital supplies in Poland, the Baltic states, Czechoslovakia, Austria and Hungary, Rumania, Bulgaria, Montenegro, Greece, Albania, northern France and Belgium. I hope I haven't forgotten some of the countries in which we operated. We restored hospitals. A good many of the hospitals had been damaged by enemy action. All the hospitals were depleted of the stocks which they needed to care for the civilian population. We worked with new and inexperienced health departments in new countries. We weren't particularly well equipped to do that job. I think we probably made quite a few mistakes in it, but the sum total is an excellent one.

Between the two wars what happened? We had formed many friendships and acquaintances throughout

Europe in those days. Then we left Europe. We were an emergency organization. We came home. The reason why I mention that fact—of which we are not particularly proud—is to impress on you how important it is that any agency which does health work in Europe following this war does not go to stay only a short time or if some agency does go to stay only a short time, it should be a part of a big plan which would provide for a proper follow-up. I need not stand before this group and tell you that you can't do really constructive medical rehabilitation in a short time. It is a long-time problem requiring great patience and it requires a lot more patience outside the United States than it does inside the United States.

The Rockefeller Foundation and some British organizations, perhaps some other American organizations, carried through, and through their work the health departments throughout Europe are in a considerably different position than they were following the last war. Most of the countries in Europe today—and I am talking about Europe mostly, although the point is good for the rest of the world too—have fairly good health departments. They have fairly good staffs of doctors and they have some staffs of nurses, and any agency or agencies that go into Europe doing medical rehabilitation will make a great mistake if they do not lead the local people to take the leadership in giving that relief. It would be a great mistake if the United Nations or the United States or Great Britain or any other country should go in and impose a plan on these countries. They must work out their own problems with our help.

Since the current war has been under way, what has been going on? The American Red Cross has sent huge quantities of medicines and hospital supplies to Great Britain. We have sent huge quantities of supplies to Russia, China, India, the Middle East, to France before the fall, and then lesser quantities to Belgium, Norway, Yugoslavia and Greece. How have those supplies been distributed in those countries? In all cases they have been distributed in close cooperation with the established health authorities in the country and with the cooperation of both the public and private authorities on health.

I will tell you one experience which I think will illustrate my point. When the Germans came into northern France they took over practically all the hospitals in the nine departments north of Paris. The civilian population came back from the south where they had fled and there were no hospitals in northern France. Neither were there any available supplies because the Germans had taken the supplies too. Fortunately, just before the fall of France a ship had left America loaded with two million dollars' worth of medical and hospital supplies. These supplies had been gotten together with the idea that they would be used behind the lines of the French and British armies both for the armies and for the civilian population. But before the time the supplies could be gotten to France the story was all over and the Germans were in command. There was no French army in the field.

After great difficulty, we shipped most of those supplies up to the north. There was no great need for medical and hospital supplies in the south of France. We had a terrible time working out a plan with the Germans for the distribution of those supplies. Every-

thing we did had to be approved by them. The head of the health department of France, the Rockefeller Foundation representatives who were there, the French Red Cross and several French agencies conferred with us on how those supplies could best be used, and we finally decided that they should be distributed in these nine departments north of Paris.

We made a hasty survey and found that the hospitals were in old museums, in hospitals de charité and in buildings which were certainly never designed to be hospitals. They had no sanitation, they had no heat and they had no equipment except for the very ordinary, common things that they could buy on the local market.

We finally got the Germans to agree that they would not disturb any of these supplies. We were rather shy in trusting them. I think you will understand that. They finally did agree, however, and Berlin itself sent out word to the commanding officers in each section that the supplies were not to be touched by the Germans.

We shipped into that district north of Paris great quantities of gauze, ether and cotton, surgical instruments, drugs and medicines, and all those things were used in the simple little emergency hospitals that were set up in order that the French population might be cared for. We did that with the full support of all the French doctors and nurses and social workers in the north of France. It was a great success. It was quickly done, and it saved untold distress.

In this matter of postwar relief it seems to me that the most important thing is an understanding of the people whom you are going to serve—making the point, again, that we help them to help themselves. Language is a great difficulty, of course, and there are not a great many doctors and nurses in the United States who have language accomplishment. Language accomplishment is not the most important qualification, however. The most important qualification is the ability to convince the people for whom we are caring that we are trying to help them to help themselves.

Over in North Africa recently, when the President arrived, everybody was excited. One afternoon, when it was known that the President was there, or about twenty-four hours after he arrived, one prominent Frenchman said to me "Mr. Allen, is it true that your President speaks perfect Arabic?"

I said "I don't know. Our President is a very remarkable man, but I doubt very much if he speaks perfect Arabic."

This Frenchman said "Well, all the reports that come to me say that he is carrying on conversations in Arabic with the Arabs."

"Well," I said, "if you knew our President as well as we do you would know that he could know about three words of Arabic, smile and wave his hands, and they would be convinced that he was wanting to help them."

That is what I mean about doing this postwar job. Let us not just be coldly efficient. Let's do the thing and have a heart in it too, because if we don't we are going to fail in one of the biggest opportunities any people in any land ever had. I believe thoroughly that the American Red Cross is qualified to play an important part in the medical rehabilitation of the world. We have had the experience, we have the acquaintanceship and we have a prestige which is beyond question.

INTER-AMERICAN COOPERATION

NATHAN A. ROCKEFELLER

Coordinator of Inter American Affairs

WASHINGTON, D. C.

It is a privilege to have the opportunity to meet with you the nation's leaders in public health and medicine at this National Conference on Planning for War and Postwar Medical Services. The memory of Dr. Carlos Finlay and his great contribution to mankind is an ever present inspiration in carrying forward those services which have made possible the tremendous advance of civilization during the past century.

Medicine whether in war or in peace knows no boundaries. It is universal in its concept humanitarian in its philosophy giving aid and assistance to the weak and oppressed in all lands. While a war torn world is bent on destroying lives it seeks to preserve and build.

The Axis has plunged the world into total war—a new form of warfare in which the military, the most spectacular phase of total war, deals only the last of a series of destructive blows. The Axis prepared for this final phase by cunningly conceived plans for the domination and corruption of political life the destruction and control of economic life and the demoralization of the will and morale of the people. The Axis plan envisioned total destruction and the enslavement of the world but it underestimated the vitality and determination of the freedom loving peoples of the world. In this hemisphere in Europe and in the Far East these peoples have rallied from the blows of the last few years and are now gaining the offensive on all fronts.

In this total war the republics of the Western hemisphere have drawn closer together and greatly strengthened their machinery of cooperation. Jointly the American republics worked out a plan of action at the Rio de Janeiro conference in January 1942 on the basis of which we have mobilized manpower and material resources to meet the Axis on all fronts of this total war. Swift, positive action was initiated to stamp out Axis subversive and propaganda activities, to prevent Axis sabotage and economic domination within the hemisphere. Defensive and offensive military strategy of the hemisphere, including the development of a network of air and naval bases, has been developed under the guidance of the Inter-American Defense Board, which is made up of the leading military strategists of the twenty-one American republics.

But the power of a nation is no greater than the strength of its people, whether on the fighting front, on the farm, in the factory or in the home. The ministers of foreign affairs at Rio foresaw this and realized that the success of this total effort would depend on the physical strength and moral fortitude of their people on the hemisphere home front. Therefore a resolution was passed recommending that the American republics take appropriate steps "to deal with problems of public health and sanitation, by providing, in accordance with ability, raw materials, services and funds."

This joint determination exemplifies the inter-American way of life—the way of friendship and cooperation. It is in stark contrast to the Axis way of life—the way of domination and death.

Thus the program of health and security formulated at Rio was designed to meet Axis total aggression on three main fronts—the military front, the production front and the home front.

First, on the military front the ministers recognized the possibility of the danger throughout the hemisphere of a situation which was so tragically described by last reports from Bataan. They indicated that the troops were unable to carry on because 90 per cent were ill with malaria and dysentery and that all forces were weak from lack of food. Control of malaria and the development of adequate food supplies in strategic areas throughout the hemisphere were critical factors in military strategy.

Secondly the same program was essential for the development and production of critical materials, such as rubber hemp manganese tin and hundreds of other raw materials essential to the operation of war plants of the United States. Sickness and hunger lay in the unexplored jungles where the great riches of rubber and other tropical production went virtually untapped. Strong and healthy men with their families, dared not face the ravages of disease and lack of food. Therefore the flow of raw materials was dependent on the work of public health doctors sanitary engineers and agriculturists in such areas as the Amazon Valley extending for over 3,000 miles through the heart of the southern continent.

Thirdly, the morale of the people and the political stability of the other American republics was threatened by increasing wartime economic dislocations. Normally our neighboring republics depended largely on exports of coffee, cocoa, sugar, bananas, grains. Coffee was accumulating in the warehouses of Brazil, bananas were rotting on Central American plantations. Cuba was having to reduce her sugar grind, all because shipping was increasingly being used to do the primary job of moving men and supplies to the fighting fronts overseas. Rail and motor transportation suffered from lack of fuel, repair parts and tires.

Unemployment was rising as factories closed for lack of materials or because of the curtailment of activities on banana and coffee plantations. The problem was aggravated by the increasing scarcity of goods and rising prices. These conditions in turn threatened social consequences. They were leading to malnutrition, ill health social unrest and weakening morale. The governments of the other Americas derive substantial parts of their revenues from export and import duties. Thus the shrinkage of foreign trade reduced the capacities of these governments to provide necessary help to their people when it was needed most.

Here, in short, was a stern test of the good neighbor policy. The ministers at Rio realized that the type of bold decisive action necessary to meet these problems would be possible only through joint action. They realized that the hardships and sufferings on the home front could play into the hands of the Axis agents,

skilled in the art of spreading fear, mistrust and confusion in the hearts and minds of people.

Therefore immediately after the conference in accordance with the resolutions passed, the Office of the Coordinator of Inter-American Affairs acting on behalf of this government, launched a program in cooperation with the governments of the other republics. This program is summed up in the term basic economy and the work is being carried out in the fields of health, sanitation, food supply and nutrition. Let me tell you in some detail of this work, because it may be of interest in connection with the problems you are discussing tonight. It illustrates graphically how the Americas are jointly facing and meeting the grave problems of the war.

To carry out this program in accordance with the Rio recommendations, notes of agreement have been exchanged between the United States and fifteen of the other American republics, calling for joint undertakings in the field of health, sanitation, nutrition and food supply. In each case, after the exchange of notes cooperative programs were mapped out by representatives of the Institute of Inter-American Affairs, an agency of the Office of the Coordinator, and officials of the respective countries. The actual execution of the work is carried out by a "servicio cooperativo" which is established in each country under the minister of public health or agriculture depending on the nature of the program.

At the present time over a thousand projects and activities are being carried on in these fifteen countries. Of these, about two hundred involve buildings constructed of local materials, including hospitals, health centers and nursing schools. Another two hundred are sanitary engineering projects, such as drainage for malaria control, improvement of sewerage and water supply. Many hundreds more are for the expansion of agricultural production in deficient areas—they include irrigation and storage facilities as well as general crop and livestock development.

Mobility of medical service is a prime requirement over the vast areas where strategic materials and defense bases are being developed. Consequently the inter-American health and sanitation program is producing unique facilities. For example on the Amazon and its tributaries a fleet of more than thirty boats has been assembled and transformed into floating dispensaries. The majority of these are small launches which carry four beds and are staffed by one doctor and two nurses. They service the rubber worker on the remote tributaries of the Amazon. Likewise along the inter-American highway in Central America motor trucks have been equipped as mobile dispensaries.

As you know there is a shortage of material and trained personnel but fortunately most of the technicians and other trained personnel for these programs are being provided by the other Americas. The ratio of doctors and engineers is about one from the United States to every twenty-five from the other Americas. The other Americas likewise are contributing substantially in the way of funds, materials and equipment.

The projects provide sanitation for areas around defense bases, they provide health services for millions

of workers on the production fronts of the Amazon and Central America in the mining regions of the Andes and Brazil on fiber growing projects in Haiti.

While malaria control is of primary importance, the work also aims to reduce the human toll taken by such diseases as tuberculosis, plague, typhus, dysentery and yaws.

The campaign against disease must be a rounded program. Disease germs are not isolationists. They move about more freely now with the development of highways and airports. For example, the death dealing gambia mosquito which ravaged northern Brazil was brought to this hemisphere by airplane from Africa. Inter-American transport by highway and air will be greatly accelerated after the war and will increase the need for our cooperation in the war on disease.

The battle against malaria is being fought under the most difficult conditions. In some places work is being done along thousands of miles of riverfronts. In others, supplies have to be carried over the Andes by airplane, motor truck, canoe, pack mule and even on the backs of men to medical outposts. To get construction materials it has been necessary in some places to erect brick kilns and saw mills. In Guayaquil the ingenuity of doctors and engineers produced one hundred beds for the hospital out of twisted wire and old pipes.

Doctors and sanitation engineers of the Americas toil through jungles, navigate swift mountain streams on balsa rafts and live for weeks and months in forests far from the comforts of home. The war they are waging against disease is essential to victory and a vital part of the total war effort.

Disease and hunger are twins born of the same conditions. They are twin problems in the vast Amazon country as in other places where development of strategic materials is under way. Brazil is moving fifty thousand additional workers for rubber production into the Amazon. The new workers must be fed as well as protected against disease.

Ordinarily with adequate shipping food had been brought in from surplus areas. Now with the shipping shortage it is essential to grow more food locally. Brazil and the United States undertook a joint program and are contributing equally to a \$4,000,000 project for expansion of food production through the whole of northern Brazil. Food growing projects likewise have been arranged in Costa Rica, Panama, El Salvador, Honduras and Paraguay. Others are in prospect. These are designed to encourage the growing of vegetables, fruits and dairy products for local consumption and to supply the military in defense areas. The Panama Canal forces are receiving increasing quantities of food from nearby countries thus saving valuable shipping space.

In Honduras, employment has been provided for two thousand former banana workers on a transcontinental road to help tide a banana growing area over the sudden loss of its economic mainstay when banana exports to the United States were curtailed drastically because of the lack of ships.

This basic economy program is a broad concept of good neighbor action on behalf of the peoples of the

Americas. Therefore let us look at it from the point of view of the individual. Take the case of Jose, a Brazilian farmer in the northern state of Ceara. Jose has been through lean years of drought. He can't make ends meet. His family is hungry. He would like to get a new start in the newly developing rubber area in the Amazon. But the rubber trees are 2,000 miles or more away and he has no money for travel. He wonders too how he would eat and keep well. So Jose thinks perhaps he had better stick to his dry acres.

But Jose changes his mind. Why? Because Brazil and the United States have gotten together to solve just such human problems. Doctors and engineers have gone to work. They are distributing antimalarial drugs. Jose finds that food and medical care will be provided. And so after a long trek to the Amazon Jose starts life afresh as a rubber tapper.

Or take the case of Pedro, a banana worker in Nicaragua. Pedro had been making good wages but he did not have much in reserve when he lost his job.

Then one day Pedro heard a fiber development project was starting nearby, that his government had entered into an arrangement with the Yankees to undertake this program. Pedro didn't ponder the abstractions of inter-American cooperation. But he did know that the project meant work, wages, food for his family. And Pedro has become one of the millions of human beings who are seeing in tangible deeds what being a good neighbor means.

The stories of Jose and Pedro can be multiplied against a variety of local conditions and production problems—guayule workers in Haiti, workers on a rail construction project in Brazil's iron-rich Rio Doce Valley, rubber gatherers in Central America, miners in Bolivia, quinine plantation workers in Central America.

Jose and Pedro are the human foundations of the Americas. They can understand the meaning of inter-American cooperation when it takes the tangible form of medicine, hospitals, screened shelters, food. Jose and Pedro can understand the economic value of a new sisal plantation or a new road. They mean a chance to work and the hope for a better future for their children. Thus Jose and Pedro are coming to see that through inter-American cooperation the fight for freedom and for opportunity is their own fight.

This basic economy program is to strengthen the human resources of the hemisphere, both for the war period and for the long pull after the war. It supports urgent immediate needs for wartime defenses and production. It bolsters morale against the shocks and hardships of wartime dislocations. It builds for the future of inter-American unity on a foundation of inter-American friendship and cooperation. The hospitals, nursing schools, health centers, the new practices of agriculture, the new roads and, most important, the economically productive and bodily sound Americans will provide the basis for expansion of trade among the Americas and a steadily rising standard of living. The resulting economic prosperity throughout the hemisphere will afford the best assurance for the social security and the peace for which we are fighting today.

Commerce Building

AMERICAN MEDICINE'S CONTRIBUTION TO POSTWAR MEDICAL SERVICE

MORRIS FISHBEIN, MD

Editor, Journal American Medical Association and
Hyer, the Health Magazine

CHICAGO

Starvation and epidemics do not recognize national or racial boundaries. Typhus in Russia, plague in China, dysentery in Africa or famine in Greece may mean disaster to Italy, Germany, Japan or the United States. Before this war is over the people of the totalitarian governments will awaken to the fundamental biologic truth that in a world like ours every man is his brother's keeper.

The statesmen who are concerned primarily with the economic rehabilitation of the war-torn world have recognized the vital character of medicine's contribution. In an address made by Sumner Welles, Undersecretary of State, at Rio de Janeiro on January 15, he said:

My government believes that we must begin now to execute plans, vital to the human defense of the hemisphere, for the improvement of health and sanitary conditions, the provision and maintenance of adequate supplies of food, milk and water, and the effective control of insect-borne and other communicable diseases. The United States is prepared to participate in and to encourage complementary agreements among the American republics for dealing with these problems of health and sanitation by provision, according to the abilities of the countries involved, of funds, raw materials and services.

We are concerned, however, not only with the problems of the Americas. That would be isolationism as much as an attempt to limit our concern for the postwar world wholly to the United States. The scope of the world's needs was well expressed by the Hon. John G. Winant, our ambassador to the Court of St. James, at Durham on June 6, 1942. He said:

When war is done, the drive for tanks must become a drive for houses. The drive for food to prevent the enemy from starving us must become a drive for food to satisfy the needs of all people in all countries. The drive for physical fitness in the forces must become a drive for bringing death and sickness rates in the whole population down to the lowest possible level. The drive for manpower in war must become a drive for employment to make freedom from want a living reality.

The ideals of this platform merit the support of every one who loves his fellowman. Particularly will they have unanimous endorsement from the physicians of our nation, who know more intimately than can any others the relationship of poor housing and malnutrition to sickness and death and who know as well the importance of scientific diagnosis and treatment in overcoming the devastation that disease can effect.

The nature of the problems is clear. The answers, however, are not quite as obvious. Many a statesman is devoting serious consideration to the economic aspects of world reconstruction and rehabilitation. The costs of such procedures will no doubt fall most heavily on those portions of the world best able to bear them. Certainly some lands and some nations have been so completely devastated by the attacks of the aggressors and by the fact that they have been the battlefields on which the decision has been made that they can only beseech aid, offering little of their own as a help in the process. Until the sick and the starved and

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the disabled in Greece, Poland, Czechoslovakia, the Netherlands, Denmark, Norway, Belgium and France in China and in the South Seas have been restored at least to some degree of physical fitness, little can be anticipated in the contribution either of materials or of work by these shattered peoples. The obligation must rest largely on the more capable and the more wealthy of the United Nations to aid not only the peoples of the countries that have been most war torn but also the people of the nations that have been defeated. I would not presume to speak as one versed in the problems of world economics. I do know that the leaders who assume the responsibilities for speaking in these matters have already called and will expect to call more definitely in the future on the medical profession and the medical resources of our country to meet the needs of the world for medical care and medical services.

Following World War I many serious problems confronted medicine in all the warring nations. That experience indicates the importance of a careful consideration now of the demands that will be made and of the resources in men and materials that will be available for meeting those demands. The economic utilization of men and materials and the extent to which the morale of the men concerned is based on a wish for doing the most that can be done rather than on compulsion is likely to play a considerable part in the ultimate efficiency of the procedures.

THE SUPPLY OF PHYSICIANS

The medical schools of the United States have been for some years making available to the American people physicians adequate in number to our needs—in fact, more adequate in proportion to the total population than are available in any other country in the world. At the beginning of this global war we had one physician to every 700 people. By Jan. 1, 1943 we had established as a standard one physician for every 1,500 people, a number considered adequate to serve the needs of our population by the authorities assigned the responsibility in this matter. Great Britain today has one physician to approximately 3,000 people in its civilian population, and Sweden one to every 2,500. No one knows the ratio of doctors to population in Germany, but it has been said that in many parts of Germany it is one to 8,000 or one to 12,000. The number of scientific physicians available for the care of the population of China is so small as to be insignificant in relationship to its needs.

Admiral McIntire recently predicted that it may be necessary following this war to hold within the ranks of our Army and Navy at least one third of all the physicians who have been enrolled so that they may be available to aid medical service that will be required in the various parts of the world to which they have been sent. American medicine has already been planning to meet these needs. The accelerated programs in the medical schools, the deferment of the premedical and medical students, the Army training programs for premedical and medical students, the maintenance of internships and of residencies in the specialties are all part of the careful planning and of the program that was ultimately adopted.

Such information as is now available indicates that the medical schools of Belgium, the Netherlands, Poland, Czechoslovakia and France have been devastated and probably wholly discontinued. The great medical schools of Germany which were once her pride

and which were once accepted by all the world for their leadership, have become today the degraded tools of Germany's war-mad leaders. Today their restricted curriculum includes the unscientific philosophy of German racism and the concept that every man must be trained as a laborer and a soldier in his professional equipment. The restoration and rehabilitation of the medical schools of the world may place a tremendous demand on the physicians and particularly on the medical educators of our country.

A medical school consists not only of great buildings with laboratories and libraries but primarily of medical teachers. The world will need medical teachers as it has never needed them before. The medical schools of the United States and those of the Allied Nations capable of meeting the demands will need to welcome into their halls the young men of many of the nations of the Americas and of other portions of the world. Our own educators may be called to other parts of the world to aid in the reconstruction and revitalizing of their medical institutions. On the doctors of those countries who remain after the war will fall the major portion of the tremendous burden of the care of their own sick, but even for this service many of our doctors may be required.

Typhus or malaria anywhere in the world menaces our people unless we set up in those nations as well as on our own shores the effective barriers that preventive medicine has for epidemic disease. Without such barriers and without the scientists capable of establishing and maintaining them, the success of winning the war may be negated by the devastation and destruction of an epidemic like that of influenza which swept the world following World War I.

MATERIALS AND SUPPLIES

Modern medicine depends on the use of medicaments and equipment which have been developed as a part of the great advancement in medical science that has occurred during the past fifty years. During World War I we learned much of what a shortage in an essential drug can do. Some of us still remember the voyage of the submarine *Deutschland* and its cargo of salvarsan. We still remember the failure to duplicate the drug using the patents and the processes that had been supplied to our Patent Office and the manner in which our own great research institutions overcame those deficiencies. Today that story has been somewhat duplicated by the record of atabrine.

But many another mistake of World War I may yet be repeated in this global war unless we consider now the problems that are certain to arise. Colonel Shook has indicated today the nature of those problems.

Following World War I vast amounts of medical supplies sent by this nation abroad were sold at public auction, some of them given as an outright gift to the countries in which they were at the time of the Armistice. Some of the drugs, including narcotics which had been given to one nation were shipped back to the United States and sold in this country at prices below those of the same products made by American manufacturers in the postwar period. Some of the narcotics appeared in the illegal drug traffic of the world. Little consideration was given to the determination of the purity or quality of some of these materials which obviously were greatly deteriorated in shipment. I have heard that some of these drugs were still being reprocessed and sold in 1938. I know of tetanus that was caused by the sale of contaminated ligatures thrown on

the market after the war ended. I know that one manufacturer purchased back from the Army a considerable quantity of an antiseptic drug so that he might be able to sell it to the Navy, which still needed some of that product. I know that even in this war some 2½ tons of drugs have been shipped to one of the war areas without adequate consideration of the needs of the area concerned, the amounts of the specific drugs that might be required and, indeed, of whether or not some of them would be required at all. Certainly the time is not too soon to begin serious planning with relationship to the needs of the world for medical supplies.

Fortunately again for our country, the growth of our pharmaceutical industries during the past twenty years has been one of the most phenomenal developments of all time. These industries have supplied amounts of blood plasma through a cooperative effort with the Red Cross, the Army, the Navy and the people of this country so great that they beggar the imagination. During 1943 more than 2,000,000 people of this nation will contribute their blood for this purpose. They have supplied quinine and atabrine and other antimalarials in amounts sufficient to guarantee to the peoples of the United Nations and to the armies and navies and to the peoples of the countries in which the battles are being fought some control over this most devastating disease. They have produced the essential vitamins of which thus far we have knowledge in amounts sufficient to overcome at least the fundamental deficiencies that would have resulted otherwise in worldwide outbreaks of scurvy and rickets and many other diseases. They have met the demands for the sulfonamides, the miracle drugs of modern medicine in terms of tons and tons and tons. As a result pneumonia, which might have incapacitated many hundreds of thousands of men, has a death rate of less than 1 per cent in our troops. Whereas 1 in 3 of those who had meningitis in World War I died of that disease, the figures for this war are 1 in 20. From wounds of all types in the Solomon Islands and in Guadalcanal there was a death rate of less than one half of 1 per cent, which might have been 5 to 7 per cent had we been compelled to depend on the drugs and the methods that prevailed in 1918.

This is in large part the contribution of the American pharmaceutical industry. Practically every one of the great organizations in the field has received from the Army and Navy the award of the E which indicates the magnificent part it has played in the war effort.

Physicians, therefore, and the medical industries of the United States have done and are doing their part in the winning of the war. The health of our people is magnificent, as shown by the low sickness and death rates that have prevailed among us for many years. These accomplishments are a tribute to the quality of American medicine, to the United States Public Health Service, to our state and local health agencies and, perhaps above all, to the gradual evolution in the United States of our own system of medical service.

The movements of great masses of people to meet the industrial needs of the war created in many portions of our country problems of housing and feeding and disease which have been answered satisfactorily in most places by the cooperative efforts of government and private agencies. In many instances leadership has come from the industries concerned. In some areas organizations of physicians have done much to facilitate the provision of the factors necessary for health.

In some areas organized labor assumed responsibility. Such agencies as the Federal Housing Administration, the Farm Security Administration, the Procurement and Assignment Service for Physicians, Dentists and Veterinarians, the United States Public Health Service and the Children's Bureau have cooperated with practitioners of medicine and with local and state public health officials to meet the needs of the emergency. Wherever such cooperation has obtained, the results have been most fortunate for the people concerned. The initiative has for the most part rested with the people themselves. The element of compulsion except through such pressures as arise from public and professional opinion has not been necessary to secure effective action.

COOPERATIVE ACTION

The time is not too soon for us to establish the necessary organizations for control of medical rehabilitation and reconstruction. Already in England there has been accumulated a mass of data showing the food situation in the occupied countries. There has been agreement on a basic list of drugs which will be needed in those countries as they are liberated. Estimates have been made as to the fundamental materials required for feeding 100,000 people of various nationalities. Plans have been drawn up for dealing with expectant and nursing mothers and for coping with the large numbers of cases of tuberculosis and typhus that are anticipated. Indeed the one death rate that has risen definitely in all the warring countries has been the rate for tuberculosis among certain age groups. Some committees are considering the steps that will have to be taken by instruction and propaganda to restore suitable standards of nutrition and to prevent the increase of infectious diseases. We know that it is possible for human beings to survive for a considerable period of time on something less than an optimal diet, but we know also that, the longer such minimal diets are used, the more extensive become the deficiencies and the more difficult their control.

An editorial recently published in the *British Medical Journal* indicates how our British colleagues have been considering the problem of relief following the war. The editorial said:

When the time comes for relief in Europe the Allied Nations will be united in a herculean task. The work must be carefully prepared beforehand, and plans are already engaging the attention of many persons and official committees. The first and most urgent requirement will be the provision of food and shelter for the starving, the refugees and the destitute. Then will come medical care of the sick, reorganization of the social and medical services and the setting into motion of agriculture and industry. For all this planning there must be a headquarters staff, under which the technique of relief and its specialist problems will have to be worked out in detail by *ad hoc* committees from among Allied representatives. The administrative capacity and pooled resources of the world will be taxed to the utmost. Medicine has an important part to play in this humane work of relief, and what it can do is now being discussed. Doctors and nurses, it is obvious, will be wanted for medical relief. The planning and carrying out of nutrition schemes, measures for the control of typhus, malaria, enteric, the danger of the present continent-wide increase in tuberculosis—these are but some of the tasks for international medicine in the postwar period.

In every one of the occupied nations, infant mortality rates are rising steeply and are said to be four times as high as they were in 1939. The edema due to starvation of protein is seen everywhere and degeneration of tissues due to deficiencies of vitamins is common.

The incidence of tuberculosis has increased from 30 to 80 per cent in different parts of Belgium.

In Great Britain a special advisory group has been established to advise the minister of health in relation ship to all these matters. In Washington today there are separate advisory medical groups for each of the many agencies. If there is any one need that confronts us now, it is the need for the establishment of a planning body representative of the best statesmanlike and medical opinion that the nation can offer to which may be referred the many problems of a medical character that are already arising as part of wartime and postwar rehabilitation. For Northern Africa nutritional and medical rehabilitation are already under way. As France and Greece and Czechoslovakia and Poland and Belgium and the Netherlands are freed from the yoke of the aggressors, their people also must be provided with food, with medical and health supplies and with medical service. Every moment that is lost in confronting starvation or epidemic disease means more deaths and more disability. The medical profession of the United States is ready to join with leaders in every other phase of industry and professional service in planning suitable procedures for these conditions.

THE TREND OF AMERICAN MEDICAL PRACTICE

Thus far I have been concerned almost wholly with the extent to which the American medical profession and American medical resources will be used in riding all of the postwar world with the marvelous professional skill and the vast quantity of superlative materials that American medical practice and American medical industry have developed. Of equal or greater significance to us in this country is the trend of changes in the nature of medical practice. During the twenty years that have elapsed since World War I the practice of medicine in the United States has been undergoing a continuous and rapid evolution. Many experiments have been initiated in wider distribution of the services of the medical profession and the hospitals. Nevertheless the fundamental features which have made American medicine the great profession that it is have been retained.

Do those who have gone forth to save democracy want to come back to the America, to the England or to the China that they knew or do they want a new world to result from this conflict? An advertisement which has caught the public fancy says in part:

Back home to the same town, to the same job you like so much, to the same America we have always known and loved where you can work and plan and build, where there are no limits on any man's any woman's or any child's opportunity. That is the America I want when I come back. Don't change that ever. Don't let any one tamper with the way of living that works so well.

Every one of us wants to save all that was good in preglobal war America. We want, above all, the principle of freedom of choice and freedom of opportunity. The very basis of the American democracy has been that principle of free choice—free choice of the school one attends, the newspaper one reads, the church in which one worships, the store in which one purchases, the hospital in which one receives hospital care, the physician, the dentist or the lawyer whom one consults. Beyond such free choice is of course, the most fundamental of all freedoms for all men—freedom from want. Much has been said of the Beveridge and similar plans as a Magna Charta for the postwar world.

The primary concern of the Beveridge plan is freedom from want for the British people. In the United States freedom from want means a job with an income sufficient to enable the worker to provide himself with food, fuel, clothing, shelter and medical care. On the technique by which the work is to be guaranteed these fundamentals of living there has been much debate and disagreement. The technique by which security is provided may mean destruction of the freedoms that are basic in a democracy.

While there has already been a tendency to compare the report of the National Resources Planning Board to the Beveridge report and in fact even to dismiss the former by calling it an American Beveridge report, the contrast in the point of view is so striking as to be easily manifest to any one who reads carefully. The Beveridge report implies a state controlled medical service with the ultimate disappearance of the private practice of medicine. The American statement calls for cooperation between the medical profession and the government and an exploration of the potentialities of expansion of publicly provided medical care and also of the feasibility of methods such as social insurance. Now social insurance does not necessarily mean, I take it, compulsory sickness insurance and a state controlled medical service but equally the variety of plans developing now in many places as part of the American plan. The proposals in the report of the National Resources Planning Board for better coordination of medical and health facilities, for increased use of clinics, health centers and group practice where feasible, and for extended use of the medical technical service are certainly not officially opposed by American medicine. Most encouraging also however is the statement on page 459 that recognizes the fundamental principle that democracy is best maintained when the worker remains in control of his own funds. Here is the statement:

Experience has shown that the provision of economic security in the form of cash payments is not only greatly preferred by the recipients and thus a factor contributing to the maintenance of initiative and self respect but is also often more economical to the community.

American medicine recognizes its obligation. This conference has served to place before all of us the imminent threat of new post war medical problems. We shall study those problems, we shall plan, we will meet the obligation inherent on us to provide our people with the quality of medical service that has given us the lowest sickness and death rates in the world.

The problem has concerned equally the leaders in the field of medical care in Great Britain. Thus Viscount Dawson of Penn, discussing medicine and the public welfare wrote in May 1942:

There are few callings in which there is so big a gap between routine and the best work as in medicine, and no profession needs to be so elastic in its government if it is to be dynamic, not static. Its front line of knowledge is always mobile and often advancing. The men working there need freedom for initiative and should be unfettered by the formulae of administration and may be on the other hand, by the demands of practice. And the same considerations hold in the sphere of clinical practice for though we need ordered planning we must strive to avoid any cast-iron uniformity. Rather do we seek unity amidst diversity for man whatever his political colour, is individual and in illness even more so than in health and his doctor must remain an individual and not become an official. It is here that medical planning is up against its crucial difficulty in that it requires collectivism for its fabric and individualism for human relationships. And individualism will not flourish easily within the rigid boundaries

of a state service but needs the freer atmosphere which belongs to the voluntary hospitals' tradition, for in the difficult conditions of a greatly changing world doctors will need not only knowledge but understanding if they are to guide bodies and minds along the straight road of health and content

This may well define the trend in the evolution in medical practice which we have been undergoing in the United States since 1935. Prepayment plans have been developed according to a variety of contracts. The plans developed have been modified according to circumstances especially prevailing in various areas. The individual participates in the plan of his own volition after he has been shown the evidence of the desirability for the plan and its utility for him and his family. The physicians who participate do so because they wish to be affiliated with the service—not because some all-embracing octopus-like compulsive mechanism placed on the people by the state has made it impossible for him to function as a physician without enrolment in a state-controlled procedure. In a nation like ours with wide diversities of population and industry and agriculture with a remarkable swing between per capita wealth and per capita poverty, the functions of the federal government may well be utilized toward making certain that all of the people have opportunity for suitable security against unanticipated illness. The medical profession has recognized the necessity for cooperation between the national, state and local governments with the forces of medicine, public health and welfare in the solution of these problems. However, medical decisions in matters of medical care must be made by medical men or there can be no safety for the patients. When medical decisions are controlled by economic considerations, the medical profession must have a voice in those economic factors. As the jobs and the funds available to our workers have become more profuse, workers in great numbers have abandoned sources of free and part-pay medical care to seek out their own physicians. Could there be any better evidence than the records of our hospitals, clinics, dispensaries and eleemosynary medical institutions to prove that the American worker wants to be free in the choice of his medical care?

By their own initiative the physicians of this country will have offered to the nation by 1944 the services of more than fifty thousand doctors (more than one third of all the active practitioners available in this country) to meet the nation's needs in time of war. By their own initiative they seek to give to the postwar world the most that American medicine can give for the restoration of the peoples of the world to health and physical fitness. They do not hesitate in offering themselves, they have been trained in the traditions of American medicine, which say to the doctor

A profession has for its prime object the service it can render to humanity. The practice of medicine is a profession.

No greater task has ever confronted the physicians of America than the part they will be asked to play in the planning of medical services for the postwar world. They will meet that obligation as they have met every other call placed on them in the past—voluntarily, bound only by the traditions of their great profession, uncompelled by any arbitrary mechanism such as that founded by totalitarian governments to enslave both their people and the physicians who served them.

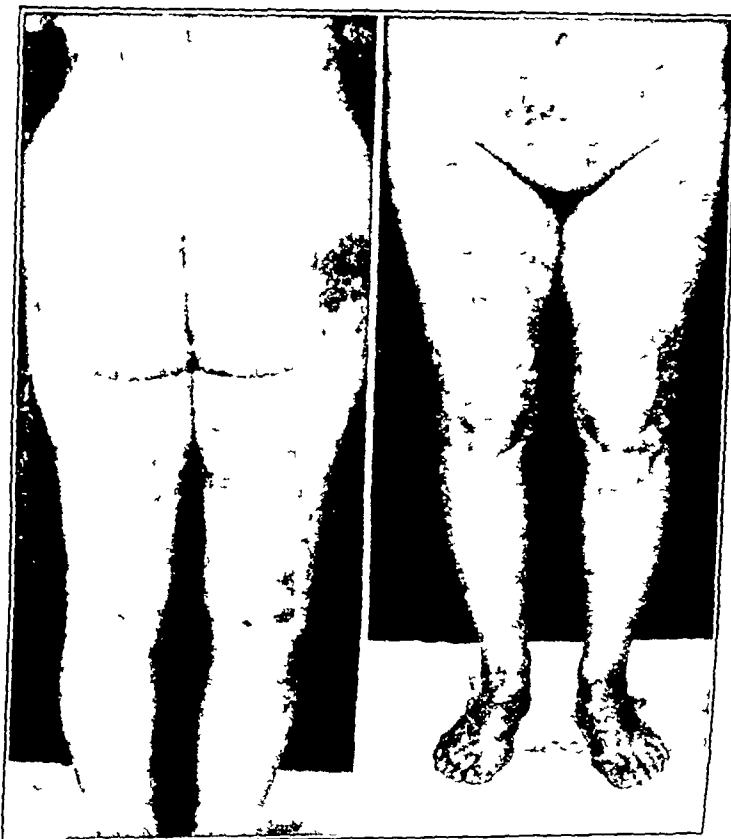
535 North Dearborn Street

Clinical Notes, Suggestions and New Instruments

CONTACT DERMATITIS FROM OLIVE OIL

RICHARD L. SUTTON, JR., M.D. KANSAS CITY, MO
Assistant Professor of Dermatology, University of Kansas
School of Medicine

Olive oil, *Olea europaea sativa* (*Oleum olivae*, U. S. P.), is generally believed completely bland on topical application. Many a dermatologic prescription contains it. I have, however, observed trouble resulting from its use. When it is applied to "dry scalp" (seborrheic dermatitis of the scalp) the dandruff is regularly made worse. When it is applied to senile pruritus the result is often unfavorable. Olive oil is not different from any other greasy substance when applied to superficial, vesiculating, automuculable, staphylococcic dermatitis, generally known



Contact dermatitis of ten years' duration due to olive oil

as "infectious eczematoid dermatitis." In this condition any unguent smears the parasites about, prevents their drying and promotes spread of the disease.

In the case which I report here the dermatitis was present for more than ten years and its maintenance was evidently due solely to olive oil, for interdiction of its use was followed by prompt cure. As I have emphasized previously, the cure of contact dermatitis is a matter of what is kept off the skin, not of what is put on it. It is an error to try to make the skin heal when the purpose should be simply to allow the skin to heal.

REPORT OF CASE

Miss M. W., a white woman aged 62, a housekeeper, came to the outpatient department of the University of Kansas Hospital on Dec. 27, 1939 because of scattered patches of shallow, scaly dermatitis. It had started more than ten years previously with a few lesions about the right knee, to which she applied olive oil. For ten years she religiously anointed the slightly itchy eruption with this substance and claimed relief by its application. Blood studies, showing slight secondary anemia

1 Sutton, R. L., Jr. Dermatitis Venenata. Practical Aspects and Innocuous Treatment, J. Kansas M. Soc. 40: 235-239 (Aug.) 1939

but no abnormality of consequence and the absence of lymphadenitis and the biopsy revealing only chronic inflammation with parakeratosis suggestive of parapsoriasis supplied evidence that premalignant mycosis fungoides might be eliminated and that diagnostic possibilities among the rare and recalcitrant dermatoses were unlikely. The scalp was free from seborrheic dermatitis. There was no story of ingestion of drugs. No medication other than olive oil had been used. Therefore she was ordered to stop applying olive oil and to do nothing further about her disease. On Jan 24 1940 she was seen and note was made that the eruption had faded and disappeared except for slight residual pigmentation. Objectively and to the patient's satisfaction she was cured. Treatment consisted of nothing at all a regimen eminently suited to contact dermatitis in such instances as do not demand bland therapy designed merely to allay symptoms.

SUMMARY

A case of dermatitis of ten years' duration was due to the application of olive oil. In contact dermatitis what is not done to the skin is more important than what is done.

1102 Grand Avenue

A METHOD OF RESTORING NERVES REQUIRING RESECTION

WALTER F. DANDY, M.D., BALTIMORE

Delay in resuturing severed nerves always means that the resulting neuromas must be resected from the central ends and the peripheral ends freshened by a shorter resection. The end result of these procedures is to lengthen the gap between the two ends of the nerves. Under such conditions it is rarely possible to bring the two ends together at least without undue tension on the line of suture. At the elbow for instance the gap may be reduced by flexing the arm and holding it in position by a cast for several weeks. But such expedients usually end badly because subsequent straightening of the arm tears apart the line of suture of the inelastic nerves and good function is almost unattainable. In the upper arm and in the leg the ends of the nerve can be brought together only by freeing long segments of the nerve and even then, if united, the tension is so great that the suture line gives way and ends in loss of function.

It need hardly be added that direct end to end suture is the only method by which nerve function can be restored and, conversely, if this cannot be attained function of the affected nerve will be forever lost. The natural corollary of this statement is that all nerves should be resutured at the earliest moment compatible with the patient's general condition and infection of the wound in order to prevent the formation of neuromas. If nerves are sutured within the first few days after the accident, the ends can be brought together and all consideration of nerve lengthening avoided. Even in the presence of infection the nerves should be carefully sutured at once and with a very good chance of restored function—at least nothing is lost in the effort. When there is any doubt concerning the preservation of function and severance of the nerve, it is safer to assume that the nerve is cut and expose it at once rather than to assume that it might be intact and later find that operation and inevitable resection of the neuromas is necessary. The former assumption loses nothing, the latter probably means permanent loss.

In the first case here reported, the maximum test of nerve resuturing is presented. All the nerves in the upper arm were divided and when fifteen months later the neuromas were resected and the peripheral ends freshened there was an 8 cm. defect between the ends of the nerves. It was possible to bridge this space only by shortening the humerus an equal amount; this was done by removing an oblique section of the humerus and wiring the ends. Shortening of the arm even to this extreme degree is probably of little concern, particularly with the function of the entire arm at stake. Although the long interval

between the time of the accident and that of the repair probably precluded a complete recovery, there was eight and one half months following the operation return of both motor and sensory function in all branches of the resutured nerves.

The same method can be used when a nerve is resected to cure a tumor along one of the nerve trunks in the upper arm or leg. When a tumor is removed with the nerve, the resection of bone should be done at the same time or within a few days thereafter.

CASE 1—History—A girl aged 13 entered the Johns Hopkins Hospital on March 21 1933 because of paralysis of the left arm following an accident.

Present Illness—Fifteen months earlier a piece of flying glass cut the inner side of the left arm midway between the axilla and the elbow. She was exsanguinated and a transfusion was done. Several hours later the wound was closed by a

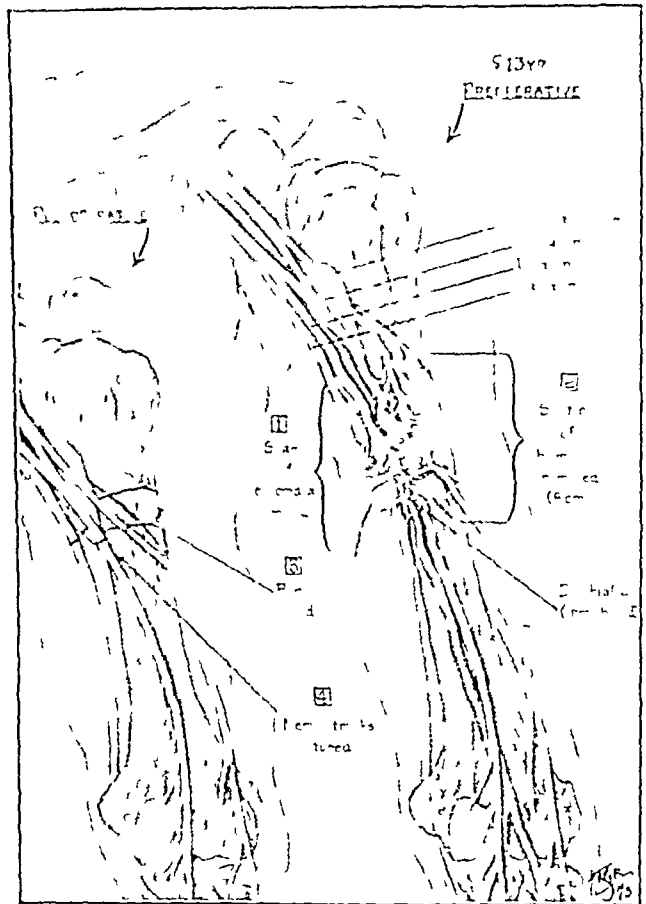


Fig 1—Operative sketch of case 1 showing resection of the four nerves in the upper arm and resuture of the nerves following removal of a segment measuring 8 cm. from the humerus.

local physician who said he could find only one nerve which he sutured. The wound became infected and drained for a month.

Examination (Dr. Frank Ford)—Fair flexion existed at the elbow but no extension, the triceps apparently being severed and knotted below the dense broad scar. The peripheral end of the triceps contracted but produced no extension, it pulled the scar. Pronation and supination were performed weakly. Extension and flexion at the wrist were lost and there was no action of the intrinsic muscles of the hand. Cutaneous sensibility was absent over the areas supplied by the median and musculospiral nerves; feeble sensibility existed over the ulnar, a pinprick being recognized as a stinging sensation. A biceps reflex was present, the radial and triceps reflexes were absent. The long flexors of the fingers and wrist supplied by the ulnar nerve reacted slightly to the faradic current and showed a prompt galvanic reaction. The remaining muscles

of the forearm and hand gave no response to faradism and only a slow contraction to strong galvanic stimulation. Apparently the ulnar nerve was the one sutured when the wound was closed and was now showing slight signs of regeneration.

There was a very feeble radial pulse. In the brachial artery a pulse could be obtained only in the axilla (the brachial artery

of the thumb or of the intrinsic muscles of the hand. There were some patchy areas of pain perception over the ulnar distribution.

Jan. 3, 1934, eight and one-half months after operation, she could flex and extend all the fingers with fair power. The thumb could be flexed and extended slightly. The wrist could be flexed, and there was beginning extension.

On the next examination, Jan. 10, 1943, ten years later, the elbow could be flexed and extended normally. The wrist could be flexed slightly and extended with more power. Pronation and supination were present in fair degree. There was no flexion or extension of the fingers, which were held in the flexed position. There was atrophy of the interossei and lumbricals. Sensation of all types was normal to the wrist. Below the wrist and over the entire hand and all fingers touch and sharp and dull pain were perceived accurately though less acutely than on the other side. Heat and cold were not recognized.

The end result therefore is good except for the hand and, despite early signs of returning function in flexion and extension of the fingers, these functions were subsequently lost. Sensory return was in all four branches, but to an imperfect degree in the hand. The case demonstrates that, even after a long interval of fifteen months, return of function can be obtained.

CASE 2—History—A girl aged 6 years was cut on the lower outer surface of the right upper arm by a pane of glass six months before. Wrist drop followed and had persisted unchanged, the radial nerve having been severed.

Operation—On Feb. 17, 1943 it was found that the nerve had been totally severed. A large neuroma was situated at the musculospiral groove and was resected, together with the upper end of the distant segment and the intervening scar. Three cm. of the lower end of the shaft of the humerus was removed by oblique incisions (fig. 2) and the ends were wired

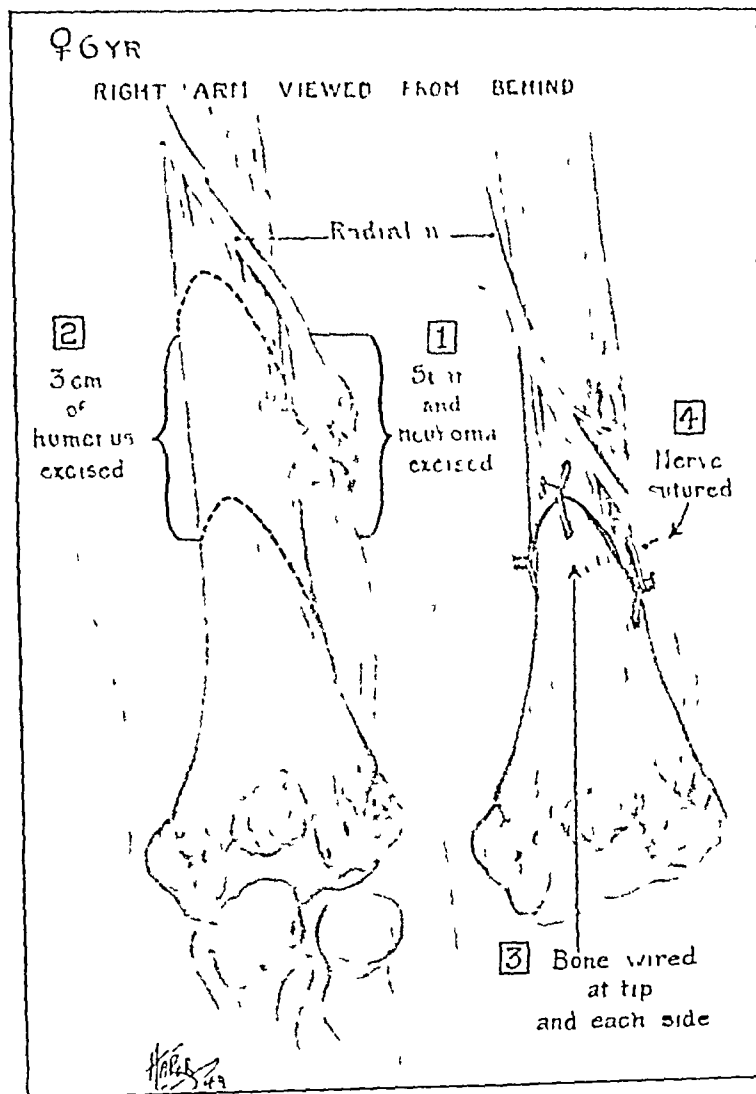


Fig. 2—Restoration of severed radial nerve following resection of 3 cm. of the humerus and an equal amount of neuroma and scar tissue from the nerve. The bone was wired by three sutures extending only through the cortex.

was severed at the time of the accident and was responsible for the severe bleeding).

Operation—March 22 the nerves of the upper arm were exposed and dissected above and below the scar. On each of the four big nerves—ulnar, median, musculospiral and musculocutaneous—there was a large neuroma, and all of these blended together into a mass of scar tissue. The peripheral ends of the nerves also entered into and fused with the scar. It was difficult to understand how even the minimal sensory function in the ulnar region could have been retained. After removal of the scar and the extensive neuromas from the central ends an 8 cm. defect (fig. 1) remained between the central and the peripheral ends of the nerves. This had been anticipated when the operation was begun. The only conceivable way to overcome this defect and make an end to end nerve suture was to resect the humerus. Accordingly an oblique section of bone 8 cm. wide was removed from the upper half of the humerus by an electric saw and the surfaces of bone were then wired. The humerus therefore was shortened 8 cm. The four nerve trunks were then sutured end to end without tension. The brachial artery was attenuated and a solid cord thrombosed. The triceps muscle was resutured. Healing was by first intention.

Subsequent Course—October 24, exactly six and one-half months later, the patient was able to flex the fingers and wrist, but extension was not possible and there was no movement



Fig. 3 (case 2)—Appearance of humerus after shortening 3 cm.

by three small sutures through the cortex only (fig. 3) instead of longer wires around the periphery.

Since the operation has been performed only two weeks, no report on the return of nerve function can be made.

This operative attack is of course applicable to severed nerves in the forearm and leg. It is the only way that function can be restored after an interval.

Johns Hopkins Hospital

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
HOWARD A. CASTER, SECRETARY

MASSACHUSETTS VISION TEST ACCEPTABLE

Submitted by the Commonwealth of Massachusetts Department of Public Health, Division of Child Hygiene, 75 Tremont Street, Boston

Distributor: Welch Allyn Company, Auburn, N. Y.

The Massachusetts Vision Test is a method of school vision testing which provides for the screening of children to determine the need of detailed ocular examination and possible treatment. A notable feature of the test lies in the fact that it can be applied to young children. Five and six year old children needing ocular attention can be detected when the test series is applied by those skilled in the handling of young children. Errors which occur in the testing by nonprofessional persons are said to result in more children being referred than actually require correction by the specialist.

The test series is composed of three parts.

Part One screens out cases of low visual acuity. The charts are constructed to minimize the possibility of memorizing. Illumination of the charts is standardized. The Snellen illiterate I is employed throughout because of the variation in difficulty between different letters and different numbers.

Part Two detects those who may pass the visual acuity tests but who have a hyperopic error which is latent and may require correction.

Part Three indicates cases in which there is difficulty in using the two eyes together.

The equipment provided for testing includes:

Illuminator—Equipped with two tubular light sources which provide satisfactory illumination over the surface of the Snellen chart. In establishing the standard of proper illumination an especially designed instrument was evolved by the manufacturer.

Snellen Chart—A card divided into four rectangles. The upper two rectangles each contain two lines, one with a 20/20 rating (20) the other a 20/30 rating (30). The third rectangle contains two lines of symbols, one with a 20/40 rating (40) and the other a 20/50 rating (50).

Within the fourth rectangle are three symbols of different sizes with ratings designated.

Occluders—A supply of clean square pieces of stiff paper or cardboard measuring $3\frac{1}{2}$ by $3\frac{1}{2}$ inches to be used by the examiner for covering the eyes. (These may be prepared in the class room beforehand and should be disposed of after use in each case.)

Plus Sphere Test—A pair of ordinary spectacles marked +1.50 for use in third grade and above. The lenses should be cleansed after each using with soap and water. (A second pair marked +1.75 is provided for use with children in the kindergarten and the first and second grades. The frame is of a lighter color to distinguish it from the spectacles used for the older children.)

Maddox Rods—Two pairs of spectacle frames containing no lens for the left eye and a small black disk with a central red ribbed glass section for the right eye. In one pair the ribs are vertical in the other pair horizontal. (Smaller pairs of frames are provided for use with children in the kindergarten and the first and second grades.)

House Chart—A wall chart showing a picture of a house with an opening in the window through which a small electric light bulb is inserted.

Pinhole Test—A small black tube with rectangular front section containing a pinhole opening and a cord attached at one corner. A perforated picture is affixed over the pinhole opening. A small electric light bulb is inserted in the tube to provide a point light source at the pinhole aperture.

In the instruction booklet for the test it is recommended that the testing be done in a room in which a 20 foot distance between the child and the test charts is available. Since the illumination for the tests is supplied electrically, window light is neither necessary nor desirable. A wall as far away from windows as possible should be chosen. Window shades should be drawn so that beams of light do not fall near or on the charts. (The room need not be completely darkened but a minimum of light will facilitate execution of the tests. Additional covering may sometimes be necessary to eliminate patches of light.)

The following directions for the test are taken from the instruction booklet.

Place the Snellen chart and the house chart side by side so that the center of each is about 40 inches from the floor. Arrange the electrical attachments in such a way that the illuminator, the lighted house chart and the pinhole test can be used in sequence.

Measure a 20 foot distance on the floor from the charts to establish the position at which the child is to sit while being tested. A table for holding the test materials and for recording results is placed to one side of this position. If a light control switch is provided it should be placed on the table within easy reach of the tester.

The tester sits with the back toward the charts, facing the child, so that squinting, pecking or turning the head can be observed and corrected. A separate desk copy of the Snellen chart is provided so that the teacher need not watch the wall chart while testing.

In the Council's examination of the unit it was found that light meter tests of the illuminated vision chart showed 11 foot candles at the top and bottom of the chart and approximately 6 foot candles in the center.

The arrangement of the distance vision chart expedites rapid and reasonably accurate elimination

of eyes with approximately normal vision. The test letters (illiterate Es) are arranged in four groups with different colored borders. Each group consists of two lines. The upper two groups each contain a 20/20 and a 20/30 line of test letters. The lower two groups contain letters ranging from 20/40 to 20/100. The use of plus 1.50 spherical lenses in a spectacle frame roughly enables the examiner to eliminate the lower hyperopias.

The muscle test is based on the assumption that vertical phorias of more than 2 prism diopters and lateral phorias of more than 5 prism diopters potentially necessitate further examination and possible treatment. The near test, which is especially adapted to horizontal phorias, might be dispensed with if time is limited.

The Council reached the following conclusion concerning the apparatus:

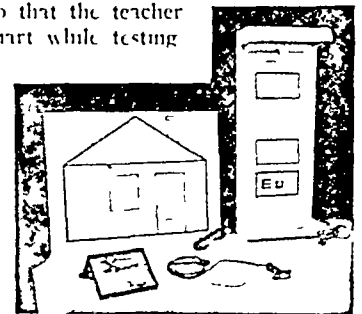
1 It is a relatively simple and complete test, especially adapted for school children of the lower grades. Distance vision with elimination of lower hypermetropias and myopias as well as muscle balance are roughly measured.

2 It is purchasable as a single unit which increases its desirability for schools and factories.

3 In this test the same distances are customarily used for measuring vision and muscular anomalies which are employed in office and hospital practice. Thus it differs from stereoscopic tests.

4 The instrument is apparently a pioneer in grouping several fundamentals into a single unit adapted for mass testing of visual function by nonmedical examiners.

The Council on Physical Therapy voted to accept the Massachusetts Vision Test for inclusion on its list of accepted devices.



Massachusetts Vision Test Chart

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 1, 1943

PLANNING FOR POSTWAR MEDICAL SERVICE

This issue of THE JOURNAL is devoted largely to publication of the papers read before the National Conference on Planning for War and Postwar Medical Services which was held in New York in March. Readers of THE JOURNAL will note that these papers provide a consideration of the problems of disease and nutrition which are likely to confront the postwar world, problems of personnel and materials and methods of administration of medical services. The purpose of that conference was to place on the table many of the questions which are now in the minds of those who are familiar with these subjects. The conference did not attempt nor did it propose to offer any plan for changing the nature of medical practice in the United States or for meeting world needs.

Any one with foresight realizes that there will be great changes in the postwar world. The medical profession does not fear change regardless of the aspersions of those who constantly assail it as a reactionary and too conservative group. For many centuries the medical profession has adjusted itself to the tremendous changes wrought by new discoveries and techniques in the prevention of disease and in the care of sickness, why should it be apprehensive regarding additional changes? The medical profession does realize, on the basis of many years of scientific observation, that change in itself is not necessarily beneficial. There may be change for the worse as well as change for the better. Trained in the scientific method, the physician studies his case and changes his treatment to meet new signs or symptoms, keeping in mind always the aphorism to hold fast to that which is good.

Before the people and the medical profession of this country there are now at least two formal proposals for development of medical care as part of national programs of security. The fundamental tenets of the

Beveridge plan have been widely reported in the public press, and the considerations of the Beveridge plan in Great Britain have been reflected by the correspondence from London in THE JOURNAL. On March 31 a special session of the representative body of the British Medical Association considered some proposals from the council of that organization relative to participation by the association in meeting the desires of the British government relative to the Beveridge plan. The council of the British Medical Association had indicated its belief that complete medical participation should be dependent on adoption of the Beveridge plan as a whole. Apparently it was feared that the medical aspects of the plan would be thrown to the British people as a "sop." Moreover, the council of the British Medical Association felt that the medical profession would be definitely opposed to a complete system of state medicine but would be willing to participate in a plan for medical service for all, provided physicians would be given opportunity to practice privately and participants in the plan would be given opportunity to seek private medical care for which they would pay out of their own funds. The results of the deliberations of the representative body of the British Medical Association are not yet available. In the meantime, however, it seems that the Parliament is proceeding to give special consideration to the medical proposals with the idea of making the beginning on the Beveridge plan with medical services exactly the "sop" that the British Medical Association must have anticipated on the basis of previous performances by political minds. Here in the United States representatives of American business and the other professions have begun to realize that the tossing of medicine as a "sop" to the proponents of state medicine is merely a concession which does not delay but rather gives impetus toward complete socialization and destruction of private enterprise.

The report of the National Resources Planning Board, which the President of the United States sent to the Congress in February, was hailed as an American Beveridge plan. Actually the National Resources Planning Board was established under President Hoover and most of the report was available more than a year before it was sent to the Congress. Those sections having to do with the medical phases of security had been published in pamphlet form in September—before the Beveridge plan had been made public. A recent Gallup poll indicated relatively little awareness by the American people of the content of the report of the National Resources Planning Board and indeed relatively little interest in the report. Most of the discussions concerning it seem to be appearing in periodicals like the *New Republic*, the *Survey Graphic* and the *Nation*, devoted to "little groups of serious thinkers." The report does not deal with details, it consists largely

of generalizations which incline toward the general point of view that action toward advancement of the health of the nation proceed along the following lines

(a) Health measures and adequate nutrition in order to eliminate all diseases disabilities and premature deaths which are preventable in the light of existing knowledge, through

1 The development of adequate public health services and facilities in every county within the country

2 The development of a health program for mothers and children ensuring remedial treatment as well as diagnosis and advisory services, maternal and child health clinics, and health services in the schools

3 Protection of workers whether in the factory or on the farm from unnecessary accidents, controllable occupational diseases and undue fatigue

4 Continued support from public and private funds for public health research and education with a view to the progressive expansion of the frontiers of control over health hazards

5 Continued support for public and private agencies engaged in the dissemination of knowledge of sound nutritional principles and practices Especial attention should be devoted to demonstration work in the schools, the factories and farming areas

(b) Assurance of adequate medical and health care for all, regardless of place of residence or income status and on a basis that is consistent with the self respect of the recipient, through

1 Federal appropriations to aid states and localities in developing a system of regional and local hospitals and health centers covering all parts of the country

2 Assurance of an adequate and well distributed supply of physicians, dentists, nurses and other medical personnel

3 Expansion and improvement of public medical care for needy persons through larger appropriations and through increased cooperation by and with the medical and dental professions

4 Immediate action by government in cooperation with the medical profession to formulate plans which enable the patient to budget expenses over a reasonable period and to contribute toward the costs of care according to his ability and which at the same time assure to medical personnel a decent livelihood commensurate with the high costs of their professional training

The mark of intelligent man as contrasted with the higher apes is ability to plan for the future On the medical profession primarily rests the obligation for much of the active work of reconstruction and rehabilitation of the postwar world For such work the medical profession must begin to prepare now Intelligent man does not repeat the mistakes of the past Surely we would be unintelligent if we did not do everything in our power to meet our obligations so that the world would not again be faced by the disaster and catastrophe that followed World War I As President-Elect James E. Paullin said in opening the National Conference on Planning for War and Postwar Medical Services, "The organizations we represent are composed of people who are willing to begin now to see that all of their personnel and scientific facilities are made available to help win this war, we are equally anxious that our talents, scientific achievements and services be made available to all nations and all peoples in planning for postwar medical service, not only to our own country, but to the countries of our allies and to the oppressed of the Axis dominated and controlled peoples

In his opening remarks at the banquet Mr Basil O'Connor president of the Finlay Institute of the Americas and of the National Foundation for Infantile Paralysis said in part

The prevention of disease, the promotion of health, the determination of nutritional deficiencies, the provision of food and of medical and health supplies and of trained scientific personnel are problems which already confront our own people and those of other nations of the world

The question of medicine and health will, of course, be a part of postwar relief in general, but it should not be submerged in postwar relief or confused with postwar reconstruction Postwar health problems in the United States need not necessarily be any part of postwar relief, and yet, postwar reconstruction in other countries in so far as it relates to health and medicine may have a very direct bearing on postwar health problems in the United States

The subject of postwar health problems, both at home and abroad, is sufficiently enormous in itself to be kept separate and distinct from other postwar activities for the moment at least Of course, postwar health activities must synchronize with postwar reconstruction, but they must not be considered secondary

Just a month ago, Melville MacKenzie, principal regional medical officer of the British Ministry of Health, made the following statement

"In the three years following the last war, more people died from famine and preventable diseases than had been killed in the war itself, and their deaths were largely the result of administrative chaos in relief"

I think we all admit the existence of the problem I think we all are cognizant of its seriousness I think we all are aware of the difficulties involved in its administration, and I know that we all are fully aware of the necessity of preparing to meet it now

Every moment that is lost in confronting the threat of epidemic disease or of starvation, either at home or abroad gives these horsemen of the Apocalypse greater speed in their carrying of death

From the papers published in this issue of THE JOURNAL and from the considerations here presented, it is apparent that postwar planning for medical services is a subject sufficiently large and important to demand the best thought and consideration that our nation can afford In meeting these problems there should be no piecemeal planning, the problems must be considered as a whole The programs adopted in medical rehabilitation of the occupied countries and the action by the British Parliament on the medical aspects of the Beveridge plan are likely to affect seriously the nature of medical practice in our own country The nutritional problem of the world is dependent for its solution on scientific diagnosis of nutritional deficiencies The provision of medical personnel of all kinds adequate to meet the needs of the postwar world will throw a tremendous burden on American medical education Certainly the time is not too soon to suggest that the government of the United States establish as soon as possible a mechanism for giving to these questions the analysis and consideration that they deserve and for suggesting the steps that may be followed under a democratic government for their solution

EXTRAHUMAN SOURCE OF
POLIOMYELITIS

Virus infected rodents may be the source of outbreaks of human poliomyelitis, according to a recent report by Jungeblut and Dalldorf¹ of Columbia University. Five cases of poliomyelitis occurred during September and October 1942 within a sharply circumscribed half square mile area in White Plains, N. Y. The cases occurred in rapid sequence and were the only cases of poliomyelitis reported in White Plains for over a year. Two cases, however, had occurred in the same restricted area during the previous year. The 1942 epidemic involved 2 adults and 3 children, of whom 2 died of bulbar paralysis while 3 recovered with extensive peripheral paralysis. Microscopic study in the 2 fatal cases revealed severe and typical poliomyelitis lesions of the cord and medulla.

In the search for possible extrahuman sources of this epidemic a dead gray house mouse, which obviously had been dead for only a short time, was discovered in the basement of the home in 1 of the fatal cases. A second gray mouse was trapped in the same basement. Additional house mice, dead or alive, were collected in other parts of the epidemic area. Ten per cent saline suspensions were prepared from the glycerated brains of these mice and injected intracerebrally into white mice. Definite symptoms were observed in white mice injected with three different suspensions: one prepared from the dead mouse, one from the trapped mouse found in the house and one from another mouse trapped in the immediate neighborhood.

In the injected mice characteristic prodromal symptoms appeared after an incubation period of from five to fourteen days progressing in some animals to a fatal paralysis of both front and hind legs. The infection thus far has been propagated through twelve serial passages from these fatal cases. By the third serial passage the virulence was considerably increased so that it now became infectious for hamsters and cotton rats, in which it produces a typical prostrating paralysis. Cultural tests showed that all serially infected brains were bacteriologically sterile. The infectious agent was readily passed through a Seitz filter.

In the fully developed paralytic disease in white mice microscopic examination revealed extensive destruction of the anterior horns in various levels of the spinal cord similar to the clinical picture of "rodent poliomyelitis"² and of mice paralyzed with the mouse adapted Lansing strains of the human virus³. The serums from 2 of the 3 local convalescent patients neutralized this virus *in vitro*. From such evidence the New York investigators concluded that the dead and trapped mice of the local

area were presumably suffering from the same virus infection as the human patients.

Confirming this conclusion, Jungeblut tested the mouse infectivity of the brain and cord in the 2 fatal human cases. Intracerebral injection of the material from 1 cord caused a prostrating paralysis with typical lesions in 1 monkey. The cord material from this monkey caused death in a hamster on the twentieth day, from which point on the disease was readily transmitted serially in both hamsters and mice by either the intracerebral or the intraperitoneal route. This passage virus was neutralized with poliomyelitis hyperimmune horse serum and also with the 3 convalescent human serums from surviving patients. The viruses isolated from the dead house mouse and from the fatal human cases were therefore apparently identical in specificity and differed only in relative virulence. More detailed studies are now in progress.

The observations of Jungeblut and Dalldorf may well constitute one of the most important contributions to the epidemiology of poliomyelitis of the present decade since it is the first time that a probable extrahuman source of human poliomyelitis has been supported by experimental evidence. Faber's⁴ recent demonstration of the hypersusceptibility of the oropharyngeal surface to virus of poliomyelitis adds to the concept of human poliomyelitis as a mouse borne food infection.

REFRIGERATION (CRYMO-) ANESTHESIA

Future generations may find it difficult to understand why it is taking us so many years to appreciate the significance of reduced temperature. Little thought has been given to temperature physiology by most of us, except for rather empirical fever observations. Attempts are still made to keep tissues at "normal" temperature in spite of the rebellion of many patients with peripheral vascular disease. The usefulness of maintaining life processes at a reduced rate by lowering the temperature is still not generally understood. Perhaps this is due in part to the erroneous tradition that external heat should always be applied for the prevention and treatment of traumatic shock.¹

Recent reports indicate that in combat areas military surgeons are largely occupied with the care of injuries of the extremities. The older methods of anesthesia for these cases are not completely satisfactory. In minor cases general anesthesia frequently seems out of proportion to the primary condition, and in severe cases the added burden may be dangerous.

Life processes, in common with chemical reactions, have a speed which is profoundly influenced by temperature. Oxygen consumption of the tissues can be reduced about 13 per cent for each degree centigrade

¹ Jungeblut, C. W., and Dalldorf, Gilbert. *Am. J. Pub. Health* **33**: 169 (Feb.) 1943.

² Olitsky, P. K., and Schlesinger, R. W. *Proc. Soc. Exper. Biol. & Med.* **47**: 79 (May) 1941.

³ Lillie, R. D., and Armstrong, Charles. *Pub. Health Rep.* **55**: 718 (April 26) 1940.

⁴ Faber, H. K., and Silverberg, R. J. *Science* **96**: 473 (Nov. 20) 1942.

¹ Cooling in Shock, editorial, *J. A. M. A.* **121**: 432 (Feb. 6) 1943.
Waters, R. M. Cooling in Shock, *ibid.* **121**: 783 (March 6) 1943.
Wakim, K. G., and Gitch, W. D. The Effect of External Temperature on Shock, *ibid.* **121**: 903 (March 20) 1943.

When a tourniquet is applied and the extremity is packed in ordinary chipped ice (without salt) the oxygen demands are reduced sufficiently to prevent necrosis for many hours. The skin temperature falls to 2 to 4 C and surgical anesthesia is complete within about two hours.

This method should not be confused with placebo freezing with ethyl chloride spray which is quite unsatisfactory and objectionable. True refrigeration anesthesia was first used for amputation of partially gangrenous extremities of patients in the older age groups.² There has been caution in applying it to traumatic cases.³ Refrigeration without a tourniquet is useful but not completely anesthetic.⁴ Refrigeration with a tourniquet affords surgical anesthesia and does not of itself require amputation.

If it is necessary to demonstrate the presence or absence of circulation in tissue of doubtful viability, the tourniquet can be loosened, but this results in loss of anesthesia as soon as the tissues are warmed. The manufacture of sterile ice is neither difficult nor expensive. With proper equipment it can be made by medical units in the field.

Each anesthetic method has its own difficulties and disadvantages. Cooling inhibits or delays inflammatory reactions and the autolytic changes that are familiar as the gross evidence of gangrene.⁵ Failure to appreciate these refrigeration phenomena may lead to misinterpretation of the true nature of the situation and faulty management.

Theoretically, one might expect that the tourniquet and refrigeration would increase the dangers of post-operative sloughing. Practically, it has been found that the factors of safety in this respect are quite adequate even in the presence of arterial disease. Actual experience with the procedure convinces surgeons, internists, nurses and especially patients that it is a far more conservative and sensible anesthesia than the commonly accepted methods.

Refrigeration offers advantages for nearly all cases of severe wounds of the extremities. Prevention and treatment of shock may be sufficient indication, surgical anesthesia is a valuable by-product. The suffering and blood loss from periodic loosening of an emergency tourniquet can now usually be avoided. Certainly external applications of heat should never be used in conjunction with a tourniquet. Simple measures can and always should be instituted to help cooling whenever a tourniquet is applied. This is especially important in hot environments.

The large scale program of medical education for war which is now in progress should include instruction

in temperature physiology and advanced courses in the principles and practice of refrigeration anesthesia. Anesthetists should not cloister themselves in the surgery and devote their lives to the dogma and rituals of the past. These subjects must be made known to all.

Current Comment

WHAT THE PUBLIC KNOWS ABOUT HEALTH

A report of a "quiz corner" study¹ carried out at the New York and San Francisco world fairs gives positive information about the knowledge of the average person regarding health. These quiz corners were placed where visitors to the fairs would pass them in large numbers. The tests were based on two hundred and twenty-three test questions covering cancer, communicable diseases, nutrition, general health information, superstitions and misconceptions, anatomy and physiology, maternal and child health, venereal diseases and tuberculosis. These were divided into five tests of twenty-five questions and two tests of fifty questions each. Some questions that fell in several categories or were repeated with different emphasis were included in more than one test form. The results of this extensive test of approximately a hundred thousand people did not develop anything startlingly new. Certain facts were established which, at least for the newcomer to the field of health education, should save needless and costly blundering. Health knowledge differed little between New York and San Francisco. In both places persons who had traveled farthest to see the fairs made better scores, being presumably somewhat better off economically and having therefore enjoyed better educational opportunities, wider experience or both. A difference in wording affects the response. For example, faced with the statement "Tuberculosis may be inherited" and a true-false choice, 45 per cent at the New York fair and 47 per cent at San Francisco indicated their belief that tuberculosis was inherited. This looks almost like a chance answer. When, however, the same information is called for in a multiple choice type of selection, namely "Which one of the following conditions is inherited? (a) tuberculosis, (b) color blindness, (c) syphilis," only 10 per cent of the New York group and 14 per cent of the San Francisco group chose tuberculosis as the inheritable condition. These were not the same groups of people but they were groups in each instance approximating five thousand, except the San Francisco group of ten thousand of which 47 per cent indicated that tuberculosis is inherited. Other predictable results were that health workers made the highest scores, while workers in other professions tended to be above the general average. Housewives knew more about nutrition and older people knew more about the problems of older persons while younger people were more familiar with problems appropriate to their own ages.

² Allen, Frederick M. *Ann J Surg* 45: 459 (Sept.) 1939.

³ Allen, Frederick M. and Grossman, L. W. *Arch. Phys. Therap.* 23: 711 (Dec.) 1942. Dziob, Joseph M. and Brown, Rowell K. *Indust. Med.* 12: 79 (Feb.) 1943.

⁴ McElvenny, Robert T. *Surg., Gynec. & Obst.* 73: 263 (Aug.) 1941.

⁵ Brooks, Barney and Duncan, George W. *Ann Surg* 114: 1069 (Dec.) 1941.

¹ Derruberry, Maybes, Weissman, Arthur, and Caswell, George. *What the Public Knows About Health*. New York: American Museum of Health, 1942.

PHARMACOPEIA ADDS MULTIPLE VITAMIN COMPOUNDS

Shortly after the establishment of the therapeutic importance of vitamins, the United States Pharmacopeia undertook to provide standards and assay methods. At first the action of the Pharmacopeia was confined to individual vitamins, when the U. S. P. XII appeared in 1942 then employment in combinations similar to those found in foods was so thoroughly accepted by medical authorities that the Pharmacopeia found it advisable to provide recognition and standardization for an increasingly large number of these substances. The latest U. S. P. preparations of vitamins, the "Hexavitamin" (six vitamins) Capsules and Tablets, the "Triasyn B" (three synthetic B vitamins with liver) Capsules, Tablets and Injections, have all been approved by authoritative medical groups and were added to the Pharmacopeia at the request of the Office of the Surgeon General of the Army for special use among the troops. These forms of vitamin combinations are commonly sold as "Multiple Vitamins" for the "Hexavitamin type," and as the "B-Complex" for the "Triasyn B type." Neither synthetic pyridoxine hydrochloride nor calcium pantothenate was added to the "B-Complex" type on the recommendation of the National Research Council and the Council on Pharmacy and Chemistry of the American Medical Association since these compounds have not yet had sufficient clinical study to justify definite therapeutic claims. However, the new "Liver B-Vitamins Concentrate" and "Injection" and "Dried Yeast" and "Dried Yeast Tablets" were introduced to furnish elements of the B complex when these were needed. The U. S. P. Vitamin Advisory Board as now established has the following membership: Dr. C. A. Elvehjem, University of Wisconsin, Madison, Wis.; Dr. C. G. King, scientific director of the Nutritional Foundation, Inc., New York; Dr. E. V. McCollum, Johns Hopkins University, Baltimore; Dr. E. M. Nelson, Vitamin Division, Food and Drug Administration, Washington, D. C.; and E. Fullerton Cook, Philadelphia, chairman. The scientific standing of this board gives assurance of careful scientific evaluation.

MUDDY THINKING IN NEW YORK TIMES ABOUT COMMISSIONS FOR WOMEN PHYSICIANS

The peculiar confusion of thought which characterizes practically all editorials in the *New York Times* on medical subjects is especially emphasized in a statement published in that newspaper on April 22 with the title "Women Army Doctors." After announcing the fact that the Congress passed legislation authorizing the commissioning of women physicians in the Army and Navy medical departments for the period of the emergency, the editorial says: "There are at least 5,000 and possibly as many as 7,000 women physicians. Permit them to practice in base hospitals—all that the bill sanctions—and the drain on the country's medical resources would be less than it is." Since the country's medical resources consist of all the physicians that we have, and since the physicians are needed

in the armed forces, industry and civilian life, and since the conditions are just about equally critical in all three fields, just how is the drain reduced by moving women doctors who are practicing in civilian life into the Army? Obviously, removal of a woman from civilian practice merely creates another area in civilian life for which a physician has to be found. The confusion here illustrated is simply a matter of logic. When it comes to any consideration of the practice of medicine, the failure of the *New York Times* to secure information from authoritative, qualified sources is even more obvious.

COBRA VENOM FOR PAIN OF ARTHRITIS

Talkov and Bauer¹ report the results of daily intramuscular injections of cobra venom to 12 selected patients with rheumatoid arthritis. Three of the 12 patients experienced subjective relief estimated variably from 25 to 75 per cent. Improvement was not complete, dramatic or lasting in any case. Objective alterations were not detected. The only significant toxic effect was local reaction at the site of injection in 1 patient. The observed effects with large doses of cobra venom for control of pain in rheumatoid arthritis hence were disappointing and contrary to previous reports. These Boston investigators conclude that cobra venom is without value for the relief of pain associated with rheumatoid arthritis.

"B₁ VITAMIN HYPOIMMUNITY"

In *THE JOURNAL* for April 17, page 1284, appeared a report of recent research by Foster, Jones, Henle and Dorfman, an account of which was published in the *Proceedings of the Society for Experimental Biology and Medicine* for November 1942, which seemed to indicate that excessive doses of thiamine might seriously lower susceptibility to the virus of poliomyelitis. Dr. Joseph Stokes Jr., in whose department the work was carried on, now informs us that the brevity of the presentation on which the original editorial in *THE JOURNAL* was based no doubt led to some misinterpretations of the facts presented. Adequate data ruled out the specificity of thiamine in this connection. Thus later results show not only that the mice on a vitamin B₁ deficient diet have increased resistance over a period of thirty days to the Lansing strain of murine poliomyelitis virus but also that simple restriction of food intake will produce comparable results. However, increase of the concentration of thiamine in the diet so that the amount consumed by the animals on the restricted intake was at least double that of the animals on the unrestricted intake did not increase the incidence of paralysis or death. From the data it appears that restriction of the intake of either the complete ration or just the carbohydrate will delay the manifestation in mice of infection with the Lansing strain of poliomyelitis virus. The interpretation originally made is not warranted in the light of the complete evidence.

¹ Talkov, R. H., and Bauer, Walter. The Failure of Cobra Venom to Relieve Pain in Rheumatoid Arthritis, *New England J. Med.* 228: 152 (Feb. 4) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession

ARMY

SOLDIERS TO HAVE FREE LEGAL AID

Heretofore a soldier who needed legal advice went to his company commander the post chaplain or the Red Cross representative. Under a new plan sponsored by the War Department and the American Bar Association, a commissioned officer who is also a licensed attorney is appointed the legal assistance officer at each post camp or station. The legal assistance officer will have the cooperation and help of volunteer civilian lawyers from nearby communities who have been chosen by the state bar association committee on war work for that purpose. The only barriers put on the aid offered is that the legal assistance officer may not collect debts advise or assist military personnel who are or might be subject to court-martial investigation or charges, and he may not appear before civil courts boards or commissions as attorney for the soldier or officer. All talks and dealings between military personnel and the legal assistance officer will be considered strictly confidential and personal. No superior officer may order disclosure of any information confided to the legal assistance officer. Free legal aid for all military and civilian personnel of Carlisle Barracks is now guaranteed under a recent War Department order authorizing the appointment of a legal assistance officer there. Capt Henry E. White, post judge advocate, has been given this additional duty.

LAST OFFICER CANDIDATE CLASS AT CARLISLE BARRACKS

Two hundred and twenty enlisted men of the medical department became commissioned officers after graduating in the last officer candidate class at the Medical Field Service School, Carlisle Barracks, Pa., February 27. This made a total of 2,809 medical administrative officers who have been commissioned at Carlisle Barracks and sent to units to take over administrative work, thereby relieving medical and dental officers for duties requiring professional skill. In the future all medical administrative officer training will be conducted at Camp Barksdale, Texas, where the medical administrative school, opened about a year ago graduates a thousand officer candidates each month. The closure of the officer candidate school at Carlisle Barracks was brought about by the need to increase the number of medical and dental officers in training for field duty at that station. Twenty-seven states and the District of Columbia were represented in the last class.

THE CITATION ACCOMPANYING GENERAL KENNER'S AWARD

THE JOURNAL on January 16 page 199, noted the award of the Distinguished Service Medal to Brig Gen Albert W. Kenner of the U S Army Medical Corps for distinguished service overseas. The War Department on April 7 made available the citation accompanying General Kenner's award. The citation read as follows: "Brigadier General Albert W. Kenner (then Colonel) United States Army. For exceptionally meritorious service in a position of great responsibility. General (then Colonel) Kenner organized the medical service of a Task Force accompanied that Force in the landings in French Morocco, and directed the operation of the medical service during the combat phases of the operation. When existing facilities at French Morocco were inadequate to care

for the number of wounded men, he obtained shelter and medical supplies and personnel to care for them. He personally supervised their care and as a result of his efforts only 2 out of 400 patients died."

THE DESHON GENERAL HOSPITAL

The U S Army Deshon General Hospital at Butler, Pa., was dedicated on March 26 in the presence of many guests from Washington, Baltimore, Harrisburg and other cities. Brig Gen Larry B. McAfee, assistant to the Surgeon General, gave an address entitled "The Life of George Durfee Deshon, Lieutenant Colonel, Medical Corps." Lieutenant Colonel Deshon a native of Massachusetts, entered West Point from Dartmouth College and graduated in the class of 1886, of which Gen John J. Pershing was a member. While stationed at Fort Wayne he began the study of medicine at Detroit Medical College. He resigned from the Army in 1890 and entered Bellevue Medical College, New York for his senior year then reentered the Army as an assistant surgeon in 1892. Lieutenant Colonel Deshon is to be remembered especially for the part he played in the reorganization of the Medical Department in 1908 and for the planning and construction of Gorgas Hospital in the Panama Canal Zone.

The General Hospital which was named in honor of Lieutenant Colonel Deshon occupies the buildings formerly known as the Western Pennsylvania State Sanatorium for Tuberculosis. These buildings, erected in 1938 but never occupied, were taken over by the War Department and the hospital was activated on Oct. 26, 1942.

The remodeling of the buildings and the construction of new wards mess halls officers and nurses' quarters and barracks, and of other buildings sufficient to enlarge the capacity to more than 1,000 beds was undertaken by army engineers. The new wards and barracks will be ready for occupancy within a short time.

The medical officers at present on duty at the hospital are:

COLONEL

Gentzkow, Cleon J. commanding officer

MAJORS

Arack, George executive officer
Bettison, William L. chief of officers section
Bizzozero, Orpheus J. chief general medical section
Bovik, Leslie E. chief surgical service
Davis, Perk L. chief medical service
Farrow, Reginald C. chief orthopedic section
Governale, Vincent J. chief x-ray service
Smith, Arthur M. Jr. assistant chief surgical service
Stuart, Carroll W. chief maxillofacial surgical section
Uhler, Claude chief neuropsychiatric section

CAPTAINS

Beck, Frederick W. assistant chief eye ear nose and throat section
Burnett, George W. chief contagious disease section
Drenckhahn, Charles H. chief gastroenterology section
Edwards, Jesse E. chief laboratory service
Ellis, Sidney chief anesthesiology section
Epstein, Joseph N. stationurgeon and admitting officer
Gaines, Reuben B. chief urology section
Nichol, Arthur D. assistant chief medical service
Sawicki, Herman H. dermatologist and hospital in pector
Schnebl, John T. chief eye ear nose and throat section
Tsloff, Nicholas M. registrar
Wadsworth, George H. chief general surgical section

FIRST LIEUTENANTS

Balsamo, Nicholas I. surgical ward officer
Conrad, Joseph W. medical ward officer
Davies, Baxter T. medical ward officer
Smith, Robert B. medical ward officer
Van Hale, Laurence A. surgical ward officer

CIVILIAN DEFENSE

CIVILIAN PHYSICIANS IN OCD-U S P H S
AFFILIATED UNITS TO GIVE ARMY
TEMPORARY LOCAL ASSISTANCE
IN MILITARY EMERGENCIES

Affiliated hospital units of physicians are being organized by selected hospitals and medical schools at the invitation of the Office of Civilian Defense and the U S Public Health Service to provide balanced medical staffs for emergency base hospitals in the coastal states. Emergency base hospitals are institutions in relatively safe areas to which casualties and other hospital patients may be transferred from casualty receiving hospitals in target cities under enemy attack. Members of the affiliated units receive inactive commissions as reserve officers in the Public Health Service and will be called to active duty by the Surgeon General only on the recommendation of the chief medical officer of the Office of Civilian Defense.

The affiliated hospital units will also be prepared to assist the Army in the event of an extraordinary military necessity in or near the localities in which these physicians reside, the Medical Division of the Office of Civilian Defense announces. This arrangement will relieve the Army of the necessity for organizing its own special groups of civilian physicians for local emergencies and will help to conserve the dwindling supply of physicians for the civilian population. Unit members have willingly accepted this new responsibility according to reports from OCD regional medical officers.

For the purpose of giving such temporary assistance to the Army a unit will be activated on the advice of the state chief of Emergency Medical Service and will be relieved from active service as soon as the Surgeon General of the Army can handle the emergency by the assignment of army medical officers, the OCD pointed out. Nurses are being appointed in the Public Health Service so that they may be available for similar temporary duty in serious military emergencies. Nurses on such duty will be relieved as promptly as possible by the assignment of Army nurses. Army authorities will make all requests for medical and nursing assistance through OCD regional medical officers or through state chiefs of Emergency Medical Service who may have been designated as representatives of the regional medical officers.

The Board of Trustees of the American Medical Association at its meeting of Sept 17-18, 1942 approved the formation of the affiliated hospital units. On March 20 the directing board of the Procurement and Assignment Service of the War Manpower Commission also gave full approval to the formation of the units to provide medical care for civilian casualties and other hospital patients who must be moved out of their communities of residence because of enemy action and to provide temporary care in extreme emergencies for military personnel in extemporized hospitals. The directing board pointed out that this arrangement safeguards civilian medical needs against hazardous withdrawal of physicians in an emergency.

The resolution adopted by the board urged state chairmen of the Procurement and Assignment Service to give every possible assistance to the organization of the units. It emphasized that applications for commissions will be accepted only from physicians 45 years of age or over, women physicians, physicians of any age who are physically disqualified for military duty and physicians already declared by the Procurement and Assignment Service to be essential for civilian needs.

Initially, only hospitals and medical schools in areas considered to be in most immediate danger of enemy attack were invited to establish units. The Army's request has now made it necessary to have similar groups in the interior regions to augment military personnel temporarily in the event of an extraordinary influx of military casualties. A few institutions in interior states have already been invited, but the entire list for these states has not been completed.

Because the units are to be used only in their areas of residence, the OCD and the Public Health Service have invited 191 hospitals and medical schools in various parts of the country to form affiliated units from their staffs. Up to April 19, unit directors had been nominated by 152 of these institutions and 104 had been cleared for commissions. In addition, appli-

cations had been received from 397 members of units. A unit consists of 15 members, including a chief and assistant chief of medical services, 2 general internists, a chief and assistant chief of surgical services, 4 general surgeons, 2 orthopedic surgeons, 1 dental surgeon, 1 pathologist and 1 radiologist.

First in the country to complete a unit was Albany Hospital Albany, N Y. Other institutions which on April 15 had substantially completed the membership of their units were

Newark Beth Israel Hospital Newark, N J
St Paul's Hospital Dallas, Texas
Norwood Hospital Birmingham Ala
Columbia Hospital Columbia, S C
Baylor Hospital, Dallas Texas
James M Jackson Memorial Hospital Miami Fla
Stanford University Medical School San Francisco
Huntington Memorial Hospital Pasadena, Calif
San Joaquin County General Hospital, French Camp, San Joaquin County Calif
Syracuse University College of Medicine, Syracuse, N Y
Jewish Hospital of Brooklyn
Eastern Maine General Hospital, Bangor Maine
Methodist Hospital Dallas Texas
Lynchburg General Hospital Lynchburg, Va
Springfield Hospital Springfield Mass
Maine General Hospital, Portland Maine
Central Maine General Hospital, Lewiston, Maine
Newark City Hospital Newark, N J
Atlantic City Hospital, Atlantic City, N J
City County Hospital El Paso, Texas
University of California Medical School, San Francisco

In the following institutions the organization is practically complete

FIRST CIVILIAN DEFENSE REGION

Eastern Maine General Hospital, Bangor
Central Maine General Hospital, Lewiston
Maine General Hospital, Portland
Springfield Hospital Springfield Mass

SECOND REGION

Jewish Hospital Brooklyn
Albany Medical College, Albany, N Y
Syracuse University College of Medicine, Syracuse, N Y
Newark City Hospital, Newark, N J
Newark Beth Israel Hospital, Newark, N J
Atlantic City Hospital, Atlantic City, N J

THIRD REGION

Lynchburg General Hospital, Lynchburg, Va

FOURTH REGION

James M Jackson Memorial Hospital, Miami, Fla
Columbia Hospital Columbia, S C
Norwood Hospital, Birmingham Ala

EIGHTH REGION

Baylor University College of Medicine, Dallas Texas
St Paul's Hospital, Dallas
Methodist Hospital Dallas
City County Hospital, El Paso Texas

NINTH REGION

Collis P & Howard Huntington Memorial Hospital Pasadena, Calif
University of California School of Medicine, San Francisco
Stanford University School of Medicine, San Francisco
San Joaquin General Hospital, French Camp, San Joaquin County, Calif

Many additional institutions have in process the organization of such units. These will be announced as arrangements are completed.

DR PAUL W DAVIS REPORTED MISSING

According to the Peoria Star, Dr Paul Wilson Davis of Jennings, a suburb of St Louis, and a first lieutenant in the Civil Air Patrol, has been missing since February 26, when he took off in a plane with an observer and with other planes as escorts to a convoy along the Atlantic coast. The planes became separated while patrolling. Lieutenant Davis radioed a distress message, but the other fliers and the Coast Guard after searching the area were unable to find any trace of the plane and its occupants. It is said that Mrs Davis, the wife, and the young son in St Louis were notified from Washington. Dr Davis entered the Civil Air Patrol last September. He was serving both as a pilot and as base physician. He was born in Chicago in 1912, later lived in Peoria and graduated in medicine at St Louis University School of Medicine in 1939. He had an internship at King County Hospital, Seattle, and a residency at Methodist Hospital in Peoria. He was in practice in Jennings before joining the Civil Air Patrol.

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

Under the auspices of the American Medical Association the American College of Physicians and the American College of Surgeons a series of Wartime Graduate Medical Meetings is in process of organization. These meetings are authorized, as far as they concern the armed forces, by the Surgeon Generals of the Army, Navy and Public Health Service. The organizations concerned have appointed a committee of three men—one from each organization—to proceed with the work of administration. This committee includes Dr. Edward L. Bortz (chairman, 4200 Pine Street Philadelphia), Dr. William B. Breed (secretary-treasurer) and Dr. Alfred Blalock.

The Plan

For organizational purposes, the country has been divided into twenty-four sections and key committees of three men appointed in each section to carry on the details of the program. Likewise, to insure a most worthwhile program a group of qualified authorities has been designated to serve as national consultants in the various special fields.

The duties of the section committees are

- 1 To be responsible for the details of programs at each service hospital in their respective regions, where programs are to be conducted
- 2 To be responsible for the selection of teachers and speakers with the assistance of the central committee and of the national consultants
- 3 To arrange time of meetings and schedules of travel and appearance of the teachers within their respective territories
- 4 To furnish copies of the programs to the commanding medical officers of the hospitals (programs shall be mimeographed or otherwise reproduced by the hospitals themselves)
- 5 Supervision of expenses, which shall be limited to necessary travel costs, also the forwarding of statements of these to the secretary of the central committee, Dr. William B. Breed
- 6 To obtain from the commanding officers at the end of the period of instruction a written statement concerning their impressions, and those of their staff, regarding the value of the courses, and suggestions for improvement.

The duties of the consultants are

- 1 Each consultant to prepare a specimen six hour teaching schedule for a one day period
- 2 To cooperate with the regional committees in working out local programs and securing the teachers

When the teaching schedules have been prepared by the consultants and lecturers have assembled the programs will be submitted to the Surgeon Generals of the Army, Navy and Public Health Services and the commanding officers of the various army corps commands and naval districts. When the desire for courses is indicated, the details will be arranged through the local committee with the assistance of the key schedules and the appointment of speakers.

In states where postgraduate activities are already being extended in the direction of service hospitals, it will be the policy of the Committee for Wartime Graduate Medical Meetings to turn over requests that may come to it to the group which is already functioning. Furthermore it desires to cooperate in every way possible with committees of local or state medical societies.

The teaching schedule will include ward walks, clinics, practical demonstrations, moving pictures, lectures and conferences offered to medical installations throughout the entire nation.

In carrying out the plans of the committee no single pattern can be strictly followed. However, suggested methods of approach are herewith listed.

(a) Meetings such as those already held in Boston, Philadelphia and Chicago where lecturers addressed groups in various camps on successive nights or a one day meeting at a central point with several outstanding speakers embracing topics of vital interest.

(b) The organization of teams which may arrange to visit one or more camps in nearby areas to put on a one day and evening program. Such teams may appear at two or three adjacent camps on successive days.

(c) In areas where five or six service hospitals are within reasonable distance from a central distributing center, a complete six day postgraduate program may be offered on the following basis.

The organization of six teams of two or more authorities each, from different medical specialties, to appear at the five or six hospitals in that area, each team on one particular day for five or six consecutive weeks. The program may include teaching ward rounds and laboratory demonstrations for small groups in the morning hours. Motion picture exhibits and one lecture with a question and answer period may be presented in the afternoon and a further lecture, seminar or round table conference in the evening.

It is evident that any of the foregoing plans, all of which are tentative and illustrative only, might have to be modified to meet local conditions. However, teams of teachers should be available in the various medical concentration areas throughout the country to conduct full courses of instruction where needed. Also it may be expedient at occasional intervals to repeat this circular or peripatetic plan two or even three times a year, depending on the change of medical personnel in the service hospitals.

It is the desire of the organizations in charge to extend to the doctors in the armed services the best facilities of American medicine in the interest of our fighting men.

Committee for Wartime Graduate Medical Meetings

BOARD OF NATIONAL CONSULTANTS

- 1 Anesthesia—John S. Lundy, 102 Second Avenue S.W., Rochester, Minn.
- 2 Aviation Medicine—Lieut. Col. W. Paul Holbrook, M.C.U.S. Army Air Surgeon's Office, Headquarters Army Air Force, Washington, D.C.
- 3 Cardiovascular Problems—William D. Stroud, 1011 Clinton Street, Philadelphia.
- 4 Chemotherapy—Chester S. Keefer, 65 East Newton Street, Boston.
- 5 Dermatology—
- 6 Dysentery—Lieut. Col. Thomas T. Mackie, M.C.U.S. Army, 6817 Georgia Avenue N.W., Washington, D.C.
- 7 Epidemiology and Laboratory Medicine—Roy R. Kracke, 441 Clairmont Avenue, Decatur, Ga.
- 8 Gastrointestinal Diseases—Walter L. Palmer, 920 East 59th Street, Chicago.
- 9 General Internal Medicine—David P. Barr, 525 East 68th Street, New York.
- 10 General Surgery—Irvin Abell, 321 West Broadway, Louisville, Ky.
- 11 Malaria—Henry E. Meleney, 477 First Avenue, New York.
- 12 Neurology and Neurosurgery—Tracy J. Putnam, 710 West 168th Street, New York.
- 13 Nutrition—John B. Youmans, Vanderbilt University Hospital, Nashville, Tenn.
- 14 Orthopedic Surgery—George E. Bennett, 4 East Madison Street, Baltimore.
- 15 Physical Therapy—Frank H. Krusen, 102 Second Avenue S.W., Rochester, Minn.
- 16 Plastic and Maxillofacial Surgery—Robert H. Ivy, 1930 Chestnut Street, Philadelphia.
- 17 Psychiatry—Arthur H. Ruggles, 305 Blackstone Blvd., Providence, R.I.
- 18 Psychosomatic Medicine—John Romano, Cincinnati General Hospital, Cincinnati.
- 19 Radiology—Burl Kirklin, 102 Second Avenue S.W., Rochester, Minn.
- 20 Respiratory Diseases—Francis G. Blake, 789 Howard Avenue, New Haven, Conn.
- 21 Rheumatism and Arthritis—Ralph Pemberton, 2031 Locust Street, Philadelphia.
- 22 Shock, Burns and Plasma—Lieut. Col. Douglas B. Kendrick, Jr., M.C.U.S. Army, Army Medical Center, Washington, D.C.
- 23 Shock, Burns and Plasma—Commander Harold D. Newbourn, (M.C.) U.S.N., Naval Medical School, Bethesda, Md.
- 24 Thoracic Surgery—Leo Eloesser, 490 Post Street, San Francisco.
- 25 Traumatic Surgery of the Abdomen—Frederick A. Collier, 1315 East Ann Street, Ann Arbor, Mich.
- 26 Tuberculosis—Lieut. Col. Emond R. Long, M.C.U.S. Army, Army Service Forces Office of the Surgeon General, War Department, Washington, D.C.
- 27 Urology—Herman L. Kretschmer, 122 South Michigan Avenue, Chicago.
- 28 Venereal Disease—Raymond A. Wondolch, U.S. Public Health Service, Washington, D.C.

U S PUBLIC HEALTH SERVICE FEATURED IN R K O "THIS IS AMERICA" FILM

Dr. Carl I. Rice, currently in charge of the Community Medical and Dental Section of the U S Public Health Service at Bethesda, Md., is featured in R K O's "Medicine On Guard," which tells the story of the typical wartime community faced by urgent health problems arising from the shortage of doctors. Dr. Rice works in close cooperation with the Procurement and Assignment Service of the War Manpower Commission and, when appealed to by the harassed local physician, arranges the relocation of a doctor from a less critical area. This latest "This Is America" two reel feature depicts the rising incidence of tuberculosis in a typical industrial community and again it is the U S Public Health Service that comes to the rescue. Under the direction of Dr. Herman I. Hilleboe, this movie is being checked through the use of the mobile photofluorographic units, which are set up in the factories themselves and take mass chest plates of the workers with a minimum of time loss and expense. The elaborate laboratories of the Bureau of Industrial Hygiene under the direction of Dr. James G. Townsend are shown determining the causes of occupational disabilities and thus keeping the industrial health of America at its usual high level. These aspects of the U S Public Health Service's home front battle against sickness and disease are illuminatingly and entertainingly filmed in "Medicine On Guard," which tells the story of a typical American community faced by these problems.

HEALTH OF THE NETHERLANDS UNDER HITLER

Constant friction between Dutch doctors and the Nazis, coupled with grave wartime shortages, are undermining the Dutch private and public health services, and the disease index of the occupied country has become alarming. Many persons have become so weak from wartime hardships that a slight ailment, even a common cold, may prove fatal. Medicines are either scarce or unobtainable. The harsh Nazi imposed working hours, the lack of fuel to warm homes and hospitals, and the wholesale conscription of Dutch nurses to aid the Germans on the fighting fronts have contributed to the complications in the Dutch medical-social sphere.

Lack of proper diet and overwork are breaking down the health of the Dutch people, a Dutch physician reported on his arrival in London in February. He declared that industrial fatigue had become so serious that work today required twice as many men as previously. The Dutch are living on food which gives them only about 1,500 calories a day, half the amount required from a normal diet. Reports reaching London on February 15 said that the Nazi authorities had decided to oust old people "whose recovery is doubtful" from hospitals to ease crowded conditions resulting from the increasing disease toll. Officials disclosed that more than 2,000 "serious cases" were waiting for hospital beds in Amsterdam alone. Diphtheria cases by December had reached 12,223, compared to 5,437 in 1941 and 1,273 in 1939. Dispatches in August of last year said that the tuberculosis mortality rate had increased between 39 and 44 per cent under German occupation and the death rate of newborn babies had become alarming.

Efforts of the Dutch Nazis to control the Netherlands Medical Society led to its dissolution early last year. All members received a letter urging them to resign and warning them of twelve objectives the Nazis hoped to attain. Ninety per cent of the members resigned and the board was dissolved. As an outcome of this dissolution and further German action, the Nazi Medical Front and the Netherlands Medical Chamber, headed respectively by the pro-Nazi physicians Keyer and C. C. A. Croon, virtually control all medical activities in the Netherlands today.

According to Dutch underground press reports received in London, Netherlands practitioners have refused membership in the Nazi Physicians Chamber on the ground that its governing principles are in conflict with their traditional ethics. The Nazi policy demands that doctors diminish the chances of life of the mentally afflicted or even kill them. The underground press stressed that Dutch doctors will continue to say no to all requests for collaboration with Nazi physicians.

The opposition has reached such scope that some Dutch doctors and Netherlanders in avoiding the compulsory conscription of labor for Germany, according to an article in *De Storm*, organ of the Dutch Nazi Storm Troops, which said that physicians were rejecting "healthy persons" as unfit and at the same time were giving certificates of health to "half dying persons" who must be hospitalized as soon as they reach the reich.

The war and occupation have dealt hard blows to what was one of the most advanced medical and public health organizations in the world. State subsidized hospitals with the most modern equipment were in operation throughout the country. The Central Institute for Brain Research at Amsterdam and the clinics at the Universities of Utrecht, Leyden, Amsterdam and Groningen had an international reputation which lured foreign specialists and students to the Netherlands. Today the doctors, nurses and medical students of the Netherlands are suffering from the same repression that throttles their compatriots. In the view of well informed observers the situation undoubtedly will grow worse steadily as long as the Nazis are in power.

PUBLIC HEALTH UNDER HITLER

According to NDZ of February 3, private health insurance in Germany covers nearly 10 million insured persons. In view of its growing importance, it is considered necessary that this branch of insurance should be controlled by specific regulations. The Committee for Insurance Law of the Academy for German Law has therefore submitted to the competent authorities regulations designed to fill this gap. A report says that health insurance should come under personal insurance and not under insurance against damage. Its main object is to compensate the insured for any expenditure on medical treatment. In addition, fixed benefits such as payments to dependents in case of death and maternity benefits are granted. The draft suggests that insurance companies should give full details of these benefits in their policies and tariffs.

Reichs-Gesundheitsblatt, Berlin, of January 20 gave the following figures for the incidence of infectious diseases in Germany during 1942, compared with 1941.

	1942	1941
Diphtheria	274,459	200,750
Scarlet fever	396,527	274,508
Tuberculosis (lung, throat)	125,794	116,302
Tuberculosis (skin)	1,818	1,896
Tuberculosis (other organs)	16,847	15,367
Meningitis cerebrospinalis	2,732	4,722
Encephalitis epidemica	419	652
Infantile paralysis	3,911	
Trachoma	8,514	8,161
Typhoid (typhus abdominalis)	16,015	7,630
Paratyphoid	5,916	4,855
Dysentery	15,070	10,278
Bacterial food poisoning	1,930	2,252
Icterus infectiosus	103	90
Malaria	709	1,606

Nya Dagligt Allehanda, Stockholm, of February 4 reported that Norwegian hospitals are crowded out, partly because of the ruthless German requisitioning, partly because of increasing illness. It is reported from Oslo that skin diseases especially show an alarming increase. Syphilis, which was previously rare in Norway, is now not a phenomenon. Prostitution is widespread. Diphtheria epidemics are raging in several places, especially in Opland districts. Hospital conditions in Opland are beneath criticism. Most hospitals in the county have been requisitioned by the Germans, who force sick Norwegians to be treated in schools, meeting halls and the like under conditions which would have been rejected a hundred years ago.

Trots Allt! of February 12 quoted a circular by Himmler concerning the transport of prisoners of war saying that, since in spite of previous remonstrations prisoners are still arriving at their destination covered with lice, a thorough and careful delousing is ordered in order to avoid the danger of infection and spreading of spotted typhus. Himmler also prohibits the transport of seriously ill persons together with others, and sick prisoners must in future be medically examined. The paper comments that the regulations have not been issued out of humane consideration for the prisoners but in order to protect the Germans and because of the fear of infection.

ORGANIZATION SECTION

OFFICIAL NOTES

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 5 p m Eastern War Time (4 p m Central War Time, 3 p m Mountain War Time, 2 p m Pacific War Time). An exception is the Chicago area, where the broadcasts are heard by transcription at 10 30 p m Saturdays over Station WMAQ. Unless otherwise indicated, each program is summarized by Dr W W Bauer, Director, Bureau of Health Education.

The titles and guest speakers for the next four programs are as follows:

- May 8 'Drugs March to War'
Speaker, Dr Austin E Smith Secretary, Council on Pharmacy and Chemistry
- May 15 High Air

May 22 'Flash Burns'

Speaker, Rear Admiral Ross T McIntire, M C, Surgeon General United States Navy

May 29 Sick Call

BEFORE THE DOCTOR COMES

The American Medical Association program on Radio Station WLS (890 kilocycles) entitled 'Before the Doctor Comes' will be on the air every Thursday morning at 9 45 up to and including May 27. Mrs June Merrill will interview Dr W W Bauer, Director, Bureau of Health Education, or Dr Austin E Smith, Secretary, Council on Pharmacy and Chemistry, on common home health problems. The titles for the next four programs are:

- May 6 Foreign Bodies in the Nose Ears Throat or Eyes (Smith)
- May 13 Growing Pains' (Bauer)
- May 20 Nervous Habits (Bauer)
- May 27 Immunization' (Bauer)

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status—H R 1936 has passed the Senate, authorizing an appropriation of \$2,000,000 to expand the facilities for hospitalization of dependents of Navy and Marine Corps personnel and of certain persons outside the continental limits of the United States.

Bills Introduced—The President has submitted to Congress an estimate of appropriation for the Office of Defense Health and Welfare Services of the Office for Emergency Management for the fiscal year 1944, amounting to \$2,053,000. H Res 220, submitted by Representative Bonner, North Carolina, proposes to authorize the House Committee on Invalid Pensions to investigate the progress of the program of the Federal Board of Hospitalization to determine if such program is being carried forward efficiently and expeditiously so as to meet hospitalization problems that are likely to arise out of the present global war. H R 2548, introduced by Representative Patman, Texas, proposes to establish a Civilian Supply Administration with authority, among other things, to ascertain the quantities and types of goods and services, including but not limited to food, clothing, shelter, fuel, transportation and medical care, necessary to keep the civilian population healthy and functioning effectively. H R 2567, introduced by Representative Voorhis, California, proposes to establish a Temporary National Hospital Survey, to be composed of two members of the Senate, two members of the House, one representative each from the Department of War, the Department of the Navy, the United States Public Health Service and the Veterans Administration, and four additional members appointed by the President. This survey, it is contemplated, will make a full investigation with respect to the situation of hospitals and hospital beds now available or that can be made available for use by members of the military forces, a study of all buildings of any kind or character which are or may be adapted for hospitalization including hotels, spas, dude ranches, health resorts and national park establishments, and to study the hospital and health problems as a whole both as to war and as to the effect on civilian life of the various phases of the war.

STATE MEDICAL LEGISLATION

Connecticut

Bills Introduced—Substitute for S 259, to amend the law relating to the practice of natureopathy, proposes to authorize the granting of certificates without examination to persons who have been in active and continuous practice of natureopathy for three years immediately preceding the date of his application, provided that a person who applies for such certificate after his discharge from the armed forces of the United States must show that he had engaged in the practice of natureopathy for three years immediately preceding the date of his induction into such armed forces. S 804, to amend the chiropractic law, proposes to eliminate the requirement of professional study for a period of four years of thirty-six weeks each and to substitute therefor the requirement that such course consist of four years of eight months each, totaling not less than three thousand six hundred hours.

Florida

Bills Introduced—S 139 proposes to require any physician or other person who makes a diagnosis in or treats a case of venereal disease to make a report thereof to the state board of health or to the local health officer and to make a further report in the event that such person ceases reporting to the physician prior to his having become cured or rendered non-infectious. S 141 proposes to require all persons rejected or deferred for military service who are infected with venereal disease to report to venereal disease clinics operated by the state board of health and take treatment from a private physician or at public expense for such venereal disease. H 37 proposes that each person applying for a marriage license must present a certificate signed by a qualified physician licensed to practice medicine and surgery in any state or United States territory certifying that the applicant is not infected with syphilis in a communicable stage. H 110 proposes that every person applying for a license to marry shall present a certificate from a duly licensed physician certifying that he or she is not infected with syphilis in a communicable stage. H 111 proposes that every physician attending a pregnant woman shall take or cause

to be taken, a sample of blood of such woman at the time of the first professional visit and submit such blood to an approved laboratory for a standard serologic test for syphilis. The person taking the sample must be a physician duly licensed to practice medicine. H 146 proposes that no person duly authorized to practice medicine and surgery shall be allowed to disclose any communication or information which he may have acquired in his professional capacity from any patient, except with the written consent of such patient or his legal representative. H 246 proposes that no person shall maintain or operate a maternity hospital without first obtaining a license therefor from the state board of health and defines a maternity hospital as a place which receives women for care or treatment during pregnancy or during delivery or within ten days after delivery.

Illinois

Bills Introduced—S 307 proposes the creation in the department of registration of an electrolysis committee for the purpose of examining persons desiring to practice electrolysis, defined as the removal of superfluous hair by means and use of an electrically charged needle. H 425 proposes to authorize the department of public health to establish, equip and maintain stations or distribution centers for breast milk for infants, to cooperate with hospitals in the collection, storage and distribution of such milk and to provide regulations necessary to safeguard the collection, storage and sale of such milk. H 437 proposes the enactment of an Illinois food, drug and cosmetic act.

Iowa

Bill Enacted—S 371 was approved, April 15. To amend S 82, concerning the income tax law, which was approved by the governor on March 11, 1943, S 371 provides that a taxpayer may deduct expenses paid during the taxable year, not compensated for by insurance or otherwise, for medical care of himself, his spouse or any dependent. The term "medical care" is defined to include amounts paid for the diagnosis, cure, mitigation, treatment or prevention of disease or for the purpose of affecting any structure or function of the body, and also treatment or nursing as prescribed by a well recognized church or religious denomination in any hospital or at home or in a sanatorium conducted and operated by such church or denomination.

Massachusetts

Bill Introduced—H 1519 proposes that hospital records shall be admissible as evidence in a court so far as they relate to the treatment and medical history of a case and authorizes a court to admit photographic or microphotographic copies thereof.

Michigan

Bills Enacted—H 277 has become Public Act No 204 of the Acts of 1943. It, among other things, prohibits druggists and pharmacists from selling barbituric acid and any of its derivatives, chloral hydrate or paraldehyde, except on prescription of a licensed physician, dentist or veterinarian. H 343 has become Public Act No 205 of the Acts of 1943. It prohibits a minor from purchasing, and a person from selling to a minor, any alcoholic beverage except pursuant to a prescription of a duly licensed physician.

Missouri

Bill Introduced—H 590, to amend the osteopathic practice act, proposes among other things to define osteopathy as the system, method, art or science of treating diseases, injuries or defects of the human body as taught and practiced by reputable colleges of osteopathy and surgery in the state, which practice shall include, without limiting the generality of the foregoing, operative surgery with instruments, obstetrics and the use of anesthetics, antiseptics, narcotics, biologics, antidotes, stimulants, scrums and vaccines.

Bill Enacted—H 45 was approved, April 13. Amending the law relating to marriage, it requires every person applying for a license to marry to furnish a report of a negative laboratory serologic test for syphilis and an affidavit signed by him or herself that he or she is free from such disease. If the laboratory test is positive, the applicant must present a certi-

cate from a physician licensed to practice in the state of Missouri certifying that the applicant is not infected with syphilis in a communicable stage.

Nebraska

Bill Introduced—Legislative Bill No 139, amending the law relating to the practice of medicine and surgery, was amended by proposing that any person now licensed to practice osteopathy in the state of Nebraska may, if application is made prior to July 1, 1948, take the regular examination given before the Board of Examiners in Medicine and Surgery, and, if successful, he shall receive a license to practice medicine and surgery in the state of Nebraska, provided, however, that any doctor of osteopathy now licensed and practicing in the state of Nebraska who is able to show satisfactory evidence of having taken and successfully passed the regular examination in medicine and surgery shall be issued a license hereunder on payment of the prescribed fee.

New Mexico

Bills Enacted—S 101 has become chapter 50 of the Laws of 1943. It requires the county school superintendent to see that all children in his county under 8 years of age are immunized against diphtheria. S 160 has become chapter 78 of the Laws of 1943. It provides that any person having a license to practice a profession in the state shall not be prejudiced by reason of having been drafted into the armed services but shall retain such license after release from such service. H 219 has become chapter 33 of the Laws of 1943. It amends the law relating to school employees by prohibiting the employment of teachers afflicted with syphilis and requiring all school employees to present annually a certificate from a licensed physician showing freedom from any transmissible disease, including tuberculosis and Wassermann tests.

Pennsylvania

Bills Introduced—S 526 proposes that a woman who is reasonably suspected of being afflicted with syphilis, gonorrhea or other venereal disease in a communicable stage and who is reasonably suspected of being, because of her habits, a carrier of such disease and a menace to the health of the community, may be ordered to an institution or hospital for medical treatment after an adequate hearing and on affidavit of at least one duly licensed physician verifying the existence of the venereal disease in a communicable stage. S 555 proposes the creation in the department of health of a bureau of health clinics with duties, among other things, to make surveys and investigations to determine the desirability or need of health clinics in certain areas, to prepare suitable facilities and appoint the necessary personnel for the establishment of such clinics and to assume charge of and operate any existing health clinic or merge the same with any existing or new project. H 235, proposing to authorize the state board of medical education and licensure to issue temporary certificates to physicians licensed in other states to authorize them to practice medicine and surgery in Pennsylvania for the duration of the present war and six months thereafter, was amended to provide that such temporary licenses must have scholastic qualifications equivalent to those required by the law of Pennsylvania.

Wisconsin

Bill Introduced—A Jt Res 53 proposes a resolution that the state board of health, state board of medical examiners, state board of dental examiners and the several professional societies be requested to ask all practicing physicians and dentists to ascertain, as far as possible, whether patients are now or are on any subsequent date veterans of the present war and, if so, to preserve case histories thereof for at least six years after the date of the last professional service rendered.

Bill Enacted—S 53 has become chapter 43 of the Laws of 1943. It exempts members of the armed forces from being required to maintain a license to practice any profession within the state and suspends such license during the active service of such person with the right to renew same within six months after his discharge from the armed forces.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

GEORGIA

Campaign Against Whooping Cough—The state department of public health, in cooperation with private practitioners, was to open up a campaign against whooping cough about April 15. The health department will absorb 80 per cent of the cost of the vaccine to be used, thereby making it available at a nominal price. Only infants above 5 months of age and those children below 3 years of age will be immunized.

Blood Donor Service Expands—The Atlanta Chapter of the American Red Cross is now housed in a new blood donor center at 291 Peachtree Street. The floor space has been divided so as to provide a registration room, a bleeding room, offices for the doctor in charge, the head nurse and the Volunteer Red Cross director, a canteen for the administrative staff where light refreshments will be served to blood donors after they have made their contributions, a recovery room, a telephone center with blackboards showing the daily schedule of appointments, and a laboratory with all equipment necessary for handling the blood donations. The blood will be sent from Atlanta to Indianapolis, where it will be turned into dried plasma to be shipped wherever needed.

Certification Form Omits Names of Parents—Under a recently enacted bill, the state department of public health is authorized to certify only the following items for the issuance of birth certificates: name of child, date of birth, place of birth, color and sex. The new certification form omits the names of parents and the information as to whether or not the child is legitimate. Certified copies of birth records containing complete information thereof shall be issued only by the state department of health or other officials authorized to issue certified copies of birth records on request of the person whose record of birth is registered, if of age; either parent of the person whose record of birth is registered; the legal representative of the person whose record of birth is registered; order of any court of record; any governmental agency, state or federal, provided such certificate shall be supplied without cost to the state.

ILLINOIS

State Expands Service to Mental Patients—The state department of public welfare announces that plans are being completed, in cooperation with universities and colleges, for the expansion and standardization of psychologic service to patients of the eleven state mental hospitals. The service, which will be under the supervision of the chief psychologist, to be appointed, will augment the psychiatric and social services which have become a part of the system of treatment and will remove the state hospitals further from being custodial institutions. Professional psychologists have already been placed at most of the hospitals and arrangements have been made with the University of Chicago, Northwestern University, MacMurray College, Jacksonville, and others to reinforce the staffs by assigning graduate students and interns in psychology. The program has been in effect at Elgin State Hospital, Elgin, with Phyllis Wittman in charge as psychologist, one assistant, two graduate students serving their internships as aides and a research fellow from the Social Science Service Council. The hospital has given training to twenty-eight graduate students in psychology.

Chicago

Personal—Dr. Gustavus M. Blech recently received a distinguished service citation from the American Legion Department of Illinois for services to nation, state and the community.

Course in Motility of the Eyes—The semiannual course in motility of the eyes from a neurologic point of view will be presented at the Children's Memorial Hospital by Dr. George P. Gubnor, May 9-14. The class is limited to those interested in motor difficulties of the eyes.

LOUISIANA

State Medical Meeting—The sixty-fourth annual meeting of the Louisiana State Medical Society at the Heidelberg Hotel, Baton Rouge, May 3, will consist of a business meeting of the house of delegates and an evening session devoted to the presidential address by Dr. Emmett Lee Irwin, New Orleans, a memorial address for deceased members, and the annual oration by Gov. Sam Houston Jones, Baton Rouge. The woman's auxiliary to the society will also meet at the Heidelberg Hotel.

Training in Medical Librarianship—The residency in medical library work sponsored by the Orleans Parish Medical Society Library, New Orleans, will be open on August 15. Appointment will be made on July 1. Requisite qualifications for appointment include college and library school training and an evidence of fitness for this type of work, by personality and aptitude. The appointment carries a nominal salary and is for a term of one year. The work is done in the library of the Orleans Parish Medical Society and its cooperating unit, the Rudolph Matas Medical Library of Tulane University School of Medicine, comprising a collection of approximately sixty-five thousand volumes. The course is personally directed by the librarian in charge of the two libraries and proposes to cover a study of medical library administration used in these libraries and a comparison with varying methods used elsewhere. Any one wishing further information should address the librarian, Orleans Parish Medical Society Library, 1430 Tulane Avenue, New Orleans.

MASSACHUSETTS

New Professor of Bacteriology at Tufts—Dr. Ralph E. Wheeler, assistant professor of preventive medicine and public health, Vanderbilt University School of Medicine, Nashville, Tenn., has been named to a new professorship of bacteriology at Tufts College Medical School, Boston, effective April 1. Another chair of bacteriology is held by Basil G. Bibby, D.M.D., Boston, dean of the dental school. Dr. Wheeler graduated at Harvard Medical School, Boston, in 1926, receiving the degree of doctor of public health at Johns Hopkins University, Baltimore, in 1932. Dr. Wheeler has served as consultant and later surgeon in the U. S. Public Health Service and as research associate of the Milbank Memorial Fund of New York.

MICHIGAN

Changes in Faculty at Wayne University—Dr. Clement A. Smith, formerly of Boston, has been appointed professor of pediatrics at Wayne University College of Medicine, Detroit, effective May 1. He succeeds Dr. James L. Wilson, Detroit, who has accepted a position on the faculty of New York University College of Medicine. Dr. William E. Abbott, Cleveland, has been appointed instructor in surgery at Wayne and Dr. John W. Hirshfeld has been promoted to assistant professor of surgery.

Graduate Program—The spring "Michigan Program for Graduates in Medicine" opened in April in eight lower peninsula cities—Ann Arbor, Bay City, Flint, Grand Rapids, Jackson, Kalamazoo, Mount Clemens and Traverse City. In the upper peninsula meetings are planned to begin in Sault Ste. Marie, May 24, Marquette, May 25, Houghton, May 26, Ironwood, May 27 and Powers, May 28. The program is conducted semiannually by the Michigan State Medical Society in cooperation with Wayne University College of Medicine, Detroit, the University of Michigan Medical School, Ann Arbor, and the Michigan Department of Health, Lansing.

MINNESOTA

State Medical Meeting—The ninetieth annual session of the Minnesota State Medical Association will be held at the Hotel Radisson, Minneapolis, May 17-19, under the presidency of Dr. Stephen H. Baxter, Minneapolis. A symposium on fractures will open the meeting Monday and each day round table luncheons will be held to cover a wide range of medical topics. Among the speakers on the program will be:

Dr. Ralph K. Ghormley, Rochester, Tendon Injuries
Dr. Frank C. Neff, Kansas City, Mo., Practical Applications of a Routine Blood Count in the Newborn with Special Reference to the Obstetrical Nurse
Dr. James M. Hayes, Minneapolis, Factors in Repair of Heart
Dr. Everett D. Kleiter, Boston, Pediatric Uicer
Dr. John M. Wright, Rochester, New York, Hypertension
Capt. Erik G. Hakala, M.D. (MC), U.S.A., Control of Trauma
Dr. Herman O. McPeckers, Minneapolis, Skin Grafting
Albert E. Russell, Surgeon, U.S. Public Health Service, St. Paul

Other topics to be discussed on the program will be care of the aged, abnormal uterine bleeding, cardiovascular disease, myasthenia gravis, newer therapeutics in surgery and child health in wartime. Dr. Ralph S. Biomei, Bryn Mawr, Pa., will deliver the annual Russell D. Carman Memorial Lecture, Monday, on "Roentgen Diagnosis of Diseases of Infants and Children." Three special societies are sponsoring visiting speakers for the meeting: the Minnesota Radiological Society, Dr. Biomei, the Northern Minnesota Medical Association, Hon. Walter H. Judd, congressman from the Fifth District, and the Northwestern Pediatrics Society, Dr. Neff.

MISSISSIPPI

State Medical Meeting—The seventy-sixth annual session of the Mississippi State Medical Association will be held at the Heidelberg Hotel, Jackson, May 12-13, under the presidency of Dr. H. Lowry Rush, Meridian, whose address will be entitled "Today's Challenge to Medicine." Among the speakers will be:

Dr. Claude C. Pierce, New York, Conception Control—A Public Health Responsibility

Dr. Julius W. Davenport Jr., New Orleans, Human Blood Plasma—A Review of Its Preparation and Clinical Indications for Its Use

Dr. John J. Shea, Memphis, Tenn., Lungus Problems of the Ear, Nose and Throat

Dr. William B. Clark, New Orleans, Glaucoma

Dr. Edgar Burns, New Orleans, Recent Advances in Treatment of Carcinoma of the Prostate

Dr. Carl M. Peterson, Chicago, Secretary, Council on Industrial Health, American Medical Association, Industrial Medicine and the General Practitioner

The Ewing Fox Howard Oration will be delivered Tuesday evening at a public session by Dr. Charles C. Bass, New Orleans, on "Prevention of the Loss of Teeth."

NEBRASKA

Outbreak of Scarlet Fever—Two hundred and eighty-two women students at the University of Nebraska, Lincoln, were quarantined, April 5, in a women's residence hall after a medical checkup revealed 32 cases of scarlet fever, newspapers reported. It was stated that an isolation ward had been set up in the dormitory and the 32 patients placed there.

NEW HAMPSHIRE

State Medical Meeting—The one hundred and fifty-second annual meeting of the New Hampshire Medical Society will be held at the Hotel Carpenter, Manchester, May 11, under the presidency of Dr. Timothy F. Rock, Nashua. Among the speakers will be:

Dr. John P. Bowler, Hanover, Carcinoma of the Prostate and Its Endocrine Relationships

Dr. Oliver Cope, Boston, The Treatment of Burns

Dr. Roger I. Lee, Boston, Geriatrics, The Medical Care of the Elderly

Dr. Andre William Reggio, regional medical officer, First Civilian Defense Region, Boston, Civilian Medical Defense and Its Adaptation to Peacetime Civil Life

Dr. George V. S. Smith, Brookline, Mass., Female Sex Hormone Therapy

The Woman's Auxiliary to the New Hampshire Medical Society will hold its eighteenth annual meeting at the same time. Speakers will include Tehyi Hsieh, Boston, on "China's Vital Role in World Democracy."

NEW YORK

Dr. Whipple Awarded Medal—The Civic Medal, awarded annually by the Rochester Museum Association, will be presented on May 13 to Dr. George H. Whipple, dean of the University of Rochester School of Medicine and Dentistry. In 1934 Dr. Whipple was co-winner with Drs. George R. Minot and William P. Murphy of Boston of the Nobel Prize in Medicine.

Forum on Increase of Manpower—An open forum of the Buffalo District Committee for Industrial Health was devoted on April 16 to the theme "Increase Manpower Through Industrial Health." A panel discussion was held with Dr. Herbert H. Bauckus, Buffalo, acting as chairman and Dr. Clarence D. Selby, Detroit, leading the discussion on "Industrial Health in the Nation at War."

Child Care Group Formed—The Buffalo Victory and Child Care Association, Inc., has been organized to share with the local government one third the cost of expensive facilities for the caring for children of women workers, the New York Times reported April 6. Under a recent state law, the residual cost is to be shared equally by the state and the mothers. Children up to 14 years of age will be eligible for care under

the program, which, it is planned, will be in operation by July 1. Harold B. Ehrlich, assemblyman, has been named executive secretary of the new group which represents the war industries of the region. A movement is now under way to extend the plan to cover all war and allied industries in Erie and Niagara counties.

New York City

Epidemic of Infantile Diarrhea—Up to April 11 ten deaths had occurred in an epidemic of infantile diarrhea in the Staten Island Hospital at Tompkinsville, according to the New York Times. The cause of the outbreak had not been determined. The maternity and pediatric departments of the hospital have been closed and all new cases are being cared for at St. Vincent's Hospital at West New Brighton.

Suspend License of Dr. Cowles—The medical license of Dr. Edward Spencer Cowles was suspended on April 16 for one year by the state board of regents, which found him guilty of "fraud and deceit" in his conduct of his Body and Mind Foundation, the New York Times reported. The action of the board was unanimous, and the suspension will become effective with the service of a formal order. The Body and Mind Clinic at 139 East 69th Street was closed in April 1942. The state began proceedings to close the clinic on the grounds of unlawful practice of medicine, charging Dr. Cowles with unethical conduct in permitting two employees, Robert Rebold, a chemist, and Mrs. Eveline Dolin Schulman, a psychologist, to practice medicine without licenses. The prosecution charged, it was stated, that the clinic did a \$500,000 a year business for treating patients in mass meetings for mental disorders. The clinic was put out of business by the court of special sessions on June 16, the Times stated. Rebold was convicted but received a suspended sentence. Mrs. Schulman was acquitted. Dr. Cowles went on trial before the subcommittee of the state medical grievance committee on May 22, the hearings being conducted at long intervals. Dr. Cowles, aged 63, graduated at the University College of Medicine, Richmond, Va., in 1907. The first Body and Soul Medical and Mental Foundation, as it was originally called, was established by him in July 1923 in the Episcopal Church of St. Mark's-In-The-Bouwerie. It continued there until 1932, when it was ousted, after a quarrel with the vestry, the Times stated. The clinic moved to 142 Second Avenue and after two years to a converted garage at 139 East 69th Street, the name being changed to Body and Mind Foundation, Inc. (THE JOURNAL, May 9, 1942, p. 197 and July 4, 1942, p. 819).

Committee to Study Medicine and the Changing Order—The New York Academy of Medicine has organized a committee to study medicine and the changing order with Dr. Malcolm Goodridge as chairman. The objectives of the committee are defined as follows:

To be informed on the nature, quality and direction of the economic and social changes that are taking place now and that are clearly forecast for the immediate future; to define in particular how these changes are likely to affect medicine in its various aspects; to determine how the best elements in the science of medicine and its services to the public may be preserved and embodied in whatever changed social order may ultimately develop.

The committee plans to survey the changes that are currently taking place in economic and social organization likely to take place during the next decade. It will solicit opinions from a wide variety of groups including sociologists, economists, representatives of organized labor, industrialists, bankers and politicians, as well as the cooperation of persons actually connected with medicine in the capacities of deans of medical schools, teachers of medicine, hospital authorities, hospital clinicians, public health workers, those interested in graduate education, physicians in industrial medicine, medical social workers and workers in voluntary health organizations. The committee seeks to devote itself primarily to the study of how, within the changing social order, the best qualities in medical service, in medical education and in medical research can be preserved and developed. It is expected that the study will continue until such time as sufficient evidence has been accumulated to make possible a considered report. In addition to Dr. Goodridge, other members of the committee include Drs. Arthur F. Chace, James Alexander Miller, Alan Gregg, George Baehr, Washington, D. C., Harry Aranow, I. Ogden Woodruff, Paul Reznikoff, Henry W. Cave, Tracy J. Putnam, Wilson G. Smilie, Jean A. Curran, Brooklyn, Herbert B. Wilcox, Howard R. Craig, Edward Tolstoi, Eugene H. Pool, Robert E. Pound and Iago Galdston, secretary.

NORTH CAROLINA

State Medical Meeting—The ninetieth annual session of the Medical Society of the State of North Carolina and the twenty-first annual meeting of the woman's auxiliary to the society will be held at the Hotel Sir Walter, Raleigh, May 10-12. Speakers will include

Lieut. Col. Charles W. Mayo, M. C. Army of the United States. One Stage Combined Abdominoperineal Resection for Malignancy of the Lower Colon, Rectosigmoid and Rectum.
Dr. William Banks Anderson, Durham. Unilateral Exophthalmos as a Diagnostic Problem.
Dr. LeRoy M. Polvogt, Baltimore. Recent Advances in Chemotherapy as Applied to Otolaryngology.
Capt. Waltman Walters, M. C. U. S. Naval Reserve. Treatment of War Casualties.
Capt. Carl T. Javert, M. C. Army of the United States. A Combined Isometric and Stereoscopic Technique for Radiographic Study of the Obstetrical Patient.
Drs. William H. Sprunt and James A. Harrill, Winston-Salem. Diagnosis and Treatment of Cardiospasm.
Dr. Grace G. Jones, Charlotte. Retroperitoneal Position of the Ascending Colon.
Dr. Richard S. Lyman, Durham. Some Principles of Diagnosing Malinger and Hysteria.
Major Philip W. Brown, M. C. Army of the United States. Amebiasis.
Dr. Walter R. Berryhill, Chapel Hill. Atypical Pneumonia of Unknown Etiology.

There will also be a report of the committee on award of Moore County Medal for the best paper read in 1942 session and presentation of the medal to Dr. Edwin P. Alvea, Durham, for his paper on "Castration for Carcinoma of the Prostate Gland."

SOUTH CAROLINA

Journal Club Formed—The Medical Journal Club was recently organized at the Veterans Administration Facility, Columbia, for the purpose of perusing current literature in the fields of internal medicine and surgery. Membership is open to staff physicians of the veterans hospital as well as to physicians in Columbia. Officers are Drs. Solomon L. Zimmerman, president, Manuel D. Zane, secretary, and P. Mertz, treasurer.

TEXAS

New Hospital Association Officers—Miss Eva M. Wallace, R.N., superintendent, All Saints Episcopal Hospital, Fort Worth, was chosen president-elect of the Texas Hospital Association at its meeting in Fort Worth, February 18-19, and Mr. A. C. Seawell, superintendent, City and County Hospital, Fort Worth, was installed as president. The association decided to hold its next meeting in Dallas, Feb. 23-24, 1944. The recent meeting of the association was a war conference.

WISCONSIN

The William Snow Miller Lecture—Dr. Marius N. Smith-Petersen, clinical professor of orthopedic surgery, Harvard Medical School, Boston, gave the sixteenth annual William Snow Miller Lecture at the University of Wisconsin Medical School, Madison, April 15, under the auspices of Phi Beta Phi. His subject was "Arthroplasty."

Personal—Dr. Harold M. Coon, Madison, medical superintendent of the State of Wisconsin General Hospital, was recently elected president of the Wisconsin Hospital Association at its meeting in Milwaukee. Walter E. Sullivan, Ph.D., professor of anatomy and chairman of the department, University of Wisconsin Medical School, Madison, is serving for six months as visiting professor of anatomy at Washington University School of Medicine, St. Louis. Dr. Marshall W. Meyer, Ashland, former director of sanitary district number 9 in that city, has been named director of district number 6. He succeeds Dr. Allan A. Filek, now director of the division of local health service and tuberculosis control of the state board of health, Madison.

Guide Published for Special Diets in Rationing Program—The *Wisconsin Medical Journal* for April carried a special supplement entitled "Extra Ration Points for Special Diets." Prepared in cooperation with the Dane County War Price and Rationing Board by a special committee of the Dane County Medical Society, the supplement is a guide for the physician and rationing boards in the procedure to be followed in providing extra ration points. Members of the committee are Dr. Elmer L. Sevringhaus, chairman, Jack S. Supernaw, John E. Gonce, Jr., James P. Dean, Nels A. Hill, Lester McGarry, and the following dietitians: Esther East, Methodist Hospital; Jeanette Mikeljohn, Madison General Hospital; Ruth Dickie, State of Wisconsin General Hospital; and Elizabeth Hilgers, St. Mary's Hospital, all of Madison.

GENERAL

Theobald Smith Award—The Theobald Smith Award of \$1,000 and a bronze medal of the American Association for the Advancement of Science, established by Eli Lilly and Company in 1935, has been awarded to Dr. Sidney C. Madden, assistant professor of pathology, University of Rochester School of Medicine and Dentistry, New York, for his investigations on "Plasma Proteins."

American Psychiatric Association—"War Psychiatry" will be the theme of the annual meeting of the American Psychiatric Association at the Hotel Statler, Detroit, May 10-13. The program will include presentations concerned with the psychiatric evaluation of men to be inducted into the armed forces, the care of psychiatric casualties of the war and the treatment of men discharged from the army for psychiatric disability. Attention will also be given to the relationship of psychiatry and industrial hygiene.

Standards for the Protection of Workers in Gas and Electric Welding—The Division of Labor Standards of the U. S. Department of Labor, Washington, D. C., has reprinted in pamphlet form the manual called "Standards for the Protection of Workers in Gas and Electric Welding," prepared by the State of New Jersey Department of Labor. These standards are for the practical guidance of superintendents and foremen, putting special emphasis on health hazards due to fumes, dusts and glare as well as accident risks from fire, explosion and shock. Copies of the pamphlet may be obtained by writing to the Division of Labor Standards, U. S. Department of Labor, Washington, D. C.

Florence Seibert Awarded Achievement Prize—Florence B. Seibert, Ph.D., associate professor of the Henry Phipps Institute, Philadelphia, was presented April 13, with the first \$2,500 achievement award of the American Association of University Women. The fund for the award was raised by the Northwest Central Section of the association. Mrs. H. K. Painter, Minneapolis, regional vice president of the association for the northwest central section, participated in the ceremonies and Kathryn McHale, Ph.D., Washington, D. C., general director of the association, made the presentation in the Philadelphia branch headquarters of the association. The citation accompanying the award pointed out that it was designed to help Dr. Seibert with her research in tuberculosis.

Meeting of Neurologists—The American Neurological Association will hold its sixty-ninth annual meeting at the Waldorf-Astoria, New York, May 6-7. The presidential address will be delivered by Dr. Ernest Sachs, St. Louis, on "The Contributions of War to Medicine." Among the speakers will be

Dr. Geoffrey Jefferson, Manchester, England. Neurologic Interpretation of Acute Head Injuries.
Dr. Foster Kennedy, New York. Functional Nervous Disorders as Reported in the Present War.
Dr. John Young, Nuffield Institute, England. Process of Regeneration of Nerve and Muscle Following Immediate and Delayed Suture.
Dr. Joseph C. Yaskin, Philadelphia, and Major Melvin W. Thorne, M. C. U. S. Army. The Effects on the Cerebral Cortex of Altitude Chamber Anoxia.
Dr. Kenneth G. McKenzie, Toronto, Canada. One Aspect of the Post-Traumatic Syndrome in Craniocerebral Injuries.
Dr. Samuel B. Hadden, Philadelphia. Group Psychotherapy.

Psychoanalytic Association—The forty-fifth annual meeting of the American Psychoanalytic Association will be held at the Hotel Statler, Detroit, May 9-12, under the presidency of Dr. Karl A. Menninger, Topeka, Kan. The speakers will include

Dr. Ives Hendrick, Boston. Instinct and the Ego During Infancy.
Dr. Carl M. Herold, New York. Pleasure Principle and Drive Therapy in Reference to Psychopathology.
Dr. Sandoz Lorand, New York. Psychoanalytic Investigation of Reaction to the War Crisis of Candidates for Induction.
Dr. Rene A. Spitz, New York. Prophylaxis versus Treatment in Treatment in Traumatic Neuroses.
Dr. Gregory Zilboorg, New York. The Fear of Death in War and Peace at Home and in the Field.

The program also includes a symposium on Present Trends in Psychoanalytic Theory and Practice with Dr. Lewis B. Hill, Baltimore, as the moderator.

Judicial Commission on Bacteriologic Nomenclature—A judicial commission on bacteriologic nomenclature has been selected following recommendations approved at the third international congress of microbiology in New York in September 1939. The selection of the committee was of necessity made by ballot, the choice finally being completed in November 1942. A communication from Robert S. Breed, Ph.D., head of the division of bacteriology, New York State Agricultural Experiment Station, Geneva, N. Y., asks that con-

eration be given to the belated appointment of this committee in order that some plan for taking tentative action on questions of nomenclature may be developed by those members of the commission who can be reached under war conditions. Robert E. Buchanan, Ph.D., Ames, Iowa, has been asked to act as chairman pro tem of the judicial commission, as there is no possibility of securing an election under the rules as adopted. Dr. Breed with Dr. Ralph I. St. John-Brooks, London, are the joint permanent secretaries of the International Committee on Bacteriological Nomenclature. The members of the committee, as reported by Dr. Breed, are Dr. Buchanan, A. I. Kluver, the Netherlands, Everett G. D. Murray, Montreal, Canada, S. Orla Jensen, Denmark, James Howard Brown, Ph.D., Baltimore, A. R. Prevot, France, James Ramsbottom, Great Britain, I. Hjort, Norway, A. Iwosi, France, R. Renaux, Belgium, Alfredo Sordelli, Buenos Aires, Argentina and C. Stipp, Germany.

Drug Manufacturers Association—The annual convention of the American Drug Manufacturers Association will be held at the Palmer House, Chicago, May 2-4. Among the speakers will be:

- Dr. Elmer I. Scrimgeour, Madison, Wis., Commercial Production of Hormone and Vitamin Extracts
- Milton A. Vidler, Bethesda, Md., Senior Surgeon, U. S. Public Health Service, The Place of Biologists in Warfare
- John K. Tunks, Legal Staff, Office of Price Administration, The Operation of the OPA in Relation to the Drug Industry, Including an Explanation of the Automatic Regulation Establishing Maximum Prices for Drugs
- Donald S. Whitney, Attorney, Norwich Pharmaceutical Company, Norwich, N. Y., A Review of Important Cases Affecting the Drug Industry
- Franklyn Bliss Snyder, II, D., Evanston, Ill., Education, Research and the War
- Lawrence A. Appley, Executive Director, War Manpower Commission, Washington, D. C., Full Mobilization and Utilization of Manpower in Time of War
- Dr. Austin E. Smith, Chicago, Secretary, Council on Pharmacy and Chemistry, American Medical Association, Research and Therapeutics
- Joseph D. Coppock, Price Executive, Office of Price Administration (subject not announced)

Dr. Alexander W. Lescohier, Grosse Point, Mich., will be toastmaster at the dinner May 3 with Anton J. Carlson, Ph.D., Chicago, on "How We May Improve Our Respective Performance for a Better National Health" and the Hon. C. Wavland Brooks, Chicago, United States Senator. A luncheon session on May 4 will be addressed by Dr. Morris Fishbein, Editor, *THE JOURNAL*, with John S. Zimser, Philadelphia, presiding. One feature will be a symposium on military medicine conducted by Col. Clifford V. Morgan, M.C., U.S. Army. The symposium will be divided into a consideration of the plans and operations, aviation medicine, supply service and the treatment of burns. Among the speakers will be Lieut. Col. Arthur B. Welsh, Col. Walter S. Jensen and Col. Morgan, all of the army medical corps, and Capt. Erik G. Håkansson (MC) USN. Other military speakers on the program will be Brig. Gen. Charles C. Hillman, Brig. Gen. James S. Simmons, Brig. Gen. George F. Lull, Col. Charles F. Shook Sr., Col. Martin E. Griffin, all of the army medical corps, and Capt. Carlton L. Andrus (MC) USN. They will take part in the discussions of the various subjects.

Deaths in Other Countries

William Albert Hoffman, Sc.D., assistant professor of parasitology at the Columbia School of Tropical Medicine, San Juan, P. R., was found dead in his office, April 4. Dr. Hoffman had been with the school of tropical medicine since 1926, devoting his researches chiefly to medical entomology.

Government Services

Annual Report of United States Public Health Service

The Office of War Information has decided that the annual reports of the Surgeon General of the U. S. Public Health Service will be discontinued for the duration of the war.

Annual Report of Veterans Administration

The total hospital load of the Veterans Administration was 56,346 for the fiscal year ended June 30, 1942, as compared with 58,417 on June 30, 1941, according to the annual report of the Administrator of Veterans' Affairs. The neuropsychiatric load increased 154 and the tuberculosis 257, while the

general load decreased 2,482. At the close of the year 76.82 per cent of the United States veterans under hospitalization were receiving treatment for disabilities not of service origin as compared with 78.53 per cent for the previous comparable period. Of the total patient load 56,073 were United States veterans, classified by service as follows: World War I, 49,140; World War II, 832; Spanish-American War, 2,951; Civil War, 18; all other wars, expeditions and occupations, 55; and Regular Establishment, 3,077. There were 12,999 United States veterans under treatment for diseases or injuries determined to be of service origin, of whom 10,201 had service in World War I, 743 in World War II, 22 in the Spanish-American War, 2,032 in the Regular Establishment during peacetime, and 1 in other wars, occupations or expeditions. In addition to United States veterans there were under treatment 31 veterans of countries allied with the United States in the World War, 18 employees of the Civilian Conservation Corps and Work Projects Administration and 224 miscellaneous beneficiaries. Of the patients in hospitals at the close of this year, 8.77 per cent were under treatment for tuberculosis, 61.59 per cent for neuropsychiatric diseases and 29.64 per cent for general medical and surgical conditions. Of the 56,073 United States veterans under treatment at the end of the year, 52,999 were in facilities controlled by the veterans administration, 2,080 in other government hospitals and 994 in state or civil institutions.

An analysis of the types of hospital admissions of veterans shows that 62,082, or 34.6 per cent of the total, were first admissions, 109,232, or 60.9 per cent, readmissions, and 7,960, or 4.5 per cent, admissions by transfer from other facilities. During the year 9,658 admissions were authorized for the observation and treatment of pulmonary tuberculosis, 10,200 for psychotic or mental diseases, 14,101 for other neurologic disorders and 145,315 for general medical and surgical conditions. During the year 242,157 patients were under hospitalization, of whom 239,001 were United States veterans. Of the latter group 182,928 were discharged after an average of 78.7 inpatient days. Deaths in hospitals totaled 12,977, or 7.09 per cent of the discharges as compared with 12,891 in 1941. Of the total deaths 9,354 occurred in patients under treatment for general conditions, 1,919 for pulmonary tuberculosis and 1,704 for neuropsychiatric diseases. Of the 9,354 deaths among general patients, about 28 per cent were caused by diseases of the circulatory system, about 25 per cent by malignant tumors and about 9 per cent by diseases of the digestive system. On June 30, 1942 the veterans' administration was operating hospital facilities at ninety-two locations in forty-five states and the District of Columbia. These facilities had a capacity of 62,453 beds, an increase of 604 over the number available on July 1, 1941. A new hospital was opened at Marion, Ill., and additional beds were provided at Jefferson Barracks, Mo., Los Angeles, Newington, Conn., Perry Point, Md., Tuscaloosa, Ala., and Whipple, Ariz. The administration was also using 1,599 beds in other government hospitals. There were 18,371 beds set aside for domiciliary care in facilities under the veterans administration facilities as compared with 18,747 on June 30, 1941, a decrease of 376, due primarily to loss by fire at Dayton, Ohio. At the close of the recent fiscal year work was in progress on thirteen projects to provide 1,256 beds.

The net operating expenses for all hospital and domiciliary facilities controlled by the veterans administration totaled \$64,891,086, of which \$59,054,871 was for hospital and \$5,836,214 for domiciliary facilities. This amount does not include expenditures for new construction, improvements, construction alterations, maintenance and operation of personnel quarters, nonexpendable equipment or those for the diagnostic centers at San Francisco and Hines, Ill. Throughout the year there was a daily average of 54,636 patients of all types under treatment and a daily average of 14,371 beneficiaries receiving domiciliary care, as compared with 54,582 and 16,696 respectively during the fiscal year 1941. The per diem cost of operation for hospital facilities used principally for the treatment of tuberculosis was \$4.37, for those used exclusively for the treatment of neuropsychiatric diseases \$2.02, and for those used largely for the treatment of general medical and surgical conditions \$4.24. Collectively the per diem cost of operation for hospital facilities of all types was \$2.96. The per diem cost of operation for domiciliary facilities for this year was \$1.11. Three new physical therapy clinics were opened at Perry Point, Md., Tuscaloosa, Ala., and Marion, Ill. One in the Los Angeles facility was closed temporarily because of the partial evacuation program instituted because of its critical location. An artificial fever therapy clinic was established at the Northport, Long Island, N. Y., facility and will be used as a center for training other physicians and nurses in the administration of artificial fever.

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 13, 1943

Preparations for the Relief of Europe After the War

The appalling misery of Europe under German occupation, including the starvation of children, has been described in previous letters. Although we are engaged in our maximum war effort we are preparing relief measures, so that they can be applied immediately on liberation of the occupied countries without waiting for an armistice. The need for this is shown in a lecture to the British Red Cross Society by Dr Melville Mackenzie, principal medical officer of the Ministry of Health. He pointed out that in the three years following the last war more died from famine and preventable disease than had been killed in the war itself and that their deaths were largely the result of administrative chaos in relief. Already malnutrition, with its resulting diseases particularly tuberculosis, is widespread. It is estimated that at the present moment 200 million persons in Europe are urgently in need of more food. Typhus fever is now epidemic in most of eastern and much of central Europe as well as in Spain and North Africa. Malaria also is increasing.

Food of course, is the primary need, and then come medical supplies. The control of epidemic diseases—typhus, malaria, dysentery and tuberculosis—is urgent. The medical hospital and health services have to be reestablished. In all the occupied countries there is a shortage of doctors, nurses and midwives. There is also a shortage of potential doctors, for many universities have been closed by the Germans and most of those who would be medical students are serving in the armies. The reorganization of the faculties of medicine of the universities of Europe will be a pressing need.

In September 1941 an allied conference was held in London on postwar requirements. A committee representing fourteen governments was set up to enable the allied governments to collaborate in supplying food and other necessities immediately on liberation of the occupied countries. An allied postwar requirements bureau was established to assist the various governments in preparing estimates of relief requirements. The staff of this bureau is provided by the British government. The work is carried on mainly by technical advisory committees, of which there is a medical one containing representatives of the British, American and allied governments. The work of this medical advisory committee covers the whole of Europe. In order to obtain the best technical advice, expert subcommittees have been set up on such subjects as drug and hospital requirements including those for surgery, radiology, dentistry and bacteriology, tuberculosis, maternity and child welfare, malaria, typhus, typhoid, dysentery, cholera and diphtheria.

Another Munificent Gift from Lord Nuffield to Medicine

The name Nuffield will rank for benefactions with Carnegie, Rhodes and Rockefeller. The latest gift of this automobile magnate eclipses his previous numerous donations and like many of them helps medicine. Lord Nuffield has stated his intention of founding forthwith a charitable trust to be known as the Nuffield Foundation for which he will hand over to trustees his shareholdings in the Nuffield Organization to the value of \$50,000,000 as a capital fund. Among the managing trustees are two members of the medical profession—Prof. Sir John B. Stottford (anatomist) and Miss Janet Vaughan (pathologist). The objects which the trustees will endeavor to assist are medical research and teaching organization and

development of medical and health services, scientific research and teaching in the interests of trade and industry, social studies, and the care and comfort of aged persons. The managing trustees are enjoined to consult the appropriate ministers or departments of state in connection with any matter of major importance in which they may become interested, but they are not to be in any way bound by the views expressed. Lord Nuffield points out that his donation comes from resources built up by private enterprise, in the importance of which he is a firm believer. This declaration is needful at a time when people are looking to the state to do so much for them.

Articles of Clothing and Bedding Not Important in the Dissemination of Scabies

In a memorandum issued by the Ministry of Health it is stated that recent investigations have shown that while articles of clothing and bedding may play some part in the spread of scabies, their importance as a means of dissemination has been much overestimated and that with standard methods of treatment (benzyl benzoate emulsion or sulfur ointment) routine disinfection of clothing is unnecessary, as the layer of medication which covers the body after treatment is usually sufficient to kill all mites on the clothing. Moreover, in view of the small reinfestation rate when disinfection has been abandoned, it is simpler to repeat treatment rather than expend an amount of manpower and material required for routine disinfection in all cases. Emphasis should rather be laid on the follow-up treatment of the family and other close contacts of the original case. On occasion disinfection may be justified, as for instance when there is a high incidence of scabies among people living in overcrowded conditions and compelled to use communal bedding and clothing.

Blood Transfusion in the Desert

The distribution of blood to the army fighting in the Middle East has been a most difficult problem. In the Libyan battle of 1941 blood was sent by air to those advanced depots of medical stores that had oil burning refrigerators. From these it was collected by field transfusion units and taken to casualty clearing stations or other places. Advanced depots in battle areas held stocks of dextrose-saline solution, serum, dried plasma and apparatus for replacement. In the recent battle of El Alamein a more elaborate system was adopted which is described in the *Army Medical Bulletin*. A field transfusion unit was located at the advanced air transport center, to which blood was brought by airplane from the base. This unit collected if necessary stored and then forwarded the blood by ambulance airplane if available, or by refrigerator truck, to an augmented field transfusion unit stationed in the medical concentration area where a number of casualty clearing stations were situated. From this unit supplies were issued (1) to the casualty clearing stations and other transfusion units and (2) to an advanced blood bank consisting of a refrigerator truck with personnel. The latter supplied casualty clearing stations in the vicinity and units in the more inaccessible southern section of the line.

For transporting the blood boxes are made from salvaged tin and wood by a carpenter and a tinmith employed at a base transfusion unit. They are tin lined so that small boxes or bottles of ice can be packed round the bottles. It was feared at first that blood in transit across the desert would hemolyse through jolting and splashing in its bottle. But this was found to happen very little. When possible blood is not used more than three weeks after it has been taken but blood five weeks old which showed only slight hemolysis has been transfused with success. Units with the British expeditionary force in France used blood after seven weeks storage. But five weeks is a long time to preserve blood in a hot country.

and speaks well for the refrigeration. Between Oct. 16 and Nov. 5, 1942 nearly 11,000 bottles or ampules containing fluids for intravenous use were sent forward, including 3,220 bottles of fresh blood obtained by the base transfusion unit from troops in the base area.

TEL AVIV, PALESTINE

Feb. 14, 1943

(From Our Regular Correspondent)

Epidemic of Lymphocytic Choriomeningitis

Following sporadic cases of benign meningitis in various parts of Palestine, Dr. Falk of the General Federation of Jewish Labor in Palestine reported a number of cases in Hadra in May 1941. By June the outbreak assumed the character of an epidemic, reaching its peak in July, with a rapid decline in August and a drop to only a few isolated cases in the following three months. Sixty-six cases were carefully examined, but the incidence was undoubtedly much greater. Only a few infants were affected, the majority of victims being between the ages of 4 and 7. A few adults contracted the disease. Examination showed that the epidemic attacked certain blocks of houses, but it was comparatively rare for several members of the same family to contract the disease, which began suddenly, without prodromal symptoms, with high fever and intense headache, vomiting and cramps. The temperature curve was almost constant high for two or three days, followed by a one to three day afebrile interval and then a slight rise in the curve. In a number of cases a tumor of the spleen developed. Leukocytes were between 6,000 and 25,000. The differential count was not characteristic. The usual symptoms of meningitis were not always distinctly observable, and often the typical spinal fluid finding and subjective symptoms were absent. The nerves of the brain were unaffected, however, 2 cases of encephalitis occurred, apparently connected with the meningitis. In half the cases the cell rate in the fluid was up to 100. In several cases a large number of segmented cells in the fluid were found. The fluid was usually clear. A fine fibrin clot was also found. The pressure was usually raised, and the qualitative albumin reaction was nearly always positive, while the quantitative reaction was 12 to 66 mg per hundred cubic centimeters, the average being 36. The sodium chloride rate fluctuated between 519 and 661 mg per hundred cubic centimeters and the sugar in the fluid from 51 to 75 per cent. The mastic curve only occasionally showed slight rises up to 221,000. It was impossible to prove the presence of bacterial organisms or virus in the blood and fluid. We can only determine, therefore, the nearest clinical relationship but not the actual identity of the disease with benign lymphocytic choriomeningitis. According to the observations of Dickens, Baird and Ribers, the distinguishing feature is probably the fact that considerable polynucleose is found in the fluid instead of lymphocytose, and that the number of cells in the fluid is often not particularly high.

The disease was in almost all cases benign, usually without complications. In a few cases the knee jerk reflex was absent for some time. Except for lumbar puncture and symptomatic therapy, no other treatment was necessary.

The First Case of Madura Foot in Palestine

Madura foot was formerly considered a disease peculiar to tropical countries, however, it occurs, though rarely, in temperate and subtropical climates.

Madura foot, or more correctly, mycetoma pedis, is the name applied to pathologic processes appearing mainly in the area of the leg but sometimes also in other parts of the body, such as the hand or the abdomen, the symptoms of which are swelling, the formation of fistulas and wrinkling of the epidermis. The processes are conditioned by the growth of various fungi, which are also called mycetoma grains, bodies

of different sizes, shapes and colors, made up mainly of mycelium threads and sometimes also of chlamydozoospores. The fungi are found in the infected epidermis or in the liquid excrecence. The grains are yellow, white, red or black and are formed in the process of the struggle of the fungus with the powers of resistance of the mycelium.

This disease was first heard of in India (the island of Madura is situated opposite to Java). Cases were later reported from other countries. Apart from India the disease is known in Brazil, Argentina, Africa and most of the Mediterranean countries. More than half of the cases in Europe occurred in Italy and Greece. The first case in Italy was reported by Bassini in 1888. Catsaras in Greece described some cases. One case came to light in Turkey. Several reports of the disease were received from Tunisia and Algeria. Cleveland and Williamson reported cases from Cyprus, and recently 1 case was heard of in Yugoslavia. One case has been reported from Portugal. Until the present instance the disease was unknown in Palestine.

Dr. Dostrowski, director of the Department of Dermatology at the Hadassah-University Hospital in Jerusalem, and his assistant Dr. Sagher give the following report of the first case of Madura foot, which they encountered in an agricultural laborer aged 32, a native of Aden, who has been resident in Palestine five years. His health has been sound, and his family origins are healthy. Six months ago he experienced a swelling the size of a lentil on the sole of his left foot. Ten days later the infected part softened and pus was released. Five days later there appeared on the sole of the foot a second nodule 10 cm away from the first. In a month almost the entire sole became covered with such nodules, accompanied with swelling. In the last few months before the patient entered the hospital no further nodules appeared. Throughout the whole period pus was present within the nodules, and slight pain was experienced when walking. The urine and excrement, as well as the blood count, were normal. Chemically the blood was normal. The Wassermann and Kahn reactions were negative. The gastric juice contained an excessive quantity of acid. The microscopic histologic analysis proved the presence of Mycetoma fungi.

The question as to whether this case was contracted in Palestine or imported from abroad is difficult to decide. It is possible that the source of the disease in this case is Palestine, because it has been found in other countries of the Middle East and is known to be common in the Arabic countries. The occurrence of the disease in Yemen is described by Patton and Clemoy. It is therefore possible that our patient brought Madura foot with him in a latent form from Aden.

Marriages

GEORGE D. BROYLES JR., Palestine, Texas, to Miss Laura Elizabeth Carlson of Chicago, February 11.

WAYNE H. CRUM to Miss Anna A. Thornburg, both of St. Petersburg, Fla., in Tampa in March.

HERSCHEL COCHRAN SUDBUTH, Caddo, Okla., to Miss Olivia Jewell Sims at Tupelo, Miss., in March.

ARTHUR KLEIN, Woodbridge, N. J., to Miss Beatrice Dean Temko in Richmond, Va., February 28.

ABRAM BERRY, Columbia, S. C., to Miss Bernice Frances Coleman of Charleston in March.

CARL B. SPUTH JR. to Miss Ruth Agnes Means, both of Indianapolis, February 10.

DAVID CLEMENTS FRICK to Miss Lois Louise Scott, both of Toledo, Ohio, April 11.

KENNETH H. SCHNEPP to Miss Lois Catron, both of Springfield, Ill., March 31.

NATHAN ZIMMERMAN to Miss Minette Kositchek, both of Chicago, April 9.

Deaths

Thomas Jefferson Harris, Tucson, Ariz., University of Pennsylvania Department of Medicine, Philadelphia, 1889, member of the Medical Society of the State of New York, specialist certified by the American Board of Otolaryngology, an honorary member and formerly member of the board of directors, member of the American Academy of Ophthalmology and Otolaryngology, fellow, secretary from 1907 to 1916 and president in 1917, American Laryngological, Rhinological and Otolological Society, fellow, past president and for many years secretary of the American Otolological Society, past president and secretary of the New York Laryngological Society and the New York Otolological Society, past president and secretary of the New York Physicians Mutual Aid Association, member of the permanent commission of the International Otolaryngological Congress, fellow of the American College of Surgeons, formerly professor, diseases of the nose and throat, New York Post-Graduate Medical School, Columbia University, New York, served as consulting surgeon in the throat department of the New York Post-Graduate Medical School and Hospital, New York, and on the staff of the Manhattan Eye, Ear and Throat Hospital, New York, from 1922 to 1940 president of the Jennie Clarkson Home for Children, Valhalla, N. Y. served as lieutenant colonel in the medical corps of the U. S. Army during World War I, in charge of the department of otolaryngology at the General Hospital, number 14 at Fort Oglethorpe, Ga., and director of the school of laryngology at Camp Greenleaf, Ga. aged 77, died, March 14, in the Veterans Administration Facility, Northport, N. Y.

Alfred Mitchell Jr. of Prouts Neck, Maine Medical School of Maine, Portland, 1898, member of the New England Surgical Society and the American Urological Association, fellow of the American College of Surgeons, formerly instructor in genitourinary diseases at his alma mater in 1903 was appointed adjutant surgeon of the Maine General Hospital, Portland and later chief of the urologic service serving until 1937 on the consulting staffs of the Queen's Hospital, Children's Hospital, and the former St. Barnabas Hospital in Portland, the Bath City Hospital, Bath, the Webber Hospital, Biddeford, St. Mary's General Hospital, Lewiston, and the Goodall Hospital, Sanford, served during World War I aged 70, died February 8 in Georgetown, Mass., of heart disease.

William Howes Bishop of New York, Hahnemann Medical College and Hospital of Philadelphia, 1889 at one time professor of surgery at the New York Medical College and Flower Hospital during World War I served as a major lieutenant colonel and colonel in the medical corps of the U. S. Army awarded the Distinguished Service Medal and made a Chevalier of the Legion of Honor of France for his exceptionally meritorious and conspicuous service with the base hospital at Orleans, France, fellow of the American College of Surgeons, consulting surgeon to the Flower and Fifth Avenue Hospitals and the White Plains (N. Y.) Hospital, medical director for the Todd Shipyard Corporation, aged 75, died, March 9, of coronary thrombosis.

William Mercer Sprigg of Washington, D. C., Columbian University Medical Department, Washington, 1885, past president and vice president of the Medical Society of the District of Columbia, formerly associate professor of obstetrics at the Georgetown University School of Medicine, served on the staff of the Georgetown University Hospital attending obstetrician at the Columbia Hospital for Women and Lying-In Asylum from 1912 to 1937, from 1884 to 1887, superintendent and resident physician and for over thirty years on the staff of the Garfield Memorial Hospital, a member of the board of directors and on the staff of the Medical Center and Doctors Hospital where he died March 6 of cerebral hemorrhage, aged 78.

Irving Eugene Charlesworth of Imola, Calif., Medical-Chirurgical College of Philadelphia, 1906, past president, vice president and secretary of the Napa County Medical Society, past president of the Cumberland County (N. J.) Medical Society, served as a major in the medical corps of the U. S.

Army during World War I, formerly associated with the U. S. Public Health Service Reserve, past president and director of the International Rotary in Napa, member of the chamber of commerce and the council on national defense, medical director and superintendent of the Napa State Hospital, aged 66, died, February 28, in the University of California Hospital, San Francisco, of carcinoma.

Herbert Eldridge Milliken, Cape Elizabeth, Maine, Medical School of Maine, Portland, 1901, formerly instructor in medicine at his alma mater, for many years a member of the attending staff of the Maine General Hospital, Portland, fellow of the American College of Surgeons, served during World War I, lieutenant colonel, medical reserve corps, U. S. Army, not on active duty, at one time consultant in internal medicine for the U. S. Public Health Service, while a resident of Waterville served as city physician, secretary of the Waterville Clinical Society and for one term president of the Kennebec County Medical Association, aged 63, died, February 9, in Portland of heart disease.

Marlin C. Crane, Wittenberg, Wis., Milwaukee Medical College, 1902, member of the State Medical Society of Wisconsin, served during World War I, for his work at Yokohama harbor during the Japanese earthquake in September 1923, when he was in the medical service of a Netherlands steamship company, received a medal from the Netherlands mercantile marine, a silver medal from Queen Wilhelmina and a loving cup from the persons he assisted at one time on the staff of the U. S. Public Health Service Hospital, Palo Alto, Calif., aged 66, died February 17, in the Shawano (Wis.) Municipal Hospital of chronic myocarditis and coronary occlusion.

Frederick George Dyas of Hinsdale, Ill., Northwestern University Medical School, Chicago, 1904, professor of surgery emeritus at the University of Illinois College of Medicine, specialist certified by the American Board of Surgery, member and past president of the Western Surgical Association, member of the American Association for the Surgery of Trauma, fellow of the American College of Surgeons, major medical corps U. S. Army, 1918-1919, attending surgeon to the Cook County Hospital, Chicago, Brown (Ill.) Hospital and the Hinsdale Sanitarium and Hospital, aged 69, died March 4, of heart disease.

Paul Stanislaus Wagner of Major, U. S. Army, retired, Redwood City, Calif., Rush Medical College, Chicago, 1911, graduated from the School for Flight Surgeons in 1920, the Medical Field Service School in 1922 and the U. S. Army Medical School in 1923, commissioned a first

lieutenant in the medical corps of the U. S. Army in 1918, became a captain in 1919, retired with rank of major for disability in line of duty in 1929, at one time assistant clinical professor of military medicine at his alma mater, aged 58, died February 13, in the U. S. Marine Hospital, San Francisco, of coronary thrombosis.

James Byron Ashley, Detroit, University of Michigan Medical School, Ann Arbor, 1941, served an internship at the Harper Hospital, first lieutenant in the medical corps, Army of the United States, aged 25, was killed in action at Guadalcanal, January 13.

Andrew A. Baxter, Brandenburg, Ky., Hospital College of Medicine, Louisville, 1890, member of the Kentucky State Medical Association, aged 76, died February 14, in the SS. Mary and Elizabeth Hospital, Louisville, of coronary occlusion.

William Franklin Bell, Plain Dealing, La., Memphis (Tenn.) Hospital Medical College, 1901, member of the Louisiana State Medical Society, aged 67, died February 17, in a hospital at Shreveport, of cerebral thrombosis.

Hiram Franklin Bigony, Kirtsville, Ohio, Medical College of Virginia, Richmond, 1905, member of the Licking County Board of Health and Harrison township board of education, aged 68, died February 13, in the White Cross Hospital, Columbus, of angina pectoris.

L. August H. Bishop, Dover, Del., University of Pennsylvania Department of Medicine, Philadelphia, 1875, in active practice in Dover since 1877, member and in 1912 president

KILLED IN ACTION



LIEUT. JAMES BYRON ASHLEY, M. C.,
A. U. S., 1917-1943

of the Delaware State Medical Society, a charter member and past president of the Kent County Medical Society, surgeon for the Pennsylvania Railroad Company at Dover for fifty-two years, aged 90, on the staff of the Kent General Hospital, where he died, March 13, of heart disease.

Addison A. Blassingame of Denison, Texas, University of Texas School of Medicine Galveston, 1897, on the staff of the Denison City Hospital and formerly president of the board, formerly member of the staff of the Missouri, Kansas and Texas Railroad Employees Hospital, local surgeon for the Kansas, Oklahoma and Gulf Railway and the Southern Pacific Railroad, aged 68, died March 1, in the Baylor University Hospital, Dallas, of endocarditis and septicemia following a transurethral prostatectomy.

Harl H. Bronson, Kansas City, Mo., Marion-Sims College of Medicine St. Louis, 1896, aged 67, died, February 3.

John Creighton Buchanan, Winnsboro, S. C., Medical College of the State of South Carolina Charleston, 1887, chairman of the board of public works of Winnsboro, aged 80, died suddenly, February 28, of coronary thrombosis.

George Washington Buckner, Evansville, Ind., Indiana Eclectic Medical College, Indianapolis, 1890, formerly U. S. minister to Liberia, on the staff of the Welborn-Walker Hospital, aged 87, died, February 17, of myocarditis.

Neill Henry Buie, Fayette, Miss., Medical Department of Tulane University of Louisiana, New Orleans, 1890, aged 76, died February 26, of carcinoma of the lungs with metastases.

Robert Ira Bull of Newark, N. J., Long Island College Hospital, Brooklyn, 1904, aged 62, died February 17, in the Presbyterian Hospital.

Elham Baxter Burns of Etern, Miss., Vanderbilt University School of Medicine, Nashville, Tenn., 1915, aged 59, died, February 12, of pneumonia and rheumatic fever.

Charles Augustus Caldwell, Blitheville, Ark. (licensed in Arkansas in 1903), member of the Arkansas Medical Society, aged 65, died, February 8.

Hawes Campbell, Enfield, Va., University College of Medicine, Richmond, 1898, member of the Medical Society of Virginia, health officer of King William County, aged 69, died, February 23, of a self-inflicted gunshot wound.

Lloyd Logan Carr, Baltimore, Jefferson Medical College of Philadelphia, 1876, member of the Medical Society of the State of New York, aged 89, died, February 21, of heart disease.

William Henry Carter, Wichita, Kan., Kansas City (Mo.) Medical College, 1904, member of the Kansas Medical Society, formerly on the staff of the Wichita Hospital, aged 65, died, February 12, of angina pectoris.

John Bunyon Chapman, White Bluff, Tenn. (licensed in Tennessee in 1910), aged 70, died, February 11, in Nashville.

Howard Paxton Collings of Hot Springs National Park, Ark., Bellevue Hospital Medical College, New York, 1891, member of the House of Delegates of the American Medical Association in 1905, past president of the Garland County Medical Society, fellow of the American College of Surgeons, aged 78, on the staffs of the Ozark Sanatorium and St. Joseph's Infirmary, where he died, March 5, of coronary occlusion.

John F. Culler, Lucas, Ohio, Jefferson Medical College of Philadelphia, 1886, aged 82, died, February 24, of cerebral hemorrhage.

Chester C. Dodge, Chicago, Chicago Homeopathic Medical College, 1887, a retired school principal, aged 91, died, March 13, of arteriosclerotic decompensated heart disease.

George William Fuller, Long Beach, Calif., Hospital College of Medicine, Louisville, Ky., 1901, aged 68, died, February 21, of coronary thrombosis.

Jacob Arthur Fulton, Astoria, Ore., Northwestern Medical College, St. Joseph, Mo., 1881, Bellevue Hospital Medical College, New York, 1884, member of the Oregon State Medical Society, fellow of the American College of Surgeons, on the staff of the Columbia Hospital, past president of the staff and

was instrumental in the establishment of a nurses' training school at St. Mary's Hospital, where he died, February 21, of carcinoma of the liver, aged 85.

Pattison Fulton, Cincinnati, Hahnemann Medical College and Hospital of Philadelphia, 1940, resident assistant in the department of pathology at the Good Samaritan Hospital, commissioned a lieutenant, junior grade, medical corps of the U. S. Naval Reserve, attached to the Marine Corps, posthumously awarded the Silver Star Medal for conspicuous gallantry and intrepidity, aged 27, died, December 3, at Guadalcanal, Solomon Islands, of shrapnel wounds received in action two days earlier.

Bert Edward Greer, Dallas, Texas, Washington University School of Medicine, St. Louis, 1900, member of the State Medical Association of Texas, aged 66, on the staffs of St. Paul's Hospital and the Methodist Hospital, where he died, February 25, of uremia and acute nephritis.

Frederick Casper Harms, Saugerties, N. Y., University and Bellevue Hospital Medical College, New York, 1909, veteran of the Spanish-American War, aged 63, died, February 15, of coronary occlusion and arteriosclerosis.

Henri Joseph Ap John, Jacumba, Calif., Willamette University Medical Department, Salem, Ore., 1892, at one time associated with the Indian Service, aged 76, died, February 26, of arteriosclerotic heart disease.

Howard Hill Markel of San Francisco, University of California Medical Department, San Francisco, 1911, assistant clinical professor of orthopedic surgery at his alma mater, president-elect of the Western Orthopedic Association, member of the American Academy of Orthopaedic Surgeons, member of the board of the California Society for Crippled Children, for many years consultant to the Southern Pacific General Hospital, on the staffs of St. Francis Hospital and the University of California Hospital, aged 63, died, February 13, of coronary disease.

Harriet L. Post, Duluth, Minn., Woman's Medical College of the New York Infirmary for Women and Children, New York, 1883, aged 83, died, February 24, of cerebral arteriosclerosis and rheumatic heart disease.

John Calhoun Rice, Braden, Tenn., Memphis Hospital Medical College, 1902, member of the Fayette County School Board, aged 64, died, February 13, in the Baptist Memorial Hospital, Memphis, of coronary occlusion.

Samuel Henry Smith of Cincinnati, Medical College of Ohio, Cincinnati, 1907, aged 68, member of the staff of the Good Samaritan Hospital, where he died, February 6, of chronic obstructive pulmonary emphysema, bronchopneumonia and myocardial insufficiency.

Joseph Townsend Travers of New York, Long Island College Hospital, Brooklyn, 1908, member of the Radiological Society of North America, Inc., on the staffs of the Bellevue, Manhattan State and Jewish Memorial hospitals, aged 55, died, February 20.

J. R. Whittington, Gloster, Miss., Louisville (Ky.) Medical College, 1873, aged 93, died, February 28.

DIED WHILE IN MILITARY SERVICE

Martin Edward Harlan, Onawa, Iowa, State University of Iowa College of Medicine, Iowa City, 1938, member of the Iowa State Medical Society, on the staff of the Onawa Hospital, aged 31, lieutenant, junior grade, M. C., U. S. Naval Reserve, was accidentally drowned in Australia, February 20.

George William Smith, Niagara Falls, N. Y., Dalhousie University Faculty of Medicine, Halifax, N. S., Canada, 1925, member of the Medical Society of the State of New York, captain in the medical corps of the United States Army Air Corps, aged 42, died, March 22, in Salt Lake City.

KILLED IN ACTION



LIEUT. (J.G.) PATTISON FULTON, M. C.,
U. S. N. R., 1915-1942

Medical Examinations and Licensure**COMING EXAMINATIONS AND MEETINGS****NATIONAL BOARD OF MEDICAL EXAMINERS
EXAMINING BOARDS IN SPECIALTIES**

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL April 24 page 1410

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INDIANA Indianapolis Sept 14 16 Sec Board of Medical Registration & Examination Dr W C Moore 301 State House Indianapolis

KANSAS Kansas City May 19 20 Sec Board of Medical Registration and Examination, Dr J F Hassig 905 N Seventh St. Kansas City

KENTUCKY Louisville, Nov 15 17 Sec Dr A T McCormack 620 S Third St. Louisville

LOUISIANA New Orleans May 6 8 Sec Dr R B Harrison 1507 Hiberna Bank Bldg New Orleans

MAINE Augusta July 6 7 Sec Dr Adam P Leighton 192 State St Portland

MARYLAND Homoeopathic Baltimore June 15 16 Sec Dr J A Evans 612 W 40th St Baltimore

MASSACHUSETTS Boston July 13 16 Sec Board of Registration in Medicine Dr H Q Gallupe 413 F State House Boston

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NEVADA Carson City May 3 Sec Dr Richard A Pettit 215 North Carson St Carson City

NEW HAMPSHIRE Concord Sept 9 10 Sec Board of Registration in Medicine Dr D G Smith State House Concord

NEW JERSEY Trenton June 15 16 Sec Dr E S Hallinger 28 W State St Trenton

NORTH CAROLINA Raleigh June 14 18 Sec Dr W D James Hamlet

NORTH DAKOTA Grand Forks July 6 9 Sec Dr G M Williamson 4 1/2 S Third St Grand Forks

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UTAH Salt Lake City June Dir Department of Registration Mr G V Billings 324 State Capitol Bldg Salt Lake City

WEST VIRGINIA Charleston July 6 8 Commissioner Public Health Council Dr C F McClintic State Capitol Charleston

WYOMING Cheyenne June 7 8 Sec Dr M C Keith Capitol Building Cheyenne

* Basic Science Certificate required

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**Bureau of Legal Medicine
and Legislation****MEDICOLEGAL ABSTRACTS**

Workmen's Compensation Acts A Mere Allergic Condition Not Compensable—The workman, a man of about 41 years of age was employed from 1935 to August 1940 in the gasoline and petroleum products bulk station of the defendant corporation unloading gasoline from tank cars and loading gasoline into trucks. Sometime after entering into his employment he developed a dermatitis or skin eruption which did not result in any disability. In the summer of 1939 an eruption developed on his hands, arms and face which was diagnosed by a dermatologist as an allergic dermatitis due to contact with gasoline and for which he was treated at intervals for about two months. On April 27, 1940 he again developed an eruption on his hands and was again treated until June 22, 1940, when the eruption was pronounced as cured. He continued at his regular work until Aug 31 1940, when the employment was terminated by the employer because the workman "was allergic to gasoline poison. He instituted proceedings under the workmen's occupational disease act of Indiana for compensation, "alleging that in the performance of his duties [of his employment] he was exposed to an occupational disease and that he is afflicted therefrom with 'gasoline poisoning-dermatitis-due to gasoline poisoning.'" The industrial board found that the workman contracted an occupational disease by reason of his employment, that he was totally disabled from that disease on Aug 31 1940, the date his employment was terminated by the employer and that he was totally disabled from that date until the hearing before the board, some four months later. An award of compensation was made accordingly in his favor, and the employer appealed to the appellate court of Indiana.

The employer contended that there was no evidence to sustain the finding of the industrial board that the workman became totally disabled on Aug 31, 1940 on account of an occupational disease and that there was no evidence to support the finding that the disability was continuous from that date until about four months later. The workmen's occupational disease act of Indiana, said the appellate court, provides that

The term disability means the event of becoming disabled from earning full wages at the work in which the employee was engaged when last exposed to the hazards of the occupational disease by the employer from whom he claims compensation or equal wages in other suitable employment and disability means the state of being so incapacitated (Section 16503 Baldwin's Ind Statute Supp 1937 to 1934)

Applying the facts in this case, said the court to the section just quoted we conclude that the finding and award of the industrial board was erroneous. The workman was not disabled on the 31st day of August 1940. The evidence is absolutely to the contrary. Nor is there any evidence that the workman was disabled subsequent to that time. In fact, the workman's attending physician testified that the cause of the dermatitis was contact with gasoline and that functionally the workman has a normal body and that he can engage in any other activity that any other human being can provided he has the training and equipment, and that he is not disabled from following any other occupation except that which exposes him to gasoline and that he always will have that allergy. It is true continued the court that the workman possibly still has the allergy and that if he comes in contact with gasoline there is a probability of his being afflicted with the dermatitis again but on Aug 31 1940 he was not so afflicted. When his employment was terminated on that date he suffered no disability that caused any loss of time or wages or that would entitle him to be designated as disabled under the act. While it may be said that the dermatitis from which the workman suffered was contracted by coming

in contact with gasoline while working for the employer, the workman was not so afflicted on the date of the termination of his employment nor has he been since that date. It is possible that the allergy still exists, but a fair interpretation of the act leads us to the conclusion that a more allergic condition from which some affliction might develop was not contemplated in the act.

The award in favor of the workman was accordingly reversed—*Smolan Refining Co v West, H N E (2d) 175 (Ind, 1912).*

Society Proceedings

COMING MEETINGS

HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION, CHICAGO, BEGINNING JUNE 7 DR OTIS WELSH, 535 NORTH CLARIBORN ST., CHICAGO, SECRETARY

American Association of Genito-Urinary Surgeons, Stockbridge Mass., June 10-12 Dr Charles C Higgins, 2020 East 93d St., Cleveland, Secretary

American Association of Industrial Physicians and Surgeons Rochester, N. Y. May 25-27 Dr L. C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director

American Association on Mental Deficiency, New York May 12-15 Dr Neil A. Dayton Mansfield Training School Mansfield Depot, Conn., Secretary

American College of Radiology, Chicago, June 6 Mr Mac F. Cahal, 540 North Michigan Blvd., Chicago, Executive Secretary

American Gynecological Society, Hershey, Pa. May 31-June 2 Dr Howard C. Taylor Jr., 842 Park Ave., New York, Secretary

American Neurological Association, New York, May 6-7 Dr Henry A. Riley, 117 East 72d St., New York, Secretary

American Ophthalmological Society, Hot Springs, Va., May 31-June 2 Dr Walter S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary

American Psychiatric Association, Detroit, May 10-13 Dr Winfred Overholser, St. Elizabeth's Hospital, Washington, D. C., Secretary

American Psychoanalytic Association, Detroit, May 9-11 Dr Leo H. Bartemeier, General Motors Bldg., Detroit, Secretary

American Society of Clinical Pathologists, Chicago, June 4-6 Dr Alfred S. Giordano, 531 North Main St., South Bend, Ind., Secretary

American Surgical Association, Cincinnati, May 13-14 Dr Warfield M. Piror, Johns Hopkins Hospital, Baltimore, Secretary

California Medical Association, Los Angeles, May 2-3 Dr George H. Kress, 450 Sutter St., San Francisco, Secretary

Connecticut State Medical Society, New Haven, May 25-27 Dr Creighton Barker, 258 Church Street, New Haven, Secretary

Georgia Medical Association of Atlanta, May 11-14 Dr Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary

Illinois State Medical Society, Chicago, May 18-20 Dr Harold M. Camp, 224 South Main St., Monmouth, Secretary

Iowa State Medical Society, Des Moines, April 29-30 Dr Robert L. Parker, 3510 Sixth Avenue, Des Moines, Secretary

Maryland Medical and Chirurgical Faculty of, Baltimore, April 27-28 Dr W. Houston Toulson, 1211 Cathedral St., Baltimore, Secretary

Massachusetts Medical Society, Boston, May 24-26 Dr Michael A. Tighe, 8 Fenway, Boston, Secretary

Minnesota State Medical Association, Minneapolis, May 17-19 Dr B. B. Souster, 493 Lowry Medical Arts Bldg., St. Paul, Secretary

Mississippi State Medical Association, Jackson, May 11-13 Dr T. M. Dye, Clarksdale, Secretary

New Hampshire Medical Society, Manchester, May 11 Dr Carleton R. Metcalf, 5 South State St., Concord, Secretary

New Jersey Medical Society of, Newark, May 25-26 Dr Alfred Stahl, 55 Lincoln Park, Newark, Secretary

New York Medical Society of the State of, Buffalo, May 3-6 Dr Peter Irving, 292 Madison Ave., New York, Secretary

North Carolina Medical Society of the State of, Raleigh, May 10-12 Dr Roscoe D. McMillan, Red Springs, Secretary

North Dakota State Medical Association, Bismarck, May 10-11 Dr L. W. Larson, 221 Fifth Street, Bismarck, Secretary

Oklahoma State Medical Association, Oklahoma City, May 11-12 Dr Lewis J. Moorman, 210 Plaza Court Bldg., Oklahoma City, Secretary

Rhode Island Medical Society, Providence, June 2-3 Dr William P. Buffum, 122 Waterman St., Providence, Secretary

West Virginia Medical Association, Charleston, May 17-18 Mr Charles Lively, 1031 Quarrier St., Charleston, Executive Secretary

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Fifteenth Annual Meeting, held in Chicago, Nov. 6 and 7, 1942

The President, DR ARLIF R. BARNES, Mayo Clinic, Rochester, Minn., Presiding

(Continued from page 1413, Volume 121)

Icterus Accompanying Pneumonia in the Negro

DRS. EDWARD L. TURNER, MICHAEL J. BENT, GUERNEY D. HOLLOWAY and JOHN R. CUFF, Nashville, Tenn. Basal physiologic factors that might indicate a racial predisposition to jaundice were ruled out by studies of 98 normal Negro subjects by checking erythrocyte and leukocyte counts, hemoglobin, bleeding and coagulation time and corpuscular fragility. Using rabbits and dogs, it was found that icterus could not produce accompanying pneumonia unless there was accompanying liver damage. Liver damage was produced by means of carbon tetrachloride, by high fat diets and finally by nutritionally inadequate diets identical with those consumed by some of the Negro patients before they developed pneumonia. When pneumonia was artificially induced in animals whose livers had been damaged either through the use of carbon tetrachloride or through nutritionally deficient diets, van den Bergh reactions became positive, while they remained negative in animals fed normal diets and then given pneumonia. In a final series of 7 dogs, 3 were kept on diets that were entirely adequate and 4 were placed on a diet of overcooked greens, fat meat, corn meal and sorghum, similar to the diets used by many Negro families in the lower economic brackets. When pneumonia was produced in these 7 animals three to seven weeks following the initiation of the dietary regimen, positive van den Bergh reactions were obtained in all the animals on the deficient diets while the van den Bergh test remained negative in the controls.

It is our belief that the high incidence of icterus observed in the 74 Negro patients with lobar pneumonia was due primarily to nutritional deficiencies which rendered the liver more vulnerable to the effects of pneumococcal infection.

DISCUSSION

DR. M. A. BLANKENHORN, Cincinnati: I should like to ask whether there is any relation between the fatality rate and the icterus. Were the fatality rates higher in Negroes than in white persons in that particular epidemic? In the Cincinnati General Hospital Negro patients show no higher fatality rates than white patients, nor do they show higher incidence of nutritional disease.

DR. EDWARD L. TURNER, Nashville, Tenn.: In a group of 74 patients the mortality rate was in the neighborhood of 25 per cent. It was lower than the average hospital mortality rate. Since we have used sulfonamide drugs and have been pushing the idea of vitamin intake a little more in our patients we have seen a definite lowering of the incidence of jaundice in this group. It is rather interesting that Osler said some years ago that jaundice occurs in pneumonia in various degrees in different years. In some years it is more, in other years it is less. Our patients were not necessarily underweight but they certainly had a severe vitamin deficiency. We see quite a bit of subclinical pellagra. We see many cases of beriberi and there is a great deal of what might be called subclinical vitamin deficiency in the Negro when on this kind of a diet.

Prevention of Tooth Decay

DR. JULIAN D. BOYD, Iowa City: This report is offered as evidence that tooth decay is preventable through measures directed not toward the tooth but toward the advancement of the level of nutrition. It is based on the prolonged study of 55 teen-aged children, each of whom was observed repeatedly both as to medical and as to dental status over periods of years. In all but 3 of the subjects caries made no advance for long periods of time, in most of them no significant degree of advance occurred throughout observation. With the exception of the 3 mentioned, all were living under a prescribed regimen of diet and their medical condition (diabetes mellitus) made it likely that the prescribed regimen of diet was followed with fair constancy. Prior to the establishment of the dietary regimen these children had caries experience in degree similar to what would be predicted for an average child population.

Subsequent to the establishment of the diet the incidence of caries progression was inversely proportional to the constancy of diet observance. Twenty children had no advance of caries for an average interval of five and one-half years, 35 had no caries for three years or longer, 44 had none for periods exceeding two years. For the whole group the average rate of advance was less than a fifth of what would be predicted for the general child population. The 3 children who failed to show arrest of caries were unable because of socioeconomic reasons to follow the prescribed regimen for any significant period, their rate of caries advance equaled or surpassed the predicted "normal" rate. In other subjects, when caries was observed to advance, the period of advance usually could be identified with an interval of abandonment or of relaxation of the prescribed regimen. During such periods the rate of advance corresponded with that observed in the average child without diet supervision.

The degree of freedom from caries at 13 years of age was directly proportional to the duration of diet control prior to that time, all those whose diet control was instituted prior to the age of 6 years were entirely free from caries at the age of 13. The annual caries increment subsequent to 13 years likewise was closely dependent on the prior duration of diet control but was lessened notably even in those who had assumed diet control in their teens.

Correlations were made between the fluorine content of domestic water supplies of each child and his extent and increment rate of caries. No significant correlation was demonstrated.

This report is not concerned with the characteristic of the diabetic diet which led to the reduction of caries. The point at issue is that caries progression is preventable and that this is accomplished through measures not directed toward the teeth but toward the maintenance of excellent health and nutrition in the subject as a whole.

DISCUSSION

DR JOHN TUCKER, Cleveland. This paper gives further evidence of the importance of a well balanced diet in the maintenance of sound tooth structure. I believe however, that once more the dentists are becoming interested in the relationship of bacterial growth to tooth decay. Many of us recall the frequent admonitions of our parents to avoid eating candy and sweets, especially at night. With this thought in mind, I should like to ask Dr Boyd whether he restricted carbohydrates in the children's diet, especially at the evening meal or at bedtime.

DR JULIAN D BOYD, Iowa City. The intake of sweets automatically is lessened if a child eats all the foods his body needs for proper functioning. Dr Isie Macy (Nutrition and Chemical Growth in Childhood, Springfield, Ill., Charles C Thomas, 1942, vol 1, p 84) recently presented data to indicate that the desire for sweets is lessened if an optimum diet is ingested. I feel that bacteria play no more than a secondary role in the causation of caries and that if sugar promotes tooth decay it does so through replacement of foods needed for the body's normal functioning rather than by any regional effect. I tell parents that if children eat all the dietary ingredients prescribed I will not prohibit the use of sweets in reasonable amounts. I prescribe daily 1 quart of milk, one or two eggs, a liberal serving of meat, fish, chicken or liver, two liberal servings of vegetables, a similar amount of fruit and a teaspoon of cod liver oil. Such a basic diet will furnish only about 1,200 calories. The remainder of the energy quota may be supplied through any type of food. I believe that, if the child eats and assimilates the foregoing foodstuffs daily, caries will be negligible in its extent.

Histaminic Cephalgia Resulting in Production of Acute Duodenal Ulcer

DR BAYARD T HORTON, Rochester, Minn. The outstanding complaint of histaminic cephalgia is of acute attacks of excruciating pain which involves the eye temple neck and often the face. It usually occurs at night, will awaken the patient out of a sound sleep and cause him to jump out of bed and pace the floor in a vain attempt to get relief. These attacks usually last from a half to one hour. The pain is associated with the following signs all of which appear on the affected side: profuse watering and congestion of the eye,

rhinorrhea or stuffiness of the nose, increased surface temperature, and often swelling of the temporal vessels. These headaches have been refractive to other types of treatment but are eradicated within a period of two to three weeks by "desensitization" to histamine.

The direct relationship between acute duodenal ulcer with crater and histaminic cephalgia has been studied in detail in 10 cases during the past year. The formation of the ulcer in each instance has been secondary to the attacks of histaminic cephalgia. During such attacks the gastric acids rise to an abnormally high level just as they would if the patient had received approximately 0.35 mg of histamine subcutaneously. These subjects have all been hypersensitive to histamine—so much so that even 0.01 mg of histamine has been sufficient in many instances to precipitate a rise in gastric acidity which is the same as that which occurs among normal subjects following the subcutaneous administration of 0.35 mg of histamine base. Treatment of the histaminic cephalgia by means of histamine desensitization without other treatment for the duodenal ulcer itself not only has eradicated the attacks of histaminic cephalgia but has permitted the duodenal ulcer to heal promptly within a period of two weeks.

DISCUSSION

DR ELMER L SEVRINGHAUS, Madison, Wis. I have seen 2 patients who almost met Dr Horton's criteria. I can appreciate the difficulty from overtreatment when the dosage of histamine is too large. I should like to inquire whether unilateral lacrimation is part of the syndrome. Just recently Dr St John and I examined a patient who had typical bilateral headache produced by the hypodermic administration of histamine. I wonder whether Dr Horton feels that there are other varieties of histamine cephalgia.

DR G E WAKERLIN, Chicago. Several groups of investigators have reported that lesions in the upper brain stem give rise to gastric and duodenal ulcers in dogs which can be prevented by bilateral vagotomy. It is possible that the genesis of the ulcers in these patients may in part be due to impulses passing down from the cerebral cortex and the diencephalic region via the vagi to the stomach and duodenum.

DR HEINRICH NECHELES, Chicago. I wonder whether Dr Horton is still using histaminase in the treatment of this syndrome.

DR BAYARD T HORTON, Rochester, Minn. In practically every instance the attacks of histaminic cephalgia have been unilateral. In about 3 instances out of perhaps 200 subjects I have observed bilateral lacrimation. This represents the exception, not the rule. I am not familiar with lesions in the brain stem producing peptic ulcers which might in some way be comparable to the series of patients I have just presented. It must be kept in mind that these subjects with histaminic cephalgia have no clinical evidence of lesions in the brain stem and neurologically they are objectively negative. Histaminic cephalgia is such a clearcut clinical syndrome that one no longer needs to defend it. I have been able to eradicate attacks of histaminic cephalgia in a few subjects by the giving of histaminase in large amounts by mouth. That histaminase can be useful as a therapeutic agent when taken by mouth, in my experience at least, is definitely established. As to just how it acts I do not know.

Treatment of Essential Hypertension with Large Doses of Ascorbic Acid

Drs N S DAVIS III and EDWARD FALK POSER, Chicago. Ascorbic acid may be a constituent of the enzymes required for the normal oxidation dehydrogenation or deamination of amino acids by renal cells. By such action it may prevent the formation of pressor amines and renin in the ischemic kidney or it may inhibit the reaction between renin and hypertensinase to form hypertensin (angiotensin). By its action in the adrenal glands ascorbic acid may inhibit the formation of hypertensinogen. The administration of ascorbic acid in doses of 1 Gm daily to a small number of patients with essential hypertension has caused objective or subjective clinical improvement or both in almost all of those to whom it has been administered. It seems to offer a logical physiologic approach to the treatment of essential hypertensive cardiovascular renal disease which is worthy of further trial.

DISCUSSION

Dr G E WAKERLIN, Chicago It is known that ascorbic acid functions as a hydrogen acceptor in plant cells. This may also be true for animal cells but remains to be proved. On the basis of the probability that ascorbic acid plays a role in the oxidative and metabolic functions of the cell, it may conceivably alter or depress the pressor mechanism considered to be present in the kidney of at least some patients with essential hypertension. More work must be done, since these experiments are suggestive but do not prove that ascorbic acid has an antihypertensive effect in essential hypertension. We are going to try large doses of ascorbic acid in experimental renal hypertension in dogs. There are some reports that vitamin B complex is effective in clinical essential hypertension. I used large doses of the complex in one renal hypertensive dog for two months without obtaining any reduction in blood pressure.

Dr R D TAYLOR, Indianapolis There was no mention of diagnosis in this group of patients. How often and under what conditions were these pressures taken? In a small group of patients isolated blood pressure readings can have no value. Dr E V Allen has recently pointed out the reasons why there are upward of sixty preparations alleged to lower arterial blood pressure. The error of isolated pressure readings was his main point. Have there been any checks of improvement other than arterial blood pressure readings?

Dr W E BROWN, Omaha I should like to ask if there were any blood studies on ascorbic acid, and whether there were any clearance studies to estimate the patient's tolerance for ascorbic acid.

Dr N S DAVIS III, Chicago I am in agreement regarding the wide fluctuations in blood pressure that were mentioned. For that reason I presented cases in which blood pressure readings had been taken by the same individual under similar circumstances over a period of years before the therapy was commenced, in order that its effect might be compared with the blood pressure levels at the same season in previous years. The effects of psychic upsets on the blood pressure level is also shown in some of the records presented. I am planning to study the ascorbic acid blood levels and clearance of such patients before and after treatment is instituted but these studies have had to be postponed.

Treatment of Experimental Renal Hypertension with Vitamin A Concentrate

Dr G E WAKERLIN, C A JOHNSON, PH D, W G MOSS, MS, and E L SMITH, PH D, Chicago We have studied the effect of a vitamin A concentrate by mouth in experimental renal (Goldblatt) hypertension in dogs. Striking reductions in blood pressure were observed in three renal hypertensive dogs treated daily with 200,000 units of vitamin A concentrate in sesame oil by mouth for three months followed by 400,000 units for an additional three months. Two control dogs treated with sesame oil by mouth for six months showed no significant changes in their hypertensive levels. One hypertensive dog has thus far shown no significant change in blood pressure after two months of treatment with 400,000 units daily of a highly purified vitamin A preparation by mouth. Blood serum vitamin A determinations showed good absorption of the purified vitamin A. One hypertensive dog has thus far shown no significant change in blood pressure after two months of treatment with heat inactivated vitamin A concentrate. These incomplete results suggest but do not prove that the antihypertensive activity of the vitamin A concentrate which we have used is due to some heat labile constituent of the concentrate other than vitamin A.

In view of the therapeutic results with the vitamin A concentrate, a study of its prophylactic effect was also made. Thus far 4 dogs have been treated for three months prior to bilateral constriction of the renal arteries with 400,000 units of the concentrate daily by mouth. Two of these dogs developed malignant hypertension following constriction, demonstrating no protection conferred by vitamin A against malignant experimental renal hypertension. The other 2 dogs were not protected against typical benign experimental renal hypertension. Four control dogs were treated prophylactically with sesame oil by mouth. Three of them developed malignant hypertension and the fourth benign hypertension following con-

striction of the renal arteries. These incomplete results again suggest but do not prove that vitamin A concentrate in the dosage used is not effective prophylactically in experimental renal hypertension in dogs.

No evidences of toxicity from the vitamin A concentrate were detected in any of the animals.

The mechanism of the therapeutic effect of vitamin A concentrate in experimental renal hypertension in the dog is obscure. The fact that large doses of vitamin A preparations have been shown to increase the urea, inulin and diodrast clearances of normal dogs suggests that the vitamin A concentrate which we employed may have altered the pathophysiologic pressor mechanism produced by renal artery constriction. Obviously the suggestion that the antihypertensive effect may be due to some heat labile constituent of the concentrate other than vitamin A must be investigated further.

DISCUSSION

Dr A C CORCORAN, Indianapolis I have had under observation 10 patients, 9 of them suffering from essential and 1 from malignant hypertension, in 2 arterial pressure decreased 10-15 mm of mercury during treatment with vitamin A but almost certainly from some other causes. There was no subjective improvement in any, and the patient with malignant hypertension rapidly developed renal and circulatory failure. Renal blood flow and filtration rate increased in 5 patients treated for four weeks and in 1 after three weeks, observations after one or two weeks showed no change in 3 patients and after four weeks in 1. Therefore 5 of 6 patients suffering from essential hypertension showed increased renal perfusion after four weeks' treatment. The increase was in 2 observations associated with increased cardiac output due to tachycardia. Clinically, however, the data do not point to the conclusion that vitamin A is of any real value in the treatment of hypertension in human beings even though renal perfusion is usually increased. In terms of body weight the dose we used is roughly one tenth of that used by the authors. It might be argued that a more beneficial effect might have occurred with larger doses and these are being instituted.

Dr L N KATZ, Chicago During the past six weeks 12 dogs with nephrogenic hypertension, 3 of which showed an associated renal excretory insufficiency, were daily given 400,000 units of vitamin A dissolved in fish oil. No drop in blood pressure occurred. I am thus unable to confirm the results reported.

Dr HARRY GOLDBLATT, Cleveland My associates and I also tried vitamin A, but in inadequate quantity, so that the results, although negative, are of no value. We did try carotene (provitamin A) and gave a large dose (400,000 units daily), which is comparable to the amount of vitamin A administered by Dr Wakerlin and his collaborators. This amount of carotene had no effect on the blood pressure of hypertensive animals. There is a question, however, whether carotene in such quantities is absorbed and transformed to vitamin A. Attempts to demonstrate absorption of this material have given negative results.

Dr G E WAKERLIN, Chicago The difference between the results of Dr Page and his co-workers and our own may be explained in several ways for patients. In the first place, they used a different vitamin A concentrate and our results suggest that the therapeutic effects which we have seen in our dogs are not due to the vitamin itself but to some other constituent of the concentrate. It is still possible that essential hypertension in man may not be the same as experimental renal hypertension in the dog, so that what will affect one may not affect the other. We had planned on using carotene but have not done so yet. In view of our results on the 1 dog with highly purified vitamin A we would not expect to get results from carotene. Perhaps the explanation for the failure of Dr Katz's vitamin A preparation to reduce the pressures of his dogs is due to differences between ours and his concentrates in non-vitamin A constituents. None of our therapeutic animals had excretory insufficiency. They all showed the benign type of experimental renal hypertension. So far we have used only 3 hypertensive animals. The fact that we have had therapeutic success in all 3 does not mean, of course, that if we study another 3 or 6 dogs we may not be unsuccessful in all 3 or 6.

(To be continued)

Current Medical Literature

AMERICAN

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American Journal of Physiology, Baltimore

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Correlation of Functional Changes in Human Stomach

Wolf and Wolff have had an opportunity in a subject with a large gastric fistula to collect at intervals the total volume of secretion in the stomach. An increased parietal cell output was always associated with hyperemia of the gastric mucosa. Hyperemia also accompanied increased motor activity. From the data gathered the authors conclude that when an unusually large volume of gastric juice of high titratable acidity accumulates in an unobstructed stomach during a specified interval it is safe to assume that the mucous membrane is relatively red and that no vigorous contractions are taking place in the

stomach. When under similar circumstances the volume is small and its acidity is highly titratable it is likely that the mucous membrane is relatively engorged with blood and that especially vigorous contractions are taking place. Low acid values with small volumes of gastric juice suggest that the gastric mucosa is relatively pale and that vigorous contractions are not taking place.

Annals of Internal Medicine, Lancaster, Pa

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- Aviation Medicine—Brief History Physical Qualifications for Flying Oxygen Want and Use of Supplementary Oxygen L H Bauer Hempstead N Y—p 1
- *Successful Treatment of Gout E C Bartels Boston—p 21
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- *Ileostomy for Chronic Ulcerative Colitis (End Results and Complications in 185 Cases) J A Barger W W Lindahl F S Ashburn and J deJ Pemberton Rochester Minn—p 43
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Successful Treatment of Gout—Since 1937 Bartels has treated gout with a low purine and fat and high carbohydrate diet with periodic administration of cinchophen. Purine restriction relieves the overburdened purine metabolizing mechanism, the low fat intake prevents purine retention and the high carbohydrate content tends toward the diuresis of uric acid. Cinchophen furthers uric acid elimination. The cinchophen is given in $7\frac{1}{2}$ grain (0.5 Gm) doses three times a day for three days a week. Alcohol is not permitted. When determination of the uric acid every one to three months indicates a reduction in the serum uric acid cinchophen is taken on two days, then one day a week, and when the acid reaches a normal or near normal it is withdrawn. The diet is to be followed indefinitely, but if the uric acid continues at a normal level a more liberal diet is given. Acute attacks are treated by the intravenous injection of dextrose in addition to the regimen. Vitamins A and B are added. At times in gouty arthritis physical therapy is helpful and large troublesome tophi are removed. Of 38 patients treated for at least one year 18 have had the disease for more than nine years (average seventeen), 13 for seven years or less and 7 for three to fifteen years. The 7 did not follow the regimen carefully and used alcohol in varying amounts. In the first two groups there was a drop in the uric acid level and further attacks were prevented. After two years of treatment there were only three minor episodes among the 18 as compared to sixty-one major attacks during an equal previous time. The uric acid level which had ranged from 6.3 to 10.2 mg tell to an average of 6.3. Diet and cinchophen were used three fourths of the total treatment time and diet alone one fourth of the time. Among the 13 patients with an average preregimen uric acid level of 7.6 mg there were four minor as compared to twenty-three major attacks respectively during twenty months during and before treatment. Diet and cinchophen was used half the time and diet alone the rest of the time. The 7 patients with an average pretreatment acid level of 8.5 mg had twelve major and four minor attacks during three years of treatment as compared to twenty-three major attacks during the same length of time before treatment. Their average uric acid level fell to 7 mg. Even patients in the phase of chronic gouty arthritis responded to the treatment. The author urges that other physicians consider the plan.

Ileostomy for Chronic Ulcerative Colitis—The 185 consecutive patients who had had an ileostomy for chronic thrombotic ulcerative colitis at the Mayo Clinic from 1913 through 1939 Barger and his co-workers state comprise 5.5 per cent of all patients treated for the disease at the clinic. Eighty-six had undergone ileostomy because of chronic progressive and intractable symptoms, 63 because of severe and fulminating form and 36 primarily because of complications and sequelae of ulcerative

colitis. Thirty-five patients lived less than fourteen days after ileostomy, 20 lived more than thirteen days but less than six months and thus 130 patients remain concerning whom a study of the effect of ileostomy can be made. Of these 130 patients 37 were satisfied, as they were symptom free or had only mild recurrent symptoms of colitis, 42 also were satisfied, as their frequent symptoms of colonic disease were improved, 25 were not improved (they survived for a considerable time but had severe and frequent recurrence of symptoms) and 26 had no benefit from the ileostomy, their symptoms were severe and frequent and they died within a relatively short time after the first six postoperative months. Therefore the incidence of recurrence of infection in the colon after ileostomy is high. Of 18 patients known to be living fifteen or more years after ileostomy, 10 were females and 8 males and their average age at the time of the ileostomy was 32. The average duration of their symptoms prior to ileostomy was four and a half years but varied from one to fifteen. Thirteen had the ileostomy because of intractable symptoms but without severe exacerbations, 4 for an acute exacerbation of the disease and 1 for rectal stricture and persistent symptoms of perirectal infection. Seven of the 18 had undergone colectomy (2 total) after ileostomy. The several factors that seemed responsible for the satisfactory results in this group of patients were that (1) most of the patients had had the disease for a relatively short time, (2) they were young adults and thus were able to adjust their lives to the handicaps of ileostomy, (3) they were operated on for chronic intractable symptoms and not acute exacerbations and (4) the survival of the 7 after colectomy removed in itself the opportunity for any further development or existence of colonic disease.

Archives of Neurology and Psychiatry, Chicago

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- Amyotrophic Lateral Sclerosis and Related Conditions. Clinical Analysis. R. L. Swank and T. J. Putnam. New York—p. 151.
- Histogenesis of Early Lesions of Multiple Sclerosis. I. Significance of Vascular Changes. I. M. Scheinker. Cincinnati—p. 178.
- *Effect on Electroencephalogram of Changing the Blood Sugar Level. Pauline A. Davis, Cambridge Mass.—p. 186.
- *Results of Insulin and Epinephrine Tolerance Tests in Schizophrenic Patients and in Normal Subjects. H. Freeman, J. M. Looney, R. G. Hoskins and Cora G. Dyer. Worcester Mass.—p. 195.
- *Cerebral Dysrhythmia in Relation to Eclampsia. M. Rosenbaum and G. L. Maltby. Cincinnati—p. 204.
- Intracranial Epidermoids Occurring Simultaneously Below and Above Tentorium. H. A. Black, Brooklyn—p. 214.
- Pseudotuberculous Epilepsy in Children. J. L. Scarff—p. 223.
- Midbrain Deafness. Tumor of Midbrain Producing Sudden and Complete Deafness. P. Slovic, A. Persky and M. Saltzman, Philadelphia—p. 237.
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- Treatment of Schizophrenia. Follow Up Results in Cases of Insulin Shock Therapy and in Control Cases. J. S. Gottlieb and P. E. Huston, Iowa City—p. 266.
- Statistical Control Studies in Neurology. I. Babinski Sign. N. Savitsky and M. J. Madonick, New York—p. 272.
- Aberrant Thyroid Tumor of Vertebrae with Compression of Spinal Cord. Recovery After Operation and High Voltage Roentgen Therapy. P. G. Denker and R. L. Osborne, New York—p. 277.

Blood Sugar and Electroencephalogram.—The electroencephalograms of 40 healthy college students were analyzed by Davis during a routine rest period forty-five minutes after an intravenous injection of insulin (0.05 unit per kilogram), fifteen minutes after the oral ingestion of 50 cc of (Karo) corn syrup and during three minutes of voluntary hyperventilation. There was no consistent relation between the electroencephalographic changes and the pulse rate or blood pressure. As the level of the blood sugar fell to a minimum of 53 to 85 mg per hundred cubic centimeters, the normal alpha activity of the electroencephalogram was increasingly replaced by slower waves, chiefly in the 6 to 8 cycle range. The electroencephalogram returned to normal when the level of the blood sugar was restored, but the changes in the electroencephalogram lagged ten or more minutes behind the changes in the blood sugar. "Slow swings" of two to five seconds' duration often appeared in the frontal record during the height of the insulin reaction. These potential changes apparently originate in the skin of the fore-

head. The conspicuous electroencephalographic changes during the insulin test correlate fairly closely with the appearance of the prominent slow waves during hyperventilation and with the less prominent slow waves in the routine electroencephalogram. Both the insulin test and voluntary hyperventilation apparently accentuate characteristics that are present but less clearly evident in the routine electroencephalogram. The alteration of the blood sugar level does not require the intelligent, active cooperation of a subject and may therefore be applicable for uncooperative or unintelligent subjects. The determination of the effect of the insulin test on the electroencephalograms of abnormal subjects, particularly of known epileptic patients, would be of interest.

Insulin and Epinephrine Tests in Schizophrenic and Normal Subjects.—With the tolerance techniques of Fraser, Albright and Smith, Freeman and his associates investigated the glycemic and cardiovascular effect of insulin and epinephrine on 32 male schizophrenic patients with no physical disease and on 20 normal men. All subjects, 15 to 46 years of age, were studied in a fasting resting state. Half an hour after the injection of insulin the mean value of the blood sugar of the normal subjects decreased to a level of 29.6 mg per hundred cubic centimeters and that for the patients to 39.2 mg. One hour after the injection the respective mean values were 61.1 and 63.6 mg. The indication is that the phase of recovery from the hypoglycemic level was more active in the normal subjects. During the next hour the values for the two groups were similar. Therefore up to this point the trend indicates a greater resistance to insulin, and possibly a less rapid recovery from the hypoglycemic phase, of the patients. Half an hour after the injection of epinephrine the mean for the normal subjects rose 26.1 mg and in one hour 52.7 mg per hundred cubic centimeters. The corresponding increases in blood sugar for the patients were 22.5 and 40 mg. The response to exogenous epinephrine was definitely less in the patients, this seems to corroborate the previous observation of a probable lessened reactivity to endogenous adrenal activity. In general the changes in the blood pressure and pulse rate were greater in the normal subjects, they paralleled the differences in the blood sugar between the two groups.

Cerebral Dysrhythmia in Relation to Eclampsia.—According to Rosenbaum and Maltby, the electroencephalograms of 65 per cent of 20 patients with eclampsia were indicative of cerebral dysrhythmia as compared with 2, or 10 per cent, of 20 patients with preeclampsia. Twelve of the patients with eclampsia had a family and personal history of convulsive disorders, while only 2 of the preeclamptic patients had a similar history. It is suggested that a primary cerebral dysrhythmia may be present in patients with eclampsia and that the associated toxemia may be the "trigger mechanism" that exaggerates the inherent dysrhythmia to the degree that convulsions appear. A careful history with an electroencephalographic study might aid in predicting the development of eclampsia. The prophylactic therapy of eclampsia may include the use of anticonvulsant drugs.

Georgia Medical Association Journal, Atlanta

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- Diagnosis and Treatment of Cancer of Breast. A. P. Stout, New York—p. 1.
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- Treatment of Perforated Peptic Ulcers. Report of Thirty One Cases. M. M. Hagood, Marietta—p. 7.
- Recurrent Convulsions and Allied Disorders. W. A. Smith, Atlanta—p. 10.
- Treatment of Scabies. W. L. Dobes and P. H. Nippert, Atlanta—p. 14.
- Fainting. E. A. Steid Jr., Atlanta—p. 17.
- Subtotal Gastrectomy for Peptic Ulcers. L. Harbin, Rome—p. 19.

Iowa State Medical Society Journal, Des Moines

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Journal of Neurophysiology, Springfield, Ill

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Journal of Urology, Baltimore

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- Carcinoma of Bladder G R Livemore Memphis Tenn—p 164
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- Diagnosis and Management of Congenital Valves at Vesical Neck Report of Cases M F Fowler Atlanta Ga—p 178
- Surgical Treatment of Urogenital Tuberculosis T R Huffines Asheville N C—p 184
- Urethral Caruncle G F McKim P G Smith and T W Rush Cincinnati—p 187
- Role of the Urologic Surgeon in the Armed Forces O S Lowsley New York—p 192
- Preureteric Vena Cava and Its Embryologic Explanation P Gruenwald and S N Surks Chicago—p 193

Ureteral Stricture and Bright's Disease—Hunner has previously traced the evolution of the concept that ureteral stricture may be an important etiologic factor in the development of many cases of Bright's disease. In his experience it has seemed to occur so often that a thorough examination of renal drainage cannot be claimed without a searching investigation, including the bulb test. The symptoms typically associated with ureteral stricture are similar to those of the early stages of Bright's disease. Many of the more pronounced symptoms of the disease, such as persistent headache slow mental function inability to tolerate a sufficient amount of nourishing food and even recurrent convulsive seizures and coma have yielded promptly to the establishment of good renal drainage. Many patients have experienced this phenomenal improvement after prolonged treatment by other measures failed. The author could not account for the beneficial results obtained by his 9 patients on any basis except that better renal drainage was established. None of the patients had a prolonged rest period in the hospital, except when an operation was needed for some associated secondary complication. None of those with renal infection were given antiseptic drugs. Each was allowed

to choose his diet. Most of them were soon able to resume their regular work. The condition of 1 patient a pregnant woman, was considered only potentially as Bright's disease. Without drainage the patient would have aborted and in all probability would have remained an invalid. At the end of four years she was in excellent health, having carried to term an uncomplicated pregnancy fifteen months before. Three patients engaged in fairly normal activities for five six and nine years respectively or until death after the ureteral obstruction had been identified and dealt with. Before, it was doubtful whether any of these 3 patients would have lived for even one year if adequate renal drainage had not been established and maintained. The remaining 5 patients are still on the active list for twenty-one, twenty-six, twenty-five, sixteen and twenty-five years respectively after their first treatments. Their average age is now about 62 years. The author believes that not 1 of these 5 persons would be living today had they been dependent on the traditional methods of urologic treatment.

Endocrine Treatment of Cancers of Prostate—During the last eleven months Dean and his colleagues have used estrogen in the treatment of 60 patients with carcinoma of the prostate. In their experience surgical castration almost invariably has spectacularly relieved patients with prostatic cancer. Only 2 men failed to show improvement. Almost without exception pain disappeared within forty-eight hours appetites became remarkably good, body weight increased rapidly, strength returned and some of them resumed their former occupations. Eight patients who were able to tolerate 2 to 5 mg of diethylstilbestrol daily were generally improved, the improvement was as great as that following orchiectomy although possibly somewhat slower. Under diethylstilbestrol the size of the prostatic tumor appeared to diminish regularly and the amount of residual urine decreased. The contormation of the bodies of some of these men became feminine. There were no relapses although 1 patient failed to respond favorably. From the research point of view it seems that the natural history of prostatic cancer may be definitely modified by changes in the endocrines, which changes can be produced by surgical castration as well as by the oral administration of estrogens. From this starting point not only the cure but probably also the prevention of prostatic cancer can be brought about by the clinician working in collaboration with the biochemist.

New York State Journal of Medicine, New York

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- Tuberculosis Involving Genitourinary Tract Following Trauma J C McClelland Toronto Canada—p 135
- Recent Advances in Roentgen Diagnosis of Diseases of Chest Including Body Section Roentgenography (Planigraphy) B R Young Philadelphia—p 140
- Mortality from Diseases Treated with the Sulfonamide Drugs W D Sutliff New York—p 144
- Role That Industry Can Play in Elimination of Tuberculosis W A Sawyer Rochester—p 148
- Control of Tuberculosis in Children by Prevention of Its Spread Through Contact W J Orr Buffalo—p 152
- Sulfonated Hydrogenated Castor Oil as Detergent and Ointment Base S Quimbly and G W Fiero Buffalo—p 157
- Soap and the Soap Problem H Sharlit New York—p 160

Northwest Medicine, Seattle

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- Physiology of Aging A J Carlson Chicago—p 6
- Human Infection by Pasteurella Pseudotuberculosis Report of Case with Recovery G A C Snyder and Naomi J Vogel Spokane Wash—p 14
- Rectus Hemorrhage Simulating Appendicitis W B Hutchinson Seattle—p 16
- Curability of Gastric Carcinoma D Metheny Seattle—p 17

Physiological Reviews, Baltimore

23 1-100 (Jan) 1943

- Physiologic and Clinical Tests of Autonomic Function and Autonomic Balance C W Darrow Chicago—p 1
- Muscular Disorders Associated with Deficiency of Vitamin E A M Pappenheimer New York—p 37
- Microrespiration Technique J M Tobia Chicago—p 31
- Interrelations of Calcium and Ascorbic Acid to Cell Surfaces and Inter-cellular Substances and to Physiologic Action Mary Elizabeth Reid Bethesda Md—p 50

Rhode Island Medical Journal, Providence

26 1-18 (Jan) 1943

- Anterior Poliomyelitis Brief Review K K Gregory, Providence —p 1
- Levin Technique for Infantile Paralysis Excerpts from the Continuation Course (for Physicians) at the University of Minnesota W A Moran, Providence —p 5

Surgery, Gynecology and Obstetrics, Chicago

76 1-128 (Jan) 1943

- Injuries of Parities and Extremities S I Koch, Chicago —p 1
- *Mysterious Mixed Tumors of Salivary Glands J McFarland, Philadelphia —p 23
- Amputations for Advanced Arterial Disease Critical Analysis of Mortality I A Hays, Chicago —p 35
- Method for Obtaining Venograms of Veins of Extremities H Mahorner, New Orleans —p 41
- Carbon Dioxide Snow Electrocautery Technique for Occlusion of Large Veins Suggested Application to Venous Angioma of Brain J Ebin, New York —p 45
- *Complications and Causes of Mortality of Surgical Treatment of Carcinoma of Colon and Rectum J H Garlock, J Ginzburg, and A Glass, New York —p 51
- Uterine Contractility During Labor and Effects of Parity and Dystocia on It Study of 105 Patients with Fernald Tocograph D P Murphy, Philadelphia —p 60
- Study of Posterior Urethra in Newborn Female F A Benvenuti, New York —p 64
- Pathology and Treatment of Indolent Ulcers of Leg R I Heller, Chicago —p 77
- *Effect of Various Blood Substitutes in Resuscitation After an Otherwise Fatal Hemorrhage A C Ivy, H Greengard, I I Stein Jr, I S Grodins, and D I Dutton, Chicago —p 85
- Sliding or Parapertoneal Hernia of Pelvic Colon R K Brown, Buffalo —p 91
- Intercutaneous Intussusception in Adults W H Gerwik Jr and H B Stone, Baltimore —p 95
- Full Thickness Defects of Cheek Involving Angle of Mouth Method of Repair W J MacFec, New York —p 100
- Certain Plastic Problems in Surgery of Peripheral Nerves J R Carmichael and A B Wallace, Edinburgh, Scotland —p 106
- Gastrostomy and Gastroileal Ulcer J A Smith and A B Rivers, Rochester, Minn —p 110
- Plasma Vitamin C and Prothrombin Concentration in Pregnancy and in Threatened Spontaneous and Habitual Abortion C T Javert and H J Stander, New York —p 115
- Acute Hematogenous Osteomyelitis Juvenilis M Gage, New Orleans —p 123

Mysterious Mixed Tumors of Salivary Glands—McFarland has collected approximately 400 cases of mixed tumors of the salivary glands—that is, the parotid, the submaxillary and the sublingual—that were seen at various hospitals in and around Philadelphia during more than twenty-five years. His method of finding cases is to examine microscopic slides of salivary gland tumors as may have accumulated in the laboratories, to select the ones that conform to the taxonomic requirements and then to review the protocols for the essential clinical information. Some 200 patients in six Philadelphia hospitals were operated on by seventy-three surgeons. The microscopic structure of these tumors is extremely variable. Harvey, Dawson and Innes made use of fifty-four photomicrographs to explain the variation of their appearance. With such complexity it may become difficult to decide whether a given tumor is a mixed tumor or not. The inclusion or exclusion of such tumors must depend on the theory of origin to which one inclines. If one follows Cuneo and Veau and Chevassu in believing that the tumors arise through the "enclavement" of embryonal substance in the developing face and neck, they may be retained, if, on the other hand, the origin of the tumors from neoplasia of the respective salivary glands is accepted, they must be eliminated. The author's studies agree with the latter, now popular, view. His analysis of the infiltrative growth, local destructive properties, recurrence, metastasis, local interference with function and general toxic action of absorbed tumor products leaves him in some perplexity as to whether mixed tumors are malignant or not. A good deal of this is the result of the different terminology used by pathologists. It might be best to say that they are mixed tumors and will probably recur. There has been an occasional recurrence twenty, thirty and forty years after operation. In mixed tumors postponing surgical intervention ordinarily has everything in its favor. It is wiser not to operate as long as the patient is willing to wait. It seems useless to attempt to control or modify the growth of the tumor or to

postpone its recurrence by the use of x-rays or radium. Supposed indications for complete surgical excision are the embarrassment caused the patient by the disfigurement, limited and difficult movement of the mandible, pain from pressure on the sensory nerves and a sudden and rapid increase in the size of the tumor. If the tumor is a mixed tumor, rapid growth usually supervenes after it has existed for years. If the tumor is a carcinoma, its excision usually fails to afford much benefit, as the patient dies regardless of treatment. As for results of treatment among the author's series of collected cases at least half of the recurrences were and many still are believed by their surgeons to have been cured. Doctors fail to follow up their patients, forgetting that as many as forty years may elapse before a recurrence presents itself.

Surgical Treatment of Carcinoma of Colon and Rectum—Since July 1937 Garlock, Ginzburg and Glass state that they have had the opportunity to study 6 cases of cancer of the cecum, 16 of the ascending colon and 8 of the hepatic flexure. Frequently two or three weeks was taken preoperatively to overcome anemia, nutritional and vitamin disturbances and to treat renal complications and cardiovascular disabilities. The condition of only 13 patients permitted operation at the time of exploration. Operability was influenced more by conditions associated with the growth than by age, obesity and anemia. Free perforation of a carcinoma of the colon is a lethal complication in most instances. The Miller-Abbott tube was used often with obstructing lesions. The preoperative oral administration of sulfanilamide was a greater factor in decreasing the incidence of postoperative infection of the wound and peritonitis than its local use at operation. Postoperative pulmonary complications were beneficially influenced by the sulfonamides. Cardiovascular complications were the major cause of postoperative morbidity and mortality. Wound disruption was curtailed by the use of buried alloy steel wire. A rarely mentioned postoperative complication was retraction within the abdomen of a loop of intestine. For carcinoma of the right colon two stage ileocolic resection, with a three or four week interval between the procedures, is favored, and obstructive resection with wide excision of the mesentery for neoplasm of the transverse and left colon. Suture anastomosis of the left colon should not be done unless the fecal current has previously been completely diverted. For small carcinoma of the rectosigmoid the preference is the Devine operation, for carcinoma of the rectum the one stage Miles abdominoperineal resection and for low-lying neoplasm in the elderly the Lockhart-Mummery procedure. Finally, between 20 and 25 per cent of the patients had undergone treatment for hemorrhoids during the preceding two to five months, thus the importance of a carefully performed digital-rectal examination and proctoscopic visualization of patients complaining of bleeding from the rectum is certainly apparent.

Blood Substitutes in Resuscitation After Hemorrhage—After massive hemorrhage in animals Ivy and his colleagues found that recovery was prompt though temporary of most animals given injections of saline solution. The procedure has value in case of emergency, with the obvious necessity of further treatment with a more potent preparation as soon as possible. In the latter category may be placed heparinized plasma or serum. Regarding gelatin (plasma gel), the material used was definitely superior to citrated plasma and to the other artificial blood substitutes tested, but it fell far short of perfection. All but two gelatins studied caused definite pseudoagglutination of erythrocytes. If a gelatin can be found which will cause no pseudoagglutination, it will prove to be a good blood substitute for emergency use. Plasma gel was not suitable. The high toxicity of citrate when given in the amounts required as an anticoagulant for the large volume of plasma required under the experimental conditions is a contraindication for its use when hemorrhage is extensive. The great superiority of heparinized plasma over serum is at present obscure. It is obviously not due to the fibrinogen in the one and its absence in the other, but more likely to certain alterations in the protein content which occur during the preparation. Acacia and pectin are totally unsuitable as blood substitutes when the hemorrhage is extensive.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

17 175 238 (Dec) 1942

- Hemorrhagic Disease of Newborn Elizabeth B S Scolbie—p 175
Vitamin K Requirements of Newborn M Toohey—p 187
Gastric Acidity During First Year of Life R A Miller—p 198
Bacillary Dysentery Silverthorne and Agnes Walker—p 210
*Relation of Maternal Diet to Breast Feeding I H Ebbs and Helen Kelley—p 212
*Incidence and Mortality of Breast and Artificially Fed Infants Admitted to Hospital with Infections I H Ebbs and Frances Mulligan—p 217
Cystic Fibrosis of Pancreas C E Snelling and I H Erb—p 220
Study of Quantitative Fragility Test in Children Janet Cormick—p 227

Relation of Maternal Diet to Breast Feeding—Ebbs and Kelley compare the incidence of successful breast feeding among three groups of mothers of the low income class. The 90 women who were supplied with extra food (milk, eggs, cheese, fruit and vitamins) and the 170 who were educated to provide a good antepartum diet were more successful in nursing their infants than the mothers who had been left on their poor antepartum diets. The effect of a poor postpartum diet on nursing was evident by a decrease in the percentage of breast fed babies when extra food was stopped six weeks after the birth of the baby. This sudden decrease might be explained by the change in mental attitude of the mother when the supplementary food was withdrawn or it might have been the result of the sudden withdrawal of certain food factors which possibly influence the secretion and the quality of breast milk.

Mortality of Breast and Artificially Fed Infants—Among the 1500 infants less than 1 year of age admitted to the Hospital for Sick Children, Toronto, with infection Ebbs and Mulligan observed that fewer so affected were breast fed than artificially fed. The incidence of breast feeding among these 1500 infants with infection was less than half that in the well baby clinics of the city. Respiratory infections were more frequent than other infections. The incidence of gastrointestinal infection was lower among the breast fed babies. The mortality rate was slightly higher among the breast fed group.

British Medical Journal, London

2 31-60 (Jan 9) 1943

- The Premature Infant: Management and Prognosis W R F Collis and M A Majekodunni—p 31
*Treatment of Wounds and Inflammation by γ -Rays and Radium Rays N S Finzi and F Freund—p 34
*Use of Sulfaguanidine in Bacillary Dysentery A E Brewer—p 36
Probable Tetanus Despite Inoculation with Toxoid R J McGill—p 40

Irradiation of Wounds and Inflammation—Finzi and Freund believe that the use of radiation in the treatment of war wounds is extremely valuable and that the use of the method will without doubt increase much in the future especially when experience has confirmed the good results which could not have been achieved by other means. Acute subacute and chronic inflammation may be treated by small doses of γ -rays. Irradiation accelerates the healing of wounds and fractures. The effect of γ -rays is due to their influence on local cellular reaction and local immunity. Small doses give good results and obviate late bad effects.

Sulfaguanidine in Bacillary Dysentery—Brewer treated 77 cases of bacillary dysentery with sulfaguanidine. The drug was used only in severe or refractory cases. Patients were put to bed at rest and kept warm. The frequency and character of their stools were noted and specimens were plated and examined microscopically. Diet was limited to fluid in the first twenty-four hours. A large oral fluid intake was encouraged to replace fluid loss. No fluid intravenously was necessary. Adjunct treatment was given. The 36 patients with Shiga intoxication were given 30,000 units of antiserum. The patients with an acute infection were given an initial dose of 7 Gm of sulfaguanidine followed by 3.5 Gm every four hours. For severe infection 3.5 Gm was given in two hours after the initial dose followed in two hours by a further 3.5 Gm. In the main sulfa-

guanidine was given for two days after the stools had become normal. Patients with chronic infection received 17.5 Gm of sulfaguanidine daily in five doses for a minimum of eight days. The length of treatment was increased in the severer cases. A preliminary period of treatment with colonic lavage while on a low residue diet was had by 19 patients. In chronic cases sulfaguanidine must be given until the mucosa has healed, to gage this sigmoidoscopy is essential. Complete cure was obtained in 19 (73 per cent) of the acute cases, in 11 (55 per cent) of the chronic cases in which 90 Gm was given over six days and in 24 (77 per cent) of the chronic cases in which an average dose of 160 Gm was given over ten days. Toxic symptoms occurred in only 9 of the 51 chronic cases.

Lancet, London

1 65-96 (Jan 16) 1943

- Adequate Treatment of Gonorrhea with Sulfathiazole F J G Jefferts and G L M McElligott—p 63
*Failing Lactation Study in 1100 Cases Margaret Robinson—p 66
*Reflex Governing Outflow of Milk from Breast H K Waller—p 69
*Poisoning by Chlorinated Naphthalene E Collier—p 72
Sulfapyridine Anuria Treated by Unilateral Nephrostomy G DeLacey, R H L Cohen and J Spencer—p 74
Graves's Disease—Myxedema—Graves's Disease H Zondek—p 75

Reflex Governing Flow of Milk—To estimate the frequency of breast engorgement and its consequences, Waller questioned 52 consecutive women at an infant welfare center within four weeks of their confinement. All but 4 had been delivered in a hospital. No woman with an abnormal pregnancy, labor or puerperium was included with the exception of 3 who had mastitis. Twenty-two at four weeks were still breast feeding their babies and 30 had already ceased to do so. To the first question, whether their milk was plentiful in the first week after delivery, 46 replied affirmatively. Damage to the nipples was experienced by nearly three fourths of those who failed to continue breast feeding and in more than a third of the successful ones. Failure to withdraw milk (21 babies) which might be attributable to weakness in the baby was more common with the first born. There was overloading of the breasts in 34, and relief by breast pump was obtained by 27. The data suggested that the common tendency of the breasts to become overfull at the outset involves a risk to the continuance of milk secretion, that the risk of arrest is greatest in the first lactation and that the child's demands for food are unreliable as a means of reducing a state of high breast tension to a level ensuring continuance of secretion of milk. The emphasis is not directly on any particular degree of fullness but on the degree of emptiness to which the breasts are reduced when the child has finished feeding. Certain facts suggest that outflow is dependent on a reflex mechanism highly susceptible to interference and conditioning. The maintenance of secretion appears to depend on a reflex expelling mechanism which governs the outflow from the breast and which for convenience may be called the draft reflex. When the reflex is interfered with a baby who has learned to rely on its assistance may refuse to attempt to obtain milk. It more was known of the nature of the reflex many of the common hindrances to lactation might be brought under control. The draft reflex which is so characteristic a feature once feeding is established does not seem to be operatively effective when the breasts first begin active secretion a time which seems particularly appropriate to its appearance. In multiparous women who have successfully nursed their babies secretion and expulsion sometimes coincide. In primiparas the reflex is present must often be frustrated almost at once. In them the breast often seems incapable of achieving a balance between secretion and outflow so that stasis and overloading result. The author believes that a satisfactory reduction in the number of early failures will be seen only when initial overfilling of the breasts is prevented or at least lessened and it can be ensured that the draft reflex comes promptly and effectively into action.

Poisoning by Chlorinated Naphthalene—Since the Home Office has included poisoning by chlorinated naphthalene and its sequelae in the workmen's compensation act Collier declares that it is important for general medical practitioners and especially industrial medical officers examining factory surgeons and medical referees to know the toxic effects that it can pro-

duce Twelve illustrative cases of dermatitis and 1 of acute yellow atrophy of the liver among workers in an engineering establishment exposed to the fumes and dust of chlorinated naphthalene are reported. Poisoning by chlorinated naphthalene may result in chloracne of the face, particularly of the sides of the face. If it produces systemic effects (acute yellow atrophy or necrosis of the liver) the liver is usually the only organ damaged. If poisoning is to be prevented, the wax must not be overheated and its fumes and dust must be properly carried away by exhaust ventilation. Workers must be instructed in the importance of personal cleanliness and must be examined every week for signs of acute or jaundice.

An de la Cated Clin Ginec, Rosario

1 1-400 (July) 1942 Partial Index

- Cervicitis and Its Treatment R Araya—p 23
 Functional Disturbance of Ovary R Araya—p 53
 *Extracts of Endometrium and Ovarian Function P L Borris—p 114
 Endometrium as Gland of Internal Secretion P L Borris—p 121
 Elongation of Uterine Neck in Recurrent Prolapse Treated Earlier by Exohysteropexy P Figueroa Crias—p 182
 Transplantation of Ovine Hypophysis in Gynecology P Figueroa Crias and G Campagnoli—p 190
 Pneumococcal Peritonitis in Adult Women R Pineda and P A Sims—p 225
 Action of Sulfanilamide on Female Genital Apparatus L A Behazin—p 239
 Cancer of Vulva J I Boveri—p 258
 Cancer of Uterine Stump V M Marques—p 378
 Clinical Consideration of Atypical Hypothyroidism V M Marques—p 390

Extracts of Endometrium and Ovarian Function—At Werner's clinic in Vienna, Borris had observed the implantation of inserts of endometrium into the remaining uterine stump in order to reduce the menopausal reactions after hysterectomies. Employing the method himself he found that, while in some cases it exerted a real influence, in others the effect was hardly visible and he came to the conclusion that the endometrial implantations into the stump could not solve the problem, the more so since endometriosis resulted in one of his patients. Supposing that extracts of the endometrium would exert a substitutional effect, the author obtained and injected bovine extracts. He describes the difficulties encountered in obtaining them, since it was found that the endometrium had to be obtained from animals in estrus. He also reports clinical trials with different concentrations. The menopausal disturbances of the hysterectomized who still have their ovaries are less intense if they are given periodic injections of endometrial extracts, and women with ovarian insufficiency who need monthly fixed doses of estrone can get along with smaller doses of estrone if endometrial extract is injected fifteen days before the expected menstruation. The clinical results so far obtained are not entirely satisfactory, but the author thinks that it is merely a question of dosage, which is under investigation.

Revista Médica de Chile, Santiago

70 833-931 (Nov) 1942 Partial Index

- Primary Malignant Tumor of Gallbladder E P Tagle, O Avendaño, J M Ugarte and R Sanz—p 833
 Vasomotor Crisis of the Extremities A Velasco S and M Casanueva—p 842
 *Clinical Experience with Reaction of Hanger H Alessandri, H Ducci and R Galecio—p 848
 *Lateral Pyelography in Surgical Disorders of Kidney L Donoso—p 859
 Amebic Dysentery in Chile H Dooner—p 883
 Transportation of Patients by Airplane R Yrigoi J—p 887
 *Chronic Manganese Poisoning Two Cases M Kaffman, J Oyarzun and E Concha—p 892

Clinical Experiences with Hanger's Reaction—Alessandri and his associates used Hanger's test, which employs the flocculation of cephalin-cholesterol emulsions in order to differentiate obstructive from hepatogenous jaundice, in several groups of patients. In performing the cephalin-cholesterol test on 72 apparently normal subjects they found that as a rule the reaction was negative, rarely it was doubtful and exceptionally, that is, in persons with a history of dyspeptic disturbances or with a previous attack of jaundice, it was mildly positive. Hanger's test performed on 75 patients with catarrhal jaundice revealed positive flocculation in 69 (92 per cent). In a few cases, which showed rapid improvement, the reaction became

negative rather early and confusion with mechanical jaundice is therefore not likely. The flocculation reaction runs parallel neither with the functional tests of the liver (tolerance, for carbohydrates and for sodium benzoate) nor with the cholesterol content of the blood. In the majority of cases of catarrhal jaundice the positivity of Hanger's reaction decreases parallel with the clinical improvement and with the decrease in the bilirubinemia figures. The third group of patients on whom the authors made the cephalin-cholesterol test were 12 persons in whom jaundice was produced by arsenotherapy. Positive flocculations were obtained in the majority of these cases, which indicates involvement of the hepatic cells. Negative reaction in a few early cases seem to speak for an obstructive factor. The cases of obstructive jaundice in which the authors performed Hanger's test comprise two groups. 1 Of 14 cases in which the obstruction was due to neoplasms 11 had negative reactions, 2 had mildly positive reactions and 1 had an intensely positive reaction, the last patient had a severe hepatomegaly. 2 Of 16 cases in which choledocholithiasis was present the reactions were negative in 10, mildly positive in 3, moderately positive in 1, intensely positive in 2 and doubtful in 1. The cephalin-cholesterol flocculation proved highly positive in all of the 17 patients with hepatic cirrhosis. The authors conclude that the cephalin-cholesterol flocculation is easy, is low in cost and can be performed in any clinical laboratory. It merits to be incorporated in the routine study of patients with digestive disturbances. Although it is not infallible in the differential diagnosis of icteric disturbances, it nevertheless represents a valuable aid. If it is strongly positive in recent jaundice, involvement of the hepatic cells exists, if it is negative in a jaundice that drags on for months, mechanical icterus should be thought of. It is positive in over 95 per cent of the cases of parenchymatous impairment of the liver and, if this damage is severe, positivity of Hanger's test reaches 100 per cent.

Lateral Pyelography in Surgical Disorders of Kidney—Donoso thinks that lateral pyelograms should be made, if possible, by the retrograde route, that is, by ureteral catheterization. Only when catheterization is not possible should the descending, intravenous method be employed. After the anteroposterior pyelographic exposure the patient is turned on the side. The kidney to be examined should be next to the film. The author describes a number of cases in which he employed the method and reproduces roentgenograms. Lateral pyelography has a wide field of application. The technic is simple and does not greatly disturb the patient. The interpretation is easy. It makes possible otherwise difficult and obscure differential diagnoses. It permits the differentiation of neoplasms, cysts or collections of pus, whether they are renal, perirenal or extrarenal. It reveals primary or secondary retroperitoneal neoplasms, tumors adjacent to the kidney and metastases of malignant tumors. It aids the differentiation between urinary and biliary calculi, shadows of calcified lymph nodes, traumatic renal lesions, congenital pelvic deformities and ureteral stenosis.

Chronic Manganese Poisoning—Kaffman and his associates describe manganese poisoning in 2 men aged 27 and 42. One had worked in a manganese mine for eight months, the other for a year and a half. Like the other 200 workers in this manganese mine, these men had done their work in an atmosphere charged with mine dust, none of the workers were wearing protective masks. Both patients presented the symptoms typical for manganese poisoning. The first manifestations usually involve the motor apparatus, particularly the walk, which becomes incoordinated. The facial expression becomes masklike, the voice monotonous. Mental impairment varies, it shows itself in indifference, in lack of attention, in amnesia, in somnolence and at times in attacks of excitation. The younger of the 2 patients showed the first signs of manganese poisoning after he had worked in the mine for only five months. The evolution of manganese poisoning varies. In some cases the symptoms regress after contact with manganese ceases, in others the damage is permanent. In 1 of the reported cases there was slow but noticeable improvement a month after the work in the manganese mine had been given up, in the other 1 the mental changes subsided rapidly but not the other symptoms. The authors stress the great importance of prophylactic measures in manganese mines.

Book Notices

Indigestion Its Diagnosis and Management with Special Reference to Diet. By Martin F. Rehfuess M.D. Professor of Clinical Medicine Jefferson Medical College Philadelphia. Cloth Price \$7. 1p 356 with 63 illustrations. Philadelphia & London W. B. Saunders Company 1947.

This is an attractive looking book which is well printed and well illustrated. It is likely to be of much interest to the general practitioner, for whom it has been written, because it shows with pictures and descriptions how a number of the common procedures in diagnosis and treatment are carried out. One difficulty about the book is that Dr. Rehfuess tried to cover such a large field that some of the chapters cannot be adequate. One cannot help wishing that the chapter on gastrophotography had been left out and the space given to other subjects such as history taking or nervous indigestion. Psychiatrists would probably question Dr. Rehfuess's advice to administer mixtures of several medicines to patients with nervous indigestion. Most psychotherapists maintain that if one expects to cure a neurosis one must not counteract the effect of telling the patient that he has no organic disease by giving him a lot of medicine for it. A few gastroenterologists might wonder also how far one can hope to get with the dietary treatment of gallstones. There is much good advice in the section on dietetics at the end of the book. It is good to see that Dr. Rehfuess puts little stock in the diagnosis of chronic appendicitis. As he says, shortly after the consultant has told a patient that he has a pure neurosis the man or woman may write to say that a surgeon has just worked a cure by removing the appendix, but then the consultant must not be too disturbed until at least six months have elapsed. By then it will usually be found that the symptoms have all returned. On the whole, this book can be recommended as a good addition to the library of the general practitioner and the gastroenterologist.

A Doctor Without a Country By Thomas A. Lambie M.D. Sc.D. FR.G.S. Field Director of Sudan Interior Mission. With an introduction by Howard A. Kelly M.D. F.A.C.S. LL.D. of Johns Hopkins University. Baltimore. Second edition. Cloth Price \$2. Pp 252 with 7 illustrations. New York London & Edinburgh Fleming H. Revell Company [1942].

A Doctor Carries On By Thomas A. Lambie M.D. Sc.D. FR.G.S. Field Director of Sudan Interior Mission. Cloth Price \$2. Pp 173 with one illustration. New York London & Edinburgh Fleming H. Revell Company 1942.

These books were written by an American doctor who has spent many years as a medical missionary in the Sudan and in Ethiopia. They contain much interesting geographic, ethnologic and climatologic information through which permeates a strong religious flavor. The chapters which pertain to Ethiopia are particularly interesting. The author lived in Addis Ababa, where he became the adviser of Emperor Haile Selassie. He established the Sudan Interior Mission and the George Memorial Hospital which is named in honor of W. S. George of East Palestine, Ohio, who gave some \$70,000 toward its construction. Among the various diseases present was typhus, some victims of which they picked up on the streets and took to the hospital. Dr. Lambie says that cancer and appendicitis were almost never seen in Abyssinia or anywhere in tropical Africa. It was necessary to give up his American citizenship and to become a citizen of Ethiopia. When the Italians invaded that country in 1935 the author became the executive of the Ethiopian Red Cross. Addis Ababa was filled with wounded and retreating soldiers whose condition was pitiable. Dr. Lambie was close by when the emperor and his court fled the capital, not long thereafter he too left Ethiopia and ironically, in coming home to America he became a doctor without a country.

The second book deals with the author's return to Africa in 1939 where he again became engaged in medical missionary work. He was of some service to the British army during the Ethiopian campaign, which ended in driving the Italians out of the country. At times these books remind one of the exploits of the great African explorers Dr. David Livingstone and Sir Henry Morton Stanley.

An Evaluation of Dental Health Literature By Vern D. Irwin D.D.S. M.P.H. Director and Netta W. Wilson M.A. Educational Assistant Division of Dental Health Minnesota Department of Health. With a foreword by Frank C. Cady D.D.S. M.P.H. Senior Dental Surgeon United States Public Health Service. Approved by the American Association of Public Health Dentists. Paper Price 50 cents. Pp 58 with 1 illustration. Saint Paul & Minneapolis Bruce Publishing Company 1942.

This is an exceptionally valuable contribution to the literature of health education. It makes a dual contribution. First it gives a much needed evaluation of dental health literature and clarifies many inaccuracies. Second it furnishes a pattern for similar evaluation of health education literature in other fields which might well be undertaken by persons as well qualified, for example, in nutrition, communicable disease control and personal hygiene as are the authors of this evaluation in dentistry.

Without going into detail as to the numerous fallacies, controversial statements, half truths and downright errors occurring in dental literature issued not by advertisers, quacks or promoters but by reputable health education groups, it is sufficient to point out here that the authors based their survey on a large number of sources of which they list seventy-six state health department bulletins, twenty-four publications of the American Dental Association and five miscellaneous publications, including one each of the United States Children's Bureau and the United States Public Health Service, in all of which dental errors, inaccuracies or controversial statements have appeared. In addition, twelve textbooks and twelve magazine publications, including both lay and professional magazines, are listed.

Among 235 statements published before July 1, 1940 and representing the first 235 statements examined, they found 74 to be facts, 57 to be fallacies and 104 controversial. Of the last 145 statements examined, mostly published after July 1, 1940 they found 57 to be facts, 8 to be fallacies and 70 to be controversial statements. They published extensive statements which they considered to be subject to criticism, and opposite each such statement appears their comment and evaluation.

An excellent chapter is that on adaptation of dental health literature to the audience with special reference to material for children. They object to efforts to make children brush their teeth by comparing them with good little rabbits, who obviously never brush their teeth at all. They object to health advice which may be good, bad or indifferent as to rhyme but is mostly bad as to accuracy. They also pay their disrespects to dental health plays in which fallacious implications are carried.

Every health educator or any one else who communicates with the public about health matters should read and digest this evaluation.

So You Feel Sluggish Today The Causes and Treatment of Constipation By Harry Gauss M.D. Assistant Professor of Medicine University of Colorado Denver. Cloth Price \$3. Pp 291 with 38 illustrations. Boston Christopher Publishing House 1942.

According to the introduction this is intended to be a book "at once instructive to the physician and intelligible and therefore helpful to the layman." It is fair, therefore, to evaluate the book on this basis. The number of instances in which it has been possible to write one book for common use of doctor and layman is so small that each instance is a noteworthy book of permanent value. This book does not achieve that distinction. It is far too elementary for the physician and far too technical for the layman. The book starts out with a descriptive anatomic chapter of thirty-one pages. The rest of the book, exclusive of glossary, is devoted to lengthy, tiresome and repetitious discussions of various factors in the causation of constipation. The effect of all this material on the normal lay reader would be that he would simply rebel against it and toss the book aside. The introspective person with constipation however would seize on this book and find it full of fresh fuel for all his anxieties real and imaginary. Particularly pernicious is the twenty-three page chapter "Check Your Symptoms" which will be a paradise for the hypochondriac. The twenty page detailed chapter on laxatives "When and How to Use Them" is an invitation to self medication. Since many of the troubles of the constipated are aggravated if not caused by too much concentration on the eliminative function all these pages on constipation is just too much.

Nurses in Action The Story of the Army Nurse Corps By Colonel Julia O. Flinke, A. I. S. Superintendent of the Army Nurse Corps. Cloth. Price \$2.50. Pp. 239. Philadelphia: New York & London: I. B. Lippincott Company, 1943.

I Served on Batran By Marjita Redmond, Lieutenant A. N. C. Cloth. Price \$1.75. Pp. 167 with 16 illustrations. Philadelphia & New York: I. B. Lippincott Company, 1943.

At this time when the recruitment of young women to qualify as nurses for our armed forces is at its peak these two books are exceedingly welcome. They will do much to aid in the campaign and to enlighten people as to the tremendous service that our nurses render.

Col. Julia O. Flinke is superintendent of the Army Nurse Corps. Her book begins with the decision of a young girl to qualify for the Army Nurse Corps and tells the first steps in such qualification. Then come a brief history of the Army Nurse Corps, an outline of the technique of entrance into the service, and several sections devoted to the work of the army nurse and to army nursing as a career. The final section is a description of the Army Nurse Corps, the medical and hospital service of the Veterans' Administration and the Indian Service. The book is up to the minute with illustrations which are taken from current war files. Colonel Flinke is the first woman ever to hold the rank of colonel. She served in World War I and during the following years today there are nurses under her command throughout the world. The volume is authentic, factual and written in a style suitable to the student or to the reader who is interested only in general information.

Lieut. Marjita Redmond was one of the few who escaped from Batran and Corregidor. When Manila was declared an open city, Lieutenant Redmond went into the jungles of Bataan with other nurses and doctors to set up a hospital. The story of Batran has been told many times but never more effectively, more sympathetically or more interestingly than it is here told by Lieutenant Redmond. Physicians will find her accounts of gas gangrene and medical care under siege conditions stimulating and informative. Every reader will be moved by this account to do his utmost and then some as a contribution in this war.

The Hospital Care of the Surgical Patient A Surgeon's Handbook By George Crile, Jr. M.D. Surgeon, Cleveland Clinic, Cleveland and Franklin J. Shively, Jr. M.D. Assistant Surgeon, Cleveland Clinic. Foreword by J. V. A. Graham, M.D. Dixie Professor of Surgery, Washington University School of Medicine, St. Louis. Fabrikoid. Price \$2.50. Pp. 184 with 21 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1943.

This first edition by Crile and Shively is a concise, clearly written handbook especially designed for the young physician who is about to begin his training in the field of surgery. The authors have emphasized the application of our knowledge of physiology and biochemistry to the routine preparation of the patient, the operative procedure, the postoperative care and the recognition and treatment of complications. A word regarding prophylaxis against pulmonary complications and embolism would have been of value. The reviewer sought the reaction of several surgical residents to this book and they all agreed that the book was interesting and instructive. The one objection to a book of this kind might be brought against any textbook, and that is that our knowledge of physiology, biochemistry and chemotherapy is increasing and ever changing, and portions of this book may require revision soon. The surgical residents at other hospitals and clinics will also find that the preparation and treatment of the patient vary greatly from certain routine procedures advocated in this book, but naturally it was not the aim of the authors to include all routines. This handbook is recommended to those who are about to begin their graduate study of surgery, and they will find it an "aid in effecting a standardization of hospital treatment."

Index Catalogue of the Library of the Surgeon General's Office United States Army (Army Medical Library) Authors and Subjects Fourth Series, Vol. VII H HYSTRIX Cloth. Price, \$2.75. Pp. 972. Washington, D. C.: Supt. of Doc. Government Printing Office, 1942.

This volume on the letter H of the justly famous Index Catalogue consists of 972 pages. The Army Medical Library now contains over 400,000 volumes and 624,000 pamphlets of all sorts. This volume continues the high standards of the compilers of this publication.

The Metabolic Cost of Maintaining a Standing Position with Special Reference to Body Alignment By Harriet Graham McCormick. Paper. Price \$1.25. Pp. 75, with 9 illustrations. Morningside Heights, New York: King's Crown Press, a division of Columbia University Press, 1942.

This monograph reports clearly a study on the subject mentioned in the title and outlines in detail the methods employed. The work was done thoroughly and accurately. The results are presented in full, and conclusions are stated conservatively. A bibliography of eighty-five items is the background for a critical and thoughtful discussion of work related to the problem under investigation. The alignment associated with the minimal metabolic increase is, as might have been expected, a slovenly posture. The authors question whether this is to be advised because it is maintained primarily by ligamentous action and because it is inefficient "as a starting position and basic underlying pattern for movement." The alignment associated with the maximum metabolic increase was found to be roughly the posture assumed by the military at the command of "attention." Probably, the authors suggest, the ideal is somewhat between these two extremes, a posture which gives the maximum return for a minimal energy expenditure. This posture is one in which the angles formed with the vertical by the lower leg, the upper leg and the trunk are near zero. In other words, one in which the center of gravity of each section of the body is maintained in approximately the same vertical plane. The posture of different persons depends not only on habit early formed but also, no doubt, on variations in origins and insertions of muscles and ligaments. There is no ideal standard of posture which should be applied rigidly to all persons.

A Review of Medicine by Members of the Faculty, Northwestern University Medical School Edited by Benjamin Boshes, M.D., M.S., Ph.D. Assistant Professor of Nervous and Mental Diseases, Northwestern University Medical School, Chicago. Fifth edition. Cloth. Price, \$9.50. Pp. 712. Chicago: Northwestern University Press, 1942.

This book is an outgrowth of the "Lectures of the Cook County Hospital Quiz Course," which are given to medical students preparing for the competitive examinations for internship in the Cook County Hospital, Chicago. Many subjects in medicine, surgery, obstetrics and gynecology, pediatrics and special fields are discussed briefly in outline form: etiology, pathology, symptomatology, complications, differential diagnosis, prognosis and treatment. This form occasionally gives rise to mild absurdities such as that under treatment of heart disease, where the first two entries under the subhead "Active Treatment" are "Absolute Bed Rest" and "Sleep." The book contains a great deal of simply presented information on many disease conditions. It will appeal to those who like to study according to the outline or quiz method.

Medical Jurisprudence and Toxicology By John Glaister, M.D., D.Sc. Fellow of the Royal Faculty of Physicians and Surgeons, Glasgow. Seventh edition. Fabrikoid. Price \$8. Pp. 671 with 132 illustrations. Baltimore: William Wood & Company, 1942.

Seven editions since 1902 indicate the extent to which this book has become a classic in British medical jurisprudence. The book follows the British rather than the American approach to the subject, although numerous references to recent American literature are included. A special section of the present volume relates to the war, with the forms used in England for reporting war injuries. Here the material devoted to the effects of blast is already quite obsolete. The concentrated character of the volume makes it necessary in many instances to limit the discussions almost to definitions. As a reference work on modern medical jurisprudence the book is quite adequate.

Interviewing Its Principles and Methods By Annette Garrett, Associate Director, Smith College School for Social Work. Paper. Price \$1. Pp. 123. New York: Family Welfare Association of America, 1942.

This monograph on the subject of interviewing is already in its second printing. It deals with the technique of interviewing persons who may be reluctant to talk by reason of shyness or antagonism and those who may be overanxious to talk for reasons of their own. Many examples are given of successful interviews together with discussions as to the reasons for their success. It contains many points which might be helpful to the physician, especially in relation to history taking.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

HAZARDS OF EXPOSURE TO GLASS WOOL, GLASS FRIT OR FOAM GLASS

To the Editor—Can you give me any information as to the hazards to the health of workers employed in the making of glass floss?

Jean Henderson M.D. Stamford Conn.

ANSWER—The term 'glass floss' is a nondescript one variously applied to glass wool to 'foam glass' and to the 'glass frit' as used in porcelain enamels. The manufacture of the last named entails the greater exposures since common frits may contain lead, silica, fluorspar, cryolite, nitrates, antimony and the like. Further colored frits may contain selenium, cadmium, chromates, uranium or manganese depending on the color desired. Some of these enamel frits long have been regarded as a frequent source of lead poisoning. However, it seems more likely that this inquiry refers to glass wool or fiber glass. The process of manufacture differs with the ultimate use contemplated such as the manufacture of glass silk for garments, diving suits, coverings for machinery or instead glass pads for air conditioning, insulation, refrigeration or laboratory usage. All further comment is limited to the latter and coarser process. Glass to be reduced to the 'wool' state is already made although the composition may be dissimilar to ordinary glass. The starting point for 'glass wool' is the remelting of this glass. Furnaces are so constructed that when suitable temperatures are reached the molten glass may be discharged through a sieve-like structure. The strings of glass immediately are blown on with live steam or air under pressure. The result is a disintegration of the glass strings into minute fibers lying somewhat in parallel lines in the direction of the air blast. Since the process starts with preformed glass the usual exposures of glass manufacture may be eliminated. The remaining and specific exposures may be three in number and are (1) the usual ill effects of high temperatures, (2) mechanical injuries from spicules of glass or (3) carbon tetrachloride or other vapors which chemicals are sometimes used to remove a mineral oil lubricant at times applied to the glass fibers to promote disentanglement. Any handling of fibrous glass may lead to the penetration of the skin by numerous minute glass particles. This may lead to isolated, slow healing minor furuncles or a more diffuse dermatitis. For the purpose of lubrication a light mineral oil may be applied to the mass of glass wool in connection with its 'combing'. Later this must be removed through the use of some oil solvent of which carbon tetrachloride is but one example. Although Schulz (Gasmasker 11:57, 1939) mentions an asbestosis-like condition of the lung of a man working with glass wool, it may be doubted that any specific pneumoconiosis is likely to arise. A publication entitled 'Safe Practice in the Manufacture and Usage of Fibre Glass' being 'Safe Practice Bulletin No. 58 of the Pennsylvania Department of Labor and Industry' February 1940 furnishes extensive information about the exposures incident to this industry.

VERTIGO IN PATIENTS WITH HYPERTENSION

To the Editor—Is there any treatment that relieves vertigo in cases of hypertension especially among the aged when reduction in the blood pressure does not give relief from the vertigo?

M.D. Illinois

ANSWER—The cause or causes of vertigo in persons with hypertension is not accurately known. Persons with hypertension with or without cerebral arteriosclerosis may conceivably by sudden motions of the head alter the blood supply to and thereby the hydrodynamics of the endolymph system of the static labyrinth and so produce dizziness. Changes in the walls of the end arteries of the labyrinth may further lead to degenerative alterations in the neuroepithelium of the inner ear and so cause vertigo. Blood vessel changes of this type may also be responsible for occasional and minute hemorrhages into the labyrinth producing thereby abnormal sensations roughly classed as vertiginous.

It is clear that treatment must in large part be empiric and symptomatic. In general therapy should be directed toward the

treatment of the primary ailment and secondarily toward the vertigo. Such latter efforts tend to pattern themselves after the treatment in vogue for Meniere's syndrome, although the causation of the latter and the history and findings are thought to be quite different from that seen in persons with hypertension.

The physician may try limitation of fluids for a while, thus water may be restricted to about 1 pint a day. In this country, however, many favor instead a low sodium diet and the ingestion of ammonium chloride as recommended by Furstenberg. The latter is given in capsules, six 7½ grain (0.5 Gm.) capsules being taken three times daily with meals. This is kept up for three days and the drug is then omitted for two days and again resumed. It is best to give the drug in divided doses between mouthfuls of food to avoid gastric distress and vomiting. The treatment is carried on for about six weeks when the ammonium chloride is discontinued, but the salt poor diet is pursued further for another six weeks.

Constipation should be avoided. Excessive use of tobacco and abuse of tea and coffee should be forbidden. Small doses of phenobarbital as well as potassium bromide are occasionally found useful. The sodium salts of these should not be given. If the patient is an older person some thought should be given to the possibility of the presence and the correction of a vitamin lack. The patient should be cautioned about sudden changes in position of the head as in suddenly arising from bed and in leaning forward to wash the face and tie the shoe laces. It is obvious that the treatment recommended is not based on an exact knowledge of the cause of the symptoms and is but a rationalization of the incomplete knowledge of the day.

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Crown, S. J. Comments on the foregoing Year Book of Eye, Ear, Nose, Throat. Chicago Year Book Publishers, 1942.

UNCOOPERATIVE PATIENTS WITH SYPHILIS

To the Editor—In October 1939 a married couple came to me with syphilis in the initial stage. They were put on alternating nearsphenamine 0.6 Gm. and intramuscular bismuth subsalicylate according to the Public Health Service schedule until March 23, 1940 receiving in this time eighteen doses of nearsphenamine and four doses of bismuth each. In March 1940 I became ill but arranged for their treatment with a neighboring physician of their own choice. On returning to work in July 1940 I persuaded them with considerable trouble to resume treatment which I completed in December 1941. They have in that time received thirty-four doses of nearsphenamine and thirty-six doses of bismuth each. In the interval of four months during which I was ill they did not take any treatment as I had arranged for them. Except for those four months they were quite regular in coming in for their treatment. On Jan. 10, 1943 I took a Wassermann test which was positive in the wife as were also the Kline and Kahn reactions. I do not believe that these people will be willing to take extensive treatment again. They have a large family and I should like to give them such treatment as they are willing to take and such as will keep down the infection until the disease gets more advanced. These are the things that I wish to know. What would you suggest as the minimum method of keeping the disease under control? How long will it probably be until these cases can be depended on to be noninfectious without treatment?

M.D. Iowa

ANSWER—There is no minimum method of keeping syphilis under control. No guess can be expressed as to the length of time in which these patients will remain noninfectious without treatment. The only thing that can be said in this respect is that 85 per cent of infectious relapses occur within the first two years after the cessation of treatment.

The first correct procedure in the management of this situation at the moment is an immediate examination of the spinal fluid in both husband and wife. The enquirer gives no information as to the recent serologic status of the husband although it is implied since the wife is still seropositive that the husband may be seronegative. If the husband shows no physical evidence of syphilis if his blood test is negative now and if the spinal fluid is now normal he does not require further treatment but should be followed with blood tests every two months for the next year, every six months thereafter for an indefinite period of time and with annual physical examinations.

The wife certainly requires more treatment. The nature and kind of this cannot be outlined without knowledge as to the spinal fluid findings.

There is no royal road to the cure of syphilis and if the patients refuse to take adequate treatment they should do so at their own risk after the possible consequences have been fully explained. To give an occasional treatment such as they are willing to take and such as will keep down the infection until the disease gets more advanced is medically indefensible.

PLASMA BICARBONATE

To the Editor—What is the normal value for plasma bicarbonate expressed as milliequivalents per liter? If the plasma bicarbonate is directly related to the carbon dioxide combining power, how is it calculated when the value for carbon dioxide combining power is given in volumes per cent?

Joseph H. Davis, Lieutenant, M. C., A. U. S.

ANSWER—The normal range of bicarbonate concentration in plasma of venous blood from the arm is 24 to 31 millimoles per liter (Eyle and Cullen *J. Biol. Chem.* 83:539, 545 [Sept.] 1929). Millimolar concentrations are calculated from volumes per cent of carbon dioxide by the formula

$$\text{Millimoles CO}_2 \text{ per liter} = 0.15 \times \text{volumes per cent CO}_2$$

The total carbon dioxide content was found by Stadie and Van Slyke (*ibid.* 41:191 [Feb.] 1920) to average 94 per cent of the carbon dioxide determined by the method of Van Slyke and Cullen (*ibid.* 30:289 [June] 1917). The bicarbonate content at normal p_{H_2} is 95 per cent of the total carbon dioxide. Hence the average bicarbonate content is $0.95 \times 0.94 \times$ the CO_2 capacity, or $0.89 \times \text{CO}_2$ capacity.

The factor 0.89 is not constant, it varies between 0.84 and 0.95. Hence calculation of bicarbonate as $0.89 \times \text{CO}_2$ capacity involves a ± 5 per cent error.

For precise gravimetric determination of the bicarbonate concentration of the circulating blood plasma it is necessary to draw the blood without stasis or exposure to air and to centrifuge it without exposure to air. In the plasma thus obtained one then measures both total CO_2 and p_{H_2} . Bicarbonate is calculated from CO_2 by the equation

$$\text{mM BICO}_2 = \text{mM total CO}_2 \times \frac{1}{1 + 10^{6.1 - p_{H_2}}}$$

(Peters and Van Slyke *Quantitative Clinical Chemistry, Interpretations*, p. 881) The value of the factor $\frac{1}{1 + 10^{6.1 - p_{H_2}}}$

at different plasma p_{H_2} values is as follows: p_{H_2} 7.0, 0.89, 7.1, 0.91, 7.2, 0.93, 7.3, 0.94, 7.4, 0.95, 7.5, 0.96, 7.7, 0.97. Unless the p_{H_2} is definitely displaced from the normal, one may assume that the p_{H_2} is 7.4 and calculate simply

$$\text{mM BICO}_2 = 0.95 \times \text{mM total CO}_2$$

A simple method for determining plasma bicarbonate directly by titration is described by Van Slyke, Stillman and Cullen (*J. Biol. Chem.* 38:167 [May] 1919, 52:495 [June] 1922; Peters and Van Slyke *Quantitative Clinical Chemistry, Methods*, p. 822).

SULFONAMIDES AND MOTOR COORDINATION

To the Editor—I have had under my care a number of civilian pilot training boys for streptococcal sore throat, all of them being confined to bed and receiving sulfanilamide in doses of 1 Gm. three times daily. Today there were three airplane accidents all involving possible poor coordination. One of the pilots had not received any sulfanilamide, another had not had any for four days and the other had not had any for seven days. Will you give an opinion regarding the safe period of time before a patient should pilot a plane after having taken this drug?

M. D., Idaho

ANSWER—The effect of sulfanilamide on locomotor coordination persists for approximately forty-eight hours if the drug is given in a full therapeutic dose. Flying personnel who have taken sulfanilamide should therefore be grounded for three days following their last dose of the drug. Owing to the deleterious effects of sulfanilamide on the motor coordination and psychomotor status of the average young adult, the Surgeon Generals of the Army and Navy have ordered that sulfadiazine be used in place of sulfanilamide, since sulfadiazine is as effective therapeutically and has little or no effect on motor coordination. Opinion is somewhat divided as to whether flying personnel should be permitted to fly while taking sulfadiazine. If they are not grounded for other reasons, it is probably safe to permit a flier who is taking sulfadiazine to pilot a plane. This applies also to drivers of motor vehicles.

PSYCHOANALYSIS AND NEUROSIS

To the Editor—On a thorough routine psychoanalysis of the general population without any selection of cases, what percentage could be classed as absolutely free of any trace of neurosis whether active or latent?

M. D., New York

ANSWER—"A thorough routine psychoanalysis of the general population without any selection of cases" has never been carried out and probably never can be carried out. Therefore an answer to this question is not possible.

BILATERAL KIDNEY INFECTION WITH UREA SPLITTING ORGANISMS

To the Editor—I have a urologic patient whose urine reaction I am able to change from alkaline to acid. He has repeated attacks of ureteral colic, bilateral, and has passed several stones. Cystoscopy and x-ray examination reveal no calculi in the kidney, ureter and bladder region at present. The entire bladder is inflamed and covered with white mucus, which is difficult to wash off. The right kidney and bladder specimens are loaded with pus all the time—the left kidney is not quite so bad. Pyelogram and kidney functions approach normal. Culture of urine sediment reveals *B. coli* and *Staphylococci*. I have tried all the sulfonamide compounds and the usual acidifying drugs, mandelic acid and the like, repeated cystoscopies and lavage of kidney pelvis, and I am unable to clear up the infection or render the urine acid. I shall appreciate any suggestions.

H. M. Daniel, M.D., Anderson, S. C.

ANSWER—The patient probably has bilateral kidney infection with a urea splitting organism making for an alkaline urine and tendency toward the production of stone and incrustations. The problem under these conditions of course is a most difficult one and calls for careful persistent management and observation.

With no urinary stasis along the tract from the kidneys through the urethra and without any calcification anywhere in the urinary tract, patients like this respond best to short but thorough courses of sulfathiazole, however, with bladder incrustations these must be treated locally before sulfathiazole management is instituted.

Bladder incrustations are best managed by continuous irrigations, using a two way Foley catheter and rectal drip connection with Albright solution, which consists essentially of citric acid (monohydrate) 32.3, magnesium oxide (anhydrous) 3.8, sodium carbonate (anhydrous) 4.4 and distilled water (to 1,000).

This local acidifier dissolves off incrustations usually in the course of a few days to a week. This local acidifier may be helped by using gluconic acid by mouth and if, this is not available, diluted nitrohydrochloric acid.

HYPOPROTHROMBINEMIA SECONDARY TO HEPATIC DAMAGE

To the Editor—A woman aged 60 has pain over the right lobe of the liver, ascites, edema of the legs and jaundice of the conjunctiva, also slight skin jaundice. The gallbladder was removed in 1932. Signs and symptoms began about four or five months ago. It has been decided to do an exploratory laparotomy, but the prothrombin test has been 35 to 50 and at present is 40, although we have used everything we know of to increase the blood clotting power during the last three weeks including five blood transfusions. Kindly outline what treatment might bring the prothrombin to a point where operation could be attempted without danger of hemorrhage. Is this probably impossible on account of the bile in the blood? What would be the lowest prothrombin consistent with safety prior to operation?

M. D., Philadelphia

ANSWER—In patients with a hypoprothrombinemia secondary to hepatic damage, administration of vitamin K preparations does not raise the prothrombin level. Blood transfusions will raise the prothrombin temporarily in such cases. Two or three blood transfusions within twenty-four hours before operation should be sufficient to protect the patient against operative hemorrhage. Bile in the blood does not interfere with the formation of prothrombin, as the prothrombin level can be readily raised with vitamin K therapy in patients with uncomplicated obstructive jaundice.

Bleeding does not occur until the prothrombin is reduced to below 20 per cent of normal. Values up to 60 or 70 per cent of normal should allow a fair margin of safety against operative hemorrhage.

PROLONGED USE OF CONDOMS NOT RELATED TO PROSTATITIS

To the Editor—Kindly advise if there are any harmful effects on the prostate from the prolonged use of condoms. Is there any authority on this? What is the opinion of urologists? Several patients have questioned me concerning this. Is there more danger of prostatitis as the patient grows older?

M. D., Illinois

ANSWER—The writer has never seen, heard or read of harmful results occurring to the prostate gland from the prolonged use of condoms. It is difficult to see how this practice could in any way cause prostatitis. Prostatitis is due to infection, either by some distant focus as teeth, tonsils or sinuses, or by influenza, measles, mumps or other diseases or to infection which travels down into the posterior urethra and into the prostate from local infection, like gonorrhea.



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supplied by the author. Each illustration, table,
etc. should bear the author's name on the back.
Photographs should be clear and distinct, draw
ings should be made in black ink on white
paper. Used photographs and drawings are re
turned after the article is published, if re
quested

**ANONYMOUS CONTRI
BUTIONS** whether for publication or infor
mation, or in the way of criticism are con
sidered as signed to the waste basket

NEWS Our readers are requested to
send in items of news also mailed copies of
newspapers containing matters of interest to
physicians. We shall be glad to know the name
of the sender in every instance

PRICE LIST

A price list describing the various publica
tions of the Association will be sent on request

AMERICAN MEDICAL ASSOCIATION
535 N DEARBORN STREET, CHICAGO

"THE PROOF



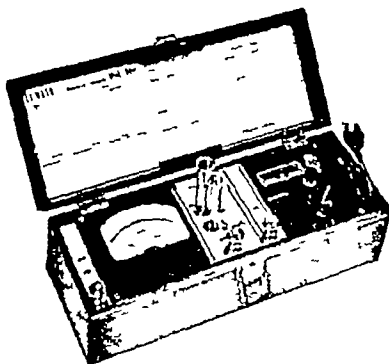
of the pudding"

During the past year Franck Chicory has
made thousands of new friends, due un
doubtedly to restrictions on the sale of
coffee. For this reason it is all the more
gratifying to receive the many voluntary
letters of commendation in which the
phrase "the best cup of coffee we ever
drank" is repeated over and over again

We believe that a product which can con
sistently please so many people will also
please you. To that end we will cheer
fully mail you a package of 10 tablets
for the small sum of 10c. Unless you
prefer an unusually stout beverage each
tablet will equal a heaping tablespoon of
dry coffee

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\$105.- including 6 color fil
ters, 12 matched test
tubes and Reference Book containing
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each. Key number counted as four words
(Payable in advance) This rate applies for
each insertion

WANTED	Partner	Sanitaria
Apparatus	Partnership	Drug Stores
Assistant	Situation	Location for Sanit
Books	FOR SALE	FOR RENT
Intern	Apparatus	EXCHANGE
Location	Practice	MISCELLANEOUS
Locum Tenens		

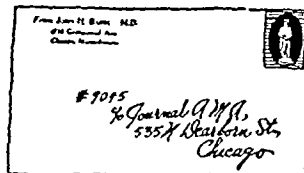
KEYED ADVERTISEMENTS—A fee of 25c is
charged to have answers sent care of A M A. Letters
sent in our care are forwarded promptly. RESULTS
are better when an advertisement receives several in
sertions and to those who remit for four consecutive
insertions of a classified advertisement we will give
free two more insertions provided the first four do
not consummate a deal. Notice for free insertions must
be received within two weeks following date of last or
fourth insertion

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NOTICE — SHOULD YOU PREFER TO
have your advertisement set in bold type
(indented like this paragraph) the rate will
be \$5 50 for 35 words additional words
14 cents each

Inquiries About Keyed Advertisements

I frequently we receive requests to this effect
Please send me the address and particulars regard
ing ads No. We are not permitted by adver
tisers who have their mail sent care of A M A to furnish
inquirers information of any kind hence when you
wish to corre
spond with such
an advertiser
address the en
velope in this
manner



Classified Ads are Payable in Advance To avoid
delay in publishing remit with order
For current issue ad must reach us by 10 a m
Monday

All statements in classified ads are published in good
faith but it is manifestly impossible to make minute
investigation of each advertisement. Physicians not
members of county medical societies should submit
professional references with their advertisement and
thus obviate delay

We exclude from our columns all known questionable
ads and appreciate notification from our readers rela
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to reject or modify all advertising copy in conformity
with the rules of the advertising committee

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For classified announcements of a commercial
or promotional nature, the rate is \$4 40 for 20
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This rate is for each insertion. No gratuitous
insertions given (25c extra if keyed through
A M A) This applies to advertisements of firms
or individual in business such as

Placement	Printers	Salesmen
Bureaus	Postgraduate Courses	Insurance
Publishers	Manufacturers	Resorts

In fact anything but personal classified ads

For Semi Display as Above Add 25% Extra

RESULTS VS ECONOMY—DO NOT TRY TO
economize at the expense of the effectiveness of
your advertisement by omitting important and
attractive features. In selling a practice, value
of which runs into hundreds of dollars, it is
surely unwise to run the chance of losing a
prospective purchaser by not including every
important fact and favorable item pertaining
to your proposition. Extra words over thirty
five cost only 11 cents each

Journal A M A, 535 N Dearborn St, CHICAGO

APPOINTMENTS

THE LAHEY CLINIC OFFERS RESEARCH FELLOWSHIPS
in medicine these special fellowships pro
vide half time opportunity for investigation of clinical
nature under supervision and half time training in
internal medicine the term of these Special Fellowships
is 2 years the qualifications preferred are 2 years
medical internship and special interest in investigation
In addition the Regular Fellowships in Internal medi
cine are available for physicians who seek certification
by the American Board of Internal Medicine and experience
provided in all phases of internal medicine candidates
must have had at least 1 year of internship but addi
tional experience in hospital or practice is desired
Appointments are made for 1 year and may be renewed
for 2 years or more for further information and
application forms write to the Medical Department
Lahey Clinic Boston Mass

ASSISTANTS WANTED

WANTED—ORTHOPEDIC ASSISTANT TRAINED
or untrained permanent connection possible for
proper man Austin T Moore M D The Ortho
pedic Hospital Columbia S C

WANTED—ASSISTANT MILITARY EXEMPT CITY
of 3 000 middle west large general practice
\$ 000 for 1 year no expense except own car state age
reference religion school and year of graduation
and experience Add 611 B C AMA

WANTED—MILITARY EXEMPT ASSISTANT
for East Central Ohio town and country practice
fully equipped 14 room office including deep ther-
apy 4 hospitals within 12 mile radius excellent
salary promising future Add 6611 B C AMA

WANTED—AT ONCE—ASSISTANT IN GENERAL
town and county practice eastern Pennsylvania up
to date equipment permanent Add 611 B C AMA

WANTED—BY BUSY PENNSYLVANIA SUR-
geon—Surgical assistant for duration only 35
years or younger draft exempt assistantship will
be acceptable to American Board salary open state
race religion and nationality Add 6628 B C
AMA

PHYSICIANS WANTED

*The ★ signifies a hospital approved for intern-
ships and the + approved for residencies in
specialties by the Council on Medical Education
and Hospitals of the A M A Consult Coun-
cil's approved list for types of internships and
residencies approved*

WANTED—Internist to head department of medicine
municipal hospital of more than 1 000 bed minimum
five years training required unusual opportunity for
research development and extension of outpatient clinic
services east — Medical Bureau (Burnelle Larson
Director) Palmolive Bldg Chicago C

INTERESTING APPOINTMENTS — (A) EAST
specialist southern industrial hospital \$ 500
starting salary (b) Internist well qualified associa-
tion progressive group certified specialists large mid-
western city offering excellent hospital living facili-
ties unlimited financial opportunity (c) Physician
anesthetist charge department 163 bed midwestern
hospital \$ 500 starting salary (d) Surgeon capable
willing to come general practice attractive California
location near Los Angeles \$ 0 monthly eventual
partnership (e) Hygiene instructor well rated east-
ern university ineligible military service qualified
teach mental hygiene salary open (f) General prac-
titioner some industrial experience advantageous
location southern California group \$500 monthly
early partnership assured (g) Woman pediatrician
assist eminent southern specialist well located large
city attractive salary a used capable applicant (h)
Woman physician a first general practice some labora-
tory anesthesia small private hospital near New York
City (i) House physician a first surgery general
care of patients \$ 7 bed Pennsylvania hospital \$ 500
full maintenance woman eligible 1st Aznoes (Ann
Woodward Director) 30 Michigan Chicago C

WANTED—CHAIRMAN OF HEALTH DIVISION
midwestern college averaging 1 000 students excel-
lent department splendidly staffed well equipped in-
firmaries duties include health education should be
sufficiently trained in psychiatry to be able to help
normal young people with problems must be capable
administrator 23 Medical Bureau (Burnelle Larson
Director) Palmolive Bldg Chicago C

SINCE 1926 CONTINUOUSLY SERVING THE
medical profession exclusively here and abroad
Write telling us of your qualifications and prefer-
ences Free registration N Y Medical Exchange
489 Fifth Ave N Y C

WANTED—PATHOLOGIST TO DIRECT LABORA-
tories performing approximately 50 000 examinations
annually including diagnosis of 8 000 surgical speci-
mens and performance of about 300 postmortem exam-
inations duties include also those of attending patholo-
gist to seven hospital full time 23 Medical Bureau
(Burnelle Larson Director) Palmolive Bldg Chi-
cago C

PHYSICIANS — (A) INDUSTRIAL—MEDICAL DI-
rector large organization midwest administrative
ability salary to \$ 500 depending on individual
needs plants 8 hour duty salaries to \$ 000 assist-
ant surgical and industrial practice midwest \$400 up
(b) General practice large midwest city a si-
tant and success of \$ 000 monthly (c) Clinics midwest
affiliated state university general work \$400 south-
west internist EAST pediatrician obstetrician start-
ing salaries \$ 000 outh general work \$3 600 plu-
tional expenses (d) Women physicians assist
in large practice southern town salary \$400 midwest
city salary open (e) Psychiatric salaries to \$6 000
men or women (f) Locum tenens California remun-
eration \$ 00 (g) Hospitals including urgent midwest
\$3 0 maintenance eat salary open (h) State hos-
pitals men or women citizenship not required (i)
temp physician July and August north woods \$ 00
plus expenses Shaw Agencies Placement Bureau 1008
N Rush St Chicago C

WANTED—PSYCHIATRIST PRIVATE INSTITU-
tion for nervous and mental diseases woman eligi-
ble to penitentiaries rank and salary dependent upon
qualifications If Diplomate starting salary not less
than \$100 excellent opportunity also for one desirous
of completing certification east 23 Medical Bureau
(Burnelle Larson Director) Palmolive Bldg Chi-
cago C

WANTED—RESIDENT PHYSICIAN MALE OR
female in modern neuropsychiatric hospital
graduate of approved medical school and 1 year
internship attractive salary with maintenance for
self and research fellowship state race religion and
nationality where licensed Add 6615 C AMA

WANTED—RESIDENT OLD OR YOUNG PHYSI-
cian handicapped permitted 14 bed hospital general
practice furnished house for resident's family pleas-
ant surroundings \$ 4 climate fishing and hunting
salary open 111 Hanna Hospital Hanna Wyo-
ning C

(Continued on page 28)



Physicians Casualty Association Physicians Health Association



FIRST NATIONAL BANK BUILDING, 4TH FLOOR

OMAHA, NEBRASKA

COMBINED ANNUAL REPORT FOR 1941

Balance January 1 1941	\$7 665 45	\$2 020 069 44
Less loss on securities written down	756 59	
Less Furniture and Fixtures written down		8 422 04

INCOME IN 1941

Received from members	\$864 777 47	
Investment income	75 701 38	
Miscellaneous income	33	
Total Income for 1941		940 479 18
		\$2 952 126 58

DISBURSEMENTS IN 1941

Accident Sickness and Hospital Claims	\$612 504 07	
Operating Expenses	119 461 35	
Total disbursements for 1941		731 965 42
Balance Dec. 31 1941		\$2 220 161 16

ASSETS

Cash	\$ 181 902 98	
Bonds (at cost)	1 902 787 68	
Stocks	22 382 00	
Real Estate Mortgages	19 067 49	
Real Estate	93 878 01	
Collection Items	139 00	
Furniture & Fixtures	2 00	
Bonds written down	2 00	
		\$2 220 161 16

THUM discourages NAIL BITING AND THUMB SUCKING

Thumb sucking and nail
biting are not only un-
healthy but are very
unbecoming to any child.
Use THUM.

THUM contains ex-
tract of capsicum
(2 34%) in a base
of acetone nail lac-
quer and isopropyl
alcohol Applied
like nail polish.

50c and \$1 per
bottle at your sur-
gical supply house
or druggist.

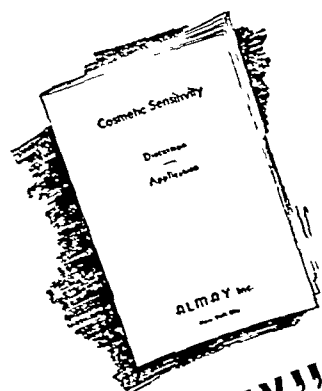
NUM SPECIALTY CO.

4614 Fifth Avenue
Pittsburgh Pa.

AMA 14



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- a practical treatise
enabling the physician to cope with
his patients' cosmetic allergy

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No shadow of slavery or sickness . . .

While men die and others fight on that War for our children may never be more than a game. Medical demands increase and the importance of X-Ray grows. For our children must not only be free, they must have the forces of health and vigor which are so strongly inherent in the Four Freedoms for which we fight.

Though we now know that this weapon of medicine, the X-Ray, may lend itself to such wartime duties as checking for weak spots in the armor plate of a battlewagon or revealing interior flaws in a pressure vessel, let us always uphold the original and most essential job of this medical tool—that of checking the inception and growth of disease.



And we at Patterson are humbly proud to contribute to the work of this science to reaffirm our assurance that intensive screen research is being continued, that the quality and supply of our X-Ray Screens will be maintained.

Behind our army which combats the forces of slavery, we shall continue our fight against the more formidable forces of sickness.


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NOT-TOO ILL TO WORK**

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LILY-TULIP

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KANSAS CITY, MO.
3030 EAST 11th STREET
LOS ANGELES, CALIF.

Tonics and Sedatives

FROM THE DOCTOR'S PRACTICE
Sir A patient of mine today told me of some high class biliary surgery that she had performed some seven years ago—in these words:

"He removed some tubes from my bile to my liver and built a casing around my gallbladder."

R. A. K., New York

WHAT A PROBLEM!

Letter received by a Health Column

Dr. ————
I enclose a stamped self-addressed envelope for your answer to my question. It is probably the oddest you've come across, but means a lot to me. The situation is—due to my husband's thrashing around at night, we got a double-decker bed, as I'm pregnant seven months, so he couldn't hurt me, as I've had a miscarriage and am carrying this child along with a cyst. Had to have shots and am taking "E" pills. Well, he slept up on top and me on the bottom. Then he said it was too hot up there and with me protesting, cut the legs off the bottom half—which left him a good 6 inches lower—but me literally "on the floor"—there being only the side frame, the springs, mattress, and then me—just 6 inches off the floor. To get in bed I had to roll in and to get out I had to roll out on the floor to my knees and get up from there. Very difficult as I'm kind a heavy now. I'm very rheumatic too so this bed business is terrific. There is a cold wood-sided basement where the wind whistles all the time, and as we are on the first floor, the floor is awful cold, and the drafts are awful. What I want to know is in my condition is it healthy for me to continue to sleep on the floor? I did one night and due to imagination or other peoples "he put you on the floor?" in horrified tones (even his folks were agast!) I had a miserable night—so I had a big fight with him—said he was inconsiderate, etc., and since have been crawling up the ladder to the 2nd bunk. Now that is some job, especially when I have to get up 1 or 2 times a night. He claims this climbing is harder on me than sleeping on the floor. Could you help? Tell me what to do. The bed can't be fixed. We have no room to put them up as single beds. Should I sleep on our couch, floor, or upper deck? Is it unhealthy so low to the floor? Answer soon as I seem to bawl everytime I look at the bed. We are both unhappy and miserable over it. Please answer.

Let's Go!

Ad Observed by J. D. in N. Y. Times
**WHAT ARE YOU GOING TO DO
AFTER THE WAR ???**

A private mental hospital out of town offers opportunities to high school and college graduates, no experience necessary. New York Medical Exchange, Agency, 489 5th Avenue NYC.

(Continued on page 28)

CONSIDERATION OF IRRITATION OF THE NOSE AND THROAT BECOMES INCREASINGLY IMPORTANT

FIGURES indicate that smoking is at its all-time peak, and is still increasing sharply! *Not to be overlooked* is the advantage provided by PHILIP MORRIS' distinctive method of manufacture. Researches reported *by thoroughly dependable sources*[—] showed that:

**WHEN SMOKERS CHANGED TO PHILIP MORRIS
EVERY CASE OF IRRITATION OF THE NOSE
AND THROAT DUE TO SMOKING CLEARED
COMPLETELY OR DEFINITELY IMPROVED.**

Reprints of these papers will be gladly forwarded

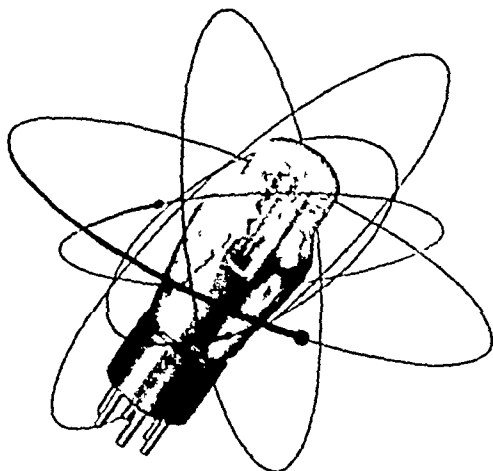


PHILIP MORRIS

PHILIP MORRIS & Co., LTD., INC
119 FIFTH AVENUE, N Y

* *Laryngoscope*, Feb 1935, Vol XLV No 2, 149-154
Laryngoscope, Jan 1937, Vol XLVII, No 1, 58-60

...AND HEREIN LIES THE FUTURE OF HEART TESTING



BYOND the war's dark horizon lies a bright new world wherein a marvelous science now aiding us in victory will open the door to an era of undreamed of wonders and developments. Such is the science of electronics providing for man the auxiliaries to do things in a better way, and often to accomplish the "impossible."

In electrocardiography, many improvements and developments we already know were made possible by applications of the electronic tube.

the ultra-portable, simple to use, yet accurate cardiograph instrument of today instantly visible electrocardiograms continuously recorded cardiograms accurate small animal cardiograms electronically amplified auscultation without distortion practical recording of heart sounds simultaneously with one or more electrocardiograms or with cardiogram and sphygmogram.

To all these accomplishments Sanborn electronic engineers have made substantial contributions. Today these men and others in this field are devoting their skill and knowledge to the urgent task of maintaining the survival of all that has gone before—and, keeping pace with war's furious demands, are developing stronger, sturdier, more dependable and still more versatile electronic instruments for the armed forces.

This background of successful electronic application and increased knowledge of electronic possibilities through research and development spells a bright future for the science of heart testing. Medicine has but to state what needs to be done, and—in all probability—the electronic tube will do it.

ONE OF A SERIES OF MESSAGES FROM

SANBORN CO.

CAMBRIDGE, MASS.

Makers of CARDIETTE, Steinh-CARDIETTE,
CARDIOSCOPE and WATERLESS Metabolism Tester

(Tomes and Sedati is Continued)

PSYCHIATRY IN A NUTSHELL (CONT.)—III

RALPH M. LUNKHOUSER, M.D.
D. TH. MANIC

When you find a poor man who is very confused

Who keeps talking as fast as greased lightning

Who keeps moving about and can never be still,

Whose actions and manners are frightening,

Who is losing much weight and does not care to eat,

Who is fearful and in a great panic,

You may be rather sure he's been that way before.

His behavior is typically manic.

In a few weeks or months he'll not be so disturbed.

He will sit all alone and dejected,

Never saying a word, simply dazed and confused.

As though by the whole world neglected.

He still is a manic, in different phase,

With many a fear and obsession.

His poor head is filled with abnormal ideas.

He is now in a state of depression.

Remember the manic—he's up or he's down.

The first stage we call agitation.

And then before long we shall see him depressed.

As though in some deep meditation.

The manic is second in all of the lists.

Of those who have any psychosis,

And, if we remember the up and down phase,

We can usually make diagnosis.

(To be continued)

FROM IHL DOCTORS' PRACTICE

Su—Having gotten not a few laughs out of the *Tomes* and *Boosts* column I report these two instances of fun, obtained in the course of pre-employment examinations here.

A man came in holding the unsmoked end of a cigar in his fingers. He was told to enter a cubicle and undress. When ready, the doctor entered, to find him still clutching his cigar. "Put your butt on that window-sill," the doctor said. The man looked at him with some bewilderment, took a chair, and tried to climb up.

A pert but sedate miss was examined. She was asked if she used any alcoholic beverages. "No," she replied. "Do you use tobacco in any form?" "No," she replied. The doctor, amused by the twinkle in her eyes, said, "You are a good little girl, aren't you?" "Date me and see," she demurely replied.

G. S. S., Ordnance Hosp.

Terre Haute

Well Rounded Care

Seen in Time

"Pregnant women are rounded up weekly in station wagons, taken to the clinic."

(Continued on page 30)

(Continued from page 25)

WANTED—(A) GENERAL PRACTITIONER DUTIES principally internal medicine some obstetrics group association (California) (b) General practitioner group association some obstetrics possibly pediatrics northwest Texas \$6,000 (c) General practitioners group association duties principally general practice opportunity to specialize if so inclined \$3,000 town of 1,000 about 200 miles from Chicago 256 Medical Bureau (Burnelle Larson Director) Palmolive Bldg Chicago

WANTED—RESIDENTS ACCREDITED 100 BED hospital+ mixed residency male or female recent graduate of Class A medical school only salary \$150 and maintenance Add 6625 C % AMA

WANTED—(A) PEDIATRICIAN MEDICAL DEPARTMENT large industrial company 300 bed hospital staff of 30 physicians west (b) Internist to become associated with several specialists should be eligible certification minimum guarantee \$5,000 Chicago area (c) General surgeon group association \$7,200 co-partnership arrangement later (California) (d) Young surgeon eligible for Board to become associated with obstetrician gynecologist Diplomate town of 10,000 east (e) Orthopedic surgeon eight man clinic midwestern town of 40,000 (f) Medical anaesthetist group and hospital+ practice east (g) Gastroenterologist group association central city of 300,000 (h) Physician interested in orthopedics and traumatic surgery to become associated with prominent surgeon California 257 Medical Bureau (Burnelle Larson Director) Palmolive Bldg Chicago

WANTED—POSITIONS OPEN FOR ASSISTANT residents in pediatrics for service beginning July 1 1943 Presbyterian Hospital+ Chicago C

INDUSTRIAL APPOINTMENTS—(A) INDUSTRIAL surgeon and physician temporary appointment large industrial company Alaska (b) Industrial physician part or full time Chicago area+ (c) Staff physician mining company southwest minimum \$400 (d) Industrial physician medical department Dutch West Indies (e) Assistant mining practice \$500 including all professional expenses West Virginia (f) Zone surgeon duties largely administrative involving considerable traveling southwestern offices of eastern company (g) Industrial physician to supervise medical care of workmen employees of large paper manufacturing company will be required to live close to work operations New England (h) Industrial physician new plant Ohio 258 Medical Bureau (Burnelle Larson Director) Palmolive Bldg Chicago

WANTED—ASSISTANT PHYSICIAN MALE OR female in a modern well equipped institution for the care of the mentally retarded initial salary \$3,000 per year Attractive increases each 6 months clinical services well established excellent opportunity for psychiatric experience institution located in a town of 7,500 population exceptional recreational advantages in an area populated with lakes and streams Add Box 148 Coldwater Mich

WOMEN PHYSICIANS FOR FOLLOWING—(A) Student health appointment state university midwest \$3,000 complete maintenance (b) Assistant ship general and surgical practice \$300 Iowa (c) Assistantship general and industrial practice \$300 including all professional expenses Pennsylvania (d) State public health appointment should be particularly well qualified or interested pediatrics \$4,800 traveling expenses (e) To direct department of health public school system approximately 6,000 children southwest 259 Medical Bureau (Burnelle Larson Director) Palmolive Bldg Chicago

WANTED—IMMEDIATELY—WOMAN RESIDENT physician general service surgery obstetrics etc small hospital Apply Good Samaritan Hospital Lebanon Pa

ASSISTANTSHIP—(A) GROUP PRACTICE should be sufficiently trained in internal medicine to qualify for teaching appointment university medical center north (b) General practice college town of 14,000 opportunity for taking over complete practice midwest (c) Private practice of surgery should be fundamentally well trained in surgery Chicago area (d) To prominent pediatrician head of department of pediatrics university medical school woman eligible midwest (e) General practice duties include surgical assisting New England (f) General practice small town Houston area (g) Orthopedic department fairly large group clinic university town (h) Busy surgical practice duties consist of assisting in major surgery postoperative care of surgical cases midwestern town of 200,000 (i) Urological division large general hospital+ specialist desirous of completing certification preferred 260 Medical Bureau (Burnelle Larson Director) Palmolive Bldg Chicago

WANTED—RESIDENCIES—AVAILABLE JULY 1 1943 pediatric orthopedic 1 year pediatric residency includes infant medicine and surgery children's medicine and surgery contagion Apply to Medical Director Children's Hospital+ Denver Colo

RESIDENCIES—(A) MIXED SERVICE provided+ \$1,800 complete maintenance now or July 1 (b) Departments of ophthalmology and otolaryngology university medical school+ active department one or three year service south (c) Resident in surgery small hospital unit of state department in surgical training required south (d) Resident in medicine large charitable hospital \$12, maintenance eligible July 1 east (f) Surgical university hospital midwest (g) Obstetrics and gynecology approval service large hospital east (h) Orthopedics approved+ California (i) Urological active service both diagnostically and surgically approved + \$1 maintenance uniforms (j) General resident no obstetrics 300 bed hospital having two residents who assist in all surgery 261 Medical Bureau Palmolive Bldg Chicago (Burnelle Larson Director)

(Continued on page 30)

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MAY 8, 1943

REFLECTIONS OF AN ARMY OFFICER ON MEDICAL STUDENTS AND THE WAR

BRIGADIER GENERAL HUGH JACKSON MORGAN
MEDICAL CORPS, UNITED STATES ARMY

My reflections as an officer in the Medical Department of the United States Army are neither carefully arranged nor very clearly expressed. They are based on no grand historical view of the times in which we live nor do they stem from any ordered, philosophical concept of our destiny as human beings on this globe. Moreover, they are directed not to those of my generation but to the medical students and house officers who are in attendance on this occasion. I am especially anxious to make the latter point clear, since I feel that I may be a little closer to the students than to their elders, for it has been my good fortune to have spent a large part of the past eighteen years with medical students. I think I know medical students and I doubt not that a good many of them know me—perhaps better than I know myself. However this may be, I can at least speak frankly and directly with them, and I think they can with me.

Although the timing of an educational experience in medicine is difficult to designate, for our purposes we will agree that the individual concerned is a student during that period of his career which is given over to preparation for his ultimate position in society as a practitioner, teacher or researcher in medicine. This begins at the first year of college and ends with the completion of postgraduate training. Before the completion of his internship the student frequently determines his ultimate goal and can, in his mind's eye, visualize himself in the future as far as professional activities are concerned. Moreover, he has some concept of the environment in which he plans to carry on his professional work. Indeed the majority of medical students have some sort of ordered concept of this future long before they receive their degrees. It is likely that few professions are so conducive to thoughtful long-time planning as medicine. To become a medical student nowadays the premedical curriculum must have been pointed carefully to acceptance by the medical school. Competition begins the day of college matriculation and steadily increases as the months go by. Then comes the inevitable day when the first screening process is instituted—probably most of you remember it. You were successful in passing through several progressively selective preprofessional school screenings and you found yourselves at long last in the medical school of your selection and, equally impor-

tant, in a school which selected you. This was the earliest of many similar screening experiences. In the medical school, competition increased. Academic morbidity was great during the first school year and mortality may have occurred within a few months. It almost always occurs for a few by the end of the first or second year. By graduation time, competition becomes a fixed habit with you. The award of internships is based on medical school performance, assistant residencies on internship performance, residencies on assistant residency performance. Thus quality of current work determines future hospital and medical faculty appointments. Specialization is decided on for those aspiring to the higher echelons of practice, and jockeying for position begins for the long steeplechase ending in certification as a fully qualified specialist. Specialization implies practice and practice implies patients, and patients are usually won—not inherited. Thus, becoming established in practice has its competitive implications too, although we try hard to protect our profession and our patients from the abuses, indignities and commercialism commonly associated with the term, to the end that this competition may be one for quality and opportunity for service rather than for material gain.

I have emphasized the competitive aspects of the activities of the undergraduate and graduate student and practitioner because I feel that because of this competition and other factors which I shall not enumerate there are few disciplines so conducive to the creation of a "one man show." Individualism, independence, objectivity and resourcefulness are engendered by this discipline. The young medical man early in his educational life, knows where he is going and is on his way. Competition successfully met strengthens his determination to attain his objective, and sacrifices to this end become almost reflex. The successful medical student is a marked man among individuals of his age group. He is, relatively speaking a specialist already. He deliberately bypasses or excludes many aspects of life which would attract him were he otherwise engaged. His normal social, economic and oft-times biologic inclinations are deliberately adjusted to consistency with his objective. He practices effectively a kind of isolationism. Celibacy and poverty are his accustomed states, and except for rare understandable, though often lurid lapses, he leaves to his less occupied fellows active participation in the life of the nonmedical world about him.

TWO WORLD WARS

The third and fourth year medical students and some of the younger doctors before me tonight were either nonexistent or were enjoying the security of embryonic or fetal existence or infancy when the first phase of the current war was terminated in the armistice of 1918. Military victory was attained then and according to my way of thinking, forfeited later when our country insured the failure of the League of Nations.

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by separating itself from its responsibilities and obligations. During the ensuing twenty-four years our country remained an isolated unit in a closely integrated world—a world according to Vice President Wallace, which has become actually smaller when measured by travel time than was our little country at the time our constitution was adopted in 1787. (It is well to remember that this constitution was necessary for the protection of the several states which were no longer isolated enough to feel secure from one another or the rest of the world as individual units.) We worked for peace following World War I, but with no success. Shortly after the armistice of 1918 we repudiated our 1917-1918 slogan to "Make the World Safe for Democracy"—a slogan ridiculed and discarded as we became cynical, "realistic," "debunked." We became quite sophisticated and poked fun at those who still cherished this fine ideal for which men had given their lives. "Anyway," we said, "it should have been worded 'to make Europe safe for democracy' for who really questioned the safety of democracy in the United States—thousands of miles from Europe and its recurring wars? But in 1941 we rediscovered that the slogan was both realistic and practical, for we learned then that our isolation was no protection and that only by making the world safe for democracy could our American democracy be preserved. It has been demonstrated conclusively in the past decade that there is no safety for any democracy unless there is safety for all.

It appears that in international affairs a gangster or kidnaper makes his decisions as to his next "take" on the same basis that our underworld gangsters and kidnapers operate. Can he get away with it? The gangster is everybody's business because everybody is vulnerable to the gangster at one time or another. To tolerate him and his attack on others only because we think we are strong enough to overcome him should he elect to attack us is putting a very high stake on our judgment. Not only is this dangerous as far as our selfish interests are concerned, but it is also in complete disregard of the responsibility that is part of civilized, enlightened citizenship. The unopposed rape of Manchuria by the Japanese when you were 14 years old, of Abyssinia by the Italians when you were 18 and embarked on your professional career, of Spain by Hitler and Mussolini when you were 19, of China by Japan when you were 20, all gave emphasis to the indifferent, selfish attitude of our democracies. The free people of the world saw fit to allow these things to happen—things which were contrary to their interpretation of right and wrong and in total violation of any concept of international justice and decency. But, at the time they occurred, these outrages did not seem to affect our immediate self interest directly. Indeed, the notion of avoiding violence in our attitude toward them was so strong as to make conspiracy and compromise acceptable to the end that we might have "no war in our time." You were well on in your highly specialized, competitive and absorbing medical education then—and most of you gave little more than enough thought to these developments to decide, along with the majority of your elders, that you wanted to keep your skirts clear of them. You asked only that you be allowed to follow the well defined course of medical progression ahead of you. This had been, was and, you believed, always would be your objective. Others, older and less occupied than you, were of the same detached, indifferent state of mind regarding the conflict, according to the Gallup polls. The European

war was Europe's concern chiefly, and less than 10 per cent of us felt that we should declare war on Germany, although, if there is any comfort in recalling it now, a much larger group was willing to help England even at risk of war. It was not until after the Germans and Italians had overwhelmed Greece in April 1941 that as many as 30 per cent of us felt we should fight the aggressors although even then another 30 per cent of us were opposed to incurring the risk of war by helping England. In October 1941 only 25 per cent of us felt that we should enter the conflict. Is it surprising that medical students and young doctors shared this feeling of indifference and apathy? There was an extremely full life—a life which in peacetimes precluded distractions of any sort and demanded relentless concentration on the single objective of a medical education. Lend-lease and armed neutrality and selective service became topics of serious discussion but were not necessarily definitive distractions, and your major reaction to the ominous developments in the outside world was to hold hard to your course and your goal. Many of you in early 1941 belonged to the 50 to 65 per cent who believed, regardless of the right or wrong of it, that this country would get into the war eventually. Many of you resented this, correctly believing that it was a problem not of your making. It may have held, doubtless did hold a strange, detached fascination for you, but you could put it out of mind whenever the papers and radio would allow and, with the aid of draft board deferment of medical students, you kept at your absorbing task.

OUR ENTRY INTO THE WAR

Then came Dec. 7, 1941 and the attack by Japan at Pearl Harbor. Three days later Germany and Italy declared war on us. Whether we liked it or not, and regardless of our previous opinions about the war, it now became our war. Our enemies dispelled confusion and doubt and clarified our position. Germany, Italy and Japan announced that their objectives were to destroy our freedom, enslave us and possess our material assets. The United States was in the war on the side it had favored from the beginning, no longer giving only lip service to idealism and against the dictum that "Might is Right" but also fighting to survive as a free nation in the world. This was a little more than one year ago, and it really came as a shock and dislocation to you, for you had no choice except to relate yourselves to it. Here was something which had actually happened, and it was bigger than your career or anything else. What was your reaction? You know far better than I, but I hazard a guess that it was not altogether that of men impatient and eager for the fray. "The Japs have to be whipped, and the Germans and Italians too—but why should this happen to us?" Certainly you had a right to ask that question. Some of you were not even born when the real answer to your query was laid down. You have had little, if anything, to do with the setting up of this war. My generation is responsible, not yours. Yet on your shoulders must fall the responsibility of correcting the oldsters' mistakes, and life is always like this. My generation and the generation before me had a chance to make the world safe for democracy and we failed. Your generation and mine again will have that chance after this war is won, and it is comforting to believe, as I do, that we shall not fail unless you look to my generation (which, remember, failed once) rather than to your own for leadership. But the war isn't won yet, and if we are to survive at all it must be won. Then will

come the problem of an enduring peace. So let us concern ourselves with the present now and ask of medical students and recent medical graduates: Where do you find yourselves now, today, with relation to the war and your careers?

It appears now that you will very soon find yourselves on active duty in the Army or Navy of the United States—no longer a free agent to follow the line of your ambition and, regardless of all else to meet competition and bend circumstance to the attainment of the objective which for many of you is as old as your mature life. You are called on at long last, and in no uncertain terms, to compromise with personal ambition and objective. An interference stronger than any you have ever encountered, has developed in your struggle toward your goal and this interference is your loyalty as an American citizen. What is your chief objective now? It is the common objective of all loyal Americans—to bend every effort and utilize every talent to help win the war and thus preserve our country, and then to insure an enduring peace. Is this objective incompatible with your former, prewar objective which was in general to become a doctor of medicine? In the broader sense it is not, for you are more useful to your country now as doctors and potential doctors than you could be as combat soldiers. In this you are more fortunate than your brethren in most of the other walks of life. The war will not prevent the completion of your formal medical education. What about training for a specialty in medicine? This is an important question to those of you who have decided to restrict your work to one field. As far as specialization is concerned it is obvious that it will be possible for but few, if any of you to have two three or four years of postgraduate training before your assignment to duty with the armed forces. Indeed, it is even conceivable that the need for young medical officers in the armed forces might become so great as to preclude the one year of internship now prescribed.

How will the Army use you when you become commissioned in the Medical Corps? I will, first, answer this question the way I believe most of you would answer it. "If I am very very lucky I will be assigned to a general hospital and to the specialty in which I am interested, or if I am lucky I will be assigned to a station hospital or an evacuation or field hospital where professional work has at least some resemblance to that with which I am familiar in civilian life. If I am unlucky I will be assigned to troops where little of my knowledge will be utilized and where I shall acquire no useful professional training."

Regarding the relative importance of assignments in the Medical Department I have a definite opinion. During the past year I have had an opportunity to observe the professional work of our army general and station hospitals in this country. The quality of professional care which is provided is in the main good. The experience and training afforded by the professional services of such hospitals for the junior members of the staff varies in relation to the senior officers of course. In hospitals in which the professional services are headed by men interested in the training of young men general medicine and surgery and the medical and surgical specialties are practiced along conventional lines. The ward officer does the work of the civil hospital intern and assistant resident under the supervision of his section chief. The section chief is responsible to the chief of service medical or surgical as the case may be, and the chiefs of service are respon-

sible to the commanding officer. Ward rounds are held daily in each section, and "grand rounds" bring together all the sections once a week or more. Inter-service consultations, staff meetings, clinical-pathologic conferences and journal clubs complete the program of professional activity with one exception. The recommendations of the ward officer and section chief regarding the final disposition of patients are always reviewed formally by boards composed of representatives of the services and the commanding officer. So much for the professional work of the hospitals. It isn't materially different from practice in our better civilian institutions.

THE FIELD MEDICAL OFFICER

Let us examine the future activities of the "unlucky" majority of you who will be ordered to field duty. The clinical material reaching army hospitals comes to it almost exclusively through the activities of the medical officers who are assigned to troops. Thus the initiation of medical care begins with this medical officer. It is he who decides whether treatment can be provided locally or whether hospitalization is required. His acumen determines whether or not diphtheria, meningitis pneumonia and measles are promptly recognized, isolated and evacuated for hospital care. Thus triage, or the selection and classification of significant illness and injury, and evacuation are extremely important functions. They are initiated and can be initiated only by the medical officer with troops. It is obvious that the proper functioning of the enormous medical organization which is behind the fighting force is dependent on the skilful, prompt execution of triage and evacuation. In the theaters of operations these functions are conspicuously important, and here as in the training area, the wounded man is dependent on his medical officer also for first aid and emergency treatment. How to prevent death from asphyxia in this sucking chest wound, what to do and how to do it under the existing circumstances for shock, how to handle burns in order to preserve life and the function of the burned part, what to do about simple and compound fractures in order to save life and limb, how to practice hemostasis, how to recognize malingerers and the hysterical and how to handle them, which cases to evacuate when facilities are limited and which to retain, which patients to treat when almost overwhelmed by the volume of work, and which to abandon as hopeless, what to do about head wounds and abdominal wounds, how and when to prescribe the sulfonamides for battle casualties and, equally important how to see that they are available and actually administered, when and how to use tourniquets and when and how not to, how to collect the wounded, transport them to aid stations and further on to definitive treatment, how to control in the most effective way omnipresent pain, how to sustain courage in self and fellows when it is ebbing? The mere asking of these questions indicates a convincingly negative answer to the next. Is there any place in this army where medical knowledge and skill resourcefulness and courage are more important than in an active first aid station in a battle area?

The health of the fighting men (and these are the only men who will gain us the victory) is in the hands of the field medical officer. He is the family doctor during the training period and he accompanies his clientele into combat. His knowledge of camp sanitation safeguards their health. Preventive medicine in its most exciting productive aspect is his interest and

duty. He is a practical specialist in hygiene and sanitation. He is, in one man, sanitarian, diagnostician, expert in traumatic surgery with all its complications, expert in triage, expert in evacuation, morale officer. And in order to accomplish his mission, he also must know something about map reading, logistics and military tactics.

I have been describing a doctor who is foreign to civil concepts of medical practice—a specialist who is recognized only by the military. Just now the exigencies of life are such that, for the winning of this war, he is the most important doctor extant. And the winning of the war is for the time being all that counts. Each one of us here would be carrying a gun were it not for the fact that we can actually help win the war more effectively by being a doctor or training to be one. Although ours is a noncombatant service I am sure we take no pride in that classification of our function when there is so much at stake and when combat alone will settle the issue. If we weren't contributing more toward the victory by being in this noncombatant medical department than we could by taking up guns, then we would get to the guns for otherwise, when men are fighting to preserve our lives and institutions our position would be intolerable.

The doctors of our country during past wars created a great tradition. I predict that this tradition will be not only sustained but also enriched by the present generation of medical men. During this war you will be guided in your roles by the example provided you by the distinguished physician whose memory we honor this evening. In this assurance I shall conclude these remarks by reading to you a few paragraphs by another distinguished physician. They were written at the outbreak of the war between the states, sixteen years before Dr. Morris was born. In 1861 Dr. Oliver Wendell Holmes, in his fifty-second year and Parkman professor of anatomy and physiology at Harvard University, terminated an introductory lecture to medical students as follows:

"It is time to bring these crowded remarks to a close. The day has been when at the beginning of a course of lectures I should have thought it fitting to exhort you to diligence and entire devotion to your tasks as students. It is not so now. The young man who has not heard the clarion voices of honor and of duty now sounding throughout the land will heed no word of mine. In the camp or the city, in the field or the hospital, under sheltering roof or half protecting canvas or open sky, shedding our own blood or stanching that of our wounded defenders, students or teachers—whatever our calling and our ability—we belong not to ourselves, but to our imperiled country, whose danger is our calamity, whose ruin would be our enslavement, whose rescue shall be our earthly salvation."

"You cannot all follow the armies of your country to the field, but remember that he who labors for the general good at home is an ununiformed soldier in the same holy cause with those who bear arms or minister at the side of the ambulance and in the camp hospital."

With these stirring words and, with a salute from my Chief, Surgeon General James C. Magee, to the ununiformed soldiers who constitute the faculties and students of the medical schools, to the staffs of civilian hospitals, to the essential practitioners in rural and urban communities, to civilian doctors all who are carrying their share of the heavy load imposed by our country's total war effort, I conclude the Roger Sylvester Morris Memorial Lecture for 1942-1943.

ANORECTAL LYMPHOGRANULOMA VENEREUM

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I have studied lymphogranuloma venereum at the New York Hospital since 1932, largely in a clinic specially devoted to the disease. During that period Frei tests were performed on all inpatients and outpatients who presented symptoms or signs which were at the time regarded as lymphogranulomatous. The attendance of patients at the Lymphogranuloma Clinic was regular and extended, in most instances, over a period of years. The progress of clinical manifestations was closely followed by repeated proctoscopic and gynecologic examinations. From 1932 through 1937, treatment consisted chiefly of injections of antimony and potassium tartrate, fuadin, neostam and Frei antigen (by the intradermal and subcutaneous routes). As these remedies were virtually ineffective, the progress of the disease in the persons so treated must have differed little from that in untreated persons. Since 1938 therapy has been carried out mainly with the sulfonamide compounds, principally sulfathiazole and sulfanilamide.

Early in this study¹ it was recognized that of all the clinical manifestations of lymphogranuloma venereum those which involve the anorectal region are the most important, accordingly, all information was carefully gathered which might throw light on the genesis and progress of the disease in this area of the body. The prime significance of the anorectal lesions rests on the following facts:

They may be, and frequently are, of great chronicity, they are infectious during the period of their activity, they are not completely controlled by any form of therapy, they may not become apparent until great structural change has occurred in the bowel wall, they may lead to complete closure of the bowel, to considerable local deformity and, in rare instances, to death.

Among the unanswered questions of anorectal lymphogranuloma are the frequency of occurrence of the symptomatic and asymptomatic disease in the community, the relative distribution of the entities which comprise the condition, the progress of certain of the commoner entities after their inception, the relation of the anorectal disease to inguinal lymphadenopathy and, vice versa, the mode of acquisition and the status of present therapeutic methods. This paper is an attempt to answer these questions.

THE ESTIMATED FREQUENCY OF OCCURRENCE OF LYMPHOGRANULOMA VENEREUM IN NEW YORK CITY

There has been an increase in the number of cases of symptomatic lymphogranuloma discovered annually at the New York Hospital during the past nine years. The sharp rise which occurred in 1934 and again in

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From the New York Hospital and the Department of Medicine,
Cornell University Medical College, New York.
1. Grace, A. W., in discussion on D'Aunoy, R. D., von Harm
Emmerich, and Lichtenstein, L. Virus of Lymphogranuloma Inguinale,
Am. J. Path. 11: 827 (Sept.) 1935.

1940 accompanied the introduction of mouse brain² and yolk sac³ antigens respectively. The unlimited supply of the former material enabled many more tests to be performed than were possible with the small stocks of human antigen then available and the greater sensitivity of the yolk sac material (also available in unlimited quantity) led to the discovery of reactors more weakly positive than could be detected by the use of mouse brain antigen. The smaller rise in 1941 followed the introduction, in that year of routine Frei tests in all cases of chronic cystitis. It is not possible therefore, to state whether or not an actual increase in frequency of the symptomatic disease has occurred in New York City since 1933.

The data of the accompanying table show that symptomatic lymphogranuloma venereum is now found in approximately 1 of every 1,000 persons admitted to the New York Hospital. It is likely that a higher incidence of the disease would have been observed had all, instead of only 10 per cent, of 600 cases of fistula in ano and perirectal abscess been Frei tested. The clientele of the hospital can be regarded as a cross section of the city's population, although the institution is situated in a predominantly white district. Proportionately, therefore about 7,000 cases of symptomatic lymphogranuloma must occur annually among the 7,000,000 inhabitants of New York City. Asymptomatic lymphogranuloma venereum occurs much more frequently than the symptomatic form and is most commonly observed among those who have other venereal diseases.⁴ Thus 42.1 per cent of the syphilitic patients at the New York Hospital were found to have asymptomatic lymphogranuloma. Disregarding a comparatively small number of cases of gonorrhea, in which the incidence of asymptomatic lymphogranuloma is probably comparable to that in syphilis, there were, at the New York Hospital between 1936 and 1941, approximately 9 cases of asymptomatic to 1 of symptomatic lymphogranuloma venereum.

THE RELATIVE DISTRIBUTION OF THE CLINICAL MANIFESTATIONS OF LYMPHOGRANULOMA VENEREUM

Two hundred and seventy-six patients showed 348 clinical manifestations of lymphogranuloma venereum. The regions most frequently affected with the disease are, in descending order of frequency, the anorectal space, the inguinal region, the genital region and the lower urinary tract, more than half of the cases present anorectal manifestations, the commonest of which are proctitis, with or without stricture, fistula in ano and perirectal abscess. The proportion of white patients and of the male sex who suffer from anorectal lymphogranuloma is higher than has been generally believed. Finer analysis of the material reveals that 48.7 per cent of such lesions occurred in white males, 13.5 per cent in white females and 29.5 per cent in Negro females. Only one third of the males were known to be homosexuals, all of whom adopted the passive role

CONSIDERATION OF CERTAIN OF THE COMMONER ENTITIES OF ANORECTAL LYMPHOGRANULOMA VENEREUM

Studies of the development of proctitis in male homosexuals indicate that an average period of six weeks elapses between infection of the anorectal mucosa and the appearance of symptoms. The commonest early sign of lymphogranulomatous involvement of the anorectal mucosa is the passage of blood by the anus. This is a direct consequence of the replacement of a portion of the mucosa by granulation tissue resulting from the local action of the virus. Bacterial infection of the raw surface together with the pyogenic property of the virus soon causes the anal discharge to be purulent. Contraction of the fibrous elements of the granulation tissue produces a narrowing of the lumen of the bowel which may be partial (stricture) or complete (stenosis). Infections of the lower portion of the bowel may be discovered before or after narrowing of the lumen has occurred. In the former instance the condition is known as proctitis without stricture and, in the latter, as proctitis with stricture. The invasive properties of

Annual Number of New Cases of Symptomatic Lymphogranuloma Venereum per Ten Thousand Inpatients and Outpatients, New York Hospital 1933-1941

Year	Number of New Cases of Symptomatic Lymphogranuloma Venereum	Total Number of New Admissions	Cases of Symptomatic Lymphogranuloma Venereum per 10,000 Admissions
1933	10	40,574	2.4
1934	26	43,419	6.0
1935	27	44,123	6.1
1936	32	45,977	7.0
1937	33	44,484	7.4
1938	25	43,411	8.1
1939	30	41,846	7.1
1940	39	41,889	9.3
1941	44	49,041	10.5

the virus deposited either perianally or within the bowel lumen lead also to the formation of fistula in ano and perirectal abscess which may precede, succeed or be unassociated with the development of proctitis with or without stricture.

Proctitis Without Stricture—Seven eighths of the patients with proctitis without stricture had no antecedent history of anorectal disease. The remainder had had perirectal abscess or fistula in ano at an average interval of 1.7 years. The proportion of patients with proctitis without stricture which subsequently become strictured is not exactly known but is probably in the neighborhood of one third, 15 of our series of 44 had stricture at an average interval of 10.9 months after the appearance of the proctitis. It would seem also that unless stricture develops within three years after the onset of anorectal inflammation a condition of chronic proctitis without stricture will result. Twelve such cases were observed in which the average duration of the proctitis was eight years with limits of three and eighteen years respectively. In only 1 case was lymphogranulomatous proctitis observed to heal spontaneously.

Proctitis without stricture is predominantly found in men who constituted 81.8 per cent of the series. Such male preponderance is due I believe to the fact that approximately three fourths of the men were homosexuals who adopted the passive role and whose anorectal mucosa therefore received a concentration of the

² Grace A. W. and Shaffer M. F. The Use of Standardized Mouse Brain Antigen for the Performance of the Frei Test for Lymphogranuloma Inguinale. *J. A. M. A.* 107: 13.9 (Oct. 25) 1936.

³ Grace A. W., Rake Geoffrey, and Shaffer M. F. A New Material (Yolk Sac) for Performance of the Frei Test for Lymphogranuloma Venereum. *Proc. Soc. Exper. Biol. & Med.* 45: 2.9 (Oct.) 1940.

⁴ Shaffer M. F., Rake Geoffrey, Grace A. W., McKee Clara M., and Jones Helen P. Lymphogranuloma Venereum Intercurrent with Other Venereal Diseases. *Am. J. Syph. Conorr. & Ven. Dis.* 25: 699 (Nov.) 1941.

virus sufficiently heavy to produce the characteristic changes simultaneously over relatively large areas of the bowel. In the female, virus usually deposited in the vagina and on the external genitalia, reaches the anorectal mucosa through contiguous moist surfaces more slowly, and probably in lower concentrations, than in the male homosexual. The acute phase of the infection accordingly, is less apt to occur in women, and considerable structural changes are often found to have taken place in the female anorectal mucosa and bowel wall by the time the condition reveals itself through the appearance of a bloody, purulent, anal discharge. Proctitis without stricture is largely a manifestation of lymphogranuloma venereum. Forty-four patients or 84.6 per cent, gave a positive and 8 patients a negative Frei reaction. It is interesting to note that, in 7 of the cases presenting negative reactions the proctitis healed spontaneously within an average period of twenty-two months, with limits of three and fifty-two months respectively.

Proctitis With Stricture—This condition differs from proctitis without stricture chiefly in the possession in the bowel wall, of a firm band of fibrous tissue which encircles and narrows the lumen. The degree of closure of the bowel varies from being just perceptible to being complete. The fibrous band, or stricture, is usually single may extend over several inches of the wall and occurs most frequently within reach of the examining finger. The condition is not acute but is of considerable chronicity and is accompanied by a bloody, purulent anal discharge. In the absence of anal fissure there is little pain. The smallest diameter of the lumen of the bowel compatible with evacuation, aided by cathartics, was approximately 8 mm. The number of cases of proctitis with stricture in which colostomy was required for relief of symptoms of obstruction was relatively small 17, or 18.9 per cent, of our series having had to submit to this operation, three fourths of the group were females and the remaining 4 persons were white male homosexuals. The average period that elapsed between the onset of anorectal disease and the performance of colostomy was 7.2 years, with limits of one and twenty-two years respectively.

In one half of the cases of proctitis with stricture there was no history of either previous anorectal disease or sequelae in the anorectal area. Approximately one third began, in descending order of frequency, as proctitis without stricture, fistula in ano, perirectal abscess and perianal abscess. There is evidence to show that proctitis with stricture requires a considerably longer period for its development when preceded by the three last named entities than when it is a sequel of proctitis without stricture. The remaining one sixth of the cases of proctitis with stricture developed, while the proctitis was still active, other anorectal manifestations, of which the commonest were fistula in ano, rectovaginal fistula and perirectal abscess. The distribution by sexes of 90 cases of proctitis with stricture was as follows: males 36.7 per cent, females 63.3 per cent. The preponderance of females is partly due, I believe, to the fact, already mentioned, that males tend more than females to develop chronic proctitis without stricture. Proctitis with stricture is almost exclusively a manifestation of lymphogranuloma venereum. 96.8 per cent of 93 patients yielded a positive Frei reaction.

Stricture Without Proctitis—This term is applied to those cases in which the anorectal mucosa is smooth and without ulceration and the bowel lumen is narrowed

by the presence of a stricture in the form of a diaphragm with a small central aperture. The condition appears inactive and there is no history of an antecedent anal discharge. It is possible that these cases represent the end stage of an inflammatory process which has commenced outside the bowel wall and traveled inward as far as but without involving the mucosa. Stricture without proctitis occurs most commonly in women, who furnished 64.3 per cent of our series of 14 cases, slightly more than one half of the patients gave a positive Frei reaction.

Fistula In Ano—In this condition there is a tract which passes through the perirectal or perianal tissues and connects the bowel lumen with the cutaneous surface usually in the neighborhood of the anus. The patient is made aware of the fistulous tract by the appearance of a perianal discharge. During the period of this study 340 persons with fistula in ano were observed at the New York Hospital, 54 had concomitant perirectal abscess. Frei tests were performed in only 37 cases, of which 19 were positive. It is probable that many cases of lymphogranuloma venereum were overlooked in the untested material.

Perirectal Abscess—Two hundred and fifty-nine persons were diagnosed as presenting perirectal abscess during the course of this study. 54 had concomitant fistula in ano. Frei tests were performed in not more than 26 cases, in 12 of which there was a positive reaction. It is likely that many cases of lymphogranuloma venereum were unrecognized in the untested material.

INGUINAL ADENOPATHY IN ASSOCIATION WITH ANORECTAL LYMPHOGRANULOMA VENEREUM

The development of anorectal lymphogranuloma may be unassociated with, preceded, accompanied or followed by the occurrence of inguinal adenopathy. It is my belief that such adenopathy is a direct consequence of the presence of the virus in the perineal, perianal and anal areas whose lymph channels drain directly into the inguinal nodes. The majority of patients do not show inguinal involvement at any time. 59.7 per cent of our series of 164 persons falling into this category. The adenopathy which developed in each of the remaining three groups was unilateral and suppurative in approximately 70 per cent of 66 persons. In no instance were the nodes or pus examined for the presence of the lymphogranuloma virus. Pus was studied bacteriologically, however, in 3 cases, 1 in which the adenopathy was concomitant with and 2 in which it followed the development of anorectal disease at an interval of six months and ten years respectively, no organisms were found.

Inguinal Adenopathy Preceding Anorectal Lymphogranuloma—This the commonest time relation, included 31 persons, or 18.9 per cent of the series. The group consisted of approximately equal numbers of males and females, both of whom showed an average interval of ten years between development of adenopathy and of anorectal manifestations. About one half of the cases were observed for a period of five years or less. Rectal examination was not made in any person during the existence of the adenopathy. When first observed two thirds of the patients had proctitis with stricture, and the remainder proctitis without stricture or fistula in ano.

Inguinal Adenopathy Concomitant with Anorectal Lymphogranuloma—The group comprised 14 males and 7 females, or 12.9 per cent of the series. The

exact nature of the anorectal condition was known in 13 instances among which proctitis without stricture fistula in ano and perirectal abscess were almost equally represented. There was only 1 case of proctitis with stricture.

Inguinal Adenopathy Following Anorectal Lymphogranuloma—There were 8 men and 6 women in this category, which made up 85 per cent of the series. The average interval between the development of anorectal disease and inguinal adenopathy was 88 and 49 years for men and women respectively. Ten persons had proctitis with stricture and 3 all males proctitis without stricture.

LYMPHOGRANULOMATOUS INGUINAL ADENOPATHY UNASSOCIATED WITH ANORECTAL LYMPHO- GRANULOMA VENEREUM

Sixty-seven males and 10 females with inguinal adenopathy or with scars from earlier suppurative lesions in the groin, gave positive Frei reactions. There was neither history nor evidence in the group of other clinical manifestations which could be regarded as lymphogranulomatous. Primary lesions were present on the external genitalia in 15 persons (1 female). In approximately three fourths of the cases the adenopathy was unilateral and suppurative. The average period of observation of the group since the development of adenopathy was 78 years with one half of the cases being studied for five years or less. Proctoscopic and gynecologic examinations were made during the existence of the adenopathy and, subsequently, at intervals of approximately three months in order to determine the frequency with which lymphogranulomatous inguinal adenopathy unassociated at its inception with perineal, perianal or anal lesions, was followed by anorectal lymphogranuloma. Considerable importance was attached to this point in view of the widespread but unproved belief that the anorectal disease is a sequel of lymphogranulomatous infection of the inguinal lobes. Not one case of anorectal lymphogranuloma developed in the group. It was therefore concluded that, in the absence of perineal, perianal or anal lesions lymphogranulomatous inguinal adenopathy is seldom if ever followed by the anorectal disease.

THE MODE OF ACQUISITION OF ANORECTAL LYMPHOGRANULOMA VENEREUM

It is my belief that the lesions of anorectal lymphogranuloma arise by deposition of the virus either on the anorectal mucosa or in the perineal or perianal area—in males partly by the practice of pederasty and in females as a result of the contiguity of the vulva and the anus. Evidence in support of this statement is both direct and indirect. The former includes the work of Levaditi, Mollaret and Remie⁵ who in 1935 produced the pathologic changes characteristic of lymphogranuloma venereum in the rectum of chimpanzees by direct inoculation of the virus into the mucosa. The infection of children by the use of an enema tip in common with a lymphogranulomatous person also falls into this category. Indirect evidence is provided by the studies of the Lymphogranuloma Clinic of the New York Hospital and is divided into two groups—certain and very probable.⁶ The two groups contain 64.4 per cent of the males and 39 per cent of the females affected with anorectal lymphogranuloma. Included in the cer-

tain" category are 42 males (36 homosexuals) and 7 females in the "very probable," 14 males and 23 females. Primary infection of the mucosa is regarded as certain in all male homosexuals with the anorectal disease and also in those persons of either sex in whom inguinal adenopathy appeared concomitantly with the development of anorectal lymphogranuloma. The largest group in the "very probable" division was composed of 11 males and 14 females in whom inguinal adenopathy unilateral and suppurative in approximately 70 per cent of the cases and unassociated in all with infections in the lower limb had preceded the onset of the anorectal disease by an average period of ten years. Although none of these 25 persons were seen during the existence of the adenopathy, the site of their primary lesions has been placed in the anorectal area in virtue of the fact that none of 77 other persons with lymphogranulomatous inguinal adenopathy, observed for practically the same period as the 25 and with primary lesions either on the external genitalia or not demonstrable at all subsequently had anorectal disease. Included also in the "very probable" category are 3 males and 9 females in whom proctitis with or without stricture followed such conditions as fistula in ano, perirectal abscess, perianal abscess, perianal sinus, anal fissure and granulomatous perianal and vulval masses.

TREATMENT OF ANORECTAL LYMPHOGRANULOMA VENEREUM

It is now well established that the sulfonamide drugs will cause the regression of lymphogranulomatous inguinal adenitis, suppurative and nonsuppurative, within a period of approximately five weeks.⁶ Sulfanilamide the first of these drugs to be employed produced many toxic reactions and has now been replaced by sulfathiazole. The latter drug is administered in a course which consists of 15 Gm three times daily for two weeks followed immediately by 1 Gm three times daily for three weeks. The manifestation of the anorectal disease which is most responsive to sulfonamide therapy is proctitis which, unlike lymphogranulomatous adenitis seldom heals spontaneously. Cases of short duration without stricture can be completely healed. Long-standing cases, and all with stricture, require at least one year's therapy with rest periods of from two to three weeks after each course of treatment. The amount of anal discharge lessens shortly after treatment is begun and ultimately ceases.

Follow-up studies now in progress at the New York Hospital however indicate that the cessation of anal discharge and absence of proctoscopic signs of activity are not always certain evidence of cure of lymphogranulomatous proctitis. Anal discharge and inflammation of the anorectal mucosa have reappeared in a number of cases of apparent cure and have been controlled by resumption of sulfathiazole therapy.

I am now inclined to believe that lymphogranulomatous proctitis should be treated by alternation of a sulfonamide compound and inactivated virus the latter to be administered intravenously and derived from the infected chick embryo. Such chick preparations have furnished a means of obtaining practically pure suspensions of the virus which are so potent that in a dilution of 1 in 750 they will produce a Frei reaction equal in intensity to that given by the best human pus antigens whose physical qualities render them unsuit-

⁵ Levaditi, C., Mollaret, J. and Remie, J. Identité étiologique entre la maladie de Nicolas et l'aire et certaines anorectites ou rectocolites végétantes. Etude expérimentale. Bull. Acad. de med. 1935, 113: 459 (April 9), 1935.

⁶ Grace, A. W. and Siskind, Florence H. The Treatment of Venereal Lymphogranuloma with Sulfanilamide. New D. J. J. 1941, 1: 1-4.

able for use in a concentration higher than 1 in 5. If the previous failure of Frei antigen, that is inactivated virus, therapy to benefit more than a small proportion of patients with lymphogranuloma was due to the low concentration of virus in the human or mouse brain preparations employed that difficulty no longer exists and antigen therapy should be reattempted with concentrations of inactivated virus much higher than those hitherto employed.

Surgery has a place in the treatment of many of the manifestations of anorectal lymphogranuloma. It should however be preceded and followed by at least one course of sulfathiazole therapy. Fibrous stricture is uninfluenced by any form of treatment, in the absence of proctitis, the lumen of the strictured area may be enlarged by the use of dilators.

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TREATMENT OF HYPERHYROIDISM WITH THIOUREA AND THIOURACIL

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Two series of chemical compounds have been found to possess the unique property of inhibiting the endocrine function of the thyroid gland. The administration of these agents to experimental animals is followed, after a short latent period, by a lowering of the basal oxygen consumption, a decrease in the rate of growth and development and a diminished food intake—changes which are consistent with a state of hypothyroidism. In certain animal species these changes are accompanied by a hyperplasia of the thyroid gland which is apparently compensatory in nature and mediated by the anterior lobe of the pituitary. It was the object of this investigation to determine whether the endocrine function of the human thyroid gland could be inhibited by these compounds and to obtain information concerning their dosage and toxicity in individuals with normal thyroid glands and in cases of hyperthyroidism.

It was first pointed out by the Mackenzies and McCollum¹ that sulfaguanidine would induce thyroid hyperplasia in rats, an effect not influenced by adding iodide to the diet but one which could be abolished by the administration of effective doses of thyroxine. Similar thyroid changes were observed in rats by Richter and Clisby² and by Kennedy³ as the result of the administration of thiourea derivatives. Further studies on this phenomenon have demonstrated that the primary action of compounds of these two types is centered on the inhibition of thyroid hormone production.⁴

This work was done under the auspices of the University Committee on Pharmacotherapy.

From the departments of Medicine and Pharmacology, Harvard Medical School, and the medical clinic of the Peter Bent Brigham Hospital.

The thiouracil was supplied by Dr. R. O. Roblin, American Cyanamid Company, Stamford, Conn., and Dr. B. W. Carey of the Lederle Laboratories, Inc., Pearl River, N. Y.

1. Mackenzie, J. B., Mackenzie, C. G., and McCollum, E. V. Effect of Sulfaguanidine on the Thyroid of the Rat, *Science* **94**: 518-519 (Nov. 28) 1941.

2. Richter, C. P., and Clisby, K. H. Grayings of Hair Produced by Ingestion of Phenylthiocarbamide, *Proc. Soc. Exper. Biol. & Med.* **48**: 684-687 (Dec.) 1941. Toxic Effects of Bitter Tasting Phenylthiocarbamide, *Arch. Path.* **33**: 46-57 (Jan.) 1942.

3. Kennedy, T. H. Thioureas as Goitrogenic Substances, *Nature* **150**: 233-234 (Aug. 22) 1942.

4. Mackenzie, C. G., and Mackenzie, J. B. Effect of Sulfonamides and Thioureas on the Thyroid Gland and Basal Metabolism, *Endocrinology* **32**: 185-209 (Feb.) 1943. Astwood, E. B., Sullivan, J., Bissell, Adele, and Tyslowitz, R. Action of Certain Sulfonamides and of Thiourea on the Function of the Thyroid Gland of the Rat, *Endocrinology* **32**: 210-225 (Feb.) 1943.

More than one hundred compounds have been tested in order to select highly active substances of low toxicity for clinical use. Most of the derivatives of thiourea exhibited some activity but varied widely in toxicity, thiourea itself being the least toxic of all. 2-Thiouracil was the most highly active compound tested and the minimal lethal dose of this substance in rats was more than 100 times the dose necessary to produce a detectable thyroid effect. 2-Thiouracil, 2-thiobarbituric acid, diethyl thiourea and several derivatives of 2-thiohydantoin were two to five times as active as thiourea but were somewhat more toxic, especially the thiohydantoin.

A second series of active compounds included a number of aniline derivatives such as p-aminobenzoic acid, p-aminophenylacetic acid and related compounds and all of the commonly used sulfonamides. This class of substances, with the exception of the highly active sulfadiazine, was considerably less active than the thioureas.

From a clinical point of view thiourea and thiouracil appeared to be the most promising compounds and were therefore used in studies on normal persons and on patients with hyperthyroidism.

The substances under investigation were administered by mouth in the form of tablets or in capsules. The larger quantities were given in divided doses over each

Doses Administered for Short Periods of Time Without Detectable Toxic Effects and with No Change in the Basal Metabolic Rate

Diagnosis	Compound	Daily Dose, Gm	Duration of Treatment, Days	Total Dose, Gm
Cardiac decompensation	Thiourea	2.0	17	34
Rheumatoid arthritis	Thiourea	2.0	13	26
Diabetes mellitus	Thiouracil	1.0	7	7
Liver (cause unknown)	Thiouracil	0.4	30	12
Carcinoma of the thyroid	Thiouracil	1.0	24	24
Hyperthyroidism	Thiourea	0.6-1.5	5	5
Hyperthyroidism	Thiouracil	0.6-1.0	10	8.4
Hyperthyroidism	Sulfadiazine	5.0-10.0	10	56

twenty-four hours, the smaller in a single dose after the evening meal. Frequent determinations of the basal metabolic rate and serum cholesterol were made.

PRELIMINARY EXPERIMENTS

Data on the first 8 cases studied are shown in the accompanying table. Four persons exhibiting no evidence of hyperthyroidism were treated, 2 received 2 Gm of thiourea daily and 2 received 0.4 and 1.0 Gm of thiouracil, respectively. Treatment was continued for thirteen to thirty days and during this period no change in the basal metabolic rate occurred, the patients exhibited no signs and experienced no symptoms that could be attributed to the drugs.

One patient with advanced cardiac decompensation was treated with 1 Gm of thiouracil daily for twenty-four days. This patient had a large nodular thyroid gland and a metabolic rate of +20 to +30 per cent under conditions which were not basal. No definite lowering of the metabolic rate occurred during treatment and at operation a carcinoma of the thyroid was found. The remainder of the gland was composed of nodules of colloid filled alveoli with uniformly flat epithelium.

5. Astwood, E. B. The Chemical Nature of Compounds Which Inhibit the Function of the Thyroid Gland, *J. Pharmacol. & Exper. Therap.*, to be published.

The first 3 cases of hyperthyroidism were treated for short periods of time during the usual preoperative period of rest in bed. Treatment was continued for five ten and ten days respectively. These experiments were made before it was recognized from studies on animals that a considerable latent period was to be expected before the metabolic rate would fall. The slight decreases in metabolic rate that occurred during these periods were not greater than may have occurred from rest alone. Microscopic examination of the portions of the thyroids removed at operation did not reveal any changes which could with certainty be attributed to the treatment.

Subsequent studies were confined to the administration of thiourea and thiouracil for periods of three weeks or longer to patients with hyperthyroidism. Three cases which have been observed for a sufficiently long period of time are reported.

REPORT OF CASES

CASE 1—A man aged 58, a janitor, entered the hospital because of increasing weakness, progressive weight loss, nocturia polyuria and dyspnea of one year's duration. Two months prior to admission these symptoms became accentuated and on consultation at another hospital diabetes mellitus was diagnosed and treatment instituted. Fifteen units of protamine zinc insulin daily and a low carbohydrate diet resulted in a partial control of the glycosuria, but there was no symptomatic improvement and the patient entered this hospital for further investigation. Examination revealed a moderate degree of diffuse enlargement of the thyroid gland, a fine tremor of the hands and a warm moist skin. The basal metabolic rate was $+25$ to $+35$ per cent on repeated determinations, the blood cholesterol was 130 mg per hundred cubic centimeters and the glycosuria persisted in spite of an increase in insulin to 40 units daily.

Details of treatment and subsequent course are shown in chart 1. Thiourea was given orally in 0.5 Gm doses twice daily for eight days and four times daily for the next thirteen days. The metabolic rate began to fall on the ninth day of treatment and was normal by the sixteenth day. On the tenth day of treatment hypoglycemic symptoms became frequent and on discontinuation of the insulin the urine sugar remained low never exceeding a trace. One week after the thiourea was discontinued the metabolic rate again became elevated and the glycosuria returned. Resumption of treatment with thiourea was followed by a prompt return of the metabolic rate to normal and a great decrease in the glycosuria. After a period of three weeks at home and one month after the beginning of the second course of thiourea the patient reentered the hospital for study. At this time there was a maculopapular eruption on the face and on the extensor aspects of the extremities similar to that seen in chronic bromide intoxication. The face appeared to be edematous, the basal metabolic rate was -12 per cent and the blood cholesterol was 407 mg per hundred cubic centimeters. The drug was discontinued the rash cleared within four days, the basal metabolic rate rose to a maximum of $+19$ per cent and glycosuria returned. A third course of treatment was begun thiouracil being substituted for the thiourea in a dose of 0.4 Gm daily. After the metabolic rate had fallen and the glycosuria decreased the dosage was decreased to 0.2 Gm daily and the patient returned home. After forty days at home he returned in good condition having regained his normal body weight. The metabolic rate

was -2 per cent, the blood cholesterol was 250 mg per hundred cubic centimeters and there was a trace of sugar in the urine. The thyroid gland was found to be approximately the same size as it had been when treatment was first begun. After he was hospitalized the drug was discontinued. There was a transient and questionably significant elevation of the basal metabolic rate (maximum $+16$ per cent on one reading), and as the urine remained virtually sugar free the patient was discharged home without treatment. He obtained employment as a locomotive engineer and was able to carry heavy duties for a period of two months. However, weakness gradually returned and with this he noted nervousness, dyspnea, palpitation and pronounced weight loss. When he was hospitalized for the fourth time the metabolic rate was $+35$ per cent and the thyroid gland was distinctly smaller than it had been previously. Treatment with 0.6 Gm of thiouracil daily was begun. The metabolic rate fell to $+13$ per cent in twelve days when the dosage was reduced to 0.4 Gm daily. On the thirty-second day the dosage was further reduced to 0.2 Gm daily and on the thirty-ninth day the basal metabolic rate had fallen to -8 per cent. This dosage was continued and the patient returned to work. During this time the thyroid gland slowly increased in size to approximately that noted at the beginning of treatment. The patient has continued to take

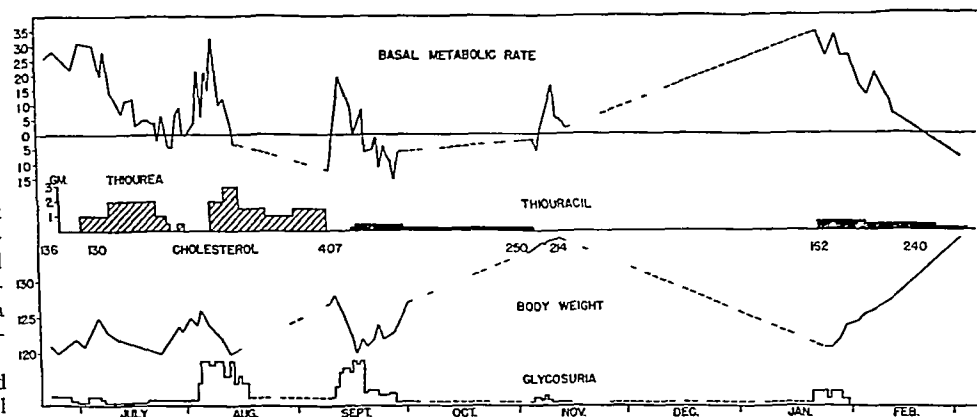


Chart 1—Changes in the basal metabolic rate, serum cholesterol level, body weight and degree of glycosuria in case 1 during four periods of treatment with thiourea and thiouracil. Insulin was discontinued on July 21. The broken lines represent periods when the patient was not under observation in the hospital.

0.2 Gm of thiouracil daily and has remained in good health for a period of two months.

CASE 2—A man aged 37, a truck driver, first noted symptoms of nervousness, anxiety and tremor following an automobile accident five years before entering the hospital. After three years of moderate symptoms he began to lose weight and to tire easily. Toxic diffuse goiter was diagnosed on his examination for entry into the army and he was referred to the hospital for treatment. At this time he had lost a total of 35 pounds (16 Kg) but was not acutely ill. There was moderate exophthalmos and a pronounced stare but minimal lid lag. The skin was warm and moist, the thyroid gland was diffusely enlarged, soft and not nodular. The basal metabolic rate was $+45$ per cent on the first day and $+26$ per cent after three days of rest in bed. The serum cholesterol was 84 mg per hundred cubic centimeters. All other findings were essentially normal. Thiouracil was given in a dose of 0.2 Gm five times daily for twenty-seven days and then 0.4 Gm five times daily for six days. Symptomatic improvement became apparent during the second week of treatment; the serum cholesterol increased to 206 mg per hundred cubic centimeters and although the metabolic rate steadily decreased it did not reach normal levels. The body weight increased 20 pounds (9 Kg) during four weeks (chart 2). When the dosage of thiouracil was increased to 2 Gm daily the patient began to suffer vague malaise which he did not admit until subsequently. He was discharged from the hospital on the thirty-fifth day of treatment and was to continue to take 1.0 Gm of thiouracil daily. Within thirty-six hours of leaving the hospital he returned with a severe pharyngitis and a temperature of 105 F.

There proved to be no demonstrable granulocytes in the blood smear and the total white cell count was 1,100. The drug was discontinued and he was treated with sulfathiazole, liver extracts and pentnucleotide. After a severe illness he recovered, granulocytes returned in normal numbers after being absent from the blood smear for seven days. The patient was given 1 cc of compound solution of iodine daily following

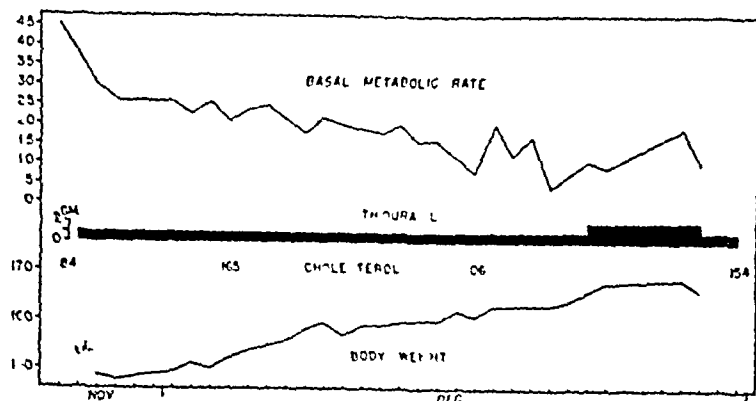


Chart 2—Effect of a large dose of thiouracil on the basal metabolic rate, serum cholesterol level and body weight in case 2. During the first seven days of treatment symptoms of toxicity developed.

this episode but the metabolic rate returned to levels of +30 to +40 per cent three weeks after the thiouracil was discontinued.

CASE 3—A woman aged 43, a housewife, had been treated for hyperthyroidism for five years. Three years prior to the current episode subtotal thyroidectomy was performed with subsequent complete relief of symptoms for a period of nine months. Nervousness, irritability and general malaise then returned and continued to be of major concern; treatment with iodine, phenobarbital and estrogens brought no relief. The basal metabolic rate during this period was +20 per cent and the patient was 15 pounds (6.8 kg) under her normal weight. The thyroid gland was not palpable, and there was a moderate degree of stare but no exophthalmos. The skin was warm and the face flushed. Thiouracil was given in a dose of 0.2 Gm three times daily while the patient continued to work at home. After one week of treatment there was a noticeable improvement in the nervous irritability and the patient noted a general sense of well being. The basal metabolic rate fell in fourteen days to +7 per cent and in thirty-five days to -6 per cent. One week after the drug was discontinued the basal metabolic rate was -4 per cent and in five

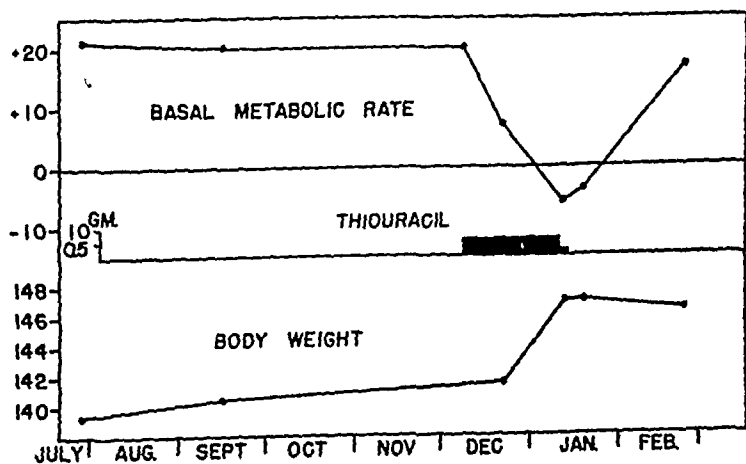


Chart 3—Decrease in the basal metabolic rate and increase in body weight following the administration of thiouracil in case 3. Five weeks after the drug was discontinued symptoms returned and the metabolic rate became elevated. A second course of treatment with 0.2 Gm of thiouracil daily during March resulted in a decrease in the basal metabolic rate to +3 per cent and a further increase in the body weight to 152 pounds (69 kg).

weeks +17 per cent (fig 3). Symptoms returned during the fourth week but there was no loss of weight. Thiouracil was resumed in a dose of 0.2 Gm daily; symptoms were again controlled after one week of treatment, the metabolic rate returned to normal and the patient has remained well on this treatment for two months.

COMMENT

These preliminary studies indicate that thiourea and thiouracil may be useful in the control of hyperthyroidism. However, a true evaluation of the merits and dangers of such therapy will require the observation of a large number of cases over a prolonged period of time.

Compounds of the type used in this investigation have never before been administered to human beings except in isolated instances when small single doses were given for studies on intermediary metabolism. Possible toxic reactions of an acute or chronic nature may occur and in the few cases thus far studied one severe and several mild episodes were observed. The occurrence of agranulocytosis (case 2) is a most serious contraindication to any form of drug therapy, and it will be of importance to determine whether this type of reaction to thiouracil represents an idiosyncrasy or whether it is the result of too large a dose. Thiourea is apparently the least toxic substance of the entire series but for clinical purposes it has the disadvantage of imparting a characteristic odor to the breath, and with some persons it is disagreeable to the taste. The only evidence of toxicity thus far encountered with thiourea was a skin rash in case 1. Thiouracil is apparently free of these disadvantages, and although it is more active it may prove to be more toxic.

There appears to be a variable latent period following the initiation of treatment before the metabolic rate begins to fall, and a similar although somewhat shorter period before clinical improvement is subjectively and objectively apparent. This delay in the effect accords well with the experiments in animals that have been referred to in which it was noted that the lowering of metabolism coincided in time with a complete or nearly complete loss of detectable colloid from the thyroid gland. If the concept that these drugs prevent the synthesis of thyroid hormone is correct, one might expect that the rate of metabolism would remain nearly constant as long as the store of thyroid hormone in the gland was adequate to supply the organism. When this store nears exhaustion, the decreased rate of thyroid hormone synthesis becomes apparent in the fall of the basal metabolic rate. Support for this explanation is given by the failure of 4 persons with normal thyroid glands to show a decrease in metabolism when the drugs were administered for periods of two to four weeks, while the cases of hyperthyroidism responded within ten to fourteen days. It is known that the store of thyroid hormone in hyperplastic glands is greatly decreased, while that of the normal thyroid is sufficient, if steadily released, to maintain the metabolism of a normal person unchanged for a period of one to three months. As the hyperplastic gland is presumably secreting at an increased rate, one might reasonably expect that its small store of preformed hormone would become exhausted much more rapidly than would that of a normal gland.

Further studies will be necessary in order to determine the optimal therapeutic regimen for long term treatment. Certain cases of hyperthyroidism will probably require treatment over many months or even years, while in other cases the state of hyperthyroidism is apparently temporary and self limited. It may be possible by the use of drugs of this type to maintain such patients in normal health during this period of temporary disturbance.

A rough estimate of the required dosages of thiourea and thiouracil may be formed from the data given. A daily dosage of 0.4 to 0.6 Gm of thiouracil would appear to have been adequate for the initial treatment of the elevated rate of metabolism in cases 1 and 3, and 0.2 Gm daily appeared to be an adequate maintenance dose in case 1. Possibly as much as 1.0 Gm daily is excessive and from case 2 it is apparent that 2.0 Gm daily was not more effective than 1 Gm. It may be that this large dose contributed to the severe toxic episode which followed.

Thiourea is about one third as active as thiouracil when tested in rats and therefore 1 to 2 Gm daily of the former might be considered an adequate dose for initial therapy with about 0.5 Gm daily for maintenance. In case 1 a maintenance dose of 1.5 Gm daily of thiourea was too large as symptoms and signs of early myxedema resulted after a period of five weeks and there was evidence of chronic toxicity in the form of a skin rash. A simple chemical method for the determination of the concentration of these substances in the blood might prove to be of value in estimating the proper dose by offering a means of comparison with the more exact determination of dosage requirements that can be made on experimental animals.

In the few cases treated thus far thyroid enlargement has not been observed with the possible exception of case 1. In this instance there was a distinct decrease in thyroid size when treatment was discontinued and a return of a slight enlargement when treatment was reinstituted. The human thyroid gland usually responds slowly with change in size and perhaps it was to be expected that little detectable enlargement would occur during a period of only a few months of drug therapy.

These results are considered to be further evidence that thioureylene derivatives inhibit the formation of thyroid hormone and that they may be employed in the treatment of hyperthyroidism.

SUMMARY

The daily administration of 1 to 2 Gm of thiourea or of 0.2 to 1 Gm of thiouracil to hyperthyroid persons resulted in the relief of symptoms and the return to normal of the serum cholesterol and the basal metabolic rate. There were observed a latent period of one to two weeks before these effects occurred, a sustained remission during treatment and a return of hyperthyroidism when therapy was discontinued.

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A COMBINED METHOD FOR THE TREATMENT OF DELAYED MENSTRUATION

AND A TEST FOR EARLY PREGNANCY
A PRELIMINARY REPORT

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Many drugs and endocrine products which have been used for the purpose of inducing menstrual flow may be considered harmful when administered to a woman in whom amenorrhea is due to early pregnancy. At one time or another probably every obstetrician and gynecologist has experienced difficulty in distinguishing between delayed menstruation and early pregnancy by physical examination especially when facilities for laboratory diagnostic procedures have not been available. After treating 57 cases of menstrual delay with prostigmine methylsulfate I have gained the impression that this drug offers a possible solution to both aforementioned problems in selected cases.

The rationale for prostigmine therapy in menstrual delay is found in the premise that in the physiology of normal menstruation the events which lead to the ultimate appearance of menstrual bleeding are initiated or at least preceded by a state of hyperemia of the uterine tissues. This hyperemia is always present in the cyclic menstrual flow and is produced by estrogenic substances which acting on the uterus release acetylcholine in this organ. The acetylcholine thus produced in turn causes vasodilatation. It has been demonstrated that this hyperemia is under the control of the parasympathetic nervous system and that nonspecific chemical agents can produce hyperemia in the uterine tissues similar in all respects to that resulting from the action of estrogenic substances.¹

Since uterine hyperemia seems to be an important as well as a constant feature of normal cyclic menstrual bleeding in women it may be that a temporary absence of adequate hyperemia, due to lack of vascular responsiveness may well be a factor in the delay of menstruation in some cases endocrine function per se being perfectly adequate. In addition if the fact is considered that the parasympathetic division of the autonomic system controls uterine hyperemia then such important conditions as physical, mental and emotional strain may exert a decided influence on the menstrual cycle in women in whom there is no evidence of endocrine deficiency and in whom the organic disease is not a contributing factor.

At any rate assuming that diminished acetylcholine in the uterine endometrium and consequent lack of adequate vascularity of this organ is the causative factor in a given instance of menstrual delay it would seem logical either to increase the acetylcholine content by administering this drug or to potentiate the action

Tons of Saltpetre—Man needs 8 Gm of nitrogen daily since protein is a nitrogen compound and the body uses up 50 Gm of protein daily which must be replaced. Since protein is essential for the building of protoplasm no creature can live without nitrogen. An animal can be overtaken with foods lacking in nitrogen such as fat sugar and starch yet it will die because it cannot build up its necessary proteins. On the other hand however a dog can be kept alive on a diet consisting exclusively of amino acids, the nitrogenous compounds from which proteins are constructed because fats and carbohydrates the two other chief constituents of the body can be formed from protein. The quantity of nitrogen contained in the atmosphere surrounding the earth is immense. It has been estimated that 12 billion tons of saltpetre could be obtained from the air over the city of London. With this quantity the nitrogen needs of the world could be satisfied for several thousand years.—Kahn Fritz. Man in Structure and Function volume 1 translated from the German and edited by George Kohn M.D. New York Alfred A. Knopf 1943.

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Dale H. H. William Henry Welch Lectures. Acetylcholine as Chemical Transmitter. J. Biol. Chem. 101 (1) 1935.
Horton J. L. and H. L. H. Perlow. Peripheral Autonomic Action of Ergonovine. J. Biol. Chem. 101 (1) 1935.

of that amount of the drug which is already present in the tissues. Prostigmine accomplishes the latter, theoretically if not actually, through inhibition of cholinesterase the tissue enzyme which destroys acetylcholine. Needless to say any drug which would exert a damaging effect on pregnancy would be highly objectionable. Preliminary experiments on impregnated rats had

TABLE 1—Patients Whose Previous Menstrual Histories Had Been Normal or Manifested Only Slight Variations in Regularity

Group	No. of Cases	Age	Delay in Days	Aschheim-Zondek Test	Menstruation Occurred	Pregnancy
1	18	19-9	10-90	Positive	—	+
2	21	20-49	5-12	Negative	7-72 hours after treatment	—
3	18	20-45	5-60	Not done	14-18 hours after treatment	13 cases — 5 cases +

* Subsequent clinical observation confirmed the presence of pregnancy

established the safety of this drug when it was administered in excessively large doses. These animals continued to full term pregnancy, producing normal and healthy litters. The same results were obtained when prostigmine was given to women in various stages of pregnancy. In no case was there an abortion or premature labor, and no other untoward side effects were noted.² With this assurance the present study was begun.

PROCEDURE

Each patient who presented herself for the treatment of delayed menstruation was subjected to a careful history taking and physical examination. After endocrine disorders and organic diseases were ruled out, as many of these women as could arrange it, about 70 per cent of the total, were given a Friedman modification of the Aschheim-Zondek pregnancy test in order that early pregnancy might be either ruled out or established. All of the Aschheim-Zondek tests were performed before the administration of the treatment.

Each patient received an injection of 1 mg. of prostigmine methylsulfate on three consecutive days. If the menstrual flow was established after the first or second injections, further treatments were deemed unnecessary. If no menstrual flow occurred within seventy-two hours after the last injection, a tentative diagnosis of pregnancy was made until this state was confirmed by an Aschheim-Zondek test or subsequent clinical observation. The ages of the patients ranged from 19 to 49. Women who, regardless of their age, had long standing records of irregular menstruation, and those in whom the amenorrhea was definitely due to an endocrine dysfunction or organic disturbance, were considered unsuitable for treatment. Nevertheless, for the sake of completeness of the study, a number of such cases were included.

RESULTS AND COMMENT

In this study of 57 cases prostigmine methylsulfate was used as a therapeutic agent in delayed menstruation and was found to be successful in inducing a normal menstrual flow in all women who were not pregnant.

2 Soskin, Samuel, Wachtel, Hirs, and Hechter, Oscar. The Treatment of Delayed Menstruation with Prostigmine. A Therapeutic Test for Early Pregnancy, J. A. M. A. 114: 2090 (May 25) 1940.
3 Robins, Spotswood. Prostigmin in the Induction of Labor, Virginia M. Monthly 67: 374 (June) 1940.

The results were uniform and no ill effects were noted. While I was utilizing this drug as a therapeutic measure for delayed menstruation, its value as a diagnostic procedure in early pregnancy was observed, and its accuracy as a diagnostic test for early pregnancy was compared favorably to the Friedman modification of the Aschheim-Zondek test. All women who were not pregnant, and whose Aschheim-Zondek test was negative before, menstruated normally following prostigmine administration. No ill effects were observed in early or late pregnancies. All Aschheim-Zondek positive women and all others not subjected to the Aschheim-Zondek test, but in whom the state of pregnancy was confirmed by subsequent clinical observation, successfully continued their pregnancies. In fact, at the time this report was compiled, some of these women had already delivered normal healthy babies. Of 18 patients who did not have the Aschheim-Zondek test, 5 in whom the amenorrhea had existed from five to sixty days gave clinical manifestations of early pregnancy. These patients did not menstruate after the administration of prostigmine. Subsequent clinical observations confirmed the presence of pregnancy in these women. All the patients who had amenorrhea, and whose previous menstrual history had been relatively normal, but who failed to menstruate after treatment with prostigmine, were tentatively diagnosed as pregnant and subsequent clinical events substantiated this diagnosis. No errors were noted.

The menstrual flow induced by the treatment did not differ in any manner from the normal as to the amount, quality and character. An occasional woman reported a slightly increased flow during the first and second days of the period.

The number of injections required to induce menstruation varied somewhat. The majority of the women required three injections, some menstruated after two injections, and in others the flow followed after the first injection. An occasional woman required four injections.

The time of the onset of menstruation following the treatment ranged from a quarter of an hour to seventy-two hours, the average time for the entire group being seventeen hours and thirty-two minutes after the last injection.

Prostigmine as a therapeutic measure for amenorrhea had no effect on those women whose past menstrual

TABLE 2—Patients Who in Addition to Their Previous Records of Menstrual Irregularities Also Manifested Endocrine Deficiencies and Other Organic Diseases

Age	Delay in Days	Aschheim-Zondek Test	Menstruation	Pregnancy
20-30	21-140	Negative	None	None

history was marked by extreme irregularities and who manifested evidences of endocrine deficiencies with obesity, male distribution of pubic hair or concomitant organic disease. Three such cases were treated. In each the Aschheim-Zondek test was negative, yet none responded to treatment. Later a large number of such cases were treated with similar results. This would seem to indicate that prostigmine is effective in only those women whose previous menstrual histories have been more or less regular and who have had no severe endocrine disturbances or organic diseases. Its use as a therapeutic agent in delayed menstruation should be confined to this type.

Some of the cases are briefly presented because of their interesting features

CASE 34—A married woman aged 29 nullipara nulligravida, with negative Aschheim-Zondek test gave a history of regular periods of twenty-eight to thirty days and five day duration until March 1, 1941. In the course of the following six months she had only slight spotting for two or three days, occurring at the time of the expected period each month. When she presented herself for the treatment, even this spotting had been delayed for thirty days. She was given 1 mg of prostigmine methylsulfate daily for three consecutive days. Seven days after her last injection she began to menstruate normally for the first time in seven months. When last seen she reported that she had had two more normal periods of twenty-nine day interval and of five day duration.

CASE 60—A married woman aged 37, tertipara quadri-gravida, whose uterus appeared to be the size of at least a four month pregnancy but the fundus was firm and irregular in shape and the cervix was not soft, was diagnosed as having myomata uteri. Interestingly enough, the patient was scheduled for operation, and she was advised to be treated at the clinic in preparation for the operation. While she was receiving treatments, she reported that her menstruation was delayed ninety days. Even at that time the appearance of the uterus and the cervix was not indicative of pregnancy. Nevertheless, because of her amenorrhea she was given three injections of prostigmine methylsulfate. No menstruation followed. On the basis of previous experience, diagnosis was changed to myomata uteri and pregnancy. An Aschheim-Zondek test was performed. It was reported to be positive. Thus the hysterectomy was deferred and the patient was referred to the obstetric clinic for proper treatment. In this case the therapeutic test for delayed menstruation was of definite value in a situation in which the clinical manifestations of pregnancy were confused.

CASE 52—A single woman aged 26, nullipara, nulligravida, had a regular menstrual cycle of twenty-seven day interval and seven day duration. She suffered from severe dysmenorrhea, very profuse flow and a large number of clots. The clinical and physical examination did not reveal any pathologic condition in the pelvis. There was no history of delayed menstruation. However, her peculiar problem was that she expected to have her next regular menstruation in ten days, but her wedding day was also scheduled for the same day. Because of unusual circumstances over which she had no control, the wedding day could not be changed. She wished to receive treatments in order to advance the date of her menstruation by several days. She was given 1 mg of prostigmine methylsulfate daily for four consecutive days. Twelve hours after the last injection she started to menstruate. This menstrual flow was remarkable in that it was induced six days in advance of the expected date in a woman whose menstrual history had been extremely regular. Furthermore, she reported that for the first time in her life the flow lasted only five days instead of the usual seven was free of all discomfort and there was a complete absence of clots. Of further interest was the fact that the two subsequent periods occurred at exactly twenty-eight day intervals and each lasted only five days, with normal flow, no clots and no discomfort. This patient is under observation.

CASE 17—A woman aged 18, nullipara nulligravida had severe dysmenorrhea since the onset of catamenia. At the time she applied for medical treatment her menstruation was delayed by fifteen days. She was given 1 mg of prostigmine methylsulfate. Normal menstrual flow followed four hours after the administration of the drug. This period and the following one were free of discomfort.

Granted that some patients might have menstruated even if they had not received prostigmine, nevertheless such consistently uniform results can hardly be disregarded. This combined method for the treatment of delayed menstruation and a test for early pregnancy seems of practical value and a perfectly safe procedure to use, no ill effects on the pregnant or the nonpregnant woman having been observed.

SUMMARY

A nonspecific chemical agent, prostigmine, which is pharmacologically and physiologically related to physostigmine has been used for the treatment of delayed menstruation, and its diagnostic value as a test in early pregnancy observed.

1 Hyperemia of the uterine tissues is essential in the cyclic menstrual bleeding.

2 Estrogenic substances release acetylcholine in the uterus, and the latter drug produces hyperemia in this organ.

3 Certain nonspecific agents have the property of potentiating the action of acetylcholine which is already in the tissues, thus causing hyperemia of the uterus and inducing menstrual flow.

4 This property of prostigmine was utilized in the successful treatment of delayed menstruation, and the method was found to be safe.

5 Absence of menstruation following treatment of suitable cases with prostigmine is considered indicative of the presence of pregnancy. The procedure may be used as a diagnostic test for pregnancy.

6 Prostigmine has no value in delayed menstruation when amenorrhea is due to organic diseases and endocrine deficiencies.

40 East Sixty-First Street

FAMILIAL ERYTHROBLASTIC ANEMIA
THALASSEMIA—COOLEY'S
ANEMIA

NOTES ON ITS PRIMITIVE TREATMENT

CAPTAIN ARIE C VAN RAVENSWAAY
MEDICAL CORPS, ARMY OF THE UNITED STATES

CAPTAIN KENNETH H SCHNEPP
MEDICAL CORPS, ARMY OF THE UNITED STATES

AND

CARL MOORE MD

Associate Professor of Medicine Washington University Medical School
ST. LOUIS

Since Cooley's¹ definite crystallization of a group of clinical findings as a disease entity, familial erythroblastic anemia has received worldwide recognition and confirmation. Cooley stressed a congenital cause, evidence of bone marrow stimulation leukocytosis, absence of increased fragility of the red blood cells, splenomegaly, osteoporosis and a peculiar mongoloid facial appearance.

As reports of cases appeared, the scope of investigation widened until it became clear that familial erythroblastic anemia was in reality a severe and usually fatal form in childhood, of what is essentially a hereditary, chronic disease of Mediterranean races, characterized by splenomegaly and certain characteristic changes in the blood. In fact, this greatly widened concept of the disorder led Whipple and Bradford² to suggest the name "thalassemia" or "Mediterranean disease" rather than the term 'erythroblastic anemia'. Indeed

Prepared under the direction of Col. James R. McDowell, Commanding Officer, Station Hospital and Post Surgeon, Jefferson Barracks, Missouri.

Released for publication by the War Department Manuscript Board, which assumes no responsibility other than censorship for the contents of this article.

1 Cooley T B, Witwer E R and Lee Pearl. Anemia in Children with Splenomegaly and Peculiar Changes in Bones. Report of Cases. *Am J Dis Child* 34:347-363 (Sept) 1923. Cooley T B, and Lee Pearl. Sickle Cell Anemia in a Greek Family. *ibid* 35:103-106 (July) 1925.
2 Whipple G H and Bradford W L. Pupal or Familial Anemia of Children. *Am J Dis Child* 44:54-66 (Aug) 1925.

in our opinion the latter term cannot help but become confused with fetal erythroblastosis. The use of the word anemia is also misleading, since many of these patients may never exhibit a significant degree of anemia.

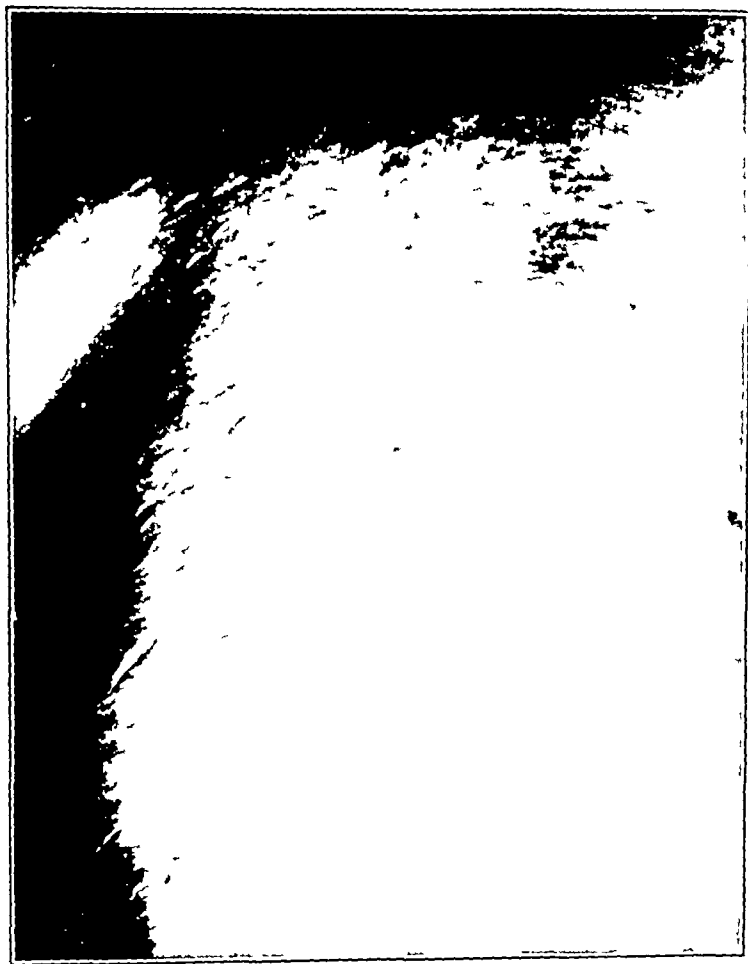


Fig 1—Appearance of some of the hundreds of tiny scars on the torso the result of seven years of primitive "cupping"

As now interpreted,³ this is a familial hemopoietic disorder occurring among the Mediterranean races. The cases reported have been found in persons of Greek, Armenian, Italian or Sicilian parentage. It is seen in its most severe form in childhood, in which it is characterized clinically by fever, continuous or intermittent, and is frequently associated with chills. There is severe splenomegaly and often severe hepatomegaly. The skin is icteric without bilirubin. This appearance is probably due to the deposition of an iron-containing pigment in the skin as well as in all internal structures and is comparable to that found in hemochromatosis.⁴ A typical mongoloid facies has been described. The blood picture is characterized by severe anemia which is hypochromic, microcytic and erythroblastic in type. Polychromatophilic, stippled and "target" cells⁵ and occasionally normoblasts are found in the circulating blood. The red cells possess an abnormally increased resistance to hemolysis by hypotonic solutions of sodium chloride. Osteoporosis can frequently be demonstrated in the long bones and skull by x-ray examination, and as the condition progresses it is gradually altered by the appearance of a compensatory lamellar striation which tends to replace the marrow.

3 Wintrobe, M. M., Matthews, Edward, Pollack, Roy, and Dobyns, B. M. A Familial Hemopoietic Disorder in Italian Adolescents and Adults. *J. A. M. A.* 114: 1530-1538 (April 20) 1940.

4 Whipple, G. H., and Bradford, W. L. Mediterranean Disease—Thalassemia (Erythroblastic Anemia of Cooley). *J. Pediat.* 9: 279-311 (Sept.) 1936.

5 Barrett, A. M. Special Form of Erythrocyte Possessing Increased Resistance to Hypotonic Saline. *J. Path. & Bact.* 46: 603-618 (May) 1938.

This form of the disease appears in infancy as early as the second month and usually terminates in death within a few years. There are all gradations from this to a type found in which the inherent defect is not so pronounced. There may be little or no anemia, fever or positive physical manifestations. In many instances the only stigma of the disease is an increased number of target cells in the circulating blood and an abnormal resistance of these cells to hemolysis. This phase of the disease is not incompatible with life, but the patients frequently complain of malaise and lack of strength. It is, however, often interspersed with episodes of anemia, increased weakness, chills and fever and susceptibility to intercurrent infection.

An effective treatment has not been found. Iron and liver therapy are of no benefit. Splenectomy tends to increase the anemia and is thus contraindicated.²

Death generally results from cardiac decompensation, secondary infection or the development of a hemorrhagic type of thrombopenic purpura.

Caminopetros⁶ has studied the familial transmission of this disease in a focal area in Sicily. His observations indicate that it is transmitted as a mendelian recessive characteristic.

REPORT OF CASE

G. P. P., born Jan. 12, 1908 in Vroulia, Sparta, Greece, was admitted to the hospital on Sept. 17, 1942 with the statement that he was suffering from familial erythroblastic anemia. His chief complaints were shortness of breath on exertion, weakness and periods of rapid pounding of the heart. Before his induc-

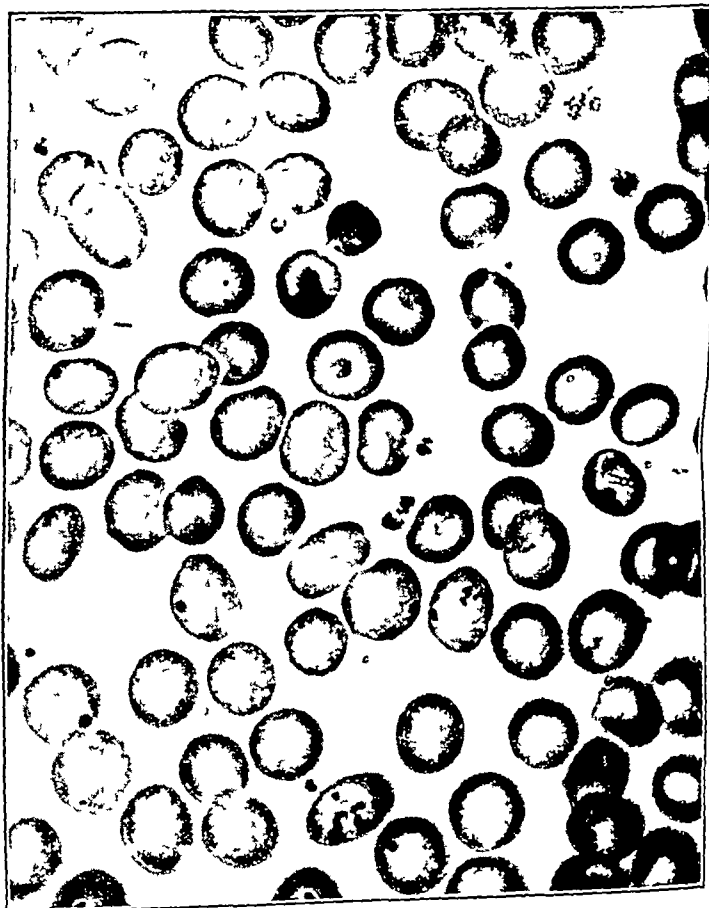


Fig 2—Smear of patient's blood. Several typical target cells are present.

tion into the Army on Aug. 22, 1942 he operated a candy store and restaurant. His story was interesting.

Vroulia is a small town in Greece within a half hour's walk of the Mediterranean. When the patient immigrated to the

6 Caminopetros, J. Recherches sur l'anémie erythroblastique infantile des peuples de la Méditerranée orientale, étude nosologique. *Ann. de med.* 43: 27-61 (Jan.) 1938. Recherches sur l'anémie erythroblastique infantile des peuples de la Méditerranée orientale, étude anthropologique, étiologique et pathogénique, la transmission héréditaire de la maladie, *ibid.* 43: 104-125 (Feb.) 1938.

United States about 1922 his home town had a population of about 700 people. In his grandfather's time the town boasted 1,200. Despite natural increases, the graveyard had been filled by the ravages of this disease, which the patient had learned to accept with a fatalistic sort of philosophy. In his part of Greece it is called *ellodous peretous* (ellodous peretous), literally chills-fever-blood disturbance. (The spelling and translation are the patient's.) It was a chronic wasting disease marked by bouts of chills, fever, sweating and "big stomach." Most of the newborn died within a year or two and many who lived were sickly specimens. The differentiation from malaria was simple: one took quinine if the chills and fever stopped, it was malaria.

The patient's paternal grandfather had been very thin and had had a "big stomach." Also occasionally he had coughed up blood. He died at about 45 years of age during the last five years of his life he had been out of his mind. His wife had left as her legacy the reputation of having the "big stomach" bigger than any one else's. She had six children, four of whom apparently died of "ellodous peretous," three of these during early childhood and one a son shortly after his marriage. There remained then the patient's father and uncle. The uncle died in 1936 approximately at the age of 50. The remains had been sent to the University at Athens for an autopsy, the result being understood by the family to have revealed a "cancer in the spleen." The uncle's wife died at the age of 28 of unknown causes, but she left an only male child who had been born paralyzed and, by diligent hand feeding, had reached the age of 15 without walking or talking. The patient's father is still living at the age of 67. He has leakage of the heart and rheumatism. During childhood he was bothered by a large spleen but recovered. This condition recurred at 21 years of age, and he was bedfast until he was 29, when he practically recovered. Even yet he has occasional chills.

The patient's mother was said to have had a relatively severe form of the disease and she died at the age of 47 with a greatly swollen abdomen. Most of her life her weight did not exceed 80 pounds (36 Kg). She bore three sons and three daughters and in many respects must have been an unusual woman. She served as the midwife of Vroulia, and since there was no physician within many miles, she was called on to treat everything and anything that presented, in addition to delivering a multitude of ill-fated babies. She had her own ideas concerning "ellodous peretous" and believed it to come from bad air. She originated her own methods of treatment, believed in them and assiduously applied them to her children.

One of the patient's brothers died in Chicago of meningitis at the age of 15. Although born in Greece he did not appear ever to have had an enlarged spleen. Another brother is 17 and almost blind of unknown cause. He has severe anemia and his spleen is said to have been palpated on different occasions. One sister is living and well at 36 with no evidence of an enlarged spleen, although she was born in Greece. Another sister born in Greece, died in Chicago at the age of 22 of anemia with an enlarged spleen. The sister who died at the age of 23 presented an almost identical condition.

The patient is mildly surprised that he is alive. He was a sickly infant who could retain little food and hence was breast fed by his mother to the age of 4, when he stood alone for the first time. The first tooth appeared at 4½ years of age. For some time after this he was fed on diluted goat's milk. During his early childhood bouts of chills and fever were frequent for which his mother had adopted the unique but time honored treatment of bleeding. Her method involved the lifting of five or six folds of skin in close proximity over the liver or spleen and nicking each with a knife. Then a tumbler was pressed over this area with a lighted piece of cotton inside. This consumed the oxygen and created a suction. These tumblers were left in place until they loosened of themselves, which was usually when about a third full of blood. As many as four or five tumblers would be used at one time. This procedure would be repeated at intervals during episodes of chills and fever and went on in the patient's case, for seven or eight years. His torso is covered with literally hundreds of tiny scars (fig 1). One sister endured this treatment for sixteen years.

Another striking form of treatment was that applied to the spleen. The children were taught to lean over any sharp edged piece of furniture, such as a table, and compress the spleen for as long as they could endure the resulting pain. The patient stated that a favorite method of his was to hook the edge of the spleen over the top edge of a fence and literally hang by the spleen both feet off the ground. Spartan treatment, but the resulting improvement in his breathing would cause him to repeat this six or eight times a day.

At the age of 14 the patient and his father came to America on a freighter. He was so pallid that he spent hours on the boat pinching his cheeks to bring out some color. He was allowed admittance to Ellis Island only because he convinced the physician that he had been the victim of severe seasickness throughout the entire twenty-eight days of the voyage.

The patient does not specifically recall any childhood diseases. He had a tonsillectomy in 1923. Except for bouts of chills, fever and weakness he had no serious illness until 1939. At this time he had a "weak" period of typical chills, fever, enlarged spleen and anemia. An infection of the upper respiratory tract followed and was complicated by pleurisy with effusion on the right side. Spontaneous resolution occurred during a nine week stay in bed. However dyspnea was severe because of the effusion and enlarged spleen. Mindful of his mother's teaching he would spend hours leaning forward and partially hunched over a large shoe pressed against his spleen.

On physical examination most of the findings were not remarkable. The skin was a peculiar yellowish tinged muddy color, and the spleen was palpated 2 cm below the costal margin. The skin of the torso was covered with hundreds of tiny scars. X-ray examination of the skull, humerus, femur and hands revealed no abnormality. Gastric analysis revealed a free acidity of 15 and a total acidity of 25.

One of us (C M) made detailed studies on blood and bone marrow (obtained by sternal puncture) with the following results: red blood cells 4,970,000, hemoglobin 14.2 Gm or 92 per cent, platelets 894,000, reticulocytes 10 per cent, white blood cells 16,550 with the following differential count: basophils 1 per cent, eosinophils 2 per cent, stab cells 1 per cent, segmented cells 67 per cent, lymphocytes 20 per cent and monocytes 9 per cent. The white cells all appeared qualitatively normal and the red cells showed no significant variation in size. A large number of the cells, however, were typically target red cells (fig 2). Venous blood showed a red cell count of 5,080,000, hemoglobin 13.8 Gm and an actual packed red cell volume of 45 per cent. The indexes calculated from these values gave a mean corpuscular volume of 89 cubic microns (normal range 80 to 94), mean corpuscular hemoglobin 27 micromicrograms (normal range 27 to 32) and a mean corpuscular hemoglobin concentration of 31 per cent (normal range 33 per cent to 38 per cent). The fragility test showed a range of 0.38 to 0.25 as compared with the normal value of 0.42 to 0.30. There was therefore evidence of increased resistance of the red cells to hypotonic saline solution. The sternal marrow removed by aspiration was very cellular and was characterized by normal distribution of qualitatively normal myeloid and erythroid elements. There were no truly abnormal characteristics of the marrow and it could easily be enough packed being perfectly normal.

The patient's wife, aged 27, whom he married in 1933, was born in this country and has never had any evidence of



Fig 3.—Appearance of the daughter of the patient shortly before her death from familial erythroblastic anemia, showing the characteristic mongoloid facies.

CONCLUSIONS

The importance of an early diagnosis in cases of tick paralysis has been made clear in the preceding discussion.

The demonstration of the American dog tick as the etiologic agent in 4 cases of tick paralysis has made widespread knowledge and recognition of this syndrome most essential.

With the realization that *Dermacentor variabilis* Say is commonly found throughout the eastern part of the United States and that although usually found on the dog, there are numerous other known hosts,⁸ it is evident that especially in rural districts tick paralysis should always be considered among the diagnostic possibilities in the presence of an ataxia or of an ascending flaccid paralysis of sudden onset.

5 East Eighty-Fourth Street

NEUROCIRCULATORY ASTHENIA

MAJOR IOLIS I. BISHOP, JR.
MEDICAL CORPS, ARMY OF THE UNITED STATES AND
FIRST LIEUTENANT ROBERT W. KINDRO
MEDICAL CORPS, ARMY OF THE UNITED STATES

The diagnosis of neurocirculatory asthenia may often be difficult to detect in the routine examination of candidates for induction into the United States Army. It is not until the physical and emotional strain of war that an individual with neurocirculatory asthenia becomes incapacitated and finally through pensions and invalidism becomes a permanent financial burden to the Army.¹ These facts are illustrated by the following report:

REPORT OF CASE

History.—W. L., a private aged 45, was inducted into the Army in October 1942. Soon after this he reported on sick call and was admitted to the hospital with the following complaints: "pain in heart, shortness of breath, and heart skips beats." He stated that while at home he worked as a farmer, carrying out his usual duties without difficulty. At times he had some shortness of breath with exertion. It was discovered that he had been discharged from the Army at the time of the last war and had with him a Certificate of Disability for Discharge which he received Nov. 12, 1918 at Camp Travis, Texas, twenty-four years ago. This Certificate of Disability for Discharge stated: "W. L. is hereby discharged from military service of the United States by reason of Neurocirculatory Asthenia, pulse standing 144, lying 92, after exercise, 180 two minutes later, 120."

Physical Examination.—General physical examination in 1942 was negative. The blood pressure was 118 systolic, 80 diastolic. The pulse rate was 130 standing and 90 sitting, after exercise 156, and after two minutes rest following this exercise 120. The palms of the hands were moist and excessive axillary perspiration was noted. There was a coarse tremor of the fingers. The apex of the heart was diffuse at the fourth interspace in the midclavicular line. There were no murmurs.

The electrocardiogram was within normal limits. The heart was of normal size and shape. The aorta was moderately widened.

The diagnosis was neurocirculatory asthenia.

COMMENT

This case illustrates that there is no specific treatment for this clinical syndrome and that the return of this soldier to civil life after the last war did not in any way change his condition, his symptoms in this war paralleling exactly those he had in the last war. From his history it was ascertained that this man could make a fair adjustment to his life as a farmer but not as a soldier. As far as we know, this is the only example of a person with this condition who has been discharged from the same army in two wars.

⁸ Cooley, R. A. Bull. 268, Montana Experiment Station, in November 1932, Bozeman, Mont.

From the Medical Service, Station Hospital, San Antonio Aviation Cadet Center, San Antonio, Texas.

Released for publication by the War Department Manuscript Board which assumes no responsibility, other than censorship for the contents of this article.

¹ Oppenheimer, B. S. Neurocirculatory Asthenia and Related Problems in Military Medicine, Bull. New York Acad. Med. 18: 367 (June) 1942.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
HOWARD A. CARTER, Secretary

RUBBERLESS RESPIRATOR COLLAR
ACCEPTABLE

Manufacturer R. L. Slater, 30 North La Salle, Street, Chicago

The Rubberless Respirator Collar is designed to fit all standard type respirators for use as the patient's neck seal to retain air pressures necessary for respirator operation. The development of the device is said to have come about as a result of research to discover a substitute for sponge rubber collars. Difficulty in obtaining sponge rubber collars is being encountered, and it is said that many respirators now in use are in need of collar replacement.

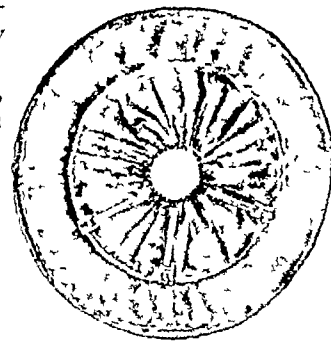
The device consists of a small wire coil spring (plated to prevent rusting) with ends soldered together to form a ring and covered by a soft closely woven fabric lined with an air tight plastic material. The lined fabric extends to the padded outer section of the collar, forming an air resisting surface with the spring action serving as a draw string around the neck. The padded section fits under the respirator metal collar clamp, permitting it to be firmly fastened to the respirator. As the result of the spring action the collar is less difficult to put on and take off than the sponge rubber collar.

The manufacturer asserts that the materials used in the construction of the collar are far more durable than sponge rubber. Air and sunlight have no apparent ill effects on the lasting qualities. The device can be easily washed and dried.

According to the manufacturer, the collars have been tested on respirators in use at several widely recognized institutions. Results of all these tests are said to be satisfactory.

In the Council's investigations the respirator collar was found to be installed on the respirator with even greater ease than the sponge rubber collar for which it is a substitute. The hole is readily made large enough to admit the head of an adult or a small child with less difficulty than is true of the rubber collar. Some little difficulty was encountered in getting a close enough fit in the case of a very small child. But by some manipulation this difficulty was overcome. On the whole, it was found that these collars are not only a satisfactory substitute for the rubber ones but may be superior.

The Council voted to accept the Rubberless Respirator Collars for inclusion in its list of accepted devices.



Rubberless Respirator Collar

AN APPRECIATION

The Council on Physical Therapy desires to take this opportunity to express its feelings of gratitude and appreciation of the services of the following consultants, whose assistance in carrying out the work of the Council has been given so freely during the past year:

Drs. Charles Bahn, Walter M. Boothby, Milton B. Cohen, Hart Fisher, John S. Hibben, K. K. Jones, S. L. Osborne, Lauriston Taylor, Ralph Waters and W. F. Wells.

Audiometers and Hearing Aids: Drs. C. C. Bunch (deceased), George M. Coates, E. P. Fowler, W. E. Grove, Dean Lierle, Isaac Jones, Walter Hughson, Douglas Macfarlan, C. Stewart Nash, Horace Newhart, Paul Sabine, B. R. Shurly and W. P. Wherry (deceased).

Educational Work: Drs. Frances Baker, Benjamin Boynton, Muriel Case Downer, Earl C. Elkins, F. H. Ewerhardt, Richard Kovacs, Fred B. Moor, W. H. Northway, William Schmidt, Walter M. Solomon, Arthur L. Watkins and Walter J. Zeiter.

Artificial Limbs: Drs. S. Perry Rogers, Paul Steele and Philip Wilson and Messrs. McCarthy Hanger Sr., W. E. Isle, J. B. Koriady, Joseph Spievak and David E. Stolpe.

MEDICAL LICENSURE STATISTICS FOR 1942

FORTY-FIRST ANNUAL PRESENTATION OF LICENSURE STATISTICS BY THE COUNCIL
ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN
MEDICAL ASSOCIATION

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STATE BOARDS OF MEDICAL EXAMINERS

Statistical compilations regarding medical licensure are presented annually in the State Board Number of THE JOURNAL. In the following pages will be found the report for the year 1942, which constitutes the forty-first annual presentation. Data are included regarding (a) medical examining and licensing boards of the several states, the District of Columbia, the territories and possessions of the United States, (b) examining boards in the medical specialties, (c) boards of examiners in the basic sciences and (d) the National Board of Medical Examiners.

These computations are based on official records received throughout the year from the medical licensing boards of all the states, Alaska, Hawaii and the Virgin Islands, the homeopathic licensing boards of Connecticut, Delaware and Maryland, the seventeen boards of examiners in the basic sciences in operation last year, the fifteen approved examining boards in the medical specialties and the National Board of Medical Examiners. The homeopathic and eclectic examining boards in Arkansas and the homeopathic board in Louisiana did not license any one during the year.

The cooperation of the officers of the foregoing boards in making possible the vast amount of reliable information presented in the following pages is gratefully acknowledged. The Council and THE JOURNAL express their appreciation to those who have supplied these data.

From 1926 to 1938 the credentials presented by physicians from countries other than the United States and Canada were verified by official correspondence with the medical school directly or through the diplomatic service. For several years the Council has been unable to render this service, and on the licensing boards of the various states now rests the responsibility of evaluating the credentials presented by applicants claiming graduation from schools outside the United States. Later in this presentation statistics have been computed separately, recording physicians examined on the basis of certificates obtained in countries other than the United States and Canada.

The tables referring to medical licensing boards include figures regarding the number of candidates examined for medical licensure in 1942, the number licensed and the number added to the profession. The

state boards are discussed first, followed by the special examining boards, the basic science boards and the National Board of Medical Examiners.

TABLE 1—Licenses Issued, 1942

	On the Basis of		
	Examination	Reciprocity and Endorsement	Total
Alabama	25	67	92
Arizona	9	16	25
Arkansas	61	19	80
California	497	283	780
Colorado	68	16	84
Connecticut	66	59	125
Delaware	7	2	9
District of Columbia	27	68	95
Florida	110		110
Georgia	96	19	115
Idaho	12	1	13
Illinois	416	93	509
Indiana	128	82	210
Iowa	64	23	87
Kansas	99	22	121
Kentucky	88	39	127
Louisiana	309	26	335
Maine	42	22	64
Maryland	165	69	234
Massachusetts	201	111	312
Michigan	185	116	301
Minnesota	199	27	226
Mississippi	43	32	75
Missouri	162	68	230
Montana	7	14	21
Nebraska	77	7	84
Nevada	2	17	19
New Hampshire	3	28	31
New Jersey	110	128	238
New Mexico		8	8
New York	1 071	259	1 330
North Carolina	77	59	136
North Dakota	6	9	15
Ohio	271	99	370
Oklahoma	51	33	84
Oregon	40	31	71
Pennsylvania	404	62	466
Rhode Island	31	6	37
South Carolina	46	9	55
South Dakota	5	5	10
Tennessee	157	45	202
Texas	193	106	299
Utah	10	10	20
Vermont	18	13	31
Virginia	140	66	206
Washington	60	49	109
West Virginia	2	28	30
Wisconsin	14	46	60
Wyoming		16	16
Alaska, Hawaii and Virgin Islands	10	10	20
Totals	6 000	2 457	8 457

LICENSES ISSUED

During the year 1942 8 457 licenses to practice medicine and surgery were issued by the medical examining boards of the forty-eight states, the District of

(Continued on page 92)

Because of the restrictions on paper, it has been necessary to restrict publication of this material in THE JOURNAL. The complete report with omitted tables will appear in the reprint.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Marginal Number	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota
SCHOOL	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F	P F
ARKANSAS																						
1 University of Arkansas School of Medicine			61 0						3 0										1 0			
CALIFORNIA																						
2 College of Medical Examiners				7 1 1 0					2 0				1 0					2 0				2 0
3 Stanford University School of Medicine				1 1													1 0			1 1		3 0
4 University of California Medical School				91 0								1 0						1 0	1 0			1 0
5 University of Southern California Sch of Med		1 0		18 0							1 0											
COLORADO																						
6 University of Colorado School of Medicine				1 0 46 0							1 0	1 0					2 0					1 0
CONNECTICUT																						
7 Yale University School of Medicine				0		0			2 0								2 0		1 0			3 0
DISTRICT OF COLUMBIA																						
8 George Washington University School of Med				6 1				12 0	1 0	1 0	1 0				1 0		1 0	1 0	4 0			1 0
9 Georgetown University College of Medicine				1 0		2 2		3 0	1 0										5 1			
10 Howard University College of Medicine	1 0									1 0		4 1				1 0			5 0			
GEORGIA																						
11 Emory University School of Medicine	1 0								12 0	12 0										1 0		
12 University of Georgia School of Medicine									4 0	42 0												
ILLINOIS																						
13 Loyola University School of Medicine				1 0					1 0			44 1	2 0				2 0			0 1	3 0	1 0
14 Northwestern University Medical School				1 1 4 0	2 0				1 0	1 0	2 0	75 1	2 0		1 0		2 0			1 0	6 0	11 0
15 University of Chicago The School of Medicine				1 0	1 0				2 0	1 0		18 0	2 0			1 0	2 0			2 0	4 0	
16 University of Illinois College of Medicine				11 0					1 0			121 0					1 0				1 0	4 0
INDIANA																						
17 Indiana University School of Medicine								1 0	1 0			2 0	105 0									3 0
IOWA																						
18 State University of Iowa College of Medicine		1 0		2 0					1 0		0 1	3 0	1 0	27 0								
KANSAS																						
19 University of Kansas School of Medicine				2 0					1 0						81 0						1 0	1 0
KENTUCKY																						
20 University of Louisville School of Medicine	2 0			1 0					2 1					1 0		80 0	1 0					1 0
LOUISIANA																						
21 Louisiana State University School of Medicine				2 0								1 0			1 0		73 0					3 0
22 Tulane University of Louisiana School of Med	11 0			2 0					10 0						1 0		78 0					
MARYLAND																						
23 Johns Hopkins University School of Medicine	1 0			4 0	2 0		1 0	5 1				1 0					1 0	3 0	58 0		1 0	4 0
24 University of Maryland School of Medicine and College of Physicians and Surgeons				1 0		2 1			2 0		1 0								63 1	2 0		
MASSACHUSETTS																						
25 Boston University School of Medicine		1 0		1 0		1 0			3 0	1 0		3 0						2 0		1 0		4 0
26 Harvard Medical School		1 0		5 0	1 0	4 0			1 0		1 0						5 0		4 1	2 0	17 0	
27 Tufts College Medical School																				6 0	1 0	
MICHIGAN																						
28 University of Michigan Medical School				3 0								3 0									1 0	88 0
29 Wayne University College of Medicine				1 0					1 0	1 0											66 0	
MINNESOTA																						
30 University of Minnesota Medical School				5 0					1 0	1 0			3 0				1 0				1 0	100 1
MISSOURI																						
31 St. Louis University School of Medicine				9 1	2 0							1 0										2 0
32 Washington University School of Medicine	1 0			17 0	1 0				2 0			2 0								1 0	1 0	1 0
NEBRASKA																						
33 Creighton University School of Medicine		1 0		16 0									2 0		9 0	4 0				1 0	1 0	1 0
34 University of Nebraska College of Medicine				5 1											2 0	3 0	1 0			1 0		2 0
NEW YORK																						
35 Albany Medical College																						
36 Columbia University Coll of Phys and Surgs		1 0		1 0		5 1		1 0	1 0	1 0		3 0						1 1		4 0		2 0
37 Cornell University Medical College					1 0	2 1			1 0	2 0		2 0						1 0		1 0	1 0	1 0
38 Long Island College of Medicine	5 0					3 0																
39 New York Medical College, Flower and Fifth Avenue Hospitals				1 0					1 0													
40 New York University College of Medicine				1 0					0 1			3 0			1 0			1 0		1 0		
41 Syracuse University College of Medicine						1 1			1 0													
42 University of Buffalo School of Medicine																	1 0					
43 Univ of Rochester Sch of Med and Dentistry		1 0		1 0	3 0																	
NORTH CAROLINA																						
44 Duke University School of Medicine	1 0										4 0											2 0
OHIO																						
45 Ohio State University College of Medicine				2 0																		3 0
46 University of Cincinnati College of Medicine				1 0		1 0			2 0											1 0		1 0
47 Western Reserve University School of Medicine																						
OKLAHOMA																						
48 University of Oklahoma School of Medicine				1 0																		1 0
OREGON																						
49 University of Oregon Medical School				12 0							3 0		1 0									
PENNSYLVANIA																						
50 Hahnemann Med Coll and Hosp of Phila				1 1 1 0	3 0	2 0			2 1				1 0	2 0				1 0	2 0		5 0	3 4
51 Jefferson Medical College of Philadelphia	1 0			1 0		1 0			4 0									1 0				3 0
52 Temple University School of Medicine				4 0		2 0	1 0	1 0	2 0													3 0
53 University of Pennsylvania School of Medicine				2 0		2 0	2 0	2 0	4 1													
54 University of Pittsburgh School of Medicine	4 0			2 0			1 0		2 1			1 0	2 0									
55 Woman's Medical College of Pennsylvania									2 0													
SOUTH CAROLINA																						
56 Medical College of the State of South Carolina				1 0																		
TENNESSEE																						
57 Meharry Medical College									2 0	1 0		1 0					1 0					1 0
58 University of Tennessee College of Medicine				4 0					4 1													
59 Vanderbilt University School of Medicine	1 0								4 0													

[illegible]

TABLE 2—CANDIDATES EXAMINED BY

Marginal Number	SCHOOL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
		Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota
19	Baylor University College of Medicine																						3 06
61	University of Texas Medical Branch	1 0																					1 06
62	University of Vermont College of Medicine							1 0															6
6	Medical College of Virginia				1 0				2 0														2 06
64	University of Virginia Department of Medicine									2 0													61
65	Marquette University School of Medicine				5 0								1 0		1 0							2 0	2 06
66	University of Wisconsin Medical School				2 0								1 0			1 0		1 0			1 0	1 0	2 06
67	Dalhousie University Faculty of Medicine																						67
68	University of Medicine																						68
69	McGill University Faculty of Medicine				2 0		3 1		1 0										1 0		2 0		1 06
70	Queen's University Faculty of Medicine						1 0						0 1									1 0	71
71	University of Alberta Faculty of Medicine				1 0								1 0										1 07
72	University of Manitoba Faculty of Medicine				2 0														1 0		2 0		11
73	University of Montreal Faculty of Medicine						0 1																12
74	University of Toronto Faculty of Medicine				2 0		2 1		1 0		1 0				1 0								1 04
75	University of Western Ontario Medical School												5 0										13
76	Foreign Medical Faculties	2 0	2 0		45	6 1	0 11 10			6 1	1 0	2 0	33 40	3 0	3 0			15	4 14 9	25	40	2 0	14
77	Extinct Medical Schools				7 0	1 0							33 1	1 0	0 1	1 0		1 0	1 0	1 0	2 1	3 0	9 0 71
78	Unapproved Schools and Undergraduates				9 3	0 3			2 0				51 3	4 0									15
Totals		4	9	61	475	71	90	7	27	118	96	13	469	128	45	99	84	175	48	176	452	196	200 1
80	Totals—Examined—Passed	34	9	61	470	68	89	7	27	110	96	12	421	128	44	99	84	175	42	165	201	196	199 5
81	Totals—Examined—Failed	0	0	0	5	3	1	0	0	8	0	1	48	0	1	0	0	0	6	11	251	0	1 81
82	Percentage Failed	0 0	0 0	0 0	3 4	4 2	3 4	0 0	0 0	6 8	0 0	7 7	10 2	0 0	2 2	0 0	0 0	0 0	12 5	6 2	55 4	0 0	0 5
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

P—Passed F—Failed

(Continued from page 89)

Columbia Alaska, Hawaii and the Virgin Islands Of the 8 557 licenses issued, 6,099 were issued after examination and 2 458 by reciprocity and endorsement of other state licenses or the certificate of the National Board of Medical Examiners

In twenty-two states, the District of Columbia, Alaska, Hawaii and Puerto Rico the internship is a requisite for practice, but a physician is permitted to take the examination on completing the medical course in most of these states, and, if successful, his license is withheld until the completion of the internship This practice is followed by recent graduates Licenses are also withheld for proof of citizenship and minor technicalities In some states also the licenses of physicians taking examinations scheduled in December are dated and issued early in the following year Tabulations in table 1, therefore, include many who were examined in 1941 and even a few in previous years Consequently, figures in this table will not correspond with those hereinafter given, which deal entirely with physicians examined for licensure within the year 1942

Four states issued licenses to more than 500 physicians, namely New York 1,330, California 740, Pennsylvania 516, Illinois 509 Twenty-five states, Alaska, Hawaii and the Virgin Islands licensed fewer than 100 physicians None were licensed by examination in New Mexico, Wyoming or the Virgin Islands The fewest number, 8, were licensed in New Mexico

An interesting point to observe is that in some states the number registered without examination far exceeded those required to write an examination On the other hand, in many states the reverse was the case The latter is particularly significant in New York, where 1,071 took examinations and 259 received licenses by endorsement of their credentials Louisiana issued only 26 of its 335 on the basis of credentials The state

of Florida grants licenses only on the basis of examinations Massachusetts, Rhode Island and Hawaii have no reciprocity agreements but endorse diplomates of the National Board of Medical Examiners

Totals for seven previous years and 1942 are shown for comparison in table 3 Since 1937, when the greatest number of licenses were issued, fewer have received licenses annually In 1942 the number registered decreased 255 This reduction can probably be charged in part to the fact that physicians have entered the armed forces immediately after graduation, although ten states granted more licenses than in previous years

TABLE 3—Licenses Issued, 1935-1942

	Examination	Reciprocity and Endorsement	Total
1935	5,725	2,194	7,919
1936	6,275	2,772	9,047
1937	6,629	3,204	9,833
1938	6,557	2,956	9,513
1939	6,400	2,872	9,272
1940	6,289	2,865	9,154
1941	6,053	2,759	8,812
1942	6,099	2,458	8,557
Totals	50,027	22,080	72,107

Notably, Louisiana registered 335 physicians in 1942 as compared with 157 in 1941 The intern year as a requirement for licensure was discontinued in Louisiana in 1942, and those who normally would have been licensed in 1943 obtained the certificate last year The University of Texas Medical Branch accelerated its senior year in 1942, this class receiving their degrees in December 1942 There was no notable change in the number of physicians licensed in Texas The University of Wisconsin Medical School dropped the requirement of a hospital internship for the duration of the war and awarded degrees in December 1942,

Graduates of schools of osteopathy were examined by the medical boards of eight states and the District of Columbia, namely Colorado, Connecticut, Indiana, Massachusetts, New Jersey, Oregon, Texas and Wisconsin, while graduates of unapproved medical schools were examined in Illinois, Massachusetts, Mississippi and Hawaii. Of the 110 osteopaths 50 were examined in Massachusetts, 25 in Texas, 12 in Colorado, 9 in New Jersey and 6 in Wisconsin. Other states examined fewer than 5. Osteopaths in Colorado, Massachusetts, New Jersey and Texas were examined in medicine

and surgery, those in the District of Columbia, Oregon and Wisconsin only in surgery. In Indiana the licenses issued to osteopaths authorized the holders to practice surgery and obstetrics. Connecticut examined 1 in medicine and 2 in surgery.

Of the graduates of unapproved schools, Massachusetts examined 272 and Illinois 54. One candidate was

TABLE 4—Source of Candidates Examined, 1942

Medical Schools	Number	Number Examined	Number Passed	Number Failed	Percentage Failed
Approved, in United States	65	4,905	4,768	117	2.4
Approved, in Canada	9	91	75	18	19.8
Extinct	13	112	100	6	5.4
Foreign	102	1,630	890	740	45.4
Unapproved Schools	11	140	217	223	50.8
Totals	200	7,180	6,076	1,104	15.4

also examined by the licensing boards in Mississippi and Hawaii. Mississippi also examined 2 undergraduates.

The total number (7,180) does not represent individuals, since a candidate might take the examination in more than one state and would be counted in each state. This applies to those who pass or fail or those who fail and later in the year pass in one or more states, or pass in one or more states and later in the same year fail elsewhere. A candidate failing more than once in a given state within the year is counted as one failure.

The greatest number of graduates of any one school examined was 163, representing Northwestern University Medical School, who were examined in twenty-six states. Of these, 161 were successful and 1.2 per cent failed. In another instance 153 graduates of Hahne-

TABLE 5—Graduates of Medical Schools in Canada Examined for Licensure in the United States, 1942

	Examined	Passed	Failed
California	7	7	0
Connecticut	9	6	3
District of Columbia	2	2	0
Florida	1	1	0
Illinois	8	7	1
Iowa	1	1	0
Maine	2	2	0
Massachusetts	4	4	0
Michigan	1	1	0
Minnesota	3	3	0
Missouri	2	2	0
New Hampshire	3	0	3
New Jersey	1	1	0
New York	31	20	11
North Dakota	1	1	0
Ohio	2	2	0
Pennsylvania	6	6	0
Rhode Island	4	4	0
Tennessee	1	1	0
Virginia	2	2	0
Washington	2	1	0
West Virginia	1	1	0
Totals	93	75	18

mann Medical College and Hospital of Philadelphia were examined in sixteen states. Twenty-eight graduates failed to pass the licensing examination, representing 18.3 per cent of those examined.

Twenty-eight schools in the United States had no failures before medical licensing boards, twenty-four less than 5 per cent, eleven between 5 and 10 per cent, and three more than 10 per cent. The number examined from many of the schools having a high percentage of failures is small compared with the annual output of graduates of these schools. This is accounted for

by the fact that a good majority of their graduates take the examinations of the National Board of Medical Examiners. Table 10 includes figures and percentages of all examined during 1942, i. e. those who were examined by the National Board of Medical Examiners in their final examination as well as those passing state tests.

Graduates of Northwestern University Medical School and Harvard Medical School were examined in the greatest number of states—twenty-six. The University of Pennsylvania graduates were tested in twenty-four states, Jefferson Medical College in twenty-three states, Johns Hopkins and Temple University schools of medicine in twenty-two states respectively and the University of Chicago in twenty-one states. All other schools had their graduates examined in fewer than twenty states. The medical schools of the University of Georgia, New York Medical College, Buffalo, Baylor, Texas and Vermont had graduates examined in fewer than five states. No graduate of Albany Medical College took the state written examinations for medical licensure during the year.

Totals taken from this table are subdivided into five groups in table 4, namely approved medical schools in the United States and in Canada, schools no longer in existence, foreign faculties of medicine and unapproved institutions. Of the United States schools 2.4 per cent failed and of the extinct schools 5.4 per cent failed. Eighteen graduates of Canadian schools, or 19.4 per cent of the total examined, failed examinations in the United States. The greatest percentage of failures represented two groups—foreign faculties of medicine and unapproved schools. In these two groups 45.4 and 50.8 per cent, respectively, failed.

Three of the five homeopathic boards in existence, Connecticut, Delaware and Maryland, examined 11 candidates, all of whom passed. The homeopathic boards in Arkansas and Louisiana did not examine any one in 1942. The one eclectic board in existence, in Arkansas, did not examine a candidate.

Ninety-three graduates of nine approved medical schools in Canada were tested for medical licensure in the United States in 1942 in twenty-one states and the District of Columbia (table 5), of whom 75 passed and 18 failed. Twenty-five graduates of McGill University Faculty of Medicine and 22 of the University of Toronto Faculty of Medicine applied for licensure in eleven states, respectively, and in each instance 21 were successful. The highest percentage of failures (60) represented Laval University Faculty of Medicine, whose graduates were examined in three states, and the University of Montreal Faculty of Medicine in four states. Three Canadian schools had no failures before United States licensing boards. The state of New York examined 31 Canadian graduates. All other states testing graduates of the schools in Canada examined less than 10 and in the majority of states fewer than 5. Eleven were unsuccessful in the examination given by the New York board of medical examiners.

Graduates of medical schools of other countries were examined for licensure in twenty-four states and Hawaii. In 1942 also 440 graduates of unapproved schools were examined in eleven states and Hawaii.

Altogether in 1942 there were 7,180 candidates tested for medical licensure, of whom 6,076 passed and 1,104, or 15.4 per cent, failed.

Elsewhere are given figures referring to actual licentiates and additions to the medical profession.

GRADUATES OF 1940 1941 AND 1942 EXAMINED
FOR MEDICAL LICENSURE

In table 6 are presented figures recording graduates of 1940, 1941 and 1942 examined for medical licensure in 1942. Represented were 4,609 graduates of sixty-five approved medical schools in the United States, 48 graduates of nine approved medical schools in Canada, 191 recent graduates of medical schools outside the United States and Canada, and 320 graduates of unapproved schools. Altogether 5,168 graduates of the last three years were examined, of whom 4,876 passed and 292 or 5.7 per cent failed. The number who passed and failed in each of these four groups are given in table 7.

Of the medical schools of the United States 1.9 per cent failed, while among the graduates of the Canadian schools 18.7 per cent failed, those holding foreign degrees 30.9 per cent and unapproved schools 42.5 per cent.

Thirty-seven schools in the United States had no failures among recent graduates applying for licensure; twenty-one schools had less than 5 per cent and eight more than 5 per cent and ranging to 16.7 per cent.

The greatest number examined by any one state was New York 588, Pennsylvania examined 436, Cali-

TABLE 7—Source of Graduates of 1940, 1941 and 1942, Examined, 1942

Medical Schools	Examined	Passed	Failed	Percentage Failed
Approved in United States	4,609	4,321	88	1.9
Approved in Canada	48	39	9	18.7
Foreign	191	132	59	30.9
Unapproved	320	184	136	42.5
Totals	5,168	4,876	292	5.7

formia 402, Illinois 369, Texas 294, Ohio 266 and Massachusetts 245.

More than 100 from each of fourteen schools were examined, the highest being 182 graduates of the University of Texas Medical Branch, who appeared before licensing boards in two states, 181 in Texas and 1 in Arizona. The senior class of the University of Texas under the accelerated curriculum was matriculated in March 1942 and completed the course in December. While the latter graduates were examined late last year they did not receive their licenses until January 1943.

Only 12 of the recent graduates of the Yale University School of Medicine were examined last year, in seven states. Very few also of the recent graduates of the Boston University School of Medicine, Tufts College Medical School, the New York Medical College and Duke University School of Medicine applied for licensure by this method and none from Albany Medical College. The majority of the graduates of these schools with few examinees before state licensing boards obtained the certificate of the National Board of Medical Examiners and received state licenses to practice medicine by endorsement of this certificate.

The source of graduates of 1940, 1941 and 1942, respectively, examined for medical licensure last year are subdivided by years in table 8, giving totals passed and failed for (a) approved medical schools in the United States, (b) approved medical schools in Canada, (c) medical schools now extinct, (d) foreign faculties

of medicine and (e) unapproved schools. Of the graduates of 1940, 396 passed, while 1,350 graduates of 1941 and 3,130 who received their degrees in 1942 were successful. These totals together with percentages are again presented in table 9.

Of the total number of examinees for licensure in the United States in 1942 72 per cent were graduates

TABLE 8—Source of Graduates of 1940, 1941 and 1942 Respectively Examined for Medical Licensure, 1942

Medical Schools	1940		1941		1942	
	Passed	Failed	Passed	Failed	Passed	Failed
Approved in United States	296	16	1,160	44	3,000	26
Approved in Canada	14	3	21	6	3	
Extinct	16		54		7	0
Foreign	58	34	63	22	11	3
Unapproved Schools	23	23	52	55	109	36
Totals	396	50	1,350	127	3,130	65

of 1942, 1941 and 1940. Of those graduates prior to 1940, 40.4 per cent failed, whereas only 5.7 per cent of the recent graduates of all schools failed.

CONSOLIDATED EXAMINATIONS

In 1942, 4,905 graduates of approved medical schools in the United States were examined by medical licensing boards, of whom 2.4 per cent failed. In the same period 972 graduates of approved medical schools in the United States appeared for Part III of the examination of the National Board of Medical Examiners, of whom 1.2 per cent failed. A comparison of the failures in each group revealed that in some instances schools having a high percentage of failures before licensing boards had few, if any, failures before the National Board of Medical Examiners. Individual school results for these two groups are presented in table 10. In these consolidated figures the percentage of failures of approved medical schools in the United States was 2.2.

Of the Canadian schools, 19.4 per cent failed state board tests and 16.4 per cent the combined tests. Very little comparison is evident in this group, since only 17 graduates of two Canadian schools were examined by the National Board. Only 51 graduates of foreign faculties of medicine were tested by the National Board, while 1,630 were examined by state licensing boards. The National Board does not admit to its examinations graduates of other than approved schools.

TABLE 9—Graduates of 1940, 1941 and 1942 Respectively Examined, 1942

Graduates of	Examined	Passed	Failed	Percentage Failed
1940	476	396	80	16.8
1941	1,477	1,350	127	8.6
1942	3,215	3,130	85	2.6
Totals	5,168	4,876	292	5.7

The total of all examined before medical licensing boards was 7,180, of whom 6,076 passed and 1,104 (15.4 per cent) failed. For both groups 8,233 were examined, 7,116 passed and 1,117 (13.6 per cent) failed. The total percentage of failures has been slightly reduced by including figures for the National Board of Medical Examiners, but materially so for certain schools. Twenty-four schools had no failures in either group. The highest percentage of failures for one school was 18.1 per cent, the failures of the majority of schools averaging less than 3 per cent.

TABLE 10—Consolidated Examinations—State Medical Examining Boards and the National Board of Medical Examiners 1942

School	Results by Medical Examining Board Tests		Part III Examination of National Board of Medical Examiners		Totals		
	P	F	P	F	P	F	Total
University of Arkansas	72	1	0	0	72	1	73
College of Medical Evangelists	70	1	0	2	112	6	118
Stanford University	67	2	1	0	67	2	69
University of California	10	0	0	0	101	0	101
University of Southern California	12	0	0	0	2	0	2
University of Colorado	6	0	5	0	61	0	67
Yale University	16	1	0	1	0	2	2
George Washington University	1	1	22	0	73	1	74
Georgetown University	10	5	10	1	70	6	76
Howard University	12	2	1	0	3	2	5
Emory University	10	0	1	0	11	0	11
University of Georgia	17	0	0	0	47	0	47
Loyola University	71	4	6	1	77	5	82
Northwestern University	161	2	21	0	182	2	184
University of Chicago	7	0	7	0	12	0	12
University of Illinois	110	0	4	0	171	0	171
Indiana University	11	0	0	0	115	0	115
State University of Iowa	0	1	20	0	70	1	71
University of Kansas	89	0	8	0	97	0	97
University of Louisville	97	1	2	0	99	1	100
Louisiana State University	8	1	1	0	86	1	87
Tulane University	129	0	7	0	136	0	136
Johns Hopkins University	97	2	10	0	107	2	109
University of Maryland	0	2	6	0	99	2	101
Boston University	6	0	0	0	42	0	42
Harvard Medical School	76	1	122	0	198	1	199
Tufts College Medical School	22	0	28	1	110	1	111
University of Michigan	10	0	3	0	108	0	108
Wayne University	71	0	0	0	71	0	71
University of Minnesota	121	1	8	0	129	1	130
St. Louis University	108	6	6	0	112	6	118
Washington University	111	1	0	0	116	1	117
Creighton University	62	2	9	0	71	2	73
University of Nebraska	82	5	1	0	83	5	88
Albany Medical College	0	0	30	0	30	0	30
Columbia University	60	3	25	0	85	3	88
Cornell University	71	1	21	0	72	1	73
Long Island College of Medicine	74	8	55	0	109	8	117
New York Medical College	8	1	65	3	73	4	77
New York University	89	3	25	0	114	3	117
Syracuse University	43	3	8	0	51	3	54
University of Buffalo	8	0	63	1	71	1	72
University of Rochester	40	4	15	0	55	4	59
Duke University	13	0	51	1	64	1	65
Ohio State University	80	0	0	0	80	0	80
University of Cincinnati	78	0	1	0	79	0	79
Western Reserve University	70	0	1	0	71	0	71
University of Oklahoma	54	2	0	0	54	2	56
University of Oregon	71	0	2	0	73	0	73
Hahnemann Medical College	125	28	2	0	127	28	155
Jefferson Medical College	134	1	4	0	138	1	139
Temple University	130	2	9	0	139	2	141
University of Pennsylvania	159	3	14	0	173	3	176
University of Pittsburgh	64	3	0	0	64	3	67
Woman's Medical College	27	2	6	0	33	2	35
Medical College of South Carolina	47	0	0	0	47	0	47
Meharry Medical College	54	2	2	0	56	2	58
University of Tennessee	110	1	0	0	110	1	111
Vanderbilt University	58	0	0	0	58	0	58
Baylor University	76	1	1	0	77	1	78
University of Texas	182	1	1	0	183	1	184
University of Vermont	23	0	22	1	45	1	46
Medical College of Virginia	73	0	0	0	73	0	73
University of Virginia	64	0	1	0	65	0	65
Marquette University	66	0	13	0	79	0	79
University of Wisconsin	63	0	0	0	63	0	63
Totals U S Schools	4,788	117	960	12	5,748	129	5,877
Dalhousie University	9	0	0	0	9	0	9
Laval University	4	0	0	0	4	0	4
McGill University	21	4	16	0	37	4	41
Queen's University	5	3	0	0	5	3	8
University of Alberta	4	1	0	0	4	1	5
University of Manitoba	4	0	0	0	4	0	4
University of Montreal	2	3	0	0	2	3	5
University of Toronto	21	1	1	0	22	1	23
University of Western Ontario	5	0	0	0	5	0	5
Totals Canadian Schools	75	18	17	0	92	18	110
Extinct Medical Schools	106	6	13	0	119	6	125
Unapproved Schools	217	223	0	0	217	223	440
Foreign Medical Schools	890	740	50	1	940	741	1,681
Totals	6,076	1,104	1,040	13	7,116	1,117	8,233

P—Passed F—Failed

FAILURES BEFORE MEDICAL EXAMINING BOARDS

Data recorded in table 11 refer to the number who failed state board examinations and were graduates of a medical school located in the state in which they were examined, and, by comparison, the number of graduates licensed in the state who obtained their medical training in schools in other states. Most noteworthy is the fact that in New York state 39 per cent of those who studied medicine in eight schools in that state who appeared for licensure in 1942 failed, while

TABLE 11—Licensure Failures by Graduates of Approved Schools Located in the State Where Examined and Elsewhere 1942

	Total No. Examined	No. Failures of Schools in State	No. Schools in State Represented	Per Cent Failed	No. Failures of Schools Out of State	No. Schools Out of State Represented	Per Cent Failed	Total Per Cent Failed in All U S Schools
Arkansas	61	0	1	0.0	0	0	0.0	0.0
California	416	0	4	1.2	42	12	2.4	2.4
Colorado	57	0	1	0.0	0	0	0.0	0.0
Connecticut	49	0	1	0.0	6	18	12.2	12.2
Dist. of Columbia	21	0	2	0.0	0	6	0.0	0.0
Georgia	90	0	2	0.0	0	10	0.0	0.0
Illinois	100	2	4	0.7	1	21	0.3	1.0
Indiana	120	0	1	0.0	0	8	0.0	0.0
Iowa	40	0	1	0.0	0	4	0.0	0.0
Kansas	98	0	1	0.0	0	9	0.0	0.0
Kentucky	84	0	1	0.0	0	4	0.0	0.0
Louisiana	174	0	2	0.0	0	18	0.0	0.0
Maryland	152	1	2	0.7	1	10	0.7	1.3
Massachusetts	60	0	0	0.0	8	23	13.3	13.3
Michigan	190	0	2	0.0	0	20	0.0	0.0
Minnesota	188	1	1	0.5	0	35	0.0	0.5
Missouri	175	0	2	0.0	0	13	0.0	0.0
Nebraska	78	2	2	2.6	0	1	0.0	2.6
New York	431	17	8	3.9	39	44	9.0	1.0
North Carolina	77	0	1	0.0	0	25	0.0	0.0
Ohio	269	0	3	0.0	1	25	0.3	0.3
Oklahoma	53	0	1	0.0	0	1	0.0	0.0
Oregon	42	0	1	0.0	0	8	0.0	0.0
Pennsylvania	443	11	6	2.5	1	31	0.2	2.7
South Carolina	46	0	1	0.0	0	3	0.0	0.0
Tennessee	148	0	3	0.0	0	9	0.0	0.0
Texas	274	2	2	0.7	2	15	0.7	1.5
Vermont	34	0	1	0.0	1	5	4.2	4.2
Virginia	112	0	2	0.0	0	12	0.0	0.0
Wisconsin	114	0	2	0.0	0	20	0.0	0.0
States Without Medical Schools								
Alabama	32	0	0	0.0	12	0	0.0	0.0
Arizona	7	0	0	0.0	7	0	0.0	0.0
Delaware	7	0	0	0.0	5	0	0.0	0.0
Florida	110	7	43	6.4	64	91	9.1	9.1
Idaho	11	0	0	0.0	11	77	7.7	7.7
Maine	26	0	0	0.0	12	0	0.0	0.0
Mississippi	42	0	0	0.0	4	0	0.0	0.0
Montana	5	0	0	0.0	1	0	0.0	0.0
Nevada	1	0	0	0.0	2	0	0.0	0.0
New Hampshire	3	0	0	0.0	18	0	0.0	0.0
New Jersey	73	0	0	0.0	0	0	0.0	0.0
New Mexico	0	0	0	0.0	0	0	0.0	0.0
North Dakota	6	1	4	16.7	167	16.7	16.7	16.7
Rhode Island	30	0	0	0.0	17	0	0.0	0.0
South Dakota	4	0	0	0.0	4	0	0.0	0.0
Utah	10	0	0	0.0	8	0	0.0	0.0
Washington	53	0	0	0.0	18	0	0.0	0.0
West Virginia	26	0	0	0.0	16	0	0.0	0.0
Wyoming	0	0	0	0.0	0	0	0.0	0.0
Alaska & Hawaii	13	0	0	0.0	12	0	0.0	0.0

a much higher percentage 90 who obtained their medical training in forty-four schools located in other states failed. Yale University had no failures before the Connecticut medical examining board, while 122 per cent of the graduates of eighteen schools of other states failed in Connecticut. Only 41 physicians failed examinations in the state in which the medical school they attended was located, and twenty-two states had no failures from schools within their boundaries. There were 65 failures from schools located in other states. Thirty-three states reported no failures during the year. Six states (table 24) had no failures in five years. In some states an applicant must receive an

average of at least 75 per cent and not fall below 50 per cent in any one subject. In case of failure in not more than two subjects, the applicant is entitled to another examination in those subjects within twelve months. Those so failing are not reported to the office of the Council as failures. The highest percentage of failures was reported by North Dakota, 167. In this state 6 physicians representing four medical schools located in other states, were examined of whom 1 failed. Four states without medical schools reported eleven failures.

Of the 8,557 licentiates in 1942, 813 had previously been unsuccessful before a licensing board. Of the approved schools 100 graduates were licensed after one failure in the state of licensure and 53 after one failure elsewhere. Forty-two received licenses after more than one failure, 27 received licenses in the state of their previous failures, 11 succeeded in obtaining licenses after more than one failure elsewhere, while 4 licentiates had previously failed in the state where licensed and also in other states. Forty-two were licensed after more than one failure.

TABLE 12—Failures Before Medical Licensing Boards by Licentiates, 1942

	Licenses Issued by Examination Reciprocity or Endorsement	Approved Schools						Foreign Schools				Unapproved Schools						Total Failures by Licentiates, 1942
		Licensed After One Failure			Licensed After Two or More Failures			Licensed After One Failure		Licensed After Two or More Failures		Licensed After One Failure		Licensed After Two or More Failures				
		Failed in State Where Licensed		Failed in State Where Licensed and 1 elsewhere	Failed in State Where Licensed		Failed in State Where Licensed and 1 elsewhere	Failed in State Where Licensed		Failed in State Where Licensed and 1 elsewhere	Failed in State Where Licensed		Failed in State Where Licensed and 1 elsewhere		Failed in State Where Licensed and 1 elsewhere	Failed in State Where Licensed and 1 elsewhere		
		Failed in State Where Licensed	Failed in State Where Licensed		Failed in State Where Licensed	Failed in State Where Licensed		Failed in State Where Licensed	Failed in State Where Licensed		Failed in State Where Licensed	Failed in State Where Licensed	Failed in State Where Licensed	Failed in State Where Licensed				
Alabama	92			2														2
Arizona	25			1														1
Arkansas	50																	0
California	740	8	2		1			4	2	1	2							26
Colorado	84				1													3
Connecticut	125	2	1					1		4		1		2				9
Delaware	9																	0
District of Columbia	95			1														2
Florida	110	4																4
Georgia	115																	0
Idaho	13																	0
Illinois	509	2	1		2			11	1	5		2	1					25
Indiana	210								1									1
Iowa	67																	0
Kansas	121																	0
Kentucky	127			1														1
Louisiana	335	1																1
Maine	64		1		1			5	2		6	3						17
Maryland	234	1	2					1	1		1							6
Massachusetts	312		2					1	2	3	4	3	18	1	2		2	62
Michigan	301		5		1													6
Minnesota	226		2															2
Mississippi	75				1													1
Missouri	250		1		1													2
Montana	21																	0
Nebraska	84	1																1
Nevada	19		1															2
New Hampshire	31				1								1					1
New Jersey	235		7					2	1	8	5	5						25
New Mexico	8																	0
New York	1,330	75	2		20	1	147	2	275	2	42							562
North Carolina	136		2		1													4
North Dakota	15	2														1		2
Ohio	370		2		1					1								4
Oklahoma	84		2															2
Oregon	76				1													1
Pennsylvania	516	4	4					3	3			1						15
Rhode Island	37																	0
South Carolina	55				1													1
South Dakota	10																	0
Tennessee	232	2	2															4
Texas	290				1													3
Utah	30										1			1				2
Vermont	51																	0
Virginia	211		2															1
Washington	109							1										6
West Virginia	65										2							2
Wisconsin	170				3													0
Wyoming	16																	0
Alaska, Hawaii and Virgin Islands	25																	0
Total	8,557	100	53	27	11	4	173	16	295	27	57	21	3	2	1	2		817

In another table presented in this group (table 12) is given the number licensed after failing a state board examination once and after two or more failures, these groups being classified by indication whether the failure or failures have been in the state in which they were receiving a license or elsewhere and also whether the failure has been in the state where licensed and elsewhere. These two divisions are given for three groups of candidates, namely graduates of approved medical schools, foreign faculties of medicine and unapproved institutions. The total number of candidates examined and licensed or granted licenses by endorsement or reciprocity in each state is also shown.

The graduates of foreign faculties of medicine who were registered after previous failures numbered 565 and those of unapproved schools 50.

In the computation of these statistics it was noted that 60 licentiates had failed five or more times. Of these 13 had five failures before obtaining a license, 19 had six, 10 failed seven examinations, 5 individuals failed eight tests, 1 failed 9, 2 failed ten, 3 failed eleven, 2 failed twelve and 2 failed thirteen examinations before being successful. Three graduates of European medical schools were licensed after eighteen, twenty and twenty-one failures respectively in Connecticut, New York and New Jersey. The majority of these physicians

ments with any state. With the exception of Florida, however, these states and Hawaii will register diplomates of the National Board of Medical Examiners by endorsement. Those desiring licenses by reciprocity or endorsement in seventeen states are required to obtain a certificate from the state board of examiners in the basic sciences before being eligible for licensure.

TABLE 13—Reciprocity

[illegible]

states at the time such licenses were issued. The

Reciprocal relationships have been established by twenty-six states. Twenty-four states, including four which have regularly established reciprocal relations, will register licentiates who present credentials which correspond with those required by their respective states at the time such licenses were issued. The medi-

cal practice acts give the examining boards the privilege of using their discretion in determining the acceptability of a candidate. The states in which diplomates of the National Board of Medical Examiners and retired officers of the government services are eligible for licensure on the basis of their credentials are also indicated. Specific requirements, such

are graduates of foreign medical schools accepted on a reciprocal basis. Other requisites or exemptions are mentioned in footnotes.

The credentials presented by physicians granted licenses in 1942 to practice medicine and surgery without written examination are given in table 14. There were 2,445 so registered on the basis of licenses issued

and Endorsement Policies

Marginal Number	Reciprocatates with, or Endorses Certificates Granted by																						Requirements										Marginal Number
	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Alaska	Puerto Rico	At the Discretion of the Board	National Board of Medical Examiners	U S Government Services	Basic Science Certificate	Internship	Professional Practice	Citizenship	Fees Dollars	Miscellaneous			
1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	1		
2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	2		
3	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	3		
4	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	4		
5	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	5		
6	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	6		
7	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	7		
8	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	8		
9	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	9		
10	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	10		
11	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	11		
12	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	12		
13	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	13		
14	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	14		
15	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	15		
16	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	16		
17	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	17		
18	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	18		
19	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	19		
20	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	20		
21	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	21		
22	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	22		
23	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	23		
24	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	24		
25	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	25		
26	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	26		
27	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	27		
28	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	28		
29	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	29		
30	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	30		
31	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	31		
32	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	32		
33	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	33		
34	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	34		
35	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	35		
36	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	36		
37	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	37		
38	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	38		
39	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	39		
40	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	40		
41	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	41		
42	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	42		
43	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	43		
44	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	44		
45	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	45		
46	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	46		
47	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	47		
48	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48		
49	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49		
50	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50		
51	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	51		
52	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	52		

- 25 Internship accepted if served in this state
 26 Internship accepted—considered equivalent to two years' practice
 27 Five years' practice
 28 Conditionally
 29 A two year internship is accepted
 30 Diplomates of National Board not required to have been in practice for three years
 31 Graduates before 1907 required to take oral examination
 32 Clinical examination required
 33 Reciprocity applicants only
 34 Supplemental examination required in certain cases when accepting the examination of a state with whom reciprocal relations have not been established
 35 May be licensed after a special (written) supplemental examination
 36 Fee for license on basis of National Board certificate \$25
 37 For matriculants after Oct 15 1937
 38 Fee \$50
 39 With on active duty only

- 40 Permanent license withheld until completion of citizenship
 41 Graduates of foreign medical school effective Sept 15 1925
 42 Canadian schools exempted effective Sept 19 1929
 43 Graduates of foreign medical school are not accepted
 44 Graduates of foreign medical school must have fulfilled all requirements of California prior to admittance to examination for any certificate used as basis of application to California
 45 Graduates of approved schools of Canada eligible
 46 Not applicable to citizens of Canada
 47 Canadian citizens are required to file first papers
 48 Fee \$10
 49 Same as required of Utah candidate applying for licensure
 50 Diplomates are accepted on basis of reexamination. The questions and answer manuscripts from the National Board are submitted for regrading
 51 All applicants must be graduates of a medical school approved by the American Medical Association
 52 Reciprocity with all states if applicant is reputable graduate of an approved medical school

as professional

TABLE 14—*Credentialed Physicians for Licensure by Reciprocity and Endorsement 1912*

[illegible]

Massachusetts 111 and Texas 105. The largest group presenting the same type of credentials were the 702 diplomates of the National Board of Medical Examiners. 189 were registered on the basis of such credentials in New York and 111 in Massachusetts.

More than 100 physicians holding licenses from Illinois, Missouri, New York and Pennsylvania respectively were licensed in other states. No physician holding a Wyoming license applied for registration in another state during the year. Five physicians received licenses by recognition of their Canadian or foreign credentials in four states. One each was licensed in Arizona, New Hampshire and New York on the basis

TABLE 16—*Licentiates Representing Additions to the Medical Profession 1942*

	Examination	Reciprocity and Endorsement	Total
Alabama	11	2	13
Arizona	6	1	7
Arkansas	1	1	2
California	11	11	22
Colorado	1	1	2
Connecticut	1	1	2
Delaware	1	1	2
District of Columbia	1	1	2
Florida	4	0	4
Georgia	1	0	1
Idaho	2	0	2
Illinois	122	1	123
Indiana	61	4	65
Iowa	1	1	2
Kansas	1	1	2
Kentucky	1	1	2
Louisiana	2	0	2
Maine	1	0	1
Maryland	1	0	1
Massachusetts	111	0	111
Michigan	1	1	2
Minnesota	1	1	2
Mississippi	1	0	1
Missouri	1	1	2
Montana	1	1	2
Nebraska	1	1	2
Nevada	1	0	1
New Hampshire	1	0	1
New Jersey	105	1	106
New Mexico	1	1	2
New York	1	1	2
North Carolina	1	1	2
North Dakota	1	0	1
Ohio	247	12	259
Oklahoma	47	1	48
Oregon	41	4	45
Pennsylvania	419	10	429
Rhode Island	20	0	20
South Carolina	45	1	46
South Dakota	1	0	1
Tennessee	164	2	166
Texas	284	0	284
Utah	15	0	15
Vermont	1	1	2
Virginia	140	1	141
Washington	52	1	53
West Virginia	11	1	12
Wisconsin	105	0	105
Wyoming	0	1	1
Hawaii	1	2	3
Totals	5,529	452	5,981

of a license from Great Britain, Germany and Austria respectively, while North Carolina registered 2. 1 on the basis of a license from the Dominion of Canada and the other of a Nova Scotia license. Two were admitted to private practice in the Virgin Islands. Twenty retired officers of the government services secured licenses without written examinations in five states, 12 in California, 3 in Kentucky, 1 in North Dakota, 3 in Virginia and 1 in Wisconsin.

Not included in the table were 13 osteopaths licensed by medical examining boards in six states and the District of Columbia, namely Indiana, New Hampshire, Oregon, Texas, Wisconsin and Wyoming.

There were registered in four states 6 physicians who presented credentials from the territories and possessions, namely 3 in California and 1 in Texas with credentials from Hawaii and 1 each in New York

and Washington with credentials from Puerto Rico and Alaska respectively. Diplomates of the National Board of Medical Examiners were licensed in forty-two states and Hawaii.

Fifty-seven licentiates of New York secured licenses to continue practice in New Jersey. Similarly 33 physicians who were licensed in Illinois were registered in California. Less than 10 of the licentiates of Alabama, Arizona, Delaware, Florida, Idaho, Massachusetts, Montana, Nevada, New Hampshire, New Mexico, North Dakota, Rhode Island, South Dakota and Utah were endorsed in other states.

A total of 2,445 physicians secured licenses by endorsement of their credentials in 1942. The physicians so licensed and in addition 13 osteopaths registered by medical examining boards are recorded by school of graduation and state or territory where licensed in table 15. All of the four-year medical schools in the United States were represented as well as eight in Canada, thirty-six faculties of medicine and one licensing corporation of other countries, one unapproved medical school, forty-four medical schools now extinct and several osteopathic schools. The largest number of graduates of any one school so licensed was from Harvard Medical School, who were registered in twenty-five states and Hawaii. Tufts College Medi-

TABLE 17—*Licentiates Representing Additions to the Medical Profession 1933-1942*

Year	Examination	Reciprocity and Endorsement	Total
1933	5,000	411	5,411
1934	5,541	629	6,170
1935	5,512	612	6,124
1936	5,759	591	6,350
1937	5,411	470	5,881
1938	5,411	455	5,866
1939	5,223	473	5,696
1940	5,229	452	5,681
1941	5,229	452	5,681
1942	5,229	452	5,681
Total	41,002	3,713	44,715

cal School had 83 of its graduates licensed by this method in twenty states. Graduates of foreign faculties of medicine numbered 85 and were registered in twenty states on the basis of a license issued elsewhere in the United States. One hundred and fifty-three graduates of medical schools now extinct migrated to thirty-six states and Alaska, 29 going to California. Fourteen graduates of unapproved schools were registered in seven states.

Of the 2,458 candidates licensed by reciprocity and endorsement, 2,158 were graduates of existing approved medical schools in the United States, 48 of eight approved schools in Canada, 85 were graduates of foreign faculties of medicine, 153 of institutions now extinct and 14 from unapproved and osteopathic schools.

LICENTIATES REPRESENTING ADDITIONS TO THE MEDICAL PROFESSION

The number of physicians who received their first license to practice medicine and surgery in 1942, and therefore represent additions to the medical profession are recorded in table 16. Figures represent candidates examined in 1942 and immediately licensed, also those examined in previous years whose licenses were withheld for lack of internship, citizenship and other technicalities and issued in 1942, and those without a state license who were during the year certified on the basis of the examination of the National Board of Medical Examiners, government services, Canadian and foreign credentials. The majority represent recent graduates.

There were 5,981 additions to the medical profession in 1942. It is not known how many of these are at present in civilian practice. The annual number of deaths reported to the American Medical Association in 1942 was 3,353. It would appear therefore, that the physician population in the United States last year was increased by 2,628. The greatest number in any one state, 1,147, was added in New York. More than

1,000 were registered on foreign credentials and to a large extent diplomates of the National Board of Medical Examiners.

Comparative figures for seven years and 1942 are given in table 17. Last year the number of physicians representing additions to the medical profession increased 269 over the previous year but the number so registered was 443 fewer than in 1937, in which

TABLE 18—Licentiate Representing Additions to the Medical Profession Classified by Schools, 1942

SCHOOL	Examination	Reciprocity and Endorsement	Totals	SCHOOL	Examination	Reciprocity and Endorsement	Totals
ARKANSAS				Cornell University Medical College			
University of Arkansas School of Medicine	61		61	Long Island College of Medicine	43	9	52
CALIFORNIA				New York Med. Coll., Flower and Fifth Ave. Hospitals	61	15	76
College of Medical Evangelists	55	14	72	New York University College of Medicine	9	26	35
Stanford University School of Medicine	55		55	Syracuse University College of Medicine	84	13	97
University of California Medical School	101		101	University of Buffalo School of Medicine	39	4	43
University of Southern California School of Medicine	51	1	52	University of Rochester School of Medicine and Dentistry	5	25	30
COLORADO				NORTH CAROLINA			
University of Colorado School of Medicine	53	2	55	Duke University School of Medicine	11	24	35
CONNECTICUT				OHIO			
Yale University School of Medicine	16	19	35	Ohio State University College of Medicine	77		77
DISTRICT OF COLUMBIA				University of Cincinnati College of Medicine	73		73
George Washington University School of Medicine	46	11	60	Western Reserve University School of Medicine	60		60
Georgetown University School of Medicine	36	16	52	OKLAHOMA			
Howard University College of Medicine	29	1	30	University of Oklahoma School of Medicine	45		45
GEORGIA				OREGON			
Emory University School of Medicine	50		50	University of Oregon Medical School	65	2	65
University of Georgia School of Medicine	41		41	PENNSYLVANIA			
ILLINOIS				Hahnemann Medical College and Hospital of Philadelphia	95		95
Loyola University School of Medicine	61		61	Jefferson Medical College of Philadelphia	121		121
Northwestern University Medical School	145	6	151	Temple University School of Medicine	121	2	123
University of Chicago The School of Medicine	59	3	62	University of Pennsylvania School of Medicine	136	4	140
University of Illinois College of Medicine	135		135	University of Pittsburgh School of Medicine	57		57
INDIANA				Woman's Medical College of Pennsylvania	19	5	24
Indiana University School of Medicine	106		106	SOUTH CAROLINA			
IOWA				Medical College of the State of South Carolina	44	1	45
State University of Iowa College of Medicine	57	4	61	TENNESSEE			
KANSAS				Meharry Medical College	51		51
University of Kansas School of Medicine	81		81	University of Tennessee College of Medicine	51		51
KENTUCKY				Vanderbilt University School of Medicine	47		47
University of Louisville School of Medicine	89		89	TEXAS			
LOUISIANA				Baylor University College of Medicine	71		71
Louisiana State University School of Medicine	148		148	University of Texas Medical Branch	179		179
Tulane University of Louisiana School of Medicine	187	1	188	VERMONT			
MARYLAND				University of Vermont College of Medicine	17	3	20
Johns Hopkins University School of Medicine	77	9	86	VIRGINIA			
University of Maryland School of Medicine and College of Physicians and Surgeons	65	3	68	Medical College of Virginia	67		67
MASSACHUSETTS				University of Virginia Department of Medicine	61		61
Boston University School of Medicine	4	25	29	WISCONSIN			
Harvard Medical School	60	42	102	Marquette University School of Medicine	58	5	63
Tufts College Medical School	18	50	68	University of Wisconsin Medical School	57		57
MICHIGAN				CANADA			
University of Michigan Medical School	98	1	99	Dalhousie University Faculty of Medicine	9		9
Wayne University College of Medicine	47		47	Laval University Faculty of Medicine	4		4
MINNESOTA				McGill University Faculty of Medicine	14	7	21
University of Minnesota Medical School	111	2	113	Queen's University Faculty of Medicine	3		3
MISSOURI				University of Alberta Faculty of Medicine	1		1
St. Louis University School of Medicine	92	5	97	University of Montreal Faculty of Medicine	2		2
Washington University School of Medicine	92	2	94	University of Toronto Faculty of Medicine	9		9
NEBRASKA				University of Western Ontario Medical School	4	1	5
Creighton University School of Medicine	52		52	Foreign Medical Faculties	803	30	833
University of Nebraska College of Medicine	74	3	77	Extinct Medical Schools	187	2	189
NEW YORK				Unapproved Schools	88	4	92
Albany Medical College		23	23	Totals	5,329	452	5,981
Columbia University College of Physicians and Surgeons	44	10	54				

300 received their first licenses in California, Illinois and Pennsylvania. In thirteen states between 100 and 299 physicians received initial licenses. Thirty states, the District of Columbia and Hawaii increased their physician population by fewer than 100. Nevada granted no original licenses during 1942.

Of the licentiates constituting additions to the medical profession last year, 5,529 secured their licenses by examination and 452 by endorsement of credentials. Those licensed by endorsement consisted of a few reg-

istered on foreign credentials and to a large extent diplomates of the National Board of Medical Examiners.

Comparative figures for seven years and 1942 are given in table 17. Last year the number of physicians representing additions to the medical profession increased 269 over the previous year but the number so registered was 443 fewer than in 1937, in which

In table 18 data pertaining to those securing their first medical license are tabulated for each of the medi-

cal schools in the United States. Notable among the schools having a considerable number of graduates receiving their first license were 188 graduates of Tulane University School of Medicine and 170 graduates of the University of Texas Medical Branch. Ten other schools contributed more than 100. The medical schools of Boston University, the University of Vermont, Albany Medical College and the Woman's Medical College of Pennsylvania contributed fewer than 30. McGill University Faculty of Medicine added 21 of its graduates to the medical profession of the United States.

From the United States schools there were added to the profession 4811. Canadian schools 54, foreign faculties of medicine 835, medical schools no longer in existence 189 and unapproved schools 92. Rush Medical College, which ceased to function with the graduating class of 1942, is represented among the extinct medical schools, and the greater number of the 189 represented are graduates of Rush Medical College.

Table 19 records increases in the physician population grouped in nine geographic divisions. The largest number, 1696 was added in the Middle Atlantic states. The East North Central group had a total of 1,061, the West South Central 693, the South Atlantic 638, the West North Central 558, the Pacific states 509, the New England group 403, the East South Central 313 and the Mountain states 98. Twelve were added to the medical profession by licensure in Hawaii.

There were 5529 graduates of all schools added to the medical profession in 1942 by examination for licensure and 452 by reciprocity or endorsement, a total of 5981. The number of living physicians in the United States at the time the American Medical Directory was published in 1942 was 180,496.

ACCELERATION OF MEDICAL COURSES

As a war emergency the medical schools of the country, with three exceptions, have adopted an accelerated program which provides for the utilization of the long summer vacation as a teaching period, and by continuing the schedule throughout the calendar year the four year medical course is completed in three years. The medical practice acts in a number of states, however, preclude licensure of applicants who pursue medical training under the accelerated plan. An analysis of the medical licensure laws of all the states was made by the Bureau of Legal Medicine and Legislation of the American Medical Association, which prompted the Federation of State Medical Boards of the United States, in cooperation with the Bureau, to present the results of its survey to the medical examining boards of the respective states. Letters were written to those states in which amendatory legislation was considered necessary in order that candidates following an accelerated program of medical education might qualify for licensure. There were nine such states: Georgia, Illinois, Kansas, Maryland, Michigan, Nebraska, New Jersey, South Carolina and Virginia. The legislature of Virginia was in session in 1942 and a bill was passed to remedy the situation in that state. The legislatures of the other eight states are meeting in 1943. Of the states in which a legislative amendment was necessary, Kansas, Maryland, Michigan, New Jersey and South Carolina have already completed legislative action so that graduates after accelerated courses, may obtain

licensure. In Nebraska corrective legislation is pending. No legislation has to date, been introduced in Georgia or Illinois. The licensing board of Georgia has informed the office of the Council on Medical Edu-

TABLE 19—*Licentates Representing Additions to the Medical Profession Grouped in Geographic Divisions 1942*

	Examination	Reciprocity and Endorsement	Total
New England			
Maine	25	-	25
New Hampshire	2	0	2
Vermont	16	1	17
Massachusetts	179	86	265
Rhode Island	20	6	26
Connecticut	50	22	72
	200	113	403
Middle Atlantic			
New York	652	160	1147
New Jersey	105	15	120
Pennsylvania	419	10	429
	1,176	185	1,696
East North Central			
Ohio	247	12	259
Indiana	122	1	123
Illinois	312	17	329
Michigan	172	7	179
Wisconsin	105	-	105
	1,058	37	1,091
West North Central			
Minnesota	172	8	180
Iowa	61	4	65
Missouri	177	1	178
North Dakota	1	-	1
South Dakota	1	-	1
Nebraska	71	1	72
Kansas	60	2	62
	542	16	558
South Atlantic			
Delaware	6	-	6
Maryland	157	9	166
District of Columbia	18	18	36
Virginia	140	7	147
West Virginia	14	1	15
North Carolina	77	10	87
South Carolina	45	1	46
Georgia	90	2	92
Florida	47	-	47
	570	48	638
East South Central			
Kentucky	56	2	58
Tennessee	164	2	166
Alabama	19	2	21
Mississippi	23	-	23
	262	6	278
West South Central			
Arkansas	61	1	62
Louisiana	229	-	229
Oklahoma	47	1	48
Texas	254	-	254
	691	2	693
Mountain			
Montana	3	1	4
Idaho	2	-	2
Wyoming	-	1	1
Colorado	66	1	67
New Mexico	1	-	1
Arizona	6	2	8
Utah	15	-	15
Nevada	-	-	-
	92	5	98
Pacific			
Washington	52	2	54
Oregon	41	4	45
California	396	14	410
	489	20	509
Territory			
Hawaii	9	3	12
Totals	5529	452	5981

and Hospitals that requirements in the state do not prohibit licensure of physicians who have completed their studies under an accelerated program.

ACCELERATION OF PREMEDICAL COURSES

The minimum requirement for admission to approved medical schools since 1918 has been two years of college training, and since 1938 three years has been recommended. With the exception of California, Con-

necticut, Nebraska and New Mexico (table 20) the state licensing boards, by statute in the majority of instances, require that an applicant for licensure must present evidence of having completed two years of college

In November 1942 the Council on Medical Education and Hospitals recommended that for the duration of the

TABLE 20—Requirements of Preliminary Training by Medical Licensing Boards

Two Years or More of College		
Alabama	Louisiana	Oklahoma
Alaska	Maine	Oregon
Arizona	Maryland	Pennsylvania
Arkansas	Massachusetts	Puerto Rico
Colorado	Michigan	Rhode Island
Delaware	Minnesota	South Carolina
District of Columbia	Mississippi	South Dakota
Florida	Missouri	Tennessee
Georgia	Montana	Texas
Hawaii	Nevada	Utah
Idaho	New Hampshire	Vermont
Illinois	New Jersey	Virginia
Indiana	New York	Washington
Iowa	North Carolina	West Virginia
Kansas	North Dakota	Wisconsin
Kentucky	Ohio	Wyoming
One Year of College		
Connecticut	New Mexico	
High School Graduation or Its Equivalent		
California	Nebraska	

war premedical education including satisfactory courses in physics biology and chemistry, including organic chemistry be included within two calendar years of instruction. Such a program is being adopted by practically all the medical schools of the country.

The collegiate training programs now being formulated by the Army and Navy, however, provide for an acceleration of premedical education which may present licensure problems in the future, and additional legislation will be necessary in some states in order that a physician who has had less than the two year premedical requirement may obtain licensure.

REQUIRED HOSPITAL INTERNSHIPS

In tables 21 and 22 are listed the medical schools and licensing boards now requiring internships for the M.D. degree and licensure respectively.

The medical licensing boards of twenty-two states, the District of Columbia, Alaska, Hawaii and Puerto

TABLE 21—Internship Required by Medical Licensing Boards of All Candidates

Alabama	Montana	Rhode Island
Alaska	Nevada	South Dakota
Delaware*	New Hampshire	Utah
District of Columbia	New Jersey	Vermont
Hawaii	North Dakota	Washington
Idaho	Oklahoma	West Virginia
Illinois	Oregon	Wisconsin
Iowa	Pennsylvania*	Wyoming
Michigan	Puerto Rico	

Some states require the internship of graduates of medical faculties abroad and reciprocity or endorsement applicants.
* Internship requirement shortened to nine months for the duration of the war.

Rico require that all applicants for licensure serve a hospital internship. Here again the accelerated program has introduced a problem for the licensing boards. With the graduation from medical schools at nine month intervals, hospitals are accepting interns on a twelve month basis, but to avoid overlapping or to be of some aid to hospitals unable to secure interns, some hospitals will permit interns to complete the one year internship allowed by military authorities in another civilian or

government hospital. In some instances this is being done independently and without affiliation with the other hospitals. In some ten states the medical practice acts require that an applicant must have completed an internship of at least twelve months. Replies to a recent inquiry addressed to the respective licensing boards of those states that require an internship as a prerequisite for licensure, regarding the acceptability of a year's internship served in two independent hospitals, indicate that such a service would be acceptable for licensure in the majority of these states, Montana, New Hampshire, Washington and Wyoming, however, replied that the acceptability of an internship thus served would rest with the discretionary powers of the board. Illinois replied that it would not accept an internship served in this fashion, while Oklahoma responded that the matter had been referred to the attorney general for an opinion.

Legislation introduced in Delaware and Pennsylvania to reduce the required period of internship from twelve months to nine months has been enacted into law.

Some states permit an intern to take the medical licensing examination before completion of his internship but withhold issuance of the license.

Seven medical schools in the United States and four in Canada require completion of the internship before awarding the M.D. degree. Several medical schools will accept research or clinical work in lieu of hospital

TABLE 22—Internship Required by Medical Schools

College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Loyola University School of Medicine
Northwestern University Medical School
University of Minnesota Medical School
Duke University School of Medicine
University of Alberta Faculty of Medicine
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Montreal Faculty of Medicine

service. At the University of Illinois College of Medicine the internship requirement was waived in 1941 because of the national emergency. With the institution of the accelerated curriculum at the University of California Medical School the requirement for an internship was discontinued for the seniors enrolled for the session 1941-1942. Wayne University College of Medicine granted degrees in March of this year to the seniors accelerating the medical course in 1942, thus waiving the requirement of an internship. However, the seniors who were in session during 1941-1942 are at present interning and will receive their degrees in June 1943. Marquette University School of Medicine, on the other hand, dropped the requirement of internship in August 1942, thus permitting the seniors who completed their work in June of that year to secure their degrees in December 1942.

The University of Minnesota Medical School in 1915 was the first school to adopt the internship as a basis for the M.D. degree, and the first state exacting this requirement was Pennsylvania in 1914. Several states in addition require graduates of medical schools abroad and reciprocity or endorsement applicants to have completed an internship. Since 1936 nine schools have dropped the internship requirement.

LICENSURE FOR THE RELOCATED PHYSICIAN

Removal of physicians from civilian practice has resulted in a shortage of physicians in critical areas. To assist the physician attempting to relocate in such

areas or in industrial sections of the country, it has been suggested that licensing boards modify their reciprocal and endorsement relationships and expedite licensure procedures. In eleven states namely

Arizona	Georgia	Rhode Island
Arkansas	Louisiana	South Carolina
Delaware	Mississippi	Washington
Florida	Nevada	

the medical practice acts provide for the issuance of temporary permits or certificates to practice medicine valid until the next ensuing examination. Whether or not the enactment of basic science laws in some of these states will interfere with the issuance of temporary permits is a matter about which no final opinion can be ventured.

In addition to the states named the New Jersey medical practice act exempts from its requirements a lawfully qualified physician and surgeon of another state taking charge temporarily of the practice of a lawfully qualified physician of New Jersey during his absence from the state, on written request to the board of medical examiners for permission to do so. Pending legislation provides that such permission may be granted for a period of not less than two weeks nor more than four months and that the board of medical examiners, at its discretion may extend such permission for further periods of two weeks to four months but not to exceed

TABLE 23—Annual Registration

Alaska	Hawaii	New York
Arizona	Idaho	North Dakota
Arkansas	Iowa	Oklahoma
California	Kansas	Oregon
Colorado	Louisiana	Pennsylvania
Connecticut	Minnesota	Texas
Delaware	Missouri	Utah
District of Columbia	Montana	Washington
Florida	Nebraska	West Virginia
Georgia	Nevada	Wyoming

* Biennial registration

* After July 1, 1943

in the aggregate one year. In two states, Delaware and Nevada legislation has been enacted providing for the issuance of temporary permits or licenses, valid generally for the duration of the emergency. In Pennsylvania and Maine similar legislation is pending. In Kansas and Vermont the proposals to authorize the issuance of temporary permits or licenses were defeated this year.

ANNUAL REGISTRATION

Twenty-seven states, the District of Columbia, Alaska and Hawaii, as shown in table 23, require that all applicants register annually. Some of these states require such registration whether or not physicians reside in the state. The fee is generally \$2. A bill to establish annual registration in Wisconsin is pending.

Legislation to relieve physicians in military service from the necessity of complying with the annual registration laws has been enacted in Kansas, Minnesota, New York, Utah, Washington and West Virginia. Similar legislation failed of enactment in Idaho and has been received unfavorably by legislative committees in Colorado and Missouri. Wisconsin legislation pending exempts physicians in military service.

The licensing boards of all the states named in table 23, with the exception of Arizona, Colorado, Florida and Wyoming, have indicated that the requirement of annual registration has been waived for physicians in the armed services.

CANDIDATES EXAMINED

In table 24 are tabulated the number of candidates examined in the various states, territories and possessions in the five year period from 1938 to 1942. For each year there is recorded the number who passed and failed licensing examinations. Totals for the five year period and the percentage of candidates who failed are also given. In New York 5,017 were tested and passed, 2,450 in Illinois, 2,140 in Pennsylvania and 2,040 in California. More than 1,000 were successful also in

TABLE 24—Candidates Examined 1938-1942

	1938		1939		1940		1941		1942		Totals for Five Years		
	P	F	P	F	P	F	P	F	P	F	P	F	
Alabama	1	0	11	0	1	0	1	0	4	0	179	3	
Arizona	1	0	11	1	20	1	17	0	0	0	72	2	
Arkansas	1	0	1	0	0	0	0	0	61	0	10	0	
California	40	1	1	1	20	23	40	11	4	1	2,040	50	
Colorado	2	1	1	1	1	1	1	1	1	1	14	17	
Connecticut	1	0	47	3	1	0	1	0	1	1	318	171	
Delaware	11	0	11	2	15	0	1	0	7	0	2	20	
District of Columbia	1	0	1	0	49	0	0	0	0	0	1	2	
Florida	1	0	1	2	27	1	6	14	110	1	709	89	
Georgia	1	0	1	0	1	0	1	2	1	0	440	1	
Idaho	1	0	1	5	40	1	9	0	12	1	174	10	
Illinois	40	1	37	18	42	21	47	4	41	4	2,450	148	
Indiana	110	1	112	0	150	0	120	0	150	0	5	1	
Iowa	91	11	101	17	17	0	47	0	41	1	3	6	
Kansas	93	1	1	0	92	0	92	0	96	0	461	1	
Kentucky	1	1	1	0	77	0	81	0	4	0	414	1	
Louisiana	184	1	1	0	14	1	14	1	15	0	511	4	
Maine	27	7	42	6	2	14	12	4	7	193	40		
Maryland	27	1	17	16	17	1	17	1	11	11	921	92	
Massachusetts	207	1	27	2	1	20	2	1	20	1	1,277	131	
Michigan	226	1	217	0	217	0	230	0	1	0	1,125	1	
Minnesota	219	2	217	1	196	0	240	0	1	1	1,071	4	
Mississippi	11	1	21	0	42	0	0	0	47	2	175	3	
Missouri	174	1	211	0	179	0	196	0	1	1	942	4	
Montana	11	0	11	0	9	0	7	1	1	46	2		
Nebraska	1	0	1	0	84	0	62	0	1	2	416	2	
Nevada	1	0	1	0	1	0	1	0	1	0	18	3	
New Hampshire	17	0	14	2	9	1	10	1	1	0	7	117	
New Jersey	2	1	23	169	17	26	157	29	110	19	54	277	
New Mexico	2	0	1	0	0	1	2	0	0	0	6	1	
New York	107	1	107	1	630	10	1	107	60	3,017	37		
North Carolina	15	0	17	0	65	0	34	0	77	0	328	0	
North Dakota	15	2	17	1	24	0	15	1	6	1	77	5	
Ohio	242	11	269	15	305	16	253	14	274	6	1,533	62	
Oklahoma	46	0	4	0	47	0	34	0	34	0	244	0	
Oregon	54	0	2	0	33	0	22	0	45	0	140	0	
Pennsylvania	312	9	348	10	478	24	446	18	466	21	2,440	82	
Rhode Island	26	1	25	0	19	0	22	0	0	0	127	1	
South Carolina	39	1	45	0	41	0	45	0	46	0	219	1	
South Dakota	8	0	15	0	7	0	9	0	5	0	44	0	
Tennessee	179	3	19	0	188	1	199	4	190	0	949	8	
Texas	200	26	208	15	209	25	177	13	2	15	1,010	94	
Utah	14	0	17	0	9	0	15	0	14	0	69	0	
Vermont	26	1	17	0	21	1	35	0	24	1	166	3	
Virginia	127	0	117	1	142	1	146	3	145	1	672	6	
Washington	72	0	59	1	48	0	69	1	69	0	308	2	
West Virginia	65	1	2	0	38	0	34	0	27	0	197	1	
Wisconsin	115	0	111	0	115	0	120	0	124	2	5	3	
Wyoming	7	0	8	1	16	1	8	0	0	0	39	2	
U. S. Terr. & Possessions	34	9	30	4	30	2	67	8	15	2	172	25	
Total Examined	7,461		7,754		7,925		7,529		7,110		37,861		
Passed	6,589		6,493		6,290		6,059		6,076		31,507		
Failed	872		1,261		1,635		1,470		1,034		6,354		
Percentage Failed	11.7		16.3		20.6		19.6		15.4		16.8		

Massachusetts, Michigan, Minnesota, Ohio and Texas. The smallest number, 6, passed the examinations in New Mexico.

The percentage of failures in all states in the period has increased from 11.7 in 1938 to 15.4 in 1942. However, the percentage of failures last year was lower than in the three previous years when 19.6, 20.6 and 16.3 respectively failed.

The percentage of candidates who failed in examinations in the past five years is given in the last column for each state. The greatest percentage of failures, 50.7, occurred in Massachusetts. The high percentage in this state is due to the fact that by law the licensing board is required to admit to its examinations the graduates of unapproved schools, many of whom repeatedly fail. New York had a failure percentage of 43.0, occa-

sioned in large part by the admittance to examination of a considerable number of graduates of foreign faculties of medicine, who likewise repeatedly fail. On the other hand twenty-nine states failed less than 5 per cent. In sixteen of these states the percentage

TABLE 25—Registration, 1901-1942

Year	All Candidates Examined			Reciprocity or Endorsement	Total Registered
	Examined	Passed	Percentage Failed		
1901	7,006	5,000	29.0	1,006	6,006
1902	7,175	5,088	29.8	1,087	6,082
1903	8,010	6,377	20.7	1,633	7,875
1904	7,273	5,731	21.4	1,542	7,155
1905	7,773	6,083	21.7	1,690	7,373
1906	7,293	5,866	19.6	1,427	7,293
1907	7,011	5,710	18.4	1,301	7,250
1908	6,964	5,582	19.8	1,382	6,825
1909	6,880	5,467	20.5	1,413	6,710
1910	6,135	5,233	14.6	1,202	6,515
1911	5,579	4,579	18.1	1,000	6,515
1912	5,854	4,077	17.5	1,777	5,906
1913	4,878	4,151	14.9	1,727	5,501
1914	4,753	4,084	14.1	1,669	5,444
1915	4,667	3,884	17.2	1,047	4,211
1916	4,730	4,074	14.2	2,516	6,620
1917	4,796	4,062	15.7	2,155	6,600
1918	4,825	4,228	12.4	2,186	6,411
1919	4,631	3,530	12.2	2,071	5,612
1920	4,727	4,028	14.8	2,100	6,435
1921	5,021	4,746	11.8	2,222	6,675
1922	6,002	5,140	9.2	1,861	7,311
1923	5,770	5,111	7.9	1,659	7,269
1924	5,809	5,002	7.2	2,176	7,175
1925	5,458	4,090	6.7	2,228	7,318
1926	5,629	5,282	6.2	2,420	7,702
1927	5,571	5,245	5.7	2,466	7,621
1928	5,611	5,263	6.2	2,211	7,476
1929	5,675	5,247	7.6	1,885	7,172
1930	5,673	5,211	7.6	1,089	7,233
1931	6,144	5,627	8.4	2,160	7,788
1932	6,443	5,809	9.1	2,196	8,055
1933	6,917	6,223	10.0	2,771	8,995
1934	7,331	6,604	10.0	3,203	9,807
1935	7,461	6,589	11.7	2,956	9,545
1936	7,751	6,497	16.7	2,872	9,365
1937	7,925	6,290	20.7	2,861	9,154
1938	7,541	6,059	19.7	2,758	8,817
1939	7,180	6,076	15.4	2,448	8,734

of failures was less than 1. In five years six states, Arkansas, North Carolina, Oklahoma, Oregon, South Dakota and Utah, had no failures.

A total of 37,861 were examined from 1938 to 1942, inclusive of whom 31,507 passed and 6,354, 16.8 per cent, failed.

These figures represent examinations given and not individuals. A candidate who fails more than once in a given year is counted as only one failure, but should he fail in one of the succeeding years he is counted in that year. The same is true of successful candidates. This table is merely a compilation of the figures computed annually and grouped for comparison. It gives a fair approximation of the number of physicians added to the profession in five years by means of written examination. On page 101 is a compilation giving exact figures for the period 1935 to 1942.

REGISTRATION, 1904-1942

The study of totals and percentages for thirty-nine years (1904-1942) will be found in table 25. This table includes figures for each year covering the number examined and passed, the percentage failed, the number registered by reciprocity or endorsement and the total registered. There was no definite increase or decrease in the number registered from 1907 to 1933, but in 1936 there was a very noticeable increase which also appeared during the following three years, while since 1938 the number registered has decreased. However, the number licensed without examination since 1904 has been increasing as a result of the wider recognition of reciprocal relations and the acceptance of the certificate of the National Board of Medical Examiners.

The decrease of more than 1,200 in 1918 was due to the sudden withdrawal of physicians and recent graduates from civilian life in World War I. However, in the following year the number registered was 2,389 greater than in 1918.

A similar situation prevailed in 1941, when 337 fewer were registered although this decrease was due in part to the fewer graduates of European schools registered as compared with several previous years. Again in 1942 there was a decrease of 283, which may be the result of recent graduates entering military service without first securing a state license.

The greatest number registered in thirty-nine years was 9,807 in 1937, of whom 6,604 passed licensing tests and 3,203 were endorsed by registration.

The percentage of failures annually dropped from 20.8 in 1905, when a great many proprietary medical schools were functioning, to 5.7 in 1930. Improvements in the standards of medical education have resulted in a decrease of failures in licensing examinations. With the migration of physicians to this country beginning in 1936 and the resultant licensure difficulties, the failures began to rise until they reached a peak of 20.7 per cent in 1940. The percentage dropped 1 in 1941 for the country as a whole and 4.3 in 1942. The rise of failure percentages in recent years has been due in large part to the inability of graduates of unapproved schools and of foreign faculties of medicine to obtain licensure successfully without failure.

While these figures represent those registered in the years given, they do not represent actual additions to the medical profession.

GRADUATES OF APPROVED MEDICAL SCHOOLS AND OTHERS REGISTERED, 1922-1942

The educational fitness of the individuals registered in twenty-one years is recorded in table 26. In the computation of these figures, schools rated as class A and B by the Council on Medical Education and Hos-

TABLE 26—Graduates of Approved Medical Schools and Others Registered, 1922-1942

Year	Graduates of Approved Schools		Others		Totals
	Number	Per Cent	Number	Per Cent	
1922	4,519	80.5	1,093	19.5	5,612
1923	5,196	80.8	1,237	19.2	6,433
1924	5,686	85.2	992	14.8	6,678
1925	6,314	86.4	997	13.6	7,311
1926	6,441	88.7	828	11.3	7,269
1927	6,410	89.4	763	10.6	7,178
1928	6,585	90.1	733	9.9	7,318
1929	7,003	91.0	699	9.0	7,702
1930	7,011	92.1	610	7.9	7,621
1931	6,932	92.8	544	7.2	7,476
1932	6,675	93.7	457	6.3	7,132
1933	6,774	93.7	459	6.3	7,233
1934	7,171	92.1	617	7.9	7,788
1935	7,362	91.5	693	8.5	8,055
1936	7,932	88.2	1,066	11.8	8,998
1937	8,389	85.6	1,418	14.4	9,807
1938	8,315	87.1	1,230	12.9	9,545
1939	8,067	86.2	1,298	13.8	9,365
1940	7,779	85.0	1,375	15.0	9,154
1941	7,767	88.1	1,051	11.9	8,818
1942	7,247	84.9	1,287	15.1	8,534
Totals	145,575	88.2	19,452	11.8	165,027

pitals of the American Medical Association since 1907 are classified as approved. In the column "Others" are included individuals who graduated prior to 1907, when the first classification of schools was made, graduates of foreign faculties of medicine, class C graduates, osteopaths given recognition by medical licensing boards and graduates of schools not approved by the Council.

In 1928 the classification A B and C by the Council was discontinued and a list of approved medical schools has since been maintained

Of the 8,534 registered by all methods in 1942, 84.9 per cent represent graduates of approved schools and 1,287, 15.1 per cent, the group designated as others

In twenty-one years a total of 165,027 were registered, including 145,575 approved graduates (88.2 per

TABLE 27—*Graduates of Unapproved Medical Schools Registered, 1937-1942*

	Examination						Reciprocity and Endorsement						Total
	1937	1938	1939	1940	1941	1942	1937	1938	1939	1940	1941	1942	
Arizona	2	1	2	0	0	0	0	0	0	0	0	0	5
Arkansas	0	1	0	0	0	0	0	1	0	0	0	0	2
California	0	0	0	1	1	0	0	0	1	0	0	0	3
Florida	2	2	1	0	0	0	0	0	0	0	0	0	5
Illinois	52	60	51	42	51	51	0	0	0	0	0	0	345
Indiana	0	0	0	0	0	0	0	3	1	2	0	1	7
Iowa	0	0	0	0	0	0	0	0	0	0	1	0	1
Kentucky	0	0	0	0	0	0	2	1	2	2	0	0	7
Massachusetts	97	55	79	95	90	105	0	0	0	0	0	0	527
Mississippi	0	0	0	0	0	0	1	0	0	0	0	0	1
Missouri	0	0	0	0	1	0	0	1	0	0	0	0	2
Nebraska	0	0	0	0	0	0	1	0	0	0	0	0	1
New Jersey	1	7	0	0	0	0	2	4	13	8	0	0	39
New Mexico	0	1	0	0	0	0	0	2	0	2	0	0	5
New York	0	0	0	0	0	0	14	8	12	8	0	0	42
North Carolina	2	0	0	0	0	0	0	0	0	0	0	0	2
Ohio	23	32	30	0	0	0	0	0	0	0	0	0	91
Pennsylvania	1	4	1	5	0	0	0	0	0	0	0	0	11
Texas	0	1	4	6	0	0	3	0	0	0	0	0	14
Virginia	1	0	1	0	0	0	0	0	0	0	0	0	2
Alaska, Hawaii and Puerto Rico	1	0	0	1	1	0	0	0	0	0	0	0	3
Totals	212	167	175	159	144	157	22	20	20	27	9	1	1,113

cent) and 19,452 others (11.8 per cent). The improved standards in medical education are again evident by a study of these totals and the percentages representing approved graduates.

The number of graduates of approved schools in the period shown has annually represented more than 80 per cent of those registered. Until the influx of foreign graduates in 1936 the number in the second group has always been well below 1,000.

Of the 8,534 registered in 1942, 4,974 graduates of approved medical schools of the United States and Canada were licensed by examination and 2,273 were endorsed. By examination 217 unapproved graduates and 885 foreign graduates were registered. Likewise, among those registered by endorsement there were 21 graduates of unapproved schools and 164 foreign graduates.

New York registered 632 graduates of approved schools of a total of 1,330. This state licensed the largest number with foreign credentials 698. Only graduates of approved schools in the United States and Canada were registered in Delaware, Florida, Idaho, Louisiana, Minnesota, New Mexico, North Dakota, Rhode Island, Utah and West Virginia.

GRADUATES OF UNAPPROVED MEDICAL SCHOOLS REGISTERED 1937-1942

Graduates of institutions which do not meet the educational standards outlined by the House of Delegates of the American Medical Association and enforced by the Council on Medical Education and Hospitals were registered in twenty states, Alaska, Hawaii and Puerto Rico in the last six years. The number so registered will be found in table 27. In the six years shown 1,113 were registered 1,014 by examination and 99 by reciprocity or endorsement. In 1942, 157 received licenses after examination in three states—namely Illinois, Massachusetts and Mississippi and

1 by endorsement in Indiana. Two states (Massachusetts and Illinois) registered all but 2 of the candidates.

GRADUATES OF SCHOOLS OF OSTEOPATHY REGISTERED BY MEDICAL EXAMINING BOARDS, 1937-1942

The number of graduates of schools of osteopathy granted the privilege of practicing medicine or surgery or both by the medical examining boards of twelve states for a six year period are given in table 28. There have been 759 such individuals registered since 1937, 588 by examination and 171 by endorsement.

In 1942 ten states registered 60 by examination and 13 by recognition of their credentials a total of 73. Massachusetts and Texas issued 31 of the 73 so licensed. In six years Texas registered 237, New Jersey 233 and Massachusetts 104, a total of 574.

PHYSICIANS EXAMINED ON THE BASIS OF CREDENTIALS OBTAINED IN COUNTRIES OTHER THAN THE UNITED STATES AND CANADA

The Council on Medical Education and Hospitals does not grade or classify medical schools outside the United States and Canada. It therefore has no evidence on which to base a rating. For several years the Council was in a position to verify the claims of physicians presenting such credentials, but for several years this has not been possible and on the licensing boards themselves rests the responsibility of both verifying and evaluating the credentials presented by these graduates. In the 1942 edition of the American Medical Directory a symbol in the biographic data indicates that the information given is the licensing board's record of the credential accepted as meeting the educational qualification for licensure. The absence of the symbol indicates that official verification is on file in the office of the Council.

Nineteen states reported that holders of credentials obtained in countries other than the United States and Canada are not eligible for licensure. The requirements for candidates for medical licensure in the United States, Alaska, Hawaii and Puerto Rico holding such credentials are given in table 29. Eighteen states, Alaska, Hawaii and Puerto Rico require full citizenship and

TABLE 28—*Graduates of Schools of Osteopathy Registered by Medical Examining Boards, 1937-1942*

	Examination						Reciprocity and Endorsement						Total
	1937	1938	1939	1940	1941	1942	1937	1938	1939	1940	1941	1942	
Colorado	19	18	22	15	2	0	0	0	0	0	0	0	59
Connecticut	1	0	1	0	0	0	0	0	0	0	0	0	2
Dist. Columbia	0	1	0	1	0	2	0	0	0	0	2	1	7
Indiana	2	2	4	7	3	4	1	0	0	1	3	2	29
Massachusetts	12	10	10	27	26	1	0	0	0	0	0	0	114
New Hampshire	4	2	0	2	0	0	1	0	2	0	0	0	14
New Jersey	52	46	45	47	34	9	0	0	0	0	0	0	237
Oregon	1	1	1	0	2	1	0	1	1	1	2	0	17
Texas	17	21	19	20	13	17	5	17	1	1	1	2	121
Virginia	2	1	0	0	3	0	0	0	0	0	1	0	7
Wisconsin	1	0	0	1	2	5	2	3	0	0	0	1	14
Wyoming	0	0	0	1	0	0	4	1	2	0	0	0	10
Totals	117	103	106	121	75	67	51	47	29	5	9	1	759

nine states naturalization papers as a condition precedent to taking the examination. In some states the requirement is by rule of the medical board in others the provision is by statute. In nine states foreign graduates are required to obtain a certificate in the basic sciences. Sixteen states—Alaska, Hawaii and Puerto Rico require a one year internship in a United

TABLE 29—Requirements of Candidates for Medical Licensure on the Basis of Credentials Obtained in Countries Other Than the United States and Canada

	Admitted to Examination	Admitted by Endorsement of State License	Citizenship	Basic Science Certificate	Internship in Hospital in United States	Further Medical Training	Examination Fee, Dollars	Other Requirements
Alabama	+	+	+					
Arizona	+	+	+					
Arkansas (reg. and homeo boards)	+	+	+					
California	+	+	+					
Colorado	+	+	1st P					
Connecticut (regular board)	+	+	1st P					
Delaware (regular board)	+	+	+					
District of Columbia	+	+	+					
Florida	+	+	+					
Georgia	+	+	+					
Idaho	+	+	+					
Illinois	+	+	1st P					
Indiana	+	+	+					
Iowa	+	+	+					
Kansas	+	+	+					
Kentucky	+	+	+					
Louisiana (reg. and homeo boards)	+	+	+					
Maine	+	+	+					
Maryland (reg. and homeo boards)	+	+	1st P					
Massachusetts	+	+	1st P					
Michigan	+	+	+					
Minnesota	+	+	+					
Mississippi	+	+	+					
Missouri	+	+	+					
Montana	+	+	+					
Nebraska	+	+	+					
Nevada	+	+	+					
New Hampshire	+	+	+					
New Jersey	+	+	+					
New Mexico	+	+	+					
New York	+	+	1st P					
North Carolina	+	+	+					
North Dakota	+	+	+					
Ohio	+	+	+					
Oklahoma	+	+	+					
Oregon	+	+	+					
Pennsylvania	+	+	1st P					
Rhode Island	+	+	1st P					
South Carolina	+	+	+					
South Dakota	+	+	+					
Tennessee	+	+	+					
Texas	+	+	+					
Utah	+	+	+					
Vermont	+	+	+					
Virginia	+	+	+					
Washington	+	+	1st P					
West Virginia	+	+	+					
Wisconsin	+	+	+					
Wyoming	+	+	+					
Alaska	+	+	+					
Hawaii	+	+	+					
Puerto Rico	+	+	+					

* Refer to chart of "Reciprocity and Endorsement Policies" for further data

- 1 Certificate of National Board of Medical Examiners and licensure in country in which school of graduation is located
- 2 Internship or one year in medical school in United States
- 3 Certificate of National Board of Medical Examiners
- 4 For graduates of last five years, if more than five years \$50
- 5 Residence of one year in Delaware
- 6 If similar privileges are accorded licentiates of District of Columbia by licensing agency of jurisdiction from which applicant comes
- 7 Senior year in class A medical school after July 1, 1936 Switzerland
- 8 Graduates of European medical colleges after July 1, 1936 Switzerland accepted, shall not be eligible for licensure. Graduates prior to this date may be accepted for the regular written and clinical examination after completing rotating internships in approved hospitals in Illinois
- 9 Enemy aliens not accepted
- 10 Application must be filed six months prior to date of examination
- 11 Licensed to practice medicine and surgery in country in which school of graduation is located, otherwise required to complete senior year in approved medical school in United States
- 12 Diplomates of National Board of Medical Examiners eligible
- 13 License to practice medicine and surgery in the country in which the school of graduation is located
- 14 Internship and one year graduate work
- 15 Diplomates of the National Board of Medical Examiners exempt from special requirements
- 16 Internship and graduate work
- 17 Internship completed in foreign countries after July 1, 1934 not acceptable
- 18 Rotating internship in approved hospital in the United States or completion of senior year in class A medical school in the United States
- 19 These requirements apply also to graduates of Canadian schools
- 20 Graduates from foreign medical colleges accepted if they present also a diploma from an approved medical school in the United States
- 21 Provided standard was the same as California on the same date
- 22 Degree from an American medical college acceptable to the Medical Council of Delaware required
- 23 Diplomates of the National Board of Medical Examiners accepted
- 24 Very limited number contracting to practice in rural districts may be accepted
- 25 Effective July 1, 1943
- 26 Homeopathic board requires one year internship in homeopathic hospital in the United States

States hospital approved for intern training. In five states there is a requirement of a senior year's work in an approved medical school in the United States. Other prerequisites are given in footnotes beneath the table.

Table 30 presents figures relating to physicians examined on the basis of credentials obtained in countries other than the United States and Canada by licensing boards in the United States and Hawaii. The figures represent both American and foreign born physicians educated abroad. Ninety-nine faculties of medicine and three licensing corporations of twenty-two European and four other countries and the Philippines were represented. There were 1,630 examined by twenty-four states and Hawaii, of whom 890 passed and 740, 45.4 per cent, failed. Graduates of the University of Vienna represented the largest group, 397, who were examined in thirteen states with a failure percentage of 45.1. Nine states examined 111 graduates of the University of Berlin, of whom 50.5 per cent failed. Graduates of all other schools were examined in fewer than eleven states. The greatest number examined by any one state was 1,263 in New York, of whom 670

TABLE 31—Physicians Examined on the Basis of Credentials Obtained in Countries Other Than the United States and Canada, 1930-1942

Year	Number Examined	Passed	Percentage Failed
1930	167	92	44.9
1931	158	91	42.4
1932	182	96	47.3
1933	200	129	35.5
1934	235	170	40.2
1935	437	303	30.7
1936	558	352	35.0
1937	920	637	30.8
1938	1,164	716	38.5
1939	1,691	839	50.4
1940	2,088	948	54.7
1941	1,717	698	59.2
1942	1,630	890	45.4
Totals	11,227	5,991	46.6

passed and 593 (47.0 per cent) failed. No other state examined more than 65 such candidates. Fewer than 5 were tested by thirteen states and Hawaii. The percentage of failures of graduates of seventy-seven of the schools was more than 25.

Table 31 records the number of graduates of faculties of medicine abroad examined for medical licensure in the United States in thirteen years, 1930-1942 inclusive. All together 11,227 were examined, of whom 5,991 passed and 42.6 per cent failed. The greatest number, 2,088, was examined in 1940, when 54.7 per cent failed. The number licensed in twelve years increased from 92 in 1930 to 948 in 1940. In 1942, 58 fewer than in 1940 were registered. The highest percentage of failures occurred in 1941, 59.2 per cent. At no time during this thirteen year period did fewer than 30.7 per cent fail.

In table 32 are assembled figures showing for the five year period 1937-1942 the number of graduates of faculties of medicine outside the United States and Canada admitted to licensing examinations in this country. Included also is a tabulation for 1942. The largest group from any one school examined in the five year period was 1,739 from the University of Vienna, of whom 49.6 per cent failed. There were 741 from the University of Berlin, of whom 49 per cent failed. Large numbers also were examined who presented credentials from the universities of Prague, Paris, Freiburg, Frankfurt-am-Main, Wurzburg, Munich,

TABLE 32—Physicians Examined on the Basis of Credentials Obtained in Countries Other Than the United States and Canada by Licensing Boards of the United States and Possessions, 1937-1942

	1937		1941		1942			1937		1941		1942	
	Number Examined	Percentage Passed	Number Examined	Percentage Passed	Number Examined	Percentage Passed		Number Examined	Percentage Passed	Number Examined	Percentage Passed	Number Examined	Percentage Passed
AUSTRALIA													
University of Sydney	1	0.0	0	0.0			Regia Università degli Studi di Bari	9	66.7	1	100.0		
BELGIUM													
Université de Liège	3	33.3	1	100.0			Regia Università di Bologna	166	69.9	74	59.5		
Université Libre de Bruxelles	12	25.0	9	44.4			Regia Università di Catania	3	33.3	0	0.0		
Université Gent	4	75.0	0	0.0			Regia Università di Firenze	20	40.0	3	25.0		
BULGARIA													
University of Sofia	0	0.0	1	0.0			Regia Università di Genova	29	82.8	10	80.0		
CHILE													
Universidad de Chile Santiago	1	0.0	0	0.0			Regia Università di Messina	17	94.1	12	100.0		
CHINA													
Pennsylvania Medical School Shanghai	7	25.6	3	66.7			Regia Università di Milano	32	46.9	6	50.0		
Peking Union Medical College	0	0.0	2	50.0			Regia Università di Modena	20	80.0	4	50.0		
Woman's Christian Medical College Shanghai	1	0.0	0	0.0			Regia Università di Napoli	172	67.6	37	56.7		
CUBA													
Universidad de la Habana	5	60.0	0	0.0			Regia Università di Padova	26	57.8	1	57.1		
CZECHOSLOVAKIA													
Deutsche Universität Prag	174	51.7	43	51.2			Regia Università di Palermo	18	77.8	3	66.7		
Masarykova Univerzita Brno	2	50.0	1	0.0			Regia Università di Pavia	8	87.5	5	60.0		
Univerzita Karlova Praha	44	68.2	26	46.2			Regia Università di Perugia	14	64.3	5	60.0		
Univerzita Komenského Bratislava	9	44.4	1	0.0			Regia Università di Pisa	41	68.3	10	40.0		
DENMARK													
Københavns Universitet	2	100.0	0	0.0			Regia Università di Roma	26	57.2	59	45.8		
ENGLAND													
Charing Cross Hospital Medical School London	1	0.0	0	0.0			Regia Università di Siena	25	68.0	4	25.0		
King's College	0	0.0	1	0.0			Regia Università di Torino	25	46.4	5	20.0		
Licentiate in Medicine Surgery and Midwifery of the Apothecaries Society of London	5	60.0	1	0.0			JAPAN						
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England	52	21.2	4	25.0			Japan Medical College Tokyo	2	100.0	0	0.0		
London Hospital Medical College	1	100.0	0	0.0			LATVIA						
Middlesex Hospital Medical School London	1	0.0	0	0.0			Latvijas Universitāte Riga	4	75.0	0	0.0		
St. Bartholomew's Hospital Medical College	1	0.0	0	0.0			LEBANON						
University of Birmingham	2	0.0	0	0.0			American University of Beirut	9	11.1	4	25.0		
University of Bristol	1	0.0	0	0.0			Université de St Joseph Beyrouth	4	50.0	0	0.0		
University of Cambridge	3	0.0	0	0.0			LITHUANIA						
University of Durham Newcastle upon Tyne	2	0.0	0	0.0			Universito Kaunas	0	0.0	1	100.0		
University of Liverpool	1	0.0	0	0.0			MEXICO						
University of London	2	0.0	1	0.0			Escuela Libre de Homeopatía del Estado de Puebla	3	100.0	1	100.0		
University of Oxford	2	0.0	0	0.0			Escuela Médico Militar México D F	4	100.0	1	100.0		
University of Sheffield	3	0.0	1	0.0			Universidad Libre Mexicana Instituto de Ciencias	1	100.0	0	0.0		
ESTONIA													
Universitü de Tartu	3	100.0	2	0.0			Universidad Nacional México D F	12	66.7	2	50.0		
FRANCE													
Université de Bordeaux	3	33.3	0	0.0			NETHERLANDS						
Université de Lyon	12	41.7	2	50.0			Rijks Universiteit te Groningen	3	20.0	0	0.0		
Université de Montpellier	8	37.5	0	0.0			Rijks Universiteit te Liden	3	33.3	1	0.0		
Université de Nancy	13	61.5	3	33.3			Rijks Universiteit te Utrecht	3	33.3	0	0.0		
Université de Paris	136	41.9	43	46.5			Universiteit van Amsterdam	15	40.0	6	0.0		
Université de Strasbourg	6	33.3	3	33.3			<						

Bonn, Heidelberg, Breslau, Budapest, Bologna, Naples, Rome, Basil, Bern, Zurich, Geneva and Lausanne. Also in the five year period there were 315 who presented in lieu of the M.D. degree the triple qualification certificate of Scotland. These individuals secured their education in the so-called extramural schools of Scotland.

EXAMINING BOARDS IN THE MEDICAL SPECIALTIES

Examining and certifying boards have been established in fifteen specialties namely anesthesiology, dermatology and syphilology, internal medicine, neurologic surgery, obstetrics and gynecology, ophthalmology, orthopedic surgery, otolaryngology, pathology, pediatrics, plastic surgery, psychiatry and neurology, radiology, surgery and urology. On authorization of the House of Delegates of the American Medical Association, the Council on Medical Education and Hospital

Examining Boards in the Medical Specialties

Key No. A B	Name of Board	Year of Incorporation	Certificates Awarded	
			Total Issued to March 1, 1942	March 1, 1943
1	American Board of Pediatrics	1913	1,741	1,959
2	American Board of Psychiatry and Neurology	1914	1,231	1,506
3	American Board of Orthopaedic Surgery	1914	757	819
4	American Board of Dermatology and Syphilology	1912	607	611
5	American Board of Radiology	1934	1,609	1,923
6	American Board of Urology	1915	815	912
7	American Board of Obstetrics and Gynecology	1910	1,469	1,656
8	American Board of Internal Medicine	1910	2,692	2,905
9	American Board of Pathology	1916	810	951
10	American Board of Ophthalmology	1917	1,979	2,195
11	American Board of Otolaryngology	1924	3,349	3,570
12	American Board of Surgery	1917	1,916	2,114
13	American Board of Anesthesiology	1918	116	188
14	American Board of Plastic Surgery	1917	127	157
15	American Board of Neurological Surgery	1910	107	188
Totals			19,561	21,733

Certification in the subspecialties. By the American Board of Internal Medicine: Allergy 68, cardiovascular disease 260, gastroenterology 122, tuberculosis 119, total 569. By the American Board of Surgery: Proctology 61. Total certified in the subspecialties 630.

tals in 1934 formulated standards governing specialty boards, and these fifteen boards are fully approved by the Council. In addition to regulations relating to the organization and operation of specialty boards, The Essentials of Approved Examining Boards in Specialties contain also the minimum qualifications deemed necessary for certification as a specialist. The latter include graduation from an approved medical school, an internship in a hospital approved by the Council and a period of specialized training in a selected specialty.

The American Board of Internal Medicine by special examination certifies specialists in allergy, cardiovascular disease, gastroenterology and tuberculosis. Similarly the American Board of Surgery certifies specialists in proctology.

During the period of the war the training of young men to meet the requirements of the specialty boards will be greatly curtailed since provision for military deferment beyond the internship will be granted to comparatively few. However, the specialty boards have not lowered their requirements because of war conditions, but the majority of them will grant some credit for military service which will compensate in

part for the interruption of planned programs of graduate training by the call of physicians to active service in the armed forces. The policies adopted by the specialty boards vary from the granting of an indefinite amount of credit, to be determined by the evaluation of the experience of individual applicants, to full credit for work done in the surgical division of a regularly constituted army or naval hospital. The Office of the Surgeon General of the Army has announced that men in service eligible for board examinations may request orders to detached duty for the purpose of taking these examinations.

The number of certificates awarded prior to March 1, 1942 and those certified from that date to March 1, 1943, respectively, appear in the accompanying tabulation. On March 1, 1942 there were 19,561 physicians certified by the fifteen specialty boards and, in the following year, 21,732, a total of 21,733 excluding the subspecialties.

In the subspecialties 630 have been registered, namely allergy 68, cardiovascular disease 260, gastroenterology 122, proctology 61 and tuberculosis 119.

The greatest number certified by any one board was the 3,570 physicians certified in otolaryngology since the organization of the board in 1924. In internal medicine 2,905 have been certified and in surgery 2,144. The board in ophthalmology, organized in 1917 and the oldest board in existence, has to date certified 2,198 physicians.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Seventeen states and the District of Columbia have adopted by legislative action basic science requirements underlying the practice of the healing art. These acts provide for certification by a board of examiners in the basic sciences as a prerequisite to eligibility for a license to practice any branch of the healing art, whether the license is to be issued after written examination or on the basis of endorsement of credentials or reciprocity. Connecticut and Wisconsin in 1925 were the first states to enact laws. Very few legislatures were in session in 1942 and no basic science law was enacted during the year. A referendum to create such a law in California in 1942 was defeated. At the recent session of the Tennessee legislature, however, a basic science law was passed which becomes operative during the current year. While the laws of some states include reciprocal agreements, the certificate is obtainable only after examination in the majority of states.

In 1942 basic science boards were in operation in Arizona, Arkansas, Colorado, Connecticut, Florida, Iowa, Michigan, Minnesota, Nebraska, New Mexico, Oklahoma, Oregon, Rhode Island, South Dakota, Washington, Wisconsin and the District of Columbia. These states, together with the year of enactment of the basic science law, are recorded in table 1.

Shown in table 2 are the subjects in which examinations are conducted by the respective states and the District of Columbia. These subjects are specified by statute. The examining boards are not authorized to add any subjects or to refrain from giving examination in any subjects specified in the statute. Tennessee is included in this table. All boards examine in anatomy, pathology and physiology, sixteen examine applicants in chemistry, fourteen in bacteriology, eight in hygiene, two in diagnosis and one in public health.

Statistics presented in the succeeding paragraphs in this section cover the year 1942 and therefore omit reference to the state of Tennessee, which enacted its basic science law in 1943. The data included in the tabulations have been received from the officials of the respective boards. The figures given are presented

TABLE 1—States Having Basic Science Laws and Year of Enactment

Arizona	1936	Nebraska	1927
Arkansas	1929	New Mexico	1941
Colorado	1937	Oklahoma	1937
Connecticut	1925	Oregon	1933
District of Columbia	1929	Rhode Island	1940
Florida	1939	South Dakota	1939
Iowa	1935	Tennessee	1943
Michigan	1937	Washington	1927
Minnesota	1927	Wisconsin	1925

in four groups namely physicians or medical students, osteopaths, chiropractors and unclassified applicants. In applying for a basic science certificate it is not a requirement in most of the states to mention the school of practice. By checking the biographic and medical student records of the American Medical Association and various directories, it has been possible to determine the profession of the majority of candidates thus permitting the classification of the number of applicants into the three groups. For some it was not possible to determine the profession represented, and they are tabulated in the unclassified group. In this group it is believed are represented osteopaths, chiropractors, naturopaths and doctors of dentistry.

The basic science boards of seventeen states named in table 3 examined in 1942 a total of 2,235 candidates. Of this number, 1,725 were physicians or medical students, 258 were osteopaths, 24 chiropractors and 215 were placed in the unclassified group. Of all applicants, 22.8 per cent failed. Of the physicians or medical students examined, 14.4 per cent failed, osteopaths 44.6 per cent, chiropractors 62.5 per cent and unclassified 54.9 per cent. Among those who passed, there were

TABLE 2—Subjects

	Examinations Required in							
	Anatomy	Bacteriology	Chemistry	Diagnostics	Histology	Pathology	Physiology	Public Health
Arizona	+	+	+		+	+	+	
Arkansas	+	+	+		+	+	+	
Colorado	+	+	+		+	+	+	
Connecticut	+			+	+	+	+	
Dist. Columbia	+	+	+		+	+	+	
Florida	+	+	+		+	+	+	
Iowa	+	+	+		+	+	+	
Michigan	+	+	+		+	+	+	+
Minnesota	+	+	+		+	+	+	
Nebraska	+	+	+		+	+	+	
New Mexico	+	+	+		+	+	+	
Oklahoma	+	+	+		+	+	+	
Oregon	+	+	+		+	+	+	
Rhode Island	+	+	+		+	+	+	
South Dakota	+	+	+		+	+	+	
Tennessee	+	+	+		+	+	+	
Washington	+	+	+		+	+	+	
Wisconsin	+			+	+	+	+	

1,476 physicians or medical students, 143 osteopaths, 9 chiropractors and 97 unclassified. The basic science board of Iowa examined the greatest number of applicants, 436, representing 129 physicians and medical students, 108 osteopaths, 5 chiropractors and 104 unclassified. Of those examined in Iowa, 40.4 failed. The next largest number, 266, were examined in Minnesota with 18.8 failures. The second greatest number of failures on the other hand was in Michigan, 36

per cent. The District of Columbia reported no failures for the year, examining 15 physicians and 1 osteopath.

Osteopaths were examined in Colorado, Connecticut, the District of Columbia, Florida, Iowa, Michigan, Minnesota, New Mexico, Oregon, Rhode Island, Washington and Wisconsin. Chiropractors appeared for examination in six states—Connecticut, Florida, Iowa, Oklahoma, Washington and Wisconsin.

It is the policy of the Arizona board of examiners in the basic sciences to omit the names of applicants who fail examinations, and the law does not require the board to record the professional school of graduation of the examinees. Failures for this state, therefore, are recorded only in the total column.

Ten states issued 304 certificates by reciprocity, endorsement or waiver, and the boards of all states granted 1,725 certificates after examination. The number of successful applicants (2,029) registered by

TABLE 3—Applicants Examined, 1942

	Physicians or Medical Students		Osteopaths		Chiropractors		Unclassified		Total Examined	Passed	Failed	Percentage Failed
	P	F	P	F	P	F	P	F				
Arizona	25						5		43	30	13*	30.2
Arkansas	115	3	0	0	0	0	0	1	119	115	4	3.4
Colorado	87	14	1	3	0	0	6	0	112	95	17	15.2
Connecticut	96	5	4	1	3	1	1	2	113	104	9	8.0
Dist. of Columbia	15	0	1	0	0	0	0	0	16	16	0	0.0
Florida	122	21	4	1	2	5	0	3	155	128	27	19.0
Iowa	106	23	111	57	1	4	42	62	436	260	176	40.4
Michigan	148	58	4	10	0	0	6	11	247	155	89	36.0
Minnesota	211	43	1	1	0	0	4	6	266	216	50	18.8
Nebraska	96	19	0	0	0	0	4	2	121	100	21	17.4
New Mexico	12	0	4	0	0	0	0	1	17	16	1	5.9
Oklahoma	57	1	0	0	1	1	2	0	60	58	2	3.3
Oregon	55	15	0	1	0	0	4	17	95	62	33	34.7
Rhode Island	55	10	1	0	0	0	0	0	69	59	10	14.5
South Dakota	13	2	0	0	0	0	0	0	15	13	2	13.3
Washington	115	25	7	9	1	3	1	1	162	124	38	23.5
Wisconsin	141	0	5	2	2	1	23	12	166	171	15	8.1
Totals—Examined	1,725		258		24		215				223	
Totals—Passed	1,476		143		9		97				1,725	
Totals—Failed	249		115		15		118				510	
Percentage Failed	14.4		44.6		62.5		54.9				22.8	

* School of practice undeterminable since names of failures not supplied.

examination reciprocity, endorsement or waiver are recorded in table 4. Among the successful candidates were 1,689 physicians, 205 osteopaths, 14 chiropractors and 121 unclassified individuals. Minnesota certified 74 without examination, the greatest number, of whom 60 were physicians, 3 osteopaths and 11 unclassified. Arizona, Florida and Washington have no reciprocal relations. None were certified without examination in Connecticut, New Mexico, Oklahoma and Rhode Island.

Osteopaths were registered in all states except Arizona, Arkansas, Nebraska and Oklahoma while chiropractors were registered in Connecticut, Florida, Iowa, Michigan, South Dakota, Washington and Wisconsin. Altogether 2,029 candidates received basic science certificates in 1942 in seventeen states ranging from 16 in New Mexico to 290 in Minnesota.

In table 5 is tabulated the number of candidates examined and certified by basic science boards in sixteen years, 1927 to 1942 inclusive. In 1928 when five boards were functioning there were 646 physicians examined of whom 9.3 per cent failed and 59 other practitioners of whom 47.5 per cent failed. In 1942, by comparison, 1,725 physicians were examined of

whom 14.4 per cent failed, and 497 other practitioners, with 49.9 per cent failures.

In the sixteen year period there were 15,307 physicians or medical students examined of whom 13,437 were successful in their examinations, while in the

TABLE 4—Certificates Issued by Examination Reciprocity and Endorsement, 1912

	Examination					Reciprocity and Endorsement					Totals
	Physicians or Med. Students	Osteopaths	Chiropractors	Unclassified	Totals	Physicians or Med. Students	Osteopaths	Chiropractors	Unclassified	Totals	
Arizona	25	0	0	5	30	0	0	0	0	0	30
Arkansas	115	0	0	0	115	15	0	0	0	15	130
Colorado	55	1	0	6	62	0	0	0	0	0	62
Connecticut	26	1	1	1	29	0	0	0	0	0	29
District of Columbia	15	1	0	0	16	42	0	0	0	42	58
Florida	122	1	2	0	125	0	0	0	0	0	125
Iowa	106	111	1	12	230	21	0	0	4	25	255
Michigan	118	4	0	0	122	0	6	1	10	16	138
Minnesota	211	1	0	1	213	60	0	11	71	142	355
Nebraska	96	0	0	1	97	6	0	0	0	6	103
New Mexico	12	4	0	0	16	0	0	0	0	0	16
Oklahoma	57	0	0	1	58	0	0	0	0	0	58
Oregon	58	0	0	4	62	13	10	0	0	23	85
Rhode Island	78	1	0	0	79	0	0	0	0	0	79
South Dakota	15	0	0	0	15	7	17	1	0	25	40
Washington	115	7	1	1	124	0	0	0	0	0	124
Wisconsin	141	5	2	23	171	9	21	1	5	36	207
Totals	1,476	145	9	87	1,725	211	62	13	21	304	2,029

same period 2,283 other practitioners took the test and 1,115 were successful. Of the physicians examined in this period 12.2 per cent failed to pass, while 51.2 per cent of the other practitioners failed to pass. Since 1927, 3,076 physicians and 571 other practitioners have been certified without examination.

All together during this sixteen year period 18,199 certificates have been granted by basic science boards of whom 16,513 were physicians and medical students, 1,686 were other practitioners.

TABLE 5—Total Candidates 1927-1942

Number of Boards	Physicians or Medical Students Examinations					Other Practitioners Examinations				
	Examined	Passed	Failed	Percentage Failed	Endorsement	Examined	Passed	Failed	Percentage Failed	Endorsement
1927	5	305	279	26	8	22	15	7	31.8	1
1928	5	616	586	60	9.3	31	28	47.5	0	31
1929	7	668	610	58	8.7	68	31	35	50.0	0
1930	7	685	606	79	11.5	118	72	30	48.1	4
1931	7	680	586	94	13.8	141	107	48	59.5	0
1932	7	657	590	67	10.2	106	78	44	54.6	12
1933	8	601	527	74	12.3	121	69	30	50.0	10
1934	9	815	725	90	11.0	127	85	26	25.4	0
1935	10	852	761	121	13.7	110	87	33	41.5	4
1936	10	1,032	891	141	13.7	230	121	66	40.6	13
1937	12	1,231	1,061	170	13.8	192	113	41	42.6	10
1938	12	1,168	1,026	142	12.2	267	158	70	55.7	26
1939	14	1,141	1,013	128	11.2	727	218	97	55.5	294
1940	16	1,303	1,140	163	12.5	324	1,464	280	15.7	22
1941	17	1,708	1,500	208	11.8	280	350	191	46.3	73
1942	17	1,725	1,476	249	14.4	213	497	249	49.9	91
Totals	15,307	13,437	1,870	12.2	3,076	16,513	2,283	1,115	51.2	1,686

Basic science legislation has been enacted in an attempt to provide a means of insuring that all applicants seeking licensure to care for sick and injured people shall first possess a reasonable knowledge of the sciences fundamental to the healing art. From the statistics here presented it would appear that the enforcement of such laws affects mostly the group classified as other practitioners.

NATIONAL BOARD OF MEDICAL EXAMINERS

The certificate of the National Board of Medical Examiners is accepted as an adequate qualification for a medical license by the licensing authorities of all but four states, the District of Columbia, the territories of Alaska, Hawaii and Puerto Rico and the Canal Zone. The provisions of the medical practice laws or state board regulations of a few states are such that diplomates of the National Board are required to take an oral examination in Connecticut, Illinois, Maine, Montana, Rhode Island and Wyoming. A brief supplemental written examination is required in Michigan. Pennsylvania requires a rotating internship. The states, territories and possessions which will endorse certificates of the National Board of Medical Examiners are recorded in table 1.

TABLE 1—States Endorsing Certificates of National Board of Medical Examiners

Alabama	Illinois	Nebraska	Rhode Island
Alaska	Indiana	Nevada	South Carolina
Arizona	Iowa	New Hampshire	South Dakota
Arkansas	Kansas	New Jersey	Tennessee
California	Kentucky	New Mexico	Utah
Canal Zone	Maine	New York	Vermont
Colorado	Maryland	North Carolina	Virginia
Connecticut	Massachusetts	North Dakota	Washington
Delaware	Michigan	Ohio	West Virginia
District of Columbia	Minnesota	Oklahoma	Wyoming
Georgia	Mississippi	Oregon	
Hawaii	Missouri	Pennsylvania	
Idaho	Montana	Puerto Rico	

TABLE 2—Examinations 1916-1921

Date	Total Examined	Failed	Percentage Failed
October 1916	10	5	50.0
June 1917	12	3	33.3
October 1917	28	6	21.5
January 1918	20	2	10.0
April 1918	23	5	26.1
December 1918	16	1	6.3
June 1919	52	1	1.9
February 1920	48	12	25.0
May 1920	60	14	23.3
February 1921	16	5	31.3
June 1921	40	3	7.5
Totals	325	57	14.3

The examinations of the National Board are accepted in lieu of the examinations in these subjects given by the boards of examiners in the basic sciences of Connecticut, Iowa, Minnesota, Nebraska and the District of Columbia.

In the following paragraphs data are presented for the twenty-fifth consecutive year regarding the examinations conducted and the issuance of certificates by the National Board of Medical Examiners. These statistics are based on official reports received periodically from the executive office of the National Board.

Graduates of approved medical schools in the United States and Canada are eligible for certification. Graduates of the university medical schools of Great Britain and Ireland are admitted to the examinations of the National Board provided these graduates have been licensed to practice in the country in which the school is located.

From October 1916 to Dec 31, 1921 eleven examinations were held and 268 candidates were certified. The results of each examination during this period are given in table 2.

Since 1922 the examination has been divided into three separate parts, which must be taken and completed in the following sequence. Part I, a written examination in each of the six fundamental medical sciences, Part II, likewise a written examination in five major clinical subjects and Part III, a clinical and practical examination in six major clinical subjects and their component subjects or subdivisions. Examinations in Parts I and II were formerly held in February, June and September at approved medical schools, provided there were at least five candidates available, and the Part III examinations were held at times sufficiently frequent to accommodate all eligible candidates in twenty-three established centers throughout the United States. The usual schedule of examinations in Parts I and II has been changed to accord more nearly with the accelerated curriculum of the medical schools. Examinations during the present year have already been held in January and March. Another examination in these parts will be given in August and

the end of their second year in schools whose third year curriculums include courses in one or two subjects of this part. The examinations in the subject not yet completed are therefore postponed and may be taken at any examination period after the candidate has completed them in his medical school. A candidate not

TABLE 3—Examinations in Part I in 1942 and 1922-1942

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
February	242	204	39	39	13.6
June	1,241	765	345	125	10.3
September	342	232	87	23	6.7
Totals	1,825	1,201	471	150	10.2
1922	333	263	53	67	20.3
1923	597	349	77	81	18.8
1924	541	415	69	107	20.5
1925	695	400	50	133	23.3
1926	625	436	104	85	16.3
1927	702	432	150	91	16.8
1928	843	533	231	79	12.9
1929	1,096	675	331	90	11.8
1930	1,260	801	245	114	12.5
1931	1,277	755	425	97	11.4
1932	1,207	847	371	89	9.5
1933	1,234	782	316	136	14.8
1934	1,241	809	347	85	9.0
1935	1,204	755	410	69	8.1
1936	1,344	838	363	122	12.5
1937	1,475	871	415	149	14.6
1938	1,654	916	508	160	14.1
1939	1,773	1,045	460	225	17.7
1940	1,673	1,069	375	209	12.6
1941	1,640	1,057	346	207	12.6
1942	1,825	1,201	471	150	10.2
Totals	24,767	15,425	6,931	2,611	10.7

again in the month of November. Special examinations in Part III will be held from time to time in centers having a sufficient number of candidates to warrant doing so.

Although there has been no change in any of the established regulations of the National Board because of the war emergency in matters pertaining to premedical education, curriculum and internships, the Board is prepared to abide by the recommendations of the Council on Medical Education and Hospitals of the American Medical Association and the wartime changes now in effect in the majority of approved medical schools.

The tables hereinafter presented enumerate the results of examinations in Parts I, II and III for each calendar year since 1922 including those who passed and failed examinations and those certified.

After completing successfully the first two years in an approved medical school the candidate is eligible for Part I. Candidates are required to take all six subjects of this part at a regular examination period unless entitled to take an incomplete examination or electing to take a divided examination. An incomplete examination is allowed candidates taking Part I at

TABLE 4—Examinations in Part II in 1942 and 1922-1942

Date	Total Examinations	Passed	Incomplete	Failed	Percentage Failed
February	127	120	7	7	5.5
May	679	665	14	14	2.0
June	181	166	15	15	8.3
September	85	80	5	5	5.9
Totals	1,072	1,031	41	41	3.8
1922	109	90	0	19	17.4
1923	192	170	2	20	10.5
1924	267	227	0	40	15.0
1925	342	309	0	33	9.6
1926	351	334	1	46	12.1
1927	361	314	1	46	12.8
1928	410	371	1	38	9.3
1929	465	399	19	47	10.5
1930	620	543	7	70	11.4
1931	719	630	2	87	12.1
1932	732	674	0	58	7.9
1933	714	631	0	63	8.8
1934	633	553	0	50	7.9
1935	689	620	0	69	10.0
1936	765	716	2	50	6.5
1937	855	803	1	51	6.0
1938	861	815	0	46	5.3
1939	938	854	0	54	5.8
1940	1,025	963	9	56	5.5
1941	1,091	954	1	46	4.6
1942	1,072	1,031	0	41	3.8
Totals	13,157	12,031	46	1,030	7.9

entitled to take an incomplete examination in Part I may, if he so elects, take a divided examination by writing any four subjects at one time and the remaining two within thirteen months, but after at least one semester of study. Those electing to take a divided examination are excluded from these statistical presentations until reported as having passed or failed.

TABLE 5—Examinations in Part III 1922-1942

	Total Examinations	Passed	Failed	Percentage Failed
1922	22	22	0	0.0
1923	82	81	1	1.2
1924	126	120	6	4.8
1925	210	206	13	5.9
1926	233	243	12	4.7
1927	293	272	21	7.2
1928	322	306	16	5.0
1929	352	337	15	4.3
1930	410	401	19	4.5
1931	417	419	15	4.1
1932	500	572	23	5.1
1933	511	576	25	4.5
1934	567	548	19	4.4
1935	575	573	20	3.3
1936	611	517	29	5.0
1937	655	630	33	5.7
1938	700	675	24	3.4
1939	720	723	41	5.7
1940	791	770	21	2.7
1941	810	833	2	2.7
1942	1,033	1,019	1	1.2
Total	10,333	9,931	441	4.3

Between 1936 and 1941 a total of 57 were examined of whom 57 passed and 57 failed. Total certificate awarded up to and including 1941: 10,115.

A physician is eligible for Part II who has passed Part I and has completed successfully a four year medical course in an approved medical school.

Three examinations in Part I were held in 1942 and four in Part II. The results of these examinations together with those for twenty-one years are included in tables 3 and 4. The figures cover the details of each examination given during a calendar year at all

include some who failed and were reexamined during the same year and also some who passed Parts I and II in the same year. They therefore represent examinations conducted rather than individuals examined.

During the past year 1,865 examinations were given in Part I of which 1,204 candidates passed and 190,

TABLE 6—Parts I, II and III, Excluding Duplications, 1922-1942

	Total Examined	Passed	Incom- plete	Failed	Percentage Failed
1922	575	81	35	86	18.1
1923	775	94	70	102	11.7
1924	978	76	69	141	16.8
1925	1,167	915	10	202	18.1
1926	1,161	90	107	166	11.9
1927	1,148	947	142	159	11.1
1928	1,140	1,101	211	118	9.7
1929	1,771	1,280	19	124	8.9
1930	2,044	1,567	122	175	10.2
1931	2,218	1,682	410	176	9.7
1932	2,512	1,880	85	197	6.9
1933	2,277	1,806	280	191	8.6
1934	2,561	1,801	300	140	6.7
1935	2,188	1,811	108	129	6.6
1936	2,517	1,889	30	175	8.1
1937	2,715	2,131	107	187	8.0
1938	2,892	2,308	191	191	7.6
1939	3,221	2,476	443	302	10.9
1940	3,188	2,597	363	228	7.1
1941	3,188	2,749	312	277	7.1
1942	3,607	3,016	391	200	5.5
Totals	44,095	31,637	5,910	3,528	8.0

102 per cent failed. In 1942 also 471 incomplete examinations in Part I were given. In 1942, 1,072 examinations were held in Part II. There were 1,031 successful examinees and 41, or 3.8 per cent, failures.

Since 1922 a total of 24,267 examinations have been given in Part I and 13,157 in Part II. During this period 15,425 candidates passed Part I and 12,081

TABLE 7—Diplomates from Individual Medical Schools, 1942

University of Arkansas	3	Albany Medical College	35
College of Medical Practitioners	53	Columbia University	25
Stanford University	4	Cornell University	21
University of Colorado	5	Long Island College of Med	75
Yale University	39	New York Medical College	65
George Washington University	22	New York University	25
Georgetown University	40	Syracuse University	8
Howard University	1	University of Buffalo	63
Emory University	1	University of Rochester	15
Loyola University	6	Duke University	51
Northwestern University	21	University of Cincinnati	1
University of Chicago	7	Western Reserve University	1
University of Illinois	4	University of Oregon	2
State University of Iowa	20	Hahnemann Medical College	2
University of Kansas	8	Jefferson Medical College	4
University of Louisville	2	Temple University	9
Louisiana State University	1	University of Pennsylvania	14
Tulane University	7	Woman's Medical College	6
Johns Hopkins University	10	Meharry Medical College	2
University of Maryland	6	Baylor University	1
Boston University	36	University of Texas	1
Harvard Medical School	122	University of Vermont	22
Tufts College Medical School	88	University of Virginia	1
University of Michigan	3	Marquette University	13
University of Minnesota	8	McGill University	16
St. Louis University	6	University of Toronto	1
Washington University	5	Fxinet Medical School	13
Creighton University	9	Foreign	50
University of Nebraska	1		
		Total	1,040

passed Part II. In twenty-one years there have been 2,611 failures in Part I, 10.7 per cent, and 1,030 failures in Part II, 7.9 per cent. From 1922 to 1942 inclusive, 6,231 candidates took incomplete examinations in Part I and 46 in Part II.

A candidate is eligible for Part III who has passed Parts I and II, received the degree of Doctor of Medicine and has satisfactorily completed an internship of at least one year in a hospital approved by the Council

on Medical Education and Hospitals of the American Medical Association or by the Department of Hospital Service of the Canadian Medical Association or has served a year in an acceptable laboratory.

The results of examinations in Part III for the twenty-one year period 1922 to 1942 are given in table 5. In 1942, 1,053 were examined as compared with only twenty-two in 1922. This was the greatest number examined in any one year. Of those examined in 1942, 13, or 1.2 per cent, failed. In twenty-one years 10,268 were examined, of whom 9,864 were granted certificates and 404, 3.9 per cent, failed. Between 1916 and 1921, certificates were awarded 268 candidates. Since the inception of the board in 1916, 10,132 certificates have been awarded. Physicians who earned the certificate are designated Diplomates of the National Board and are privileged to use the designating initials D.N.B.

In table 6 are recorded the number of individuals examined during any one year. The classification of passed or failed in cases in which more than one examination has been taken in a given year was based

TABLE 8—Licenses Granted on the Basis of National Board Certificates, 1942

Alabama	6	Nevada	1
Arizona	3	New Hampshire	10
Arkansas	2	New Jersey	30
California	48	New Mexico	3
Colorado	4	New York	189
Connecticut	36	North Carolina	13
District of Columbia	23	North Dakota	4
Georgia	4	Ohio	25
Idaho	1	Oklahoma	2
Illinois	20	Oregon	5
Indiana	6	Pennsylvania	22
Iowa	7	Rhode Island	6
Kansas	2	South Carolina	1
Kentucky	5	South Dakota	2
Maine	11	Tennessee	5
Maryland	20	Vermont	5
Massachusetts	111	Virginia	12
Michigan	11	Washington	7
Minnesota	11	West Virginia	1
Mississippi	1	Hawaii	4
Missouri	11		
Montana	3	Total	1,072
Nebraska	3		

on the results of the last examination during the year in question. For example, if in 1942 a candidate passed Part I but later in 1942 failed Part II he is computed in the tabulation as having failed. On this basis figures computed indicate there were 3,607 who took at least one of the examinations of the National Board in 1942 as compared with 525 in 1922. A total of 44,095 individuals was examined in one or more of the examinations in the twenty-one years shown, of whom 34,657 passed, 5,910 took incomplete examinations and 3,528, 8 per cent, failed.

Physicians certified as Diplomates in 1942 numbered 1,040, representing graduates of fifty-three medical schools in the United States, one school now extinct, two in Canada and 50 graduates of faculties of medicine abroad. Table 7 records the number of Diplomates from each school certified last year.

Diplomates licensed to practice medicine on the basis of their credentials increased from two in 1917 to 702 in 1942, 7,572 having been so licensed since the National Board was formed. However, 10,132 have received the certificate of the Board. In 1942 Diplomates were licensed on the basis of their National Board certificate in forty-one states, the District of Columbia and Hawaii. The number so registered in each state is recorded in table 8.

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SATURDAY, MAY 8, 1943

PROVISION OF MEDICAL SERVICE IN CRITICAL AREAS

At a meeting of the War Participation Committee of the American Medical Association with the directing board of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians and with representatives of the United States Public Health Service in Washington on Dec 14, 1942, plans were presented whereby the United States Public Health Service could meet the need for medical services in critical areas. The War Participation Committee of the American Medical Association at that time recommended that state medical societies cooperate with the State Procurement and Assignment Service and with the state boards of registration and licensure in determining areas that lack medical services and in developing plans for medical services in such areas when the need arises. The Secretary of the American Medical Association, Dr. Olin West, was requested to inform the secretaries of all state medical associations of the action taken. The Board of Trustees endorsed the activities of the War Participation Committee in this regard. In the meantime various measures have been taken in different areas to meet critical situations and in others plans have been developed for the future. These are as follows:

1 In some communities, local medical groups and health agencies have endeavored to arrange conditions so that the remaining physicians may extend their services as far as possible. Additional nurses for home visits and bedside care when they can be secured are of great value in conserving the time and energy of physicians. Additional hospital beds, clinics and health centers when they can be obtained greatly relieve many situations.

2 In most instances in which there is a real shortage of medical care, it is necessary for the State Procurement and Assignment Service to undertake to find physicians who can be spared from some com-

munities within the state and persuade them to relocate in others where they are needed more.

3 When a sufficient number of physicians cannot be induced to relocate in needy communities at their own expense, it is recommended that the Public Health Service be enabled to defray costs of moving and transportation within prescribed limits and if necessary to pay a stipend for a period not to exceed three months to enable the physician to establish himself and acquire sufficient practice to provide his living expenses.

4 When a serious shortage of physicians still exists in spite of all efforts to extend medical services to those in dire need, it is recommended that the Public Health Service be enabled to assign physicians to assist in the medical care of the citizens of such areas under the following conditions:

- (a) That such assignments be made only on official request of the state and local agencies which are responsible for the provision of such service.
- (b) That Public Health Service physicians so assigned be attached to the state and local agencies charged with the responsibility of rendering medical services and that their activities be conducted in accordance with the laws of the state.

In order to determine areas in which there is a critical shortage of physicians and to ascertain what action may be needed, the Procurement and Assignment Service of the War Manpower Commission, with the assistance of the Public Health Service has initiated a plan for surveying areas reported to have a medical care shortage. These surveys are made jointly by the State Procurement and Assignment Service and the Public Health Service, with the cooperation of the state health department and the state medical and dental societies.

There seems to be general agreement on the view that a ratio of 1 physician to 1,500 people is deemed desirable as a national average. Since, however, it will not be possible to secure such a ratio in all places, the absolute minimum that should be allowed to exist in war industry and military areas is to be 1 physician for each 3,000 people. Moreover, there are desperate situations in some agricultural areas because most of the effective physicians have left communities to join the armed forces. In order to permit the United States Public Health Service to carry on this work the Surgeon General has estimated that some 59 physicians and 5 dentists will be needed to relieve existing and anticipated medical and dental care shortages in some forty-two areas. Thus far the United States Public Health Service has been requested to supply or to assist in supplying 13 physicians and 2 dentists or approximately one fourth of the determined need. It is recognized that this activity of the United States Public Health Service is one for the emergency and that a

is not contemplated that the service will be further extended either for the emergency or in the postwar period in the field of medical care. Certainly the medical profession, including the regularly organized state and county medical societies, will do its utmost to cooperate with governmental agencies in making certain that the people of our country, and particularly those who have been dislocated into military and industrial areas to meet war needs, are provided with medical care.

DURATION OF PREGNANCY

Recent regulation changes by which the classification of registrants is to be established under the Selective Service System provide for a distinction between (1) men with child (or children) with whom they maintain a family relationship in their homes, provided such status (child) was acquired prior to Dec 8, 1941, and (2) men with wives only or with child (or children) acquired after Dec 8, 1941. As a result of these provisions it will become necessary for local Selective Service boards to determine beyond reasonable doubt in certain borderline instances whether a child has been conceived before or after Dec 8, 1941 in order to classify the registrant correctly.

Many reports have a bearing on this problem. Wahl¹ studied a series of 9,000 women to determine the length of pregnancy. He found that the average duration of gestation was 285 days, which is contrary to commonly quoted figures of 280 days. As pointed out by Schwarz,² pregnancy actually begins the moment the female egg cell becomes fertilized and ends with the birth of the child. The time estimated as the length of pregnancy is difficult to determine on account of several variable factors: (1) the question of the time of ovulation, (2) the time of migration, (3) the lifetime of the egg and the spermatozoa, (4) the time of impregnation and (5) the time of implantation of the ovum.

The Hotellings,³ who analyzed over 2,000 obstetric cases at the Stanford University Clinic, came to the following conclusions: "The conclusion of the earlier writers that 280 days is the average duration of normal pregnancy, that is, when the very short and very long durations are excluded, is confirmed by our study. However, the standard deviation from this average, which other students have estimated to be from 8 to 10 days, we find to be 11 days. If the early births are included, the mean duration is shorter and the standard deviation greater. The mean duration from the date of coitus to birth is 271 days, the standard deviation being scarcely any less than when duration is counted from the beginning date of the last menstruation. The standard deviation also seems to be no less when duration is counted from the last day of the last menstrua-

tion, as in England and France. Accordingly, there is no perceptible gain in accuracy by reckoning even from a single coitus of known date, unless, of course, the menstruation date is unknown."

The longest possible period of gestation has not been legally defined in this country. French law recognizes the legitimacy of a child born 180 days after marriage and 300 days after the death of the husband, the German law 181 and 302 days respectively. In England in 1921 the legitimacy of a child born 331 days after the husband went to war was allowed. In the United States each case is decided on its own merits, since there is no law in this country or in England which defines the duration of gestation.

The problem is further complicated by the fact that there are no accurate criteria for ascertaining the degree of hypermaturity of newborn infants, even fully formed teeth are sometimes found in those born at term. It can only be said that the weight of the newborn child when evaluated against the size of the parents and parity of the mother can be highly suggestive.

For practical purposes the burden of proving any pregnancy lasting more than 280 days would seem to rest on the claimant. Under such circumstances the claimant would be charged with presenting overwhelming medical evidence of the prolonged nature of the gestation. Any child born after Sept 15, 1942 could therefore not be considered as having been conceived before Dec 8, 1941 in the absence of overwhelming evidence to the contrary.

THE DISTRIBUTION OF PHYSICIANS AND STATE LICENSING LAWS

A perfect distribution of physicians based exclusively on the distribution of population can perhaps be obtained only in a totalitarian state, although neither the Germans nor the Russians seem to have solved the problem. One may suspect that even then it would be satisfactory only to the dictatorial regime and probably not to the medical profession or to the population itself. The distribution of physicians in the United States before the war no doubt left much to be desired, the war itself has accentuated the problem. Withdrawal of large numbers of doctors for federal services, shifts of masses of people to new locations, difficulties of transportation of doctors and patients, and crowding of hospitals are some of the newer aspects of the situation. As a result, a number of areas of real medical scarcity have developed.

This problem of relocation encounters many difficulties, one of which is the legal restraints imposed by the various state licensing laws. The suggestion that a federal emergency license good in any state is the solution has met many obvious objections. The directing board of the Procurement and Assignment Service held a joint meeting with the Executive Committee of the Federation of State Medical Boards on Dec 10,

¹ Wahl, F. A. *Deutsche med. Wchnschr.* 63:125 (Jan 22) 1937.
² Schwarz, O. H. *The Diagnosis of Pregnancy, in Obstetrics and Gynecology* (Curtis), Philadelphia, W. B. Saunders Company, 1933, vol 1, p. 671.
³ Quoted by Schwarz.²

1942 and agreed to certain principles, which have been communicated to the licensing bodies of each state. These include procedures for determining the need of relocations of physicians. As far as possible relocations are to be accomplished by utilizing physicians already licensed within each state. When help from outside the state is necessary, full advantage should be taken of existing provisions for reciprocity between states and for interstate endorsement. Whenever existing laws make these measures impossible, a change in the law permitting temporary licenses during the emergency may be enacted, and a draft of such a law to serve as a model was provided. This model law contains restrictions of the right to practice, as regards both time and place. Finally, arrangements have been made with the United States Public Health Service whereby, when other efforts have proved unsuccessful and certain conditions required by the restrictions placed on the United States Public Health Service are met, that service may aid in supplying doctors to meet the necessities of the situation.

Two principal objects are sought: first is the best distribution of our available resources of medical personnel and the health protection of the largest number of people; second is the doing of this in such a way as to preserve the rights and advantages that inhere in local self government. A breaking down of the right of each state to determine for itself the standards of medical licensure and practice within its borders cannot be contemplated with indifference, even under the plea of war necessity. It may distress the judicious that one state may allow practice by those who are improperly qualified or that another may exclude excellent men by peculiar requirements. A uniformly sound standard of eligibility, and general reciprocity, in regard to licensure is desirable. It seems wiser, however, to reach this desirable goal by the natural evolution of experience and education than to substitute federal control.

AMINOACRIDINE COMPOUNDS AS SURFACE ANTISEPTICS

No doubt the discovery that sulfonamide compounds act locally as antiseptics served to revive the almost extinguished interest in local antiseptics. Of the newer antiseptics gramicidin and penicillin appear to possess a striking antiseptic action; the effect of propamidine in chronic wound infection was recently commented on in THE JOURNAL.¹ In a recent issue of the *British Medical Journal* Browning² calls attention anew to the flavines. As early as 1913 Browning and Gilmour

demonstrated that the action of the diaminoacridine compounds, in contrast to all other efficient antiseptics, is intensified rather than reduced when the medium contains serum. Toxic damage from acriflavine or proflavine absorbed from wounds has not occurred. True necrosis may occur at the site of injection of flavines into closed tissues if the flavines are used in high concentrations. Russell and Falconer³ showed that 1 1,000 solution of proflavine and 2 7 diaminoacridine in isotonic saline solution buffered at the pH of 6.2 were harmless when applied to rabbit's exposed brain tissue, while acriflavine 1 1,000 and euflavine 1 2,000 caused hemorrhage and necrosis.

Considerable disparity appears in the studies of various investigators on the inhibitory effect of acridine compounds on the phagocytic activity of the leukocytes. Successful results with acridine compounds have been obtained repeatedly in recent wounds of mice inoculated with streptococci. After intraperitoneal inoculation of virulent streptococci, one intraperitoneal injection of the antiseptic after an hour's interval saved the lives of 60 per cent of the animals. Browning therefore concludes that it is possible to destroy infection in a freshly infected wound by the use of an antiseptic. There is also convincing clinical evidence that the flavines can control established suppuration in wounds and that this may occur in instances in which drugs of the sulfonamide group have failed. Continued use of the flavines, however, leads to retardation of granulation and healing so that it may be advantageous to change to other treatment later.

In the same issue of the *British Medical Journal*⁴ the reason for the failure of acridine compounds in the past is said editorially to be explained by the wrong choice of compound and misapplication. Thus acriflavine, which has been most popular in the past, was recently demonstrated to be least satisfactory. Recent researches show proflavine to be the compound of choice as an efficient wound antiseptic, probably superior to the sulfonamides in the presence of gas gangrene. The introduction by Mitchell and Buttle⁵ of the use of proflavine in powder form in treatment of wounds did away with one of the drawbacks common to all acridines when applied as solutions, namely their affinity for fabrics, which interfered with their diffusion into the tissues of the wound. The scarcity of penicillin and certain limitations of the sulfonamides make it desirable to investigate further the possibilities of the acridine compounds, in particular proflavine.

1 Propamidine in Chronic Wound Infection editorial J A M A 121:946 (March 20) 1944

2 Browning C H The Present Status of Aminoacridine Compounds (Flavines) as Surface Antiseptic Brit M J 1:41 (March 20) 1943

3 Russell Dorothy S and Falconer M A Antiseptics in Primary Wounds: An Experimental Study of the Bactericidal Reaction of Chemical Tissues to Various Antiseptic Solutions Brit J Surg 28:472 (Jan) 1941

4 The Rehabilitation of the Features editorial Brit M J 1:55 (March 20) 1944

5 Mitchell G A C and Buttle C A H Proflavine Powder in Wound Therapy Lancet 2:416 (Oct 6) 1942

Current Comment

STATE BOARD NUMBER

The exceeding importance of making available at the earliest possible moment the facts regarding medical licensure in the United States has made it necessary for *THE JOURNAL* to publish the State Board Number at this time although somewhat abbreviated. The restrictions on the use of paper made it simply impossible to include many of the large tables which are usually incorporated in this number. However, the facts here included provide practically all the essential information that is usually incorporated in the issue devoted particularly to the results of the state board examinations. The Council on Medical Education and Hospitals will make available in the form of a reprint the usual full report for those who are especially desirous of having the more detailed statistics.

MATERIALS USED FOR PHARMACEUTIC PURPOSES EXEMPTED

Under an order released by the Office of Price Administration on April 29, by-products of animal slaughtering operations used only for pharmaceutical or nonfood purposes were expressly exempted from the meats and fats rationing regulations. This order, effective May 5, excludes adrenal glands, bile, epididymides, lymph glands, ovaries, parathyroid glands, pineal glands, pituitary glands, placentas, prostate glands, salivary glands, thyroid glands and tonsils from the definition of rationed meat. It will be observed that liver has not been exempted, notwithstanding the fact that already producers are confronted with a definite shortage of liver for pharmaceutical purposes. During recent years the utilization of liver for the manufacture of materials related to the control of anemia and for vitamin B complex and similar purposes has been greatly extended, so that the amounts now required are far beyond what would have been needed in either 1941 or 1942. Attention must be called, incidentally, to an extraordinary release from the Office of War Information announcing the action taken by the Office of Price Administration. Apparently the Office of War Information is completely without scientific medical advice in the preparation of its releases, since the statement could never have been made by any one with even a modicum of medical information. The release from the Office of War Information reads:

Over and above the actual meat for food which is lost to legal trade, OWI said, strategic by-products are wasted such as materials from which are derived surgical sutures, adrenalin and vital insulin. Sutures are used surgically in the drawing together of the edges of a wound, which is sewn with gut-thread. Adrenalin is a powerful drug obtained from the adrenal glands of animals and is used to check hemorrhage and as a hypodermic injection to check pressure and stimulate the heart. Insulin, among its other applications, is used to retard the formation of sugar in the blood of diabetics.

Who could possibly have informed the Office of War Information that adrenalin is used "as a hypodermic injection to check pressure" or that "insulin

is used to retard the formation of sugar in the blood of diabetics"? What a pity that the opportunity for public education in matters related to medicine and health offered to the Office of War Information by the new regulations should not have been utilized to the utmost advantage by the issuing of information with a reasonable amount of accuracy. For the information of the Office of War Information, adrenalin does not "check pressure" but raises the blood pressure. Insulin does not "retard the formation of sugar in the blood" but restores the ability of the human body to use sugar and fat in the normal manner, enabling the body to burn more sugar in the cells in its tissues.

WAR PRODUCTION BOARD RELAXES RESTRICTIONS ON SCALES

By an action of the War Production Board dated April 29, baby scales will be produced at one fourth the 1941 rate but will be sold to the public only on the prescription of a physician. Previously the production of baby scales for household use had been banned except for clinical type scales made for sale to physicians and hospitals on A-9 ratings. The partial easing on restrictions of production covering household baby scales was necessitated by several factors, most important of which was the complete exhaustion of all supplies because of the growing demand which resulted from the phenomenal increase in the birth rate. Under the new order the sale of baby scales to doctors, hospitals, distributors and dealers is permitted without restriction. Manufacturers may produce only one model, and that model must be the one made in 1942 which used the least amount of steel. The use of copper and brass is completely prohibited, and metal cannot be used for making the tray. Fiber, paper board, plastics, wicker or cane may be used for the tray. It is anticipated that the saving resulting from these restrictions will hold down the consumption of steel for baby scales to not more than one eighth of the amount used in 1941. Physicians will, of course, give utmost cooperation to the War Production Board in the issuing of prescriptions to their patients for the purchase of these scales. Such cooperation will require that a prescription be not issued except under circumstances in which it becomes impossible for the family to utilize a scale available in the neighborhood or which can be borrowed from any available source. Presumably also physicians will recommend the use of scales only when considered necessary in relationship to routine care of an infant requiring constant study of the weight in relationship to suitable growth. At the same time that the War Production Board authorized the manufacture of baby scales, an order was issued restoring production of dietetic scales used by persons whose diet is under a physician's control to the 1941 levels. These scales also may be sold only on prescription by a physician. The prohibitions on the production, repair and maintenance of scales for household use have been relaxed to the extent that parts may be used for rebuilding used commercial scales into baby weighing scales. Again it should be emphasized that the position of the civilian physician in the war effort is one of the most

responsible and important of any type of professional service rendered to the public. Never before have so many responsibilities been placed even on the physician. Already he has shown in the war effort that the ethics and honor of the profession warrant the belief that he will exercise his functions in the high tradition of the past.

THE ROCKEFELLER FOUNDATION IN 1942

The review of the work of the Rockefeller Foundation in 1942 presented by Raymond B. Fosdick¹ records appropriations of over eight million dollars, over half spent in the fields of public health and medical sciences. Of special interest to the medical profession is the work of the foundation in yellow fever. Today, principally as the result of the work of the foundation, few of our soldiers or sailors need to be victims of yellow fever. Our troops in Liberia and other parts of Africa where yellow fever is endemic are now protected by vaccination from the consequences of this savage disease, with its mortality ranging in some localities as high as 70 per cent. During 1942 much attention was given to an outbreak of jaundice which appeared to be associated with certain definite lots of yellow fever vaccine. In preceding years nearly eight million vaccinations had been successfully administered without disturbing consequence except for a few cases of jaundice in Brazil. Research during 1942 indicated that the incidental jaundice which is not contagious and does not constitute a danger to public health is probably due to a virus in the human serum component employed in the vaccine. Oddly enough, cases of jaundice appeared in England and Russia, apparently following the administration of vaccines or serums which were manufactured in those countries for diseases other than yellow fever and which also contained a human serum component. Now yellow fever vaccine is being successfully made without this component. Fosdick's report mentions also the research being developed in the laboratories of the foundation and elsewhere on synthetic drugs designed to replace the now scarce quinine. The foundation has also supported psychiatric studies, medical education, research in the biologic sciences, the training of British medical students in the United States and various important programs in the humanities and the social sciences. The contributions to various abortive movements and executive secretariats concerned with fermenting changes in the nature of medical practice seem somewhat out of harmony with the nature or previous practices of this foundation. Because of the disastrous effects of wartime inflation, the work of the foundation as well as of other American agencies in China has deteriorated rapidly and has reached a critical stage. As Fosdick suggests and as the work of the foundation is designed even a relatively small sum may be used effectively to help build a bridge between what men have valued in the past and what they hope to maintain in the future.

RHEUMATIC FEVER IN CHILDREN

The serious character of rheumatic fever as a cause of heart damage to children, and indeed as a cause of death, has made it desirable to refocus medical attention on this disease. Rheumatic fever now ranks among the leading causes of disability and is generally recognized as an important public health problem in this country. The states of Michigan, Iowa, California and Rhode Island, the District of Columbia, Cincinnati and Chicago make this disease reportable. For other sections of the country accurate statistics are not, therefore, available. Nevertheless there is evidence that the death rates in certain areas are exceedingly high, notably in New York, Pennsylvania, New Jersey and Delaware as well as in Idaho, Montana, Colorado and Utah. With a view to aiding the movement toward better recognition and control of this condition, the Metropolitan Life Insurance Company has issued a pamphlet on rheumatic fever in general which has been approved by the American Heart Association, the American Academy of Pediatrics, the United States Public Health Service and the Children's Bureau of the Department of Labor. In the development of the pamphlet some seventeen authorities cooperated with the medical director of the company and its medical staff. The booklet, which is distributed without cost to practicing physicians, provides a complete consideration of the most recent information on the subject, a bibliography and five appendices with methods of examination, laboratory tests, outlines for classifications of murmurs and outlines of the activities in which patients may indulge. Already several state medical societies have arranged to place it in the hands of all their members.

UNIFORM DEFINITIONS OF MOTOR VEHICLE ACCIDENTS

Comparative figures on motor vehicle accidents occurring in different areas have been difficult to obtain chiefly because of variations in the use and interpretation of definitions by the various official and unofficial agencies involved. In an attempt to meet this problem the Committee on Definitions of the National Conference on Uniform Traffic Accident Statistics under the chairmanship of Dr. Halbert L. Dunn, chief statistician for vital statistics of the Bureau of the Census, has prepared a manual¹ of uniform definitions. This manual defines such terms as "fall from motor vehicle," "injury to nonoccupants," "street wear and tear" and "terminating on a trafficway." The standards set up should be determined by individual agencies and organizations to suit their specific purposes but in order to secure uniformity in the published data the provisions of this manual should be rigidly followed in the classification of motor vehicle accidents for general publication purposes. The desirability of following these recommendations is manifest.

¹ Fosdick, R. B. The Rockefeller Foundation. A Review for 1942. New York, 1943.

¹ Dunn, H. L. and Monahan, J. M. Uniform Definitions of Motor Vehicle Accidents. U. S. Department of Commerce, Bureau of the Census. United States Government Printing Office, Washington, 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession

ARMY AND NAVY MEDICAL TRAINING PROGRAM

Official Announcement on Details of Army and Navy Programs for Training Medical Students

ARMY PROGRAM FOR STUDENT TRAINING

In order to assure the Army the annual loss replacements for medical dental and veterinary officers, the Army Specialized Training Division has been directed to train a sufficient number of enlisted men who, on receipt of the appropriate degree in medicine dentistry and veterinary medicine, may be appointed in the Medical, Dental or Veterinary Corps, Army of the United States. Such training will include both a pre-professional and a professional phase and as far as possible will be continuous. To this end basic military training will not be required of enlisted men of the Enlisted Reserve Corps who are bona fide preprofessional and professional students and who, when called to active duty are finally selected for premedical or medical training under the Army Specialized Training Program. Basic military training will be, however, required of all other groups.

Enlisted Men

Enlisted men recommended by Army Specialized Training Program Selection Boards for assignment for such preprofessional or professional training, at any level, must be thoroughly qualified as regards fitness and aptitude for subsequent professional training. Their scholastic ability likewise must be such that attrition in both the premedical and medical phases will be held to a minimum.

Students in Medical Administrative Corps

There are now in approved schools of medicine, dentistry and veterinary medicine approximately 22,000 students who hold commissions in the Medical Administrative Corps, A U S, or in the Officers Reserve Corps and who are on an inactive status for the purpose of completing their professional training with a view to appointment in the Medical, Dental or Veterinary Corps, A U S. The discharge of these students, at their own request, from their commissions and their enlistment in the Enlisted Reserve Corps has been authorized. Students so enlisted will be ordered to active duty at the end of the academic period which terminates between April 15 and June 30, 1943 or, if the academic period continues beyond the latter date, on June 30, 1943. Orders calling such enlisted men to active duty will be issued fifteen days prior to termination of the academic period or June 30, 1943, whichever is applicable. These students will be invited to submit letters of resignation for the purpose of enlistment in the Enlisted Reserve Corps.

Contracts will be requested with all approved schools effective not later than the beginning of the next academic term which ends before June 30, 1943.

ROTC Students

First and second year advanced course ROTC medical students who hold commissions in the Medical Administrative Corps, A U S, or in the Officers Reserve Corps and who resign their commissions and enlist in the Enlisted Reserve Corps will be called to active duty as prescribed. Those not in the Enlisted Reserve Corps may be voluntarily inducted for subsequent transfer to the Enlisted Reserve Corps and call to active duty.

Assignment of Students

Medical, dental and veterinary students in good standing in approved schools of medicine, dentistry and veterinary medicine, not under Army jurisdiction, if inducted under Selective Service subsequent to June 30, 1943, will be assigned with the least practicable delay to the Army Specialized Training unit at the institution in which currently matriculated.

The total number of college students pursuing approved premedical, predental and preveterinary courses is greatly in excess of the capacity of approved schools of medicine, dentistry and veterinary medicine. It is emphasized that these trainees are soldiers assigned for university training rather than "students in uniform." Premedical, predental and preveterinary students in the Enlisted Reserve Corps will be called to active duty and assigned to an appropriate Specialized Training and Reassignment unit for classification and reassignment. Enlisted men recommended by selection boards at specialized training and reassignment units for continuation of their preprofessional training or for professional training will at the proper time be assigned to an appropriate Army Specialized Training Unit. Those not recommended for such training will be assigned to an appropriate replacement training center for the completion of the required period of basic military training or, for those not recommended for any phase of Army Specialized Training to an appropriate unit or installation within the territorial limits of the service command.

Induction Under Selective Service

Premedical and predental students only, not in the Enlisted Reserve Corps, if inducted under Selective Service subsequent to the end of the academic period which terminates prior to June 30, 1943 or, if the academic period continues beyond this date, subsequent to June 30, 1943, reporting at reception centers, will, if they attain a score of 115 or better on the Army General Classification Test, be transferred to a Medical Department Replacement Training Center if practicable or to an appropriate installation within the geographic limits of the service command for basic military training. Such men will be designated as candidates for the Army Specialized Training Program. They will there appear before the Army Specialized Training Program field selection board for selection or rejection for the Army Specialized Training Program. Enlisted men who have completed the required preprofessional schooling and have been recommended for professional training by the Army Specialized Training Program selection board at a Specialized Training Assignment and Reclassification unit, but for whom there are no appropriate immediate vacancies in contracting schools of medicine, dentistry and veterinary medicine, will be assigned to a Medical Department Replacement Training Center and/or to other service command installations, preferably with the Medical Department, pending assignment to a suitable unit within prescribed quotas, for professional training.

The procedures for the selection of enlisted men for assignment for training in medicine, dentistry and veterinary medicine under the Army Specialized Training Program will be no less thorough and exhaustive than those now in common usage for acceptance for admission to the accredited professional schools throughout the country.

NAVY PROGRAM FOR STUDENT TRAINING

Medical students who at present hold commissions as Ensigns H-V (P), USNR have the option of remaining on inactive duty in their present status until completion of their course in medical school at their own expense or they may resign their commission and enlist as Apprentice Seamen U S Naval Reserve, and be placed on active duty with pay, uniforms and a per diem allowance to defray the cost of their subsistence. The tuition will be paid by the Navy, including the cost of books and the cost of renting microscopes or other equipment necessary in the medical courses.

Entering Students

Students who are now in medical school, or those who have been accepted to the next entering classes, who are Ensigns H-V (P) USNR will continue in these schools. On satisfactory completion of the prescribed course of studies, the students will be commissioned in the Naval Reserve as Lieutenants (junior grade) MC-V (G) on an inactive duty status to complete one year of internship in a civilian hospital. Those students who desire to enter the Medical Corps of the regular Navy and successfully pass the examination will be assigned to an internship in a naval hospital on active duty.

If the student fails to maintain satisfactory standards on active duty in the Navy College Training Program, he may be assigned to general duty in enlisted status in the rating for which qualified. The pay of Apprentice Seamen on active duty, without dependents is \$50 per month. Certain allowances are made for the dependents of an Apprentice Seaman on active duty contingent on the allotment by the man concerned of a portion of his pay to his dependents. The amounts of the allowances depend on the number and relationship of the dependents.

Ensigns

Married Ensigns H-V(P) USNR are eligible for enrolment and participation in the Navy College Training Program. The maximum age restrictions prescribed for other Apprentice Seamen in the Navy College Training Program are not applicable to former Ensigns H-V(P).

Former Ensigns H-V(P) who enlist and who are attending medical school on or about July 1, 1943 will be ordered to active duty at the school which they are attending at that time.

Navy medical students in the Navy College Training Program will pursue an accelerated course. While on active duty in school, medical students will wear a Midshipman or Cadet type uniform with suitable distinguishing insignia.

Applications for appointment as Ensigns H-V(P), USNR, from civilian students in medical school, or those students who have been accepted for admission to the next entering class of an approved school, will not be accepted after June 1, 1943. Thereafter qualified students who are in attendance at or who have been accepted by an approved medical school will, on approval by the Bureau of Medicine and Surgery and the Bureau of Naval Personnel be inducted as Apprentice Seamen, Class SV-12 (S), for training in the Navy College Training Program.

Premedical Students

Premedical students assigned to colleges and universities participating in the Navy College Training Program will be made up mostly from premedical students who now hold an enlisted rating in class V-1 or V-7, USNR. A small percentage of premedical students will be taken from the successful applicants who passed the test given on April 2, 1943 in all high schools and colleges in the country. Tests will be given again in November 1943 and in March 1944.

Premedical students formerly in class V-1 and V-7, on active duty in the Navy College Training Program, who are not selected for medical training by the Navy but who are acceptable to an approved medical school may submit request to the Bureau of Naval Personnel for discharge. Each such request will be considered on its own merits. If not acceptable to an approved medical school such men will be considered candidates for other officer candidates training in which qualified.

The course of studies for premedical students entering the first term on July 1, 1943 will run for five terms of sixteen weeks each. It is proposed to screen premedical students after the first year of their studies. The successful students will continue their course until completion, the failures will be allowed to continue the term they are in at the time of failure and then be assigned other training. It is the intention of the Navy Department that Naval trainees, pursuing a premedical course and later assigned to medical schools, be acceptable to the schools to which ordered.

CIVILIAN DEFENSE

CIVILIAN DEFENSE AFFILIATED
MEDICAL UNITS

The following resolution has been passed by the Directing Board of the Procurement and Assignment Service:

As a measure of protection for the civilian population in case of enemy action, the United States Public Health Service in cooperation with the Medical Division, Office of Civilian Defense, has invited selected hospitals and medical schools to organize affiliated units of physicians in accordance with a specific table of organization. The physicians of these units are asked to accept reserve commissions in the U S Public Health Service on an inactive status with the understanding that they will be called to active duty only for the following purposes:

- 1 To provide medical care for civilians who must be moved out of their communities of residence as the result of enemy action.

- 2 To provide temporary medical care in extreme emergency for military personnel in extemporized hospitals in the area.

Affiliated units will be called to active duty only on the recommendation of the respective state chiefs of Emergency Medical Service. In selecting units for activation, the state chiefs will call on those physicians who can best be spared temporarily from their civilian practices. By virtue of this arrangement, civilian medical needs will be safeguarded against haphazard withdrawal of physicians in an emergency.

The Directing Board of the Procurement and Assignment Service fully approves of the formation of affiliated units for the purpose outlined and urges all state chairmen of the Procurement and Assignment Service to facilitate the organization of these units in every way possible. Applicants for U S P H S reserve commissions for service in the affiliated units should not be cleared with the Procurement and Assignment Service because the terms of their commissions fully protect the civilian medical needs of the communities in which the units are being organized. It is understood that the U S Public Health Service will accept applications only from the following groups: (1) physicians 45 years of age or older, (2) women physicians, (3) physicians of any age who are physically disqualified for military duty, (4) physicians already declared by the Procurement and Assignment Service to be essential for civilian needs.

In the case of each physician under 45 who is being considered for such a commission and who is physically fit for military duty, it is understood that the U S Public Health Service will obtain from the local Procurement and Assignment Service chairman concerned assurance that the physician has already been declared essential for civilian needs. The fact that Reserve Officers of the U S Public Health Service are now classified as 4-B by Selective Service does not affect this arrangement since the Public Health Service has agreed that if such physicians holding inactive reserve commissions are subsequently declared by the Procurement and Assignment Service to be available for military duty, they will be permitted to resign their commissions.

APPOINT SUPERVISOR OF RESCUE SERVICE PROGRAM

Simon H. Ash, head of the mineral production security division of the U S Bureau of Mines and a leading mine safety engineer, has been appointed to supervise the Office of Civilian Defense Rescue Service Program and will leave for England to study the British civilian rescue service and its experience under air raid conditions. On his return Mr. Ash will set up a school for the training of civilian defense rescue officers. The director of civilian defense, James M. Landis, said in the announcement that the British have discovered that a highly specialized type of rescue crew is necessary to save the lives of victims trapped by the collapse of buildings during a bomb-

ing attack. Mr. Ash has directed rescue operations involving practically every type of mine, quarry and tunnel disaster and has been safety engineering consultant for many of the largest terminals and underground construction projects. He was born in the state of Washington, began working in coal mines at the age of 14, and later attended Lehigh University and the University of Washington, from which he received a degree in mining engineering. For three years Mr. Ash has represented the Bureau of Mines on the National Resources Planning Board. For the purpose of enabling him to carry out his new duties, Mr. Ash has been commissioned in the U S Public Health Service and assigned to the Office of Civilian Defense.

ARMY

BRIGADIER GENERAL NORMAN T. KIRK NOMINATED FOR SURGEON GENERAL

The nomination of Norman T. Kirk to be Surgeon General of the Army with the rank of major general has been sent to the Senate by the President. General Kirk, who is 55 years old, was until recently commanding general of the Percy L. Jones General Hospital in Battle Creek, Mich. He was formerly chief of the surgical service at the Army Medical Center at the Walter Reed General Hospital, Washington, D. C. He entered the army medical corps in 1913 with the rank of first lieutenant. He is to succeed Major Gen. James C. Magee, whose term expires on June 1.

THE HALLORAN GENERAL HOSPITAL

The Paul Halloran General Hospital is a 3,000 bed army general hospital located on 383 acres of partly wooded land in the middle of Staten Island, New York, and is established as a separate military post, directly under the commanding general of the Second Service Command, Services of Supply, Governors Island, N. Y.

The hospital proper was built by the state of New York and consists of forty-three brick buildings of Georgian architecture in addition to a series of army hospital clinics, such as surgery, x-ray, laboratory, physical therapy, dental and detachment barracks. Construction of the buildings was started by the Department of Mental Hygiene of the State of New York in 1939. A shortage of critical materials prevented final completion, and the buildings had never been occupied. After preliminary surveys by Surg. Gen. James C. Magee, it was decided that the site and buildings offered great possibilities for use as an Army General Hospital. A survey by the Army Corps of Engineers was made in July 1942, and the buildings were finally turned over to the Army on October 14. Extensive alterations have been made to the buildings. The hospital received its first patients on November 5.

The hospital was named in honor of the late Col. Paul Stacy Halloran, a distinguished officer of the Medical Corps of the U S Army.

The staff is in part as follows:

Col. Ralph G. DeVoe, M. C., Commanding Officer
Col. Edward N. Pickard, M. C., Chief of Medical Service
Lieut. Col. Alonzo T. Briney, D. C., Chief of Dental Service
Lieut. Col. Vansel S. Johnson, M. C., Chief of Surgical Service
Major George K. Carpenter, M. C., Chief of Orthopedic Section, Surgical Service
Major Joseph A. Crisler Jr., M. C., Assistant Chief of Surgical Service
Major Kenneth M. Kahn, M. C., Registrar
Major Arnold M. Kallen, M. C., Hospital Inspector
Major Harold P. Lewis, M. C., Assistant Chief of Medical Service
Major Joseph Rothman, M. C., Chief of Officers' Medical Section
Major Charles H. Schutt, M. C., Plans and Training Officer
Major Thomas P. Shearer, M. C., Chief of Genitourinary Section, Surgical Service
Major Arthur B. Soule Jr., M. C., Chief of X-Ray Service
Major George A. Vassos Jr., M. C., Executive Officer, Public Relations Officer

Major Thomas B. Wiper, M. C., Chief of Septic and Thoracic Surgical Section, Assistant Chief of Surgical Service
Capt. Melvin I. Ames, M. C., Assistant Chief of Officers' Section, Medical Service
Capt. Charles V. Amole, M. C., Genitourinary Section, Surgical Service
Capt. George S. Baker, M. C., Chief of Neurosurgical Section, Surgical Service
Capt. Theodore Baker Jr., M. C., Chief of Laboratory Service
Capt. John M. Buchanan, M. C., Chief of Tuberculosis Section, Medical Service, Assistant Plans and Training Officer
Capt. William S. Conway, M. C., Chief of Ear, Nose and Throat Section, Surgical Service
Capt. Edmund J. Croce, M. C., General Surgical Section, Surgical Service
Capt. Arthur G. DeVoe, M. C., Chief of Eye Section, Surgical Service
Capt. Henry L. George Jr., M. C., Chief of Communicable Disease Section, Medical Service
Capt. Hazen L. Hauman, M. C., General Surgical Section, Surgical Service, Chief of Officers Section
Capt. Thomas A. Johnson, M. C., Chief of Gastrointestinal Section, Medical Service
Capt. Sidney Katz, M. C., General Surgical Section, Surgical Service, Assistant Plans and Training Officer
Capt. John W. Kayes, M. C., Chief of Cardiovascular Section, Medical Service
Capt. Carmello P. Locasto, M. C., Chief of Dermatology and Syphilis Section, Medical Service
Capt. William S. McCullagh, M. C., Chief of Neuropsychiatry Section, Medical Service
Capt. Karl F. Mech, M. C., Orthopedic Section, Surgical Service
Capt. George E. Paulissen, M. C., Anesthesia and Operating Section, Surgical Service
Capt. Robert T. Rosenfeld, M. C., Orthopedic Section, Surgical Service
Capt. Thomas D. Thompson, M. C., Orthopedic Section, Surgical Service
Lieut. Raymond L. Abraham, M. C., Chief of Obstetric and Gynecologic Section, Assistant Plans and Training Officer
Lieut. Louis C. Acquarulo, M. C., Orthopedic Section, Surgical Service
Lieut. Isidore R. Cohen, M. C., General Medical Section, Medical Service
Lieut. Michael J. Dardis, M. C., Chief of Outpatient Service
Lieut. Benjamin F. Dennis, M. C., Neuropsychiatric Section, Medical Service
Lieut. Frank F. W. Drews Jr., M. C., Orthopedic Section, Surgical Service
Lieut. Lloyd E. Hawes, M. C., Assistant Chief, X-Ray Service
Lieut. Robert W. Mann, M. C., General Surgical Section, Surgical Service
Lieut. John S. McQuade, D. C., Dental Service
Lieut. Joseph M. Miller, M. C., Septic and Thoracic Section, Surgical Service
Lieut. Moore A. Mills, M. C., Receiving and Disposition Officer, Chief of Tropical Medicine Section, Medical Service
Lieut. Kurt Nussbaum, M. C., Neuropsychiatric Service, Medical Service
Lieut. Nicholas R. Occhino, M. C., General Medical and Tuberculosis Section, Medical Service, Pharmacy Officer
Lieut. William S. Rhode, M. C., Neuropsychiatric Service, Medical Service
Lieut. John R. Sharp, M. C., Upper Respiratory Section, Medical Service
Lieut. Darrel T. Shaw, M. C., Chief of Plastic Surgical Section, Surgical Service
Lieut. Raymond J. Sherer, M. C., Dermatology and Syphilis Section, Medical Service

FEMALE PHYSICIANS

On April 16 the President signed a bill enabling the commissioning of women in the Medical Corps for duty as physicians. No similar authority exists with regard to dentists or veterinarians. The procedure outlined for the processing of male physicians will apply to the processing of female physicians. No female physician will be processed until the District Office has received her availability clearance form from the state Procurement and Assignment physician chairman. It is anticipated that some delay may ensue before the Surgeon General will be in a position to recommend female physicians for appointment, because regulations and forms must be prepared and issued. Whereas district offices are authorized now to process any female physicians whose availability may be declared by the Procurement and Assignment Service, such candidates should be advised that there will probably be a considerable time lag in the consideration of their cases by the Surgeon General. Until further instructions, district offices will use the same forms and procedures in processing female physicians as are in use for male physicians. Female physicians processed and appointed will count against, and are not in addition to, the total figure for physicians in the Surgeon General's 1943 program.

CHANGES IN MEDICAL OFFICERS

Dr A William Reggio, Boston, recently state chief of emergency medical service for Massachusetts, has been appointed regional medical officer for the first civilian defense region (the New England states), succeeding Dr Dudley A Reekie. Dr Reggio was formerly instructor in surgery at Harvard Medical School and assistant visiting surgeon at the Massachusetts General Hospital. Dr Reekie, who was acting chief of the field casualty section, has since been assigned by the Surgeon General, U S Public Health Service, to the U S State Department to head a group of Public Health Service officers who will act as special advisers on health matters to Robert Murphy, chief civil affairs officer for North Africa. To succeed Dr Reekie as acting chief of the field casualty section, Dr H van Zile Hyde, regional medical officer for the second civilian defense region (New York, New Jersey and Delaware), has been transferred to Washington. Dr John J Bourke, deputy state chief of emergency medical service for New York, is now acting regional medical officer for the second region.

Dr David D Rutstein, medical gas officer on the Washington staff, has resigned to become deputy health commissioner of New York City. Before he joined the medical division, Dr Rutstein was chief of the cardiac bureau of the New York State Health Department, Albany.

MISCELLANEOUS

QUINACRINE PLACED UNDER
ALLOCATION

Quinacrine, a synthetic chemical having antimalarial properties similar to those of quinine, which is now almost unobtainable, was placed under allocation on April 2 by the War Production Board through issuance of General Preference Order M-306. Quinacrine is also produced under the trade name of atabrine. A producer seeking authorization to deliver or use quinacrine in any month beginning with May 1943 must file application with the War Production Board on form PD-602 by the 20th of the preceding month. In addition, each producer is required to file by the 5th of each month, beginning with May, with WPB on form PD-602 a list of civilian customers to whom he made deliveries in the preceding month. A producer is defined in the order as a person who produces or imports quinacrine or has it prepared for him or who makes quinacrine tablets or other dosage forms of quinacrine except ampules.

DEVICE FOR FOLDING SURGICAL
DRESSINGS

E I du Pont de Nemours and Company, Inc., Wilmington Del., announces the invention and mass production of a device that folds surgical dressings three to five times faster than by hand. The inventor, Philip W Burnham, an engineer with the du Pont Company, and more than a score of other experts and officials rushed to completion the device within four weeks to aid the Wilmington Red Cross chapter in meeting huge army and navy quotas for surgical dressings. While the Delaware Red Cross has adopted the device it will not be available on a national scale until officially adopted by the American Red Cross. The device is so simple to operate that Delaware school children are being organized for this work. The turnover among volunteer Red Cross workers is expected to be far less, it is said now that the surgical dressing folding job will be less monotonous and tiring. Harry J Haon, director of the Delaware chapter, said that the local Red Cross chapter fell behind its quota for dressings by several hundred thousand for the first quarter of this year, despite breaking all previous production records. If this condition applies nationally, the new folding device would aid the many chapters more nearly to meet their quotas of surgical dressings. While more workers are urgently needed, Mr Haon is sure that many volunteers will come forward when the new folding devices are available. The plans, specifications and all rights to the appliance are being given to the Red Cross.

PUBLIC HEALTH UNDER HITLER

According to NDZ of February 15, the Reich Committee for Medical Research into Work and Output (Reichsarbeitsgemeinschaft für Arbeits- und Leistungs-Medizin) was set up in Berlin February 21. It will combine, under the leadership of the DAF, all research activity in this field. On this occasion the director of the Office for Health and Protection of the People, Dr Bockhacker, spoke to representatives of the press about the wartime tasks in connection with health measures in the factories.

The employment of doctors in the factory itself has during the last few years become an integral part of factory life. The war makes it necessary to pay more attention to the health of the working people. The call for higher output and especially the appeal to women must not involve injuries to health. It is the task of the works doctors to insure this, and the scope of their preventive activities has recently been further extended by the introduction of medical inspections at the place of work. This does away with the long periods of waiting in surgeries and leads to considerable economies in working hours.

The system of works doctors has revolutionized the work of medical care for the working people and the results of this are visible in the good state of health of the workers. Even in occupations in which there is considerable danger the general state of health is so outstandingly good that absence from work amounts to only 3 per cent on the yearly average. In some instances medical inspection in the factories has even reduced absenteeism below the peacetime frequency. More than 5,000 factory medical stations partly with auxiliary staffs, have so far been set up. Thousands of doctors have become accustomed to factory life, treating the workers practically on the job. It is the task of the works doctor not to treat sick persons but rather to maintain the health of his charges and to protect them from all influences that might prejudice their power of resistance. He is so to speak the industrial pastor of the workers. Diagnosis of the job is added to the diagnosis of working capacity.

Sept-Jours of January 10 stated that among the illnesses due to food shortage carotenemia has appeared. The greatest menace due to restriction is tuberculosis. It is estimated there were 550,000 dangerous cases of tuberculosis in France before the war. They number 1,000,000 today. Those affected are mostly men and women between 50 and 60 whose old lesions decalcify and release bacilli owing to lack of calcium contained in milk and lack of meat and rats. (Carotenemia is a disease which has recently appeared in France and is due to eating too many vegetables of the carrot type—Ed.)

ORGANIZATION SECTION

OFFICIAL NOTES

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Departments of the United States Army and the United States Navy are on the air each Saturday at 5 p. m. Eastern War Time (4 p. m. Central War Time, 3 p. m. Mountain War Time, 2 p. m. Pacific War Time). An exception is the Chicago area where the broadcasts are heard by transcription at 10-30 p. m. Saturdays over Station WMAQ. Unless otherwise indicated, each program is summarized by Dr. W. W. Bauer, Director, Bureau of Health Education.

The titles and guest speakers for the next four programs are as follows:

May 15 'High Air'
May 22 'Flesh Burns'

Speaker: Rear Admiral Ross T. McIntire, M. C., Surgeon General, United States Navy

May 29 'Sick Call'

June 5 'Doctors for Tomorrow'

Speaker: Brig. Gen. Fred W. Rankin, President of the American Medical Association

BEFORE THE DOCTOR COMES

The American Medical Association program on Radio Station WLS (890 kilocycles) entitled "Before the Doctor Comes" will be on the air every Thursday afternoon at 2:45 up to and including May 27. Mrs. June Merrill will interview Dr. W. W. Bauer, Director, Bureau of Health Education, on common home health problems. The titles for the last three programs are:

May 13 'Growing Pains'
May 20 'Nervous Habits'
May 27 'Immunization'

MEDICAL LEGISLATION

STATE MEDICAL LEGISLATION

California

Bills Introduced—A 328 proposes the enactment of a hospital lien law applicable to the operators of a public or private hospital which furnishes hospital service to an injured person. The term "hospital service" would include medicines, supplies and roentgenologic, laboratory, nursing and other care and service necessary for the treatment of the injured. A 664, to amend the business and professions code, proposes to authorize the board of medical examiners to examine applicants for licenses to practice physical therapy, which is defined as the treatment of patients by the use of massage, therapeutic massage, exercise, therapeutic exercise, or by the use of the physical, chemical and other properties of electricity (except x-rays, radium and electrosurgery), heat, light or water.

Colorado

Bill Enacted—H 236 was approved, April 20. It enacts a service tax for the state of Colorado but exempts therefrom services rendered by chiropractors, osteopaths, physicians, surgeons and other practitioners of licensed professions.

Delaware

Bills Enacted—S 41 was approved, April 13. It amends the medical practice act by exempting therefrom the treatment of human ills by prayer or spiritual means in accordance with the tenets of any well recognized religious denomination. H 97 was approved, April 16. It amends the workmen's compensation act by authorizing an employer to engage a physician or surgeon other than the one furnished by the employer and to receive from the employer the reasonable cost of the services rendered by such physician or surgeon.

Florida

Bills Introduced—S 182 proposes, in effect, to waive physicians' annual registration fees during the period of their service with the armed forces of the United States or of any allied nation. H 276 proposes that all persons desiring to be married must furnish a certificate from a physician licensed to practice and engaged in the practice of medicine in the state of Florida certifying that such physician has made an examination and found the applicant to be free from any venereal disease.

Illinois

Bill Introduced—H 478 proposes the appointment by the department of registration and examination of an advisory board consisting of three qualified naprapaths to examine applicants

desiring to practice naprapathy, which is defined as a method and system of practical and scientific treatment of the human body for remedial and hygienic purposes without the use of medicine or operative surgery. The proposal would further provide that naprapathic treatment is principally as follows: (1) the use of the hands and fingers in contact with the external surfaces of the human body, (2) manual manipulation, massaging, exercising, rubbing, stretching and adjusting contracted muscles, ligaments and shrunken connective tissues for the purpose of releasing pressure on nerves and relieving abnormal nerve tension, (3) programs of rest, diet, exercise, fresh air, sunlight, elimination of waste and systematic practice of personal hygiene, (4) application of heat and electricity, and hot and cold applications, (5) application and use of modern therapeutic appliances, such as the use of infra-red, ultraviolet rays, short wave electric currents and diathermy treatment.

Massachusetts

Bill Introduced—H 894 proposes that recipients of old age assistance shall receive, among other things, false teeth, eye glasses and hospital and medical services which the aged citizen might need.

Michigan

Bills Enacted—H 250 has become Public Act No. 227 of the Acts of 1943. It amends the crippled children's act by limiting professional fees for major operations to \$75 and to \$200 for any one physician for any one patient in any one year. H 264 has become Public Act No. 229 of the Acts of 1943. It provides that, where persons entitled to hospital service under a contract for such service are unable to obtain admittance to any hospital because of lack of facilities or accommodations, such contract may provide a method by which such persons may be reimbursed in whole or in part for the expense of nursing and other nonmedical care, restricted to the equivalent of hospital care, required from the illness or injury entitling such person to hospital service.

Missouri

Bills Introduced—S 79, to amend the law relating to food and drugs, proposes, among other things, that a drug shall be deemed to be misbranded if it is sold at retail and contains any quantity of aminopyrine, barbituric acid, cinchophen, dinitro-cresol, sulfanilamide drugs, thyroid or their derivatives, unless it is dispensed on a written prescription signed by a licensed physician, dentist or veterinarian and its label bears the name and place of business of the dispenser, the serial number and date of such prescription, and the name of the prescribing

physician, dentist or veterinarian. H 572 proposes that all residents of the state who are or shall become habitual drunkards, habitual users of opium, cocaine, or of some salt or derivative of these drugs, to such an extent as to become what are commonly called "habitual drunkards," "dope fiends" or "addicts" shall be subject to involuntary confinement in the state hospitals for insane persons for such time as might be necessary to accomplish a cure. H 575 proposes to amend the criminal law concerning abortions by eliminating therefrom an existing proviso exempting instances in which an abortion or miscarriage was procured in order to preserve the life of the mother or unborn child when such action was necessary in the opinion of a duly licensed physician. H 621 proposes the establishment of a sanatorium for the treatment of tuberculous Negroes.

Nevada

Bill Enacted—S Concurrent Resolution No 3 was adopted, March 17. It directs the Nevada industrial commission to make a study and survey of the occupational disease codes and legislation of other states and to make a report thereon at the beginning of the next session of the state legislature.

New Hampshire

Bill Enacted—S 55 has become chapter 122 of the Laws of 1943. It provides for the recognition within the state of hospital service corporations organized under the laws of other states when such other states grant like recognition to New Hampshire hospital service corporations.

New Mexico

Bill Enacted—S 141 has become chapter 83 of the Laws of 1943. It requires every physician who makes a diagnosis of or treats or prescribes for a case of venereal disease to report such case immediately to the municipal or district health officer and authorizes state, district and municipal health officers to detain

and examine persons reasonably suspected of being infected with a venereal disease and to require persons so infected to report for treatment to a reputable physician.

Pennsylvania

Bill Enacted—H 235 has become act 45 of the Acts of 1943. It authorizes the state board of medical education and licensure to issue temporary certificates to physicians licensed to practice in other states after such physician has submitted satisfactory proof to the board that he possesses a license issued by the authorized agency of such other state, that this license is still in effect and has not been revoked or suspended, that he is of good moral character, is not addicted to the intemperate use of alcohol or narcotic drugs, has scholastic qualifications equivalent to those required by law of Pennsylvania and is of satisfactory professional standing in the state from which he comes.

South Carolina

Bill Introduced—H 141 proposes that all medical and hospital expenses shall be an exemption under the state income tax law to the same extent and in the same amount as they are allowed under the federal law.

Wisconsin

Bill Introduced—S 313 proposes, among other things, that no person shall practice medicine, surgery or osteopathy, or any other system of treating bodily or mental ailments or injuries of human beings, under any other Christian or given name or any other surname than that under which he was originally licensed or registered to practice in Wisconsin or any other state. The bill would further provide that no person engaged in the practice of any profession for which a license is required by the state shall change his Christian or given name or his surname to any other Christian or given name or any other surname than that under which he was originally licensed in such profession in this or any other state.

WOMAN'S AUXILIARY

Colorado

In February Mrs. Emily G. Bogert, state commander for the Colorado Society for the Control of Cancer demonstrated to the Woman's Auxiliary to the Denver County Medical Society the methods of making dressings and rolling bandages which are used at the cancer clinics of Colorado General and St. Luke's hospitals. The Visiting Nurse Association of Denver also distributes these dressings. Mrs. George W. Miel opened her home to the group and at the February meeting 100 gauze pads, 111 large combination pads and 100 small combination pads were made and 90 bandages were rolled.

Members of the Mesa County auxiliary have constituted a serving unit working at the hospital two afternoons a month and have just purchased an electric sewing machine for use at St. Mary's. They also are serving in the Red Cross gauze room in the Mesa County Center each Thursday morning.

District of Columbia

A Victory Silver Tea to provide Bundles for America and Smokes for Yanks was one of two special activities undertaken recently by the Woman's Auxiliary to the Medical Society of the District of Columbia. Among the guests were presidents of the women's boards of the local hospitals. Past presidents of the auxiliary assisted at the tea table. The committee in charge of donations reported that \$65 was collected during the afternoon.

The auxiliary is planning a series of buffet suppers and entertainments for medical officers stationed in nearby camps and hospitals. The first of this series was held in the medical society's building on January 23. About eighty officers attended from Walter Reed Hospital, the U. S. Naval Hospital at Bethesda, Md., Potomac River Naval Command Headquarters Staff of the Army Air Corps Bolling Field and Naval Air Station. Assistant hostesses at the party were daughters of physicians.

Indiana

The directors of the Woman's Auxiliary to the Allen County Medical Society met at the home of Mrs. E. M. Van Buskirk. The treasurer's report showed a paid membership of eighty-four at that time. Dr. Jessie C. Calvin is general chairman of the Civilian Defense Nutrition Program. Mrs. E. N. Mendenhall is chairman of the organization of neighborhood nutrition classes. Mrs. M. E. Glock is Mrs. Mendenhall's assistant in the organization work. Mrs. Ray Chester is the library chairman, assisted by Mrs. J. R. Adams and Mrs. Ernest Carlo. The duties of this committee are to review books, current magazine articles and commercial literature that are placed on the nutrition shelf and reading table in the public library and the packets carried into the rural districts by the library busses. Mrs. A. C. Worley, chairman of a pediatric project, has Mrs. Carl Moats, Mrs. Doster Buckner, Mrs. C. B. Parker, Mrs. Sterling Hoffman and Mrs. A. Jerome Sparks to assist in providing recreational material for children in the three hospitals. Mrs. Noah Zehr is chairman of the auxiliary Red Cross activities in producing surgical dressings sewing and administrative work. Mrs. Maurice R. Lohman was chairman of the auxiliary committee in the Minute Woman's Bond Sale campaign during Thanksgiving week. Her committee composed of Mrs. S. R. Mercer, Mrs. N. H. Prentiss and Mrs. Noah Zehr accounted for the sale of \$21,000 worth of bonds. Mrs. Edward Schlegel was city co-chairman of the County Minute Woman's Bond Sale. Mrs. Schlegel has just been appointed a member of the executive board of the county bond sale committee.

New Jersey

A luncheon meeting opened the new year for the auxiliary in the Young Women's Christian Association Jersey City. Mrs. Andrew Ruoff presided and welcomed Mrs. Leah Hornberger, president of the state auxiliary. The dense chairman reported the results from the sale of War Bonds and Stamps by the members in two banks during the week of December 7. Stamps sold amounted to \$925.80 and bonds sold to \$7,425.

Medical News

(PHYSICIANS WILL CO-OPERATE IN A FAVOR BY SIGNING FOR THIS DELINQUENT ITEMS OF TWO OR MORE OR LESS CRIMINAL INTEREST, SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Physicians Needed—Psychiatrists, anesthesiologists and resident physicians in the specialties of dermatology, syphilology and pathology are being sought for positions in the Los Angeles County Hospital. Applicants for the residencies will be rated on their professional training and experience as evidenced by investigation and interview. An oral examination will be given for the position of psychiatrist and anesthesiologist carrying a salary of \$235 a month. Doctors of medicine under 55 years of age who have completed one year's internship in an approved hospital may file an application for any of the positions. Applications should be filed on or before Friday, May 14. Additional information may be obtained from the Los Angeles County Civil Service Commission, Room 102 Hall of Records, Los Angeles.

ILLINOIS

State Medical Meeting—The one hundred and third annual meeting of the Illinois State Medical Society will be held at the Palmer House, Chicago, May 18-20, under the presidency of Dr. Edward H. Weld, Rockford. Among the out of state speakers will be

Dr. Frank A. Meriwether, Columbus, Ohio (subject to be announced)
Dr. Myrie G. Peterman, Milwaukee, Convulsions
Dr. Paul A. O'Leary, Rochester, Minn., Wartime Considerations of Syphilis
Major Murray Sanders, M. C., A. U. S., Epidemic Conjunctivitis
Dr. Gordon I. Harkness, Davenport, Iowa, Industrial Ophthalmology and Otolaryngology
Dr. Ralph L. Campbell, Madison, Wis., Importance of the Outlet Contraction of the Pelvis in Obstetrics

Dr. James E. Paullin, Atlanta, Ga., President-Elect of the American Medical Association, will deliver the annual oration in medicine Tuesday evening. No speaker was announced for the oration in surgery to be given Wednesday morning. Tuesday afternoon there will be a symposium on nutrition by Drs. John F. Carey, Joliet, Henry G. Poncher, Chicago, John R. Vonachen, Peoria, and Charles A. Aldrich, Chicago. A cardiovascular round table will be conducted Wednesday afternoon by Drs. Francis D. Murphy, Milwaukee, Hermon H. Cole, Springfield, and Edgar M. Stevenson, Bloomington. At the Secretaries' Conference Tuesday evening Hon. H. H. Thomas, British Consulate General, Chicago, will give a talk entitled "The Japanese as I Knew Them" and Dr. Charles H. Pluher, Chicago, past president of the society, will discuss "Latest Developments in Procurement and Assignment." Other groups meeting at the same time will be the woman's auxiliary to the state medical society, the Physicians' Association of the Department of Public Welfare of the State of Illinois, the Illinois Chapter of the American College of Chest Physicians, Medical Women's Association and the Medical Alumni Association of the University of Illinois. An industrial health conference will be a feature of the meeting May 18, with the Central States Society of Industrial Medicine and Surgery and the Chicago Society of Industrial Medicine and Surgery meeting in joint session.

KENTUCKY

Personal—Dr. Joseph Lachman, formerly of Chester, Pa., U. S. Public Health Service, was recently appointed in charge of the Pulaski and McCreary county health departments.—Dr. William J. Thomasson, Newport, observed his fiftieth anniversary as a practicing physician on April 15.

Extension Course in Medicine—On May 6 the first of a series of extension courses in medicine sponsored by the Kentucky State Medical Association was held in Corbin. The speakers were Drs. John B. Floyd, Louisville, Walter E. Doyle, Louisville, Percy S. Pelouze, Philadelphia, and Milton J. Wilder, Louisville. Others in the series will be held May 13, with Drs. Doyle, Joseph G. Sherrill, Louisville, Henry H. Caffee, Oneida, and Alice D. Chenoweth, Louisville, May 20, Drs. Doyle, Sherrill, John H. Kooser, Hyden, and Paul A. Turner, Louisville, May 27, Drs. Sherrill, Doyle, Chenoweth and Oscar O. Miller, Louisville.

MASSACHUSETTS

State Medical Meeting—The one hundred and sixty-second annual meeting of the Massachusetts Medical Society will be held at the Hotel Statler, Boston, May 24-26, under the presidency of Dr. George Leonard Schadt, Springfield. Among the out of state speakers will be

Major Stevens J. Martin, M. C., A. U. S., Current Problems of the Army Anesthesiologist
Dr. Thomas Parran, surgeon general U. S. Public Health Service, War Time Responsibilities of the Public Health Service
Brig. Gen. James Stevens Simmons, M. C., U. S. Army, Global Malaria
Col. Richard P. Strom, M. C., A. U. S., Increased Danger from Tropical Disease in the Present War
Dr. William B. Snow, New York, Physical Therapy in Arthritis
Dr. Russell M. Wilder, Washington, D. C., Medical Nutritional Requirements in the Time of War
Dr. Alvan J. Barach, New York, Oxygen Therapy, as Related to Gas Poisoning in War and in Civilian Disasters
Col. John J. Moorhead, O. R. C., U. S. Army, Surgical Lessons of the Pearl Harbor Attack
Dr. Harold A. Cole, Cleveland, Local Use of Sulfonamides in Dermatoses
Major Murray Sanders, M. C., A. U. S., Epidemic Keratoconjunctivitis

The annual oration will be delivered Tuesday morning by Dr. Edward P. Bagg, Holyoke. His address will be entitled "Small Puddles." The Shattuck Lecture will be delivered Tuesday evening by Dr. George W. Thorn, Boston, on "Physiological Considerations in the Treatment of Nephritis." There will be a round table discussion Wednesday on recent improvements in obstetric technique with Drs. Raymond S. Titus, Boston, Joseph W. O'Connor, Worcester, and Arthur F. G. Edgelow, Springfield.

MICHIGAN

Typhoid Carriers—The Michigan Department of Health now has under supervision 276 typhoid carriers. In all, 411 carriers have been identified since 1932, when the search for these carriers was begun. Some have since died or left the state. In 1932 9 known carriers were listed, while reported cases of typhoid totaled 513. Only 20 cases of typhoid have been reported so far in 1943.

Tetanus Toxoid for Farmers and Industrial Workers—The state department of health, Lansing, announces that its laboratories are ready to distribute tetanus toxoid as protection against lockjaw for farmers and workers in industry. The toxoid will be distributed through health officers and physicians and will be used instead of the tetanus antitoxin which has been furnished in the past. The toxoid will also be supplied to all Michigan citizens who want it.

University News—Wayne University College of Medicine, Detroit, has received a grant of \$1,800 from the Ciba Pharmaceutical Products Company for the continuation of a study on the metabolism of estrogens by Warren O. Nelson, Ph.D., Detroit, and one of \$2,500 for vasoconstrictor research under the direction of Dr. Frederick F. Yonkman, Detroit. The Nutrition Foundation, New York, renewed a grant of \$3,600 for Arthur H. Smith, Ph.D., Detroit, to further his soybean study, started last year.

Defects Among Students—Out of 508 Wayne University freshmen who were given physical examinations at the beginning of the semester, only 52 showed no physical defects of any sort, 797 specific defects were reported. According to a report of Dr. Irvin W. Sander, Detroit, director of the Wayne University Student Health Service, most of the defects were of a minor nature as indicated by the fact that 88 per cent of the freshmen were graded as class A, with no restrictions placed on their activities, 10 per cent were graded as class B, with specific types of activity forbidden, and 2 per cent were placed in class C, in which no physical activity is permitted.

NEW JERSEY

State Medical Meeting—The one hundred and seventy-seventh annual meeting of the Medical Society of New Jersey will be held at the Hotel Essex House, Newark, May 25-26, under the presidency of Dr. Elias J. Marsh, Paterson. Features of the meeting will be panel discussions on burns and on virus pneumonia.

Tenth Anniversary of Therapeutic Research Institute—Special ceremonies were held, April 26, to commemorate the tenth anniversary of the opening of the Merck Institute for Therapeutic Research, Rahway. Among the principal speakers were William H. Sebrell, Jr., surgeon, U. S. Public Health Service, Bethesda, Md., Dr. Francis G. Blake, New Haven, Conn., and Dr. Russell M. Wilder, Washington, D. C. The Merck Institute for Therapeutic Research, a nonprofit corporation under the laws of the state of New Jersey, was founded in 1933 for the purpose of conducting investigations into the

OKLAHOMA

State Medical Meeting—The Oklahoma State Medical Association will hold its annual session at the Skirvin Hotel, Oklahoma City, May 11-12 under the presidency of Dr James D Osborn, Frederick. Among the speakers will be

Dr Udo J Wile, Ann Arbor, Mich., Rapid Treatment Method for Syphilis
Major Lester D Borough M R C U S Army Some Neuro psychiatric Problems Arising in New Army Recruits
Capt Leslie B Marshall M C U S Navy Naval Medicine
Dr Peter I Russo Oklahoma City Spontaneous Gastrocolic Fistula: Report on Two Cases
Dr Harry Wilkins, Oklahoma City, Brain Tumors X Rays as a Diagnostic Aid
Dr Andre B Carney, Tulsa Comparative Symptoms in Peptic Ulcers and Cholecystitis in Two Hundred Cases
Col Monte I Belot M R C U S Army Problems of Induction
Dr Gregory I Stanbro Oklahoma City Carcinoma of the Breast

Other speakers on the program will include Dr Frank H Lahey, Boston, Col William Lee Hart, M C, U S Army, and Gov Robert S Kerr, Oklahoma City

TENNESSEE

State Medical Election—Dr Kyle C Copenhaver, Knoxville, was named president-elect of the Tennessee State Medical Association at its recent annual meeting and Dr Oval N Bryan, Nashville, was installed as president. Other officers elected include Drs Burnett W Wright, Nashville, vice president from Middle Tennessee, Julius C Brooks, Chattanooga, president from East Tennessee, and John W Oursler, Humboldt, vice president from West Tennessee. Drs Harrison H Shoulders and Charles M Hamilton, both of Nashville, were reelected secretary-editor and treasurer respectively. This session was a meeting of the house of delegates only.

Members of New Basic Science Board—The governor recently appointed the following members to form the basic science board which was created by the basic science law that became effective February 15. Orren W Hyman, Ph D, Memphis, Dr Edward L Turner and Dr Waller S Leathers, Nashville, George M Cameron, Ph D, and Judson H Robertson, Ph D, Knoxville. At an organization meeting of the board, March 14, Dr Leathers was elected president, Dr Turner, vice president and Dr Hyman, secretary-treasurer. The first examinations were held March 24. Of 192 applicants examined 6 failed. The law requires only candidates for license to practice medicine to take the basic science examination. Candidates for license to practice osteopathy must take the examination if they intend to use drugs in their practice. Candidates for license in chiropractic and in naturopathy are not required to take the examination. All of the applicants taking the March examination were prospective medical graduates. The great majority of them were senior medical students.

WEST VIRGINIA

State Meeting of the West Virginia Medical Association—The seventy-sixth annual meeting of the West Virginia Medical Association will be held at the Charleston Hotel, Charleston, May 16-18, under the presidency of Dr Robert J Wilkinson, Huntington, and the Society acting as host. Among the speakers will be

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GENERAL

Association on Mental Deficiency—The American Association on Mental Deficiency will hold its sixty-seventh annual meeting at the Hotel Commodore, New York, May 12-15, under the presidency of Horatio M Pollock, Ph D, Albany, N Y, whose address will be entitled "Mental Hygiene and Mental Deficiency." Included among the speakers will be

Drs Herman Yarnet and Joyce V Deutsch Southbury, Conn, A Clinical and Incephalographic Study of a Group of Patients with Congenital Cerebral Palsy
Dr I Newton Kugelmann, New York, Nutritional Factors in Mental Deficiency
Dr Jost J Michelsen, Boston, Surgical Aspects of Cranial and Intracranial Abnormalities
Dr Frederick C Thorne, Brandon, Vt, Hysterical Manifestations in Mental Defectives
Lieut Samuel R Heath Jr, A B, Fort Bragg, N C, Case Studies of Problem Soldiers

One feature will be a panel discussion on the "Utilization of the Physically and Mentally Handicapped in the War and Postwar Periods."

American Surgical Association—The annual meeting of the American Surgical Association will be held at the Netherland Plaza, Cincinnati, May 13-14, under the presidency of Dr Vernon C David, Chicago. Included among the speakers will be

Capt Waltman Walters and Lieut Hugh R Butt, M C, U S Naval Reserve Gastric and Duodenal Ulcers in the Naval Personnel
Dr Howard C Naffziger Dr Horace J McCorkle and Cordula Kohl San Francisco, Recognition and Management of Acute Trauma to the Pancreas with Particular Reference to the Use of the Serum Amylase Test
Drs Mont R Reid and William A Altemeyer, Cincinnati, Peroxide Ointments with Special Reference to Urea Peroxide
Drs Robert Elman and Carl E Lischer St Louis, An Experimental Study on the Use of Serum Plasma and Amino Acids in the Replacement Therapy of Fatal Shock Due to Repeated Hemorrhage
Dr Walter E Dandy Baltimore, Improved Diagnosis and Treatment of Ruptured Intervertebral Disks
Dr James C White Boston, Cerebral Concussions—Alterations in Cerebral Volume Blood Content and Histologic Changes After Experimental Injury by Acceleration of the Head
Drs Frank H Lahey and Lewis M Hurvath, Boston, The Thyrocardiac—A Review of Six Hundred Cases

Memorial to Dr Robert Tait McKenzie—Contributions are now being accepted for a memorial to Dr Robert Tait McKenzie, Philadelphia, to take the form of a bronze casting of the Column of Youth and a suitable pedestal bearing an appropriate inscription to be placed in a prominent location in the headquarters of the National Education Association of the United States in Washington, D C. The memorial was approved at a meeting of the American Association for Health, Physical Education and Recreation in 1939. In 1941 it was decided that medallions and prints of Dr McKenzie's creations be made available for distribution to contributors of the general fund and that henceforth the cover of the *Journal of the American Association for Health, Physical Education and Recreation* carry a cut of "The Joy of Effort" or of some other one of Dr McKenzie's creations. The medallions and prints are now available and it is hoped that through their distribution honor will be paid to the memory of the late Dr McKenzie, who died in 1938. A graduate of McGill University Faculty of Medicine, Montreal, in 1892, Dr McKenzie was noted as a sculptor, writer and scientist. He was president of the American Association for Health, Physical Education and Recreation from 1912 to 1915, a past president of the Society of Directors of Physical Education in Colleges and a fellow of the American Physical Education Association and of the American Academy of Physical Education.

LATIN AMERICA

New Medical Journals—*Paginas de Pediatria* of Buenos Aires is a monthly journal which made its first appearance with the October issue. Dr Carlos M Pintos is the editor of the journal, which has its headquarters at 1126 L Saenz Peña Street, Buenos Aires. The publication of *Acción Médica* started with the November issue. Headquarters will be those of the *Cuculo Médico* of La Paz, Casilla 687, La Paz, Bolivia. The editorial committee is comprised of Drs Florentina Mejia G, Teodoro Von Borries, Carlos Ferrufino B and Hector Alaga S.

CORRECTION

Capsules Ascorbic Acid—The description of the recently accepted product Capsules Ascorbic Acid of the McNeil Laboratories, Inc, appeared in THE JOURNAL March 27, page 1008. The sizes were given as 20 mg and 100 mg. The 20 mg dosage form should be 50 mg.

Foreign Letters

LONDON

(From Our London Correspondent)

March 20 1943

Preliminary Negotiations for Providing a Medical Service for All

As stated in previous letters the government proposes to organize for the first time in this country a complete medical service—domiliary and hospital general and special free to all. This momentous step is receiving close consideration from the British Medical Association and other medical organizations. The minister of health has invited representatives of the main medical bodies to meet him and consider his suggestions on the procedure to be adopted for consultation between him and the medical profession. At the meeting he proposed the establishment of a committee representative of the medical profession as a whole to consider with him and his officers the many problems and difficulties involved. It was agreed that this committee would not have power to commit the medical profession either in principle or in detail and that the discussions will take place not on the basis of any preconceived plan but "from the ground." When the government after consultation, is ready to indicate in general terms the measures proposed these will be submitted, before any final decision is reached to the various medical bodies represented for their consideration. In the case of the British Medical Association this will mean that the proposals will be considered by the council and all committees, the divisions and the representative body. Divisions will be asked to ascertain the views of nonmembers as well as of members of the association. Only after decision by the representative body will the association be asked to commit itself.

Consultations have been proceeding between the British Medical Association, the Colleges of Physicians, Surgeons and Obstetricians and Gynecologists and the Society of Medical Officers of Health as to the composition of the representative committee to take part though not as plenipotentiaries, in the discussion with the minister and his officers. It has been agreed that a body of thirty-seven members representing in addition to those already mentioned the Medical Women's Federation, local medical and panel committees and other bodies. About half the members of the negotiating committee represent various committees of the British Medical Association, and the majority of these are general practitioners.

The British Medical Association recognizes that as far as possible every step should be taken to give doctors on war service an opportunity to express their views on any plan put forward by the government. For this purpose machinery will be put in motion for communicating with them individually when their views cannot be ascertained through the usual channels. Perhaps never before has there been so much need for unity within the profession. The present phase is one of consultation without commitment. The British Medical Association says that it is inevitable that any scheme of reorganization affecting deeply the medical profession should be the subject of discussion, difference and controversy. What is now necessary is that the profession should have confidence in those representing it in preliminary discussion, awaiting the time when through its own organization it can examine proposals and express considered views. In an editorial article entitled

"A United Front" the *British Medical Journal* states that the history of medical organization is for the most part one of dissension, petty squabbles and narrow sectarian views. It therefore asks for a united front in the difficult months which lie ahead.

Scientific Freedom and Social Medicine

An article in the *British Medical Journal* (February 20, p. 227) on scientific freedom and social medicine by Dr. Geoffrey Bourne has attracted great attention because of its force. He points out that under the Beveridge scheme the present voluntary hospitals (so called because supported and controlled by voluntary subscribers) will probably come under some form of state or local council control. If the planning is left in the hands of the politicians and civil servants of the state it will almost certainly be modeled according to the traditions of the civil service and along the lines of the emergency medical service and the London County Council hospitals. The defects of the civil service in the stifling of initiative and the shunning of responsibility are notorious. We have now two types of medical service—the autocratic as typified in the two just mentioned and the democratic as typified by the voluntary hospitals. In the autocratic full power is in the hands of the chief medical officer. He delegates it to the medical superintendents of the hospitals who wield it over their subordinate officers. In the democratic institution full power over medical matters is entrusted to the democratic medical committees, composed of practicing physicians and surgeons who are experts in their several lines. In the autocratic system the power over medical matters resides in one man whether he is head of the service or the institution. One man is incapable of having a good knowledge of all branches of medical science and no man is without personal predilections, sympathies or antipathies, whether as to men or as to other things. Promotion to the autocratic status goes by seniority and political and administrative acumen. Seniority is likely to be assisted by a complacent attitude toward superiors and conservatism of outlook and impeded by a tendency to criticize and by liveliness or originality of outlook and even by devotion to medical practice. In the autocratically run hospital systems a medical officer may not publish a paper without permission from his superiors. It is at the voluntary hospitals that British medicine has been made. There all the great clinicians—Bright, Addison, Graves, Hutchinsonson to mention only the greatest—have done their work. These hospitals also constitute the medical schools. The government is so impressed with their work that in this medical revolution (for it is no less) which it contemplates it has announced that it wants to preserve the voluntary hospital. How this can be done under the Beveridge scheme without the evils of bureaucratic control exposed by Dr. Bourne, is a problem for the English genius for compromise.

Marriages

FRANK EARL POOLE, Clay W. Va., to Miss Edith Mary Weintz of Austinville Va. at Durham, N. C., March 24.

JAMES M. KIRTLLEY to Miss Leola Black, both of Crawfordsville, Ind., at Camp Gordon Ga. February 14.

JOHN SARGENT MORRIS JR. Lynchburg Va., to Miss Matilda Elizabeth Coby of Albany Ga. April 28.

JOHN BORDEN GRAHAM, Goldsboro N. C., to Miss Ruby McKay Barrett in Laurinburg in March.

FORREST RILEY LAFOLLETTE, New Salisbury Ind. to Miss Jean Tillotson of Franklin January 30.

STEPHEN R. BARTLETT JR. Hingham Mass. to Miss Marion Whitener at Durham N. C. March 24.

RIPON WILSON LA ROCHE, Charleston S. C. to Miss Florence Alexander Savage of Camden April 2.

RALPH E. CROSS, Johnson City Tenn., to Miss Sallie Foley of Memphis in Denver February 18.

JOSEPH JACKSON STOKES to Miss Ardis Bowen Stilwell, both of Charleston, S. C., March 25.

JAMES ARTHUR STUMBO, Martin, Ky., to Miss Mary Frances Alston at Frenchburg, March 23.

Deaths

Harry Gideon Wells * internationally renowned as a pathologist, professor emeritus of pathology at the University of Chicago died, April 26, 1943, aged 67, of hypertension and congestive cardiac failure secondary to heart block.

Dr. Wells was born in New Haven, Conn., July 21, 1875. After graduation from Sheffield Scientific School of Yale University in 1895 he became associated with Rush Medical College as a student and worked as assistant in the laboratories of Drs. Ludwig Hektoen and George H. Weaver. The school was at that time associated with Yale University from which he received his master's degree in 1897. He received the degree of doctor of medicine from Rush Medical College in 1898. After an internship in the Cook County Hospital he continued his studies at the University of Chicago from which he received the Ph.D. degree in 1903. He studied in Berlin during 1904 and 1905. Early in his career he combined teaching with research, serving continuously on the faculty of the University of Chicago with the title of associate in pathology in 1901, instructor 1903, assistant professor, 1904, associate professor 1909, professor 1913 and emeritus professor since 1940. He served also as dean of the University of Chicago School of Medicine from 1904 to 1914.

In 1911 Dr. Wells was made director of medical research of the Otto S. A. Sprague Memorial Institute. During World War I he was a member of the American Red Cross Commission to Rumania (1917-1919) with the rank of lieutenant colonel. For his work in Rumania he received the Star of Rumania from the king.

In his professional career Dr. Wells was associated with most of the important scientific organizations in his field. He had been at various times a member of the Association of American Physicians, the Society for Cancer Research, the Chicago Pathological Society, the American Association of Pathologists and Bacteriologists, the American Association for the Advancement of Science, the Society for Biologic Chemistry, and the National Academy of Sciences. He was twice honored with the presidency of the American Association of Cancer Research and once with that of the American Association of Pathologists and Bacteriologists. His ability as a lecturer and teacher in the field of pathology was widely recognized. He had been called on at various times to give the Christian Fenger Lecture of the Institute of Medicine of Chicago, the Colver Lectureship at the College of Medical Surgeons (Los Angeles) and the Mutter Lecture of the Philadelphia College of Physicians as well as innumerable lectures before medical societies.

Probably the most noteworthy of the contributions of H. Gideon Wells was his work in the field of chemical pathology. His book on that subject was recognized as unique in its field. Early in his career he had cooperated with Osborne of Yale University in the development of means for identification of plant proteins by methods of immunology. Other volumes in his specialty included "The Chemistry of Tuberculosis" and "The Chemical Aspects of Immunity."

His distinguished pupils and associates were numerous including Maud Slye, Sc.D., widely known for her work on cancer, and Dr. Esmond R. Long, leader in the field of tuberculosis.

In the American Medical Association Dr. H. Gideon Wells was secretary of the Section on Pathology and Physiology 1908-1909 and chairman of that section 1909-1910.

His students will remember him particularly for the color of his lectures, for his incisive wit, sometimes tinged with burning sarcasm, and especially for the manner in which he made of pathology an extremely vital subject.

Leopold Lichtwitz * New York, Ludwig-Maximilians-Universität Medizinische Fakultät, Munich, Bavaria, Germany, 1900, clinical professor of medicine at the Columbia University College of Physicians and Surgeons, consulting physician and for many years chief of the medical division of the Montefiore Hospital, past president of the German Society of Internal Medicine, was an officer of the German Society for Gastro-Enterology and Metabolic Diseases and the Society for Internal Medicine of Berlin, served with the German army during World War I, formerly chief of the Rudolf Virchow Hospital in Berlin and the City Hospital in Hamburg, author of "Functional Pathology" and "Nephritis", aged 66, died, March 18, at his home in New Rochelle of coronary thrombosis.

Montgomery Leonidas Hinds, Arab, Ala., Vanderbilt University School of Medicine, Nashville, Tenn., 1891, member of the Medical Association of the State of Alabama, formerly mayor of Arab, medical examiner for the Selective Service Board of Marshall County during World War I,

director of the Bank of Arab, served as second vice president of the First National Bank of Guntersville, aged 77, died, February 18, in the Highland Avenue Branch of the Baptist Hospital, Birmingham, of uremia, pyelonephritis, bronchopneumonia and arteriosclerotic heart disease.

James Kennedy Ashburn * Batavia, Ohio, Medical College of Ohio, Cincinnati, 1900, chairman of the Clermont County Selective Service Board number 2, aged 65, died, February 9, of coronary thrombosis and cerebral embolism.

Frank Levi Baum, Boyertown, Pa., Hahnemann Medical College and Hospital of Philadelphia, 1911, served during World War I, aged 68, died, February 14, in the Homeopathic Hospital, Reading, of hepatitis and cholecystitis.

Shirley Francis Boyce, Hugoton, Kan., Kansas City (Mo.) College of Medicine and Surgery, 1916, member of the Kansas Medical Society, aged 47, died, February 17, in Wichita of acute hepatitis.

John Ira Boyer, Long Beach, Calif., College of Physicians and Surgeons, medical department of the University of Southern California, Los Angeles, 1912, member of the California Medical Association, served in the medical corps of the U. S. Army during World War I, aged 56, on the staff of the Seaside Hospital, where he died, February 21, of carcinoma of the liver.

William Elyet Byers, Baltimore, Baltimore Medical College, 1904, formerly demonstrator of anatomy at his alma mater, aged 69, died, February 28, in the Johns Hopkins Hospital of bronchopneumonia and advanced carcinoma of the prostate.

George Pierce Florence, Greenville, Ga., Atlanta School of Medicine, 1911, aged 53, died, February 28, of injuries received in an automobile accident.

Samuel Fuxon * Brooklyn, Tufts College Medical School, Boston, 1923, aged 49, died, February 18, of coronary occlusion.

Robert G. Gamble, Haverford, Pa., University of Maryland School of Medicine, Baltimore, 1884, member of the Medical Society of the State of Pennsylvania, president emeritus on the staff, for many years director of medical services, member of the board of directors and on the consulting staff of the Bryn Mawr (Pa.) Hospital, aged 80, died, March 12, of coronary occlusion and arteriosclerosis.

Wade Gaston, Lost Creek, W. Va., Eclectic Medical Institute, Cincinnati, 1896, aged 74, died in February of coronary thrombosis.

Edwin Robert Girvin, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1875, aged 89, died in February.

Hugh William Graham, Mount Morris, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892, member of the Michigan State Medical Society, past president of the Genesee County Medical Society, at one time president of the village of Mount Morris, served as mayor and as president of the board of education for many terms, aged 74, on the staff of the Hurley Hospital, Flint, where he died recently of chronic uremia.

Richard Hardy Gray, San Antonio, Texas, State University of Iowa College of Homeopathic Medicine, Iowa City, 1895, formerly an acting assistant surgeon in the U. S. Public Health Service, aged 80, died, March 9, in the Medical Arts Hospital of prostatic obstruction.

Frank C. Gregg, Austin, Texas, University of Texas School of Medicine, Galveston, 1900, member of the State Medical Association of Texas, served as a lieutenant commander in the medical corps of the U. S. Navy during World War I, chief of the staff of the Brackemidge Hospital, aged 66, died recently in a local hospital of coronary thrombosis.

Henry Hartwell Howell, San Gabriel, Calif., University of California Medical Department, San Francisco, 1879, at one time coroner of Inyo County, aged 96, died, February 21, in Alhambra of bronchopneumonia.

Thomas Jefferson Kelley, Marathon, Iowa, Rush Medical College, Chicago, 1901, aged 74, died, February 6, of cerebral hemorrhage.

William Tilden Kirk, Springfield, W. Va., Maryland Medical College, Baltimore, 1901, aged 67, died, February 13.

Henry Lombert Knight, San Pedro, Calif., Rush Medical College, Chicago, 1884, for many years connected with the Eitel Hospital, Minneapolis, aged 81, died, February 2, of carcinoma of the hip.

Juanita Isabella Lea, Tryon, N. C., Michigan College of Medicine and Surgery, Detroit, 1906, aged 70, died, February 28, of pneumonia.

David S. Lillbridge, Mountaineer Ohio Western Reserve University Medical Department Cleveland 1891, aged 74, died February 28, of cerebral hemorrhage.

Oscar M. Longenecker, Kansas City, Kan. Kansas City (Mo.) Medical College 1899, member of the Kansas Medical Society, at one time instructor in materia medica at his alma mater, for two years served as superintendent of schools for Miami County and for many years as a member of the local school board of Rolla, on the staff of the Vineyard Park Hospital Kansas City, Mo., aged 76, died February 26, of coronary occlusion.

Charles Davis Luckett, English Ind. Jefferson Medical College of Philadelphia 1889, aged 81, died March 13, of arterio sclerosis of the coronary artery.

George Thomas McMahon, Waukegan Iowa Drake University Medical Department Des Moines 1895, member of the Iowa State Medical Society, aged 82, died February 22, in Des Moines of cerebral hemorrhage.

Dennis Miller, Dallas Texas, College of Physicians and Surgeons Baltimore, 1890, aged 76, died February 20, of cerebral hemorrhage and arteriosclerosis.

Charles Lynn Morris, Los Angeles Hahnemann Medical College of the Pacific San Francisco 1913, aged 55, died, February 2.

John Henry Morrison, Kirkland Wash. Northwestern University Medical School Chicago 1898, aged 69, died in February at the U. S. Marine Hospital Seattle.

William Howard Morrow, Pellwood Pa. Jefferson Medical College of Philadelphia 1886, member of the Medical Society of the State of Pennsylvania, for many years served on the school board, in 1936 at a meeting of the Sixth Council District of the Medical Society of the State of Pennsylvania received a certificate for fifty years of medical practice, aged 85, died February 4, in a hospital at Altoona of general arteriosclerosis and a fracture of the right hip due to a fall.

Henry L. Mosher, Lyndhurst N. J. University and Bellevue Hospital Medical College New York 1925, member of the Medical Society of New Jersey, member of the board of health of Lyndhurst, served on the staffs of the Hackensack (N. J.) Hospital and the West Hudson Hospital Kearney, aged 43, died February 22.

Donald A. Murray, Seattle, University of Toronto Faculty of Medicine Toronto Ont. Canada 1906, member of the American Academy of Orthopaedic Surgeons, fellow of the American College of Surgeons, served as vice president of the Pacific Northwest Orthopaedic Society, served during World War I, aged 63, on the visiting staffs of the King County Hospital Unit number 1 (Harborview) and the Swedish Hospital where he died February 3, of hypertension and arterio sclerosis with congestive failure.

Jens L. Ohnstad, McIntosh Minn., Minneapolis College of Physicians and Surgeons, 1903, member of the Minnesota State Medical Association, owner of the City Hospital, aged 74, died, February 23, of cerebral hemorrhage.

Marshall John Payne, Staunton Va. Jefferson Medical College of Philadelphia 1893, formerly vice president of the Medical Society of Virginia, past president of the Augusta County Medical Society, fellow of the American College of Surgeons, past president of the Association of Surgeons of the Chesapeake and Ohio and Norfolk and Western Railways, past president of the Rotary Club of Staunton, aged 71, died, February 11, of coronary occlusion.

Wesley Hamilton Peck, Highland Park, Ill. College of Physicians and Surgeons, New York 1888, member of the Illinois State Medical Society, past president of the Chicago Ophthalmological Society, served on the staffs of the Oak Park (Ill.) Hospital Columbus John B. Murphy and Mercy hospitals, Chicago and St. Francis Hospital Evanston, otolaryngologist to the Atchison Topeka and Santa Fe Railway Company, aged 79, died, February 26, of myocarditis and hypertension.

Colvin C. Perdue, Mobile Ala., Tulane University of Louisiana School of Medicine New Orleans 1919, member of the Medical Association of the State of Alabama, fellow of the American College of Surgeons, on the staffs of the City Hospital, Mobile Infirmary and the Providence Hospital, aged 51, died February 4, of chronic myocarditis and cirrhosis of the liver.

Sherman Rogers, Tulare Calif. College of Physicians and Surgeons, medical department of the University of Southern California, Los Angeles 1917, member of the California

Medical Association, served during World War I, visiting physician to the Tulare and East Tulare hospitals, aged 51, died February 19, of heart disease and cirrhosis of the liver.

George Francis Rozelle Jr., Dallas Texas, Baylor University College of Medicine Dallas, 1939, aged 33, died recently of pulmonary tuberculosis.

Robert Randolph Sisson, Kitzmiller, Md. Medical College of Virginia Richmond 1929, aged 43, died February 21, of acute dilatation of the heart and chronic myocarditis.

James Brown Smith, Memphis Tenn. University of Tennessee Medical Department Nashville 1893, aged 71, died, February 6.

Alonzo De Moines Snyder, Huntington Park, Calif., Kentucky School of Medicine Louisville 1897, member of the California Medical Association, aged 71, died February 16, in the California Hospital Los Angeles of carcinoma.

Roscoe Conkling Tarbell, Groton N. Y., Syracuse University College of Medicine 1901, member of the Medical Society of the State of New York, served as health officer, aged 67, died March 8, of heart disease.

Joseph Taliaferro Taylor, Adams Run S. C. Medical College of the State of South Carolina Charleston 1899, member of the South Carolina Medical Association, past president and formerly member of the state board of medical examiners, in 1934 was appointed a member of the Sanitary and Drainage Commission of Charleston County, aged 72, died February 20, of heart disease.

George Allingham Trueman, Munising Mich., Rush Medical College Chicago 1894, first mayor of Munising 1915-1916, formerly chairman of the Alger county board of supervisors, county coroner and president of the Munising township board of education, served on the staff of the Munising Hospital, aged 72, died suddenly February 22, of heart disease.

Charles Edward Tucker, Metropolis Ill. St. Louis College of Physicians and Surgeons 1892, served as local surgeon for the Chicago and Eastern Illinois Railroad Company, captain in the medical reserve corps of the U. S. Army, not on active duty, served during World War I, for many years examining physician for the Veterans Bureau, aged 74, died February 20, of heart disease.

Lynn Seeley Van Gorder, Lynden, Wash. University of Oregon Medical School, Portland, 1930, member of the Washington State Medical Association, member of the staffs of St. Joseph's Hospital and St. Luke's Hospital Bellingham, aged 38, died February 7, of carcinoma of the stomach following ulcers.

Vincent Charles Vielhaber, St. Louis, St. Louis University School of Medicine 1938, diplomate of the National Board of Medical Examiners, aged 29, died, February 25, in St. Mary's Hospital of glomerulonephritis and hypertensive vascular disease.

Arthur Edward Walters, Springfield, Ill., St. Louis University School of Medicine 1905, at one time vice president of the Illinois State Medical Society and president of the Sangamon County Medical Society, served for two terms as president of the Springfield park board, aged 60, died, March 1, of coronary thrombosis.

Joshua Thomason Ward, Laredo, Texas, University of Texas School of Medicine Galveston, 1898, member of the State Medical Association of Texas, aged 69, died, February 25.

Archibald A. White, New York, Fordham University School of Medicine, New York, 1920, aged 48, died, February 26.

James Richard Williams, Richmond Va. Medical College of Virginia Richmond, 1898, member of the Medical Society of Virginia, at one time demonstrator of operative surgery at his alma mater, aged 67, died February 18, of hypertensive cardiovascular disease.

D. L. Wood, Killeen Texas, College of Physicians and Surgeons Dallas 1905, member of the State Medical Association of Texas, aged 71, died February 23, in the Kings Daughters Hospital, Temple, of myocarditis and diabetes mellitus.

Michael George Yeager, Mercer Pa., Western Pennsylvania Medical College Pittsburgh 1897, for many years house physician on the staff of the Mercer County Home and Hospital on the staff of the Mercer Cottage Hospital, served during World War I, physician for the Bessemer and Lake Erie Railroad Company, aged 69, died, February 17, of carcinoma of the lung.

Correspondence

HOUSSAY RESENTS CENSORSHIP OF MEDICAL PERIODICALS ADDRESSED TO ARGENTINA

To the Editor—The censorship of the United States has delayed the arrival of some issues of *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* in the June 20, 1942 issue of which page 615 the censor has cut out a paper. I have had to write several letters about the censorship problem, and I would appreciate your printing this one.

Since the beginning of the war I have been a firm supporter of the Allied countries, especially France, England and the United States. I have expressed my sympathy in public whenever the occasion arose. During the Spanish civil war I presided over the committee of aid to the Spanish intellectuals. Two years ago I attended for the first time in my life, together with the ex-president of the Argentine Republic, Dr. M. I. de Alvear, the leader of the Socialist party, Dr. N. Repetto, and the ex-minister of foreign affairs, Dr. J. M. Cantilo, a public political meeting the "Cibildo Abierto" of "Accion Argentina" over which we presided and in which we spoke in favor of the Allied cause.

When the United States and Brazil entered the war I expressed openly my warm feelings in sympathy with these countries and I am a supporter of the most thorough cooperation of our country in the war.

I point out all these circumstances in order that you may understand the painful impression produced on me by the methods employed by the Board of Censors of the United States concerning the medical and biologic journals which has decided to forbid the mailing to this country of the November 1942 issue of the *Proceedings of the Society for Experimental Biology and Medicine* because it contains some articles which in the opinion of the Board of Censors may be of use to the enemy. Such procedure, as I understand, contradicts the most elemental principles of freedom.

It is practically impossible to forbid the knowledge of medical methods once they have been published in scientific journals. If some procedure is to be kept secret, and I think it is inhuman to keep secrets in medicine, it must not be published anywhere. The inefficiency of the actual measure is evident, since the journals containing the "secret articles" can be brought from other South American countries by our ships or by other foreign ships, or we can go to read them or ask for photostatic copies of them at any moment (Santiago de Chile is only six hours from Buenos Aires and Montevideo one hour).

Besides, we may know what is being published in the United States by the English medical and biologic journals, to which no censorship is applied. Also we may know what is published in the American journals by the abstracts published in the Spanish journals. Censorship to medical and biologic journals has not been applied even by Germany, as we received the scientific journals from that country until the war with Russia began. Since then we have received the abstracts of German papers which are published in the Spanish medical journals. So that with the present methods of censorship the United States, a friendly country, is the only country in the world that restricts the diffusion of scientific knowledge in Latin America.

Of course, I can by no means agree that the journals objected to should be sent to me with any articles or paragraphs cut out or crossed out as the Board of Censors has proposed. Such procedures resemble those used by the Nazis when they burned books. I prefer the numbers to be held there for the duration of the war better than to receive them with such mutilations. I would never accept such procedure.

To forbid that a method of medical treatment should be known by other men, friends or enemies, is contrary to Christian morality, to medical ethics and to the high principles of freedom and civilization. Not even the Nazis have committed such a fault.

It would be a stroke of puerility and foolish pride to believe that the war can be won by preventing some medical papers from being known by the enemies.

I hope for the sake of the well earned prestige of the United States, and in view of the high moral principles for which that country struggles, that these methods will soon be changed.

With my sincerest wishes for the victory of the Allies, I am,

Respectfully yours,

B. A. HOUSSAY, Buenos Aires

EXTERNAL USE OF COD LIVER OIL

To the Editor—In the report of the Council on Pharmacy and Chemistry on the status of the external use of cod liver oil, *THE JOURNAL*, March 6, I noted two references to my publications on this subject. As these references give a somewhat misleading impression of the scientific findings, I think they should be clarified.

In the paper published in the October 1941 issue of *Annals of Surgery* Dr. Emanuel Papper and I reported that

"In the vitamin A deficient groups, A and G, receiving no cod liver oil locally, the symptoms of vitamin deficiency persisted after wounding. These symptoms included loss of weight, fur changes, anorexia, humpback, crusting of the nose and eyes, and xerophthalmia. The average loss of weight in these two groups was 32 Gm during the period of observation. In group C, where the wounds were treated with cod liver oil, there was an average gain of 16 Gm during the experimental period. Although the symptoms of vitamin A deficiency persisted in some of the animals, they were much less severe and less frequent. This was not due to licking the oil off the wounds, as the metal caps placed on the wounds prevented the animal from reaching the wound with his paws or tongue."

The gain in weight plus the fact that the symptoms of vitamin A deficiency were improved and less frequent than in the group that received no cod liver oil locally seems to indicate that the vitamin A derived from the cod liver oil applied locally cleared up the symptoms of vitamin A deficiency. This seems to be a definite indication that vitamin A and/or D may be absorbed by the local application of cod liver oil.

The following statement appears in the report of the Council

"Brandaleone and Papper studied microscopically the scars occurring in their animals but report no differences which may have occurred as a result of varying treatments."

Nowhere in our article is any mention made of microscopic study of scars. However, there is a paragraph which reads as follows:

"In the wounds treated with cod liver oil, the edges were even in contrast to the irregular edges in the untreated wounds, profuse granulation tissue was evident, and epithelization occurred earlier than in the untreated group, and was more abundant. The wounds finally closed leaving a small, white scar."

This was not referring to any microscopic study. However, a microscopic study was made and was reported as part of a thesis for the degree of medical science at New York University in 1938. The results may be thus summarized:

Microscopic sections of the wounds of normal and vitamin A deficient rats were studied. These rats were subdivided into groups that had cod liver oil applied to the wounds and those that had nothing applied to the wounds. The vitamin A deficient group with nothing applied to the wounds showed pro-

showed retardation in healing. The groups that received cod liver oil on their wounds showed lipid material in the interstitial tissue. The normal group irrespective of the use of cod liver oil showed much more exuberant granulation tissue and earlier evidence of healing than the vitamin A deficient group of rats. However, in the vitamin A deficient group those rats that received cod liver oil locally developed evidence of granulation tissue earlier than the group that received nothing locally. In addition in the group of vitamin A deficient rats with cod liver oil applied locally the wounds showed evidence of more rapid healing and none remained unhealed as long as the group treated received no cod liver oil locally.

The fact that lipid material could be seen in the interstitial tissues is another point indicating the absorption of cod liver oil when applied locally.

HAROLD BRANDARTO, M.D., New York

MEAT PRODUCTS NOT A CAUSE OF TRANSFUSION REACTIONS

To the Editor—My attention has been called to a quotation from the magazine *Good Health* which represents a gross misinterpretation of findings secured in a study on experimental blood transfusion in dogs. I have noted and reported that blood secured from a donor recently fed a mixed carbohydrate protein meal, i. e. one to two hours prior to transfusion, will cause a definite reaction in a fasted recipient despite the fact that the bloods were mutually comparable, that the incidence of reactions was less frequent when the donor was fed protein alone, still less so when fed carbohydrate or when fasted and that reactions never occurred when a fat fed donor was used. Furthermore, a transfusion reaction was never observed to occur when both donor and recipient animals were fed prior to transfusion. I employed as a protein meal the whites of four eggs, as a carbohydrate meal 100 Gm of glucose, and the mixed meal was a combination of the two.

I have felt that this work might provide an explanation of clinically encountered transfusion reactions of obscure origin and I indicated that overeating on the part of a donor shortly before he gives blood might lead to unhappy consequences for the recipient. Nowhere in these studies have I indicated that meat or meat products possess any toxic properties. Therefore the statement as printed in *Good Health* represents a complete distortion and is totally without foundation.

A. C. ISS, PH.D., M.D.,
Northwestern University, Chicago

MARMOLA

To the Editor—In the April 17 issue of THE JOURNAL, page 1287 there is a misstatement of fact. You have listed Dr. Benjamin H. Schlomovitz as professor of pharmacology and toxicology, Marquette University Medical School, among those who testified in behalf of Marmola. Dr. Schlomovitz has never been specifically professor of pharmacology and toxicology at the Marquette University School of Medicine. From 1920 to 1923 Dr. Benjamin Schlomovitz was professor of physiology and pharmacology, but for the last twenty years he has not been associated with the Marquette University School of Medicine. This information has been given to Dr. A. J. Carlson, professor of physiology at the University of Chicago.

EBEN J. CAREY, M.D., Milwaukee
Dean Marquette University
School of Medicine

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL May 1, page 57.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. Parts I and II August 24. Part III June 21 also at various times at various centers having 5 or more eligible applicants. See Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIOLOGY. Written Philadelphia Sept. 2. Oral Philadelphia Nov. 5. Final date for filing application is August 10. See Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE. Oral Philadelphia May 29 and Chicago June 21. Written Oct. 15. Final date for filing application is Sept. 1. Asst. Sec. Dr. William A. Werrell, 1301 University Ave., Philadelphia.

AMERICAN BOARD OF OPHTHALMOLOGY. Parts I and II. New York City June 15. October 5. See Dr. John Green, 6530 Waterman Ave., St. Louis.

AMERICAN BOARD OF PEDIATRICS. Written Locally Oct. 8. Oral New York Nov. 20-21. Final date for filing application is Aug. 1. Starting July 1, 1945 Group I will be abolished. See Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts—Strain Accelerating Preexisting Pathologic Condition.—The workman, a man 64 years of age, 5½ feet tall and weighing 200 pounds apparently had diabetes and arteriosclerosis. In the course of his employment in assembling a cabinet it was necessary for him to enter the cabinet and work in a cramped position to place screws in place on the inside. The temperature in the room in which he was working was 75 degrees but it was much warmer inside the cabinet, over which there were steam pipes. He was perspiring freely. His knees buckled and he fell against another employee working with him. A few hours later he died from a cerebral hemorrhage. The industrial commission of Ohio refused an award of compensation, and suit was brought for compensation in the court of common pleas of Hamilton County, which affirmed the finding of the commission and an appeal was perfected to the court of appeals of Ohio, Hamilton County.

That an award of compensation, said the court, is proper if the deceased met his death because of an injury received during and because of the employment causing acceleration of a pre-existing disease cannot be doubted. Arteriosclerosis is what is commonly called hardening of the arteries which, owing to excess of lime deposits, lose their elasticity and thus retard the flow of blood through them. They become brittle and if by reason of strain or exertion the pressure of blood is increased may crack or break. The arteries in the brain are in many cases very small and this brittleness presents a condition of extreme danger to the individual, since a break in one of such arteries is almost certain to cause death on the flooding of the brain area. It is the undisputed evidence of the physicians who attended the deceased workman that while he was working and due to the strain and increased blood pressure and the condition of his arteries, he died because one of the arteries in the brain cracked or split under such pressure flooding his brain and causing his death a few hours after the injury. If the bones of the workman had become porous or unduly brittle because of disease and while trying to drive home a screw his shoulder blade had broken, it can hardly be supposed that compensation should be denied. What difference is there in actual effect in the two situations—a brittle blood vessel, a brittle bone? That the strain that was present in this case was within the meaning of the term "injury" as used in the Ohio workmen's compensation act the court felt clear, since there the term

is defined to "include any injury received in the course of, and arising out of, the injured employee's employment" (117 Ohio Laws, p. 109)

The appellate court accordingly reversed the judgment against the claimant and remanded the case for a new trial—*Saunders v. Industrial Commission* 11 N. E. (2d) 282 (Ohio, 1942)

Dental Practice Acts Power of Licensing Board to Define by Regulation Standards of Professional Conduct—A clothing store in New York operated a "dental credit service" for its customers for dental work to be supplied by cooperating dentists. The "service" would discount by approximately 30 per cent the fee the dentist would fix paying the balance in cash to the dentist and presumably eventually collecting in full from the store customer. Cherry, a dentist licensed to practice in New York, cooperated in this plan and in two years obtained about 25 patients by such means. Proceedings were instituted to revoke or suspend his license to practice dentistry on the grounds that he was guilty of "unprofessional conduct" because by reason of his connection with the credit service he made use of and employed the dental credit agency as advertising solicitors and free publicity press agents to obtain patients. The dental board found him guilty and recommended that he be merely reprimanded because he ceased his connection with the service as soon as he was notified that the service was deemed objectionable by the board. The board of regents of New York, however, rejected the recommendation of reprimand and instead suspended for six months Cherry's license to practice. Cherry instituted court proceedings to set aside the order of the board of regents. The matter eventually reached the Court of Appeals of New York.

The New York dental practice act, said the Court of Appeals, authorizes, as far as is here material, the revocation or suspension of a license to practice dentistry or the reprimanding of a licensee who (1) has advertised for patronage by means of hand bills, posters, circulars, stereopticon slides, motion pictures, radio or newspapers or (2) has been otherwise or in any other way guilty of unprofessional conduct. The acts which Cherry is charged with committing, unless they constitute unprofessional conduct, are not embraced in the grounds for disciplinary action stated in the dental practice act, and the order of the board of regents suspending Cherry's license for six months must be annulled unless it appears that Cherry has been guilty of such conduct. Cherry argued that the term "unprofessional conduct" as specified in the act as a cause for the revocation or suspension of a license is so vague that the legislature has in effect delegated to the board of regents unfettered discretion to determine what shall be sufficient cause for disqualification of a dentist. The legislature, of course, answered the court, could neither grant to an administrative board or quasi-judicial tribunal the power to impose a penalty on a dentist for an act or conduct not defined in advance nor the power to define, in accordance with an unfettered discretion, the acts or conduct which would justify disciplinary action against a dentist.

Such unlimited power, continued the court, is not claimed by the board. It claims that whether an act or conduct of an accused dentist is "unprofessional" may be determined by the standards recognized by the dental profession as "ethical" and that the legislature may properly leave to a quasi-judicial body the task of ascertaining and applying those standards in a particular case. Hence the legislature, so it argues, has properly delegated to it power to define "ethical" professional standards and to adopt rules and regulations prohibiting acts or conduct which do not, in its opinion, conform to such standards. Acting in accordance with such a contention the board has adopted "regulations governing dental advertising" which, in effect, provide that stated forms of dental advertising are unprofessional. Among these is "employing or making use of advertising solicitors or free publicity press agents." These regulations are an attempt to define "ethical" professional standards. The specific supervisory powers of the board of regents over the practice of dentistry enable it, within reasonable limits, to prescribe canons by which conduct deemed by it, in the exercise of fair judgment, to be unprofessional and

objectionable may, in the interest of rescuing that profession from vulgar commercialism, be banned. The field in which that power may be exercised is nonetheless subject to restriction by the legislature, and the board of regents cannot by the exercise of that power enlarge on the causes set out in the act for which the license of a dentist may be revoked or suspended.

The court then referred to the fact that that section of the dental practice act enumerating causes for disciplinary action as it was originally enacted (Laws 1927, ch. 85) provided for disciplinary action in instances in which the accused dentist had "been guilty of unprofessional or immoral conduct," or of gross ignorance or inefficiency in his profession, "or of fraud or deceit in procuring admission to practice." The statute in that form, said the court, placed no restriction on the means of publicity or the form of advertising that a dentist might use, but the board of regents adopted regulations declaring that certain forms of advertising were improper and unprofessional and this court in *Matter of Dr. Bloom, Dentist, Inc. v. Cruise*, 259 N. Y. 358, 182 N. E. 16, approved the assumption of that power by the board of regents. Thereafter the legislature amended that particular section, adding as a specific cause for the disciplining of licensees "that the dentist is guilty of untrue, fraudulent, misleading or deceptive advertising." Regulations promulgated by the board purported to impose more drastic restrictions. Since the legislature had undertaken to impose a specific restriction on dental advertising, this court in *Brown v. University of State of New York*, 266 N. Y. 598, 195 N. E. 217, held that the board of regents could not adopt different or additional restrictions prohibiting the use of particular means of publicity, that the regulation of the board of regents was for that reason invalid and that the statute imposing specific restriction on advertising impliedly sanctioned advertising that did not violate the specific statutory restrictions. Thereafter, the legislature itself determined that the means of publicity which the board of regents had attempted to ban by regulation should, with some exceptions, be banned by statute and amended this particular section accordingly as it now reads, in effect, prohibiting advertising for patronage by means of hand bills, posters, circulars, stereopticon slides, motion pictures, radio or newspapers.

It should be noted, continued the court, that in *Brown v. University of State of New York*, supra, this court did not hold that the challenged rule or regulation of the board of regents was unreasonable. We did not question that in the exercise of the police power the state could place such a restriction on dental advertising. We held there, however, that the regulation of the board of regents was invalid only because the legislature having itself fixed a standard for dental advertising and having provided that failure to abide by such standard was ground for revocation of a license had by necessary implication sanctioned advertising which did not transgress the express ban of the statute and had not delegated to the board of regents power to provide other standards of permissible advertising or to create additional grounds for revocation of license. Though the legislature has thereafter by amendment of the statute placed a ban on the use of some of the means of advertising which the board of regents had attempted to ban by regulation, the ban is not complete with respect to all forms of advertising. The legislature has specifically banned advertising "for patronage by means of hand bills, posters, circulars, stereopticon slides, motion pictures, radio or newspapers." Publicity or advertising by other means is still impliedly sanctioned by the statute. The reasons which dictated the decision in *Brown v. University of State of New York* constrain the courts, with even more compelling force, to declare invalid any assumption by the board of regents, such as is here involved, to ban by rule or regulation such other means of publicity or advertising.

The board of regents, continued the court, cannot suspend or revoke the license of a dentist for any cause not specified in the dental practice act. It cannot ban as unprofessional conduct which has been impliedly sanctioned by the legislature. Nor can it by regulation ban, as unprofessional conduct which, though not expressly or impliedly sanctioned by the legislature, accords with the standards accepted as

proper by the consensus of practitioners in that field. Even so there remains a large field in which the board of regents may by the exercise of its specific supervisory power prescribe canons by which conduct deemed by it in the exercise of fair judgment to be unprofessional and objectionable is banned. Though a breach of a regulation or canon prescribed by the board of regents is not of itself and in all cases sufficient ground for discipline it may be sufficient if the regulation or canon is reasonable and the conduct which has been specifically banned by the regulation may fairly be classed as unprofessional. The rule adopted by the board that the employing or making use of advertising solicitors or free publicity press agents constitutes unprofessional conduct may be invalid under *Brown v. University of State of New York* if the principles announced in that case were rigidly applied. However it must be considered that the employment and use of advertising solicitors and free publicity press agents are ordinarily for purposes and in a manner which would be regarded as unprofessional and improper and the dentur practice act should not be construed as an implied sanction of such employment or use. Nonetheless, there may be occasions when advertising solicitors or free publicity press agents may be employed or used for purposes and in a manner that could not reasonably be regarded as unprofessional and the board of regents cannot by general regulation ban proper use and improper use indiscriminately. The court apparently believed that under the circumstances Cherry's conduct in his connection with the credit service was not unprofessional and accordingly ordered in effect that the order of the board of regents suspending Cherry's license be set aside.—*Cherry v. Board of Regents of University of State of New York* 44 N. E. (2d) 405 (N. Y., 1942)

Society Proceedings

COMING MEETINGS

HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION, CHICAGO, BEGINNING JUNE 7. DR. OLIN WEST, 535 NORTH DEARBORN ST., CHICAGO, SECRETARY.

American Association of Genito-Urinary Surgeons, Stockbridge, Mass., June 10-12. Dr. Charles C. Higgins, 2020 East 93d St., Cleveland, Secretary.

American Association of Industrial Physicians and Surgeons, Rochester, N. Y., May 25-27. Dr. E. C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.

American Association on Mental Deficiency, New York, May 12-15. Dr. Neil A. Dayton, Mansfield Training School, Mansfield Depot, Conn., Secretary.

American College of Radiology, Chicago, June 6. Mr. Mac F. Cahal, 540 North Michigan Blvd., Chicago, Executive Secretary.

American Gynecological Society, Hershey, Pa., May 31-June 2. Dr. Howard C. Taylor, Jr., 842 Park Ave., New York, Secretary.

American Ophthalmological Society, Hot Springs, Va., June 10-12. Dr. Walter S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary.

American Psychiatric Association, Detroit, May 10-13. Dr. Winfred Overholser, St. Elizabeth's Hospital, Washington, D. C., Secretary.

American Psychoanalytic Association, Detroit, May 9-11. Dr. Leo H. Bartemeier, General Motors Bldg., Detroit, Secretary.

American Society of Clinical Pathologists, Chicago, June 4-6. Dr. Alfred S. Giordano, 531 North Main St., South Bend, Ind., Secretary.

American Surgical Association, Cincinnati, May 13-14. Dr. Warfield M. Firor, Johns Hopkins Hospital, Baltimore, Secretary.

Connecticut State Medical Society, New Haven, May 25-27. Dr. Creighton Barker, 258 Church Street, New Haven, Secretary.

Georgia Medical Association of Atlanta, May 11-14. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.

Illinois State Medical Society, Chicago, May 18-20. Dr. Harold M. Camp, 224 South Main St., Monmouth, Secretary.

Massachusetts Medical Society, Boston, May 24-26. Dr. Michael A. Tighe, 8 Fenway, Boston, Secretary.

Minnesota State Medical Association, Minneapolis, May 17-19. Dr. B. B. Souster, 493 Lowry Medical Arts Bldg., St. Paul, Secretary.

Mississippi State Medical Association, Jackson, May 11-13. Dr. T. M. Dye, Clarksdale, Secretary.

New Hampshire Medical Society, Manchester, May 11. Dr. Carleton R. Metcalf, 5 South State St., Concord, Secretary.

New Jersey Medical Society of Newark, May 25-26. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.

North Carolina Medical Society of the State of Raleigh, May 10-12. Dr. Roscoe D. McMullan, Red Springs, Secretary.

North Dakota State Medical Association, Bismarck, May 10-11. Dr. L. W. Larson, 221 Fifth Street, Bismarck, Secretary.

Oklahoma State Medical Association, Oklahoma City, May 11-12. Dr. Lewis J. Moorman, 210 Plaza Court Bldg., Oklahoma City, Secretary.

Rhode Island Medical Society, Providence, June 2-3. Dr. William P. Buffum, 122 Waterman St., Providence, Secretary.

West Virginia Medical Association, Charleston, May 17-18. Mr. Charles Lively, 1031 Quarrier St., Charleston, Executive Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Fifty-fifth Annual Meeting, Held in Chicago, Nov. 6 and 7, 1942

The President, DR. ALFRED R. BARNES, Mayo Clinic, Rochester, Minn., Presiding

(Continued from page 10)

The Nature and Properties of Antirenin

DR. HARRY GOLDBLATT, YALE I. KATZ, PH.D., DR. HARVEY A. LEWIS, LARRY RICHARDSON, A.B., A. GUILLERMO-ROJAS and DR. IRENE GOTTMAN, Cleveland. The daily intramuscular injection into dogs of a small quantity (1 arbitrary unit) of active hog rennin for three to five months results in the development of a factor in the blood which prevents the pressor effect of a large dose (20 or more units) of hog rennin when it is injected intravenously into such dogs. The intravenous injection of hog rennin does not result in the development of antirenin in the serum. In our laboratory a unit of rennin is defined as the minimum quantity which will raise the direct mean femoral blood pressure of an unanesthetized trained dog weighing between 10 and 20 Kg. by 30 mm. of mercury. To the effective substance in the blood Wakerlin and Johnson have given the name antirenin. The development of antirenin can be hastened by the administration of large quantities of rennin. The blood serum of such dogs is also capable of inactivating or destroying rennin 'in vitro' so that a mixture of rennin and antiserum does not produce the usual pressor effect when it is injected intravenously into normal dogs. We have found that the effect of rennin antiserum is virtually instantaneous both 'in vitro' and 'in vivo' and that the reaction does not require eighteen hours or more as first suggested by Wakerlin and Johnson. Hog rennin antiserum is effective both 'in vitro' and 'in vivo' against the rennin of other animals but not against human rennin. In dogs with the highest antirenin titer the intravenous injection of angiotonin (hypertensin) still continues to be as effective in raising the blood pressure as in normal animals. There is no increase in hypertensinase (angiotoninase or angiotonin inhibitor) in rennin antiserum. The prehypertensin level of rennin antiserum is equal to that of normal animals.

DISCUSSION

DR. G. E. WAKERLIN, Chicago. We agree with Dr. Goldblatt that the 'in vitro' neutralization of rennin by antirenin occurs practically immediately. We prefer to use the etherized bilaterally nephrectomized dog for assaying rennin, although the unanesthetized dog is a satisfactory assay animal. The use of the term 'kidney cortex equivalent' may be somewhat ambiguous. However, as our rennin solutions are prepared by Dr. Johnson they are relatively constant in pressor activity, so that to us renal cortex equivalent has meaning. We also found that the development of antirenin depends on the amount and frequency of administration of rennin. It is interesting to note that in the rabbit antirenin can be produced by intravenous injections of rennin as we have shown but in the dog for some reason intravenous injections of rennin do not give rise to antirenin. The titer of antirenin will vary somewhat in different dogs. In our first therapeutic experiment 1 dog continued to show antirenin in his serum for a year after injections of hog rennin were stopped, although his blood pressure returned to the pretreatment hypertensive level four or five months after the discontinuance of treatment. We have treated 4 hypertensive dogs with a second course of partially purified hog rennin with good antirenin titers developing early but with no reduction in blood pressure until the dosage of partially purified hog rennin extract was doubled. In these experiments we also treated 1 hypertensive dog with highly purified hog rennin and another hypertensive animal with smaller doses of partially purified hog rennin without any decreases in blood pressure although antirenin in good titer developed early in treatment. We have treated a group of hypertensive dogs with large doses of highly purified hog rennin and have seen reductions in blood pressure somewhat less satisfactory than we have previously seen with smaller doses of partially purified hog rennin, suggesting that the antihypertensive activity is due to some constituent of the extract other than rennin. Although one of these animals treated

with highly purified hog renin showed a satisfactory reduction in blood pressure early in treatment no antirenin appeared in his serum until late in the course of therapy. We are also completing an experiment in which 2 out of 3 hypertensive dogs showed blood pressure reductions with large doses of heat inactivated hog renin, although no antirenin ever appeared in their serums. In our prophylactic experiments we have also obtained evidence against antirenin being the mechanism involved in the successful prophylaxis of experimental renal hypertension. Thus prophylaxis apparently succeeded in 1 of the dogs given dog renin and in 1 of the animals receiving heat inactivated hog renin, although antirenin never appeared in their serums. Moreover, the dogs protected by hog renin and by rabbit renin have remained normotensive for many months after antirenin disappeared from their serums following treatment. In spite of these objections to the antirenin hypothesis however, the therapeutic and prophylactic effects of partially purified hog renin in experimental renal hypertension may be due to antirenin. We are now beginning a group of experiments which should go a long way toward determining whether antirenin is the mechanism whether some other type of immune or antihormone response to renin is involved or whether the antihypertensive activity is due to some constituent of the renin solutions other than renin.

DR. A. C. CORCORAN, Indianapolis. Human monkey and baboon renins and renin activators interact to yield angiotonin, while their renin activators do not interact with other mammalian renins. One might then suggest that renins from one or the other of these species be used for studies of antirenin in human beings, monkeys and baboons. Our tentative use of the term 'renin activator' was meant only to signify that in its absence renin was inactive and when the reaction was shown to be enzymatic, the term was retained until the nature of the reaction was fully elucidated. Complete evidence that renin, an enzyme, acts on alpha globulin as substrate will be presented by Drs. Plentl and Page. The so-called renin activator is identical with alpha globulin and, as suggested by Page and Helmer to this group three years ago, is the substrate on which renin acts to liberate angiotonin. With regard to the pyrogenicity of renal extracts used in the experimental treatment of arterial hypertension, Dr. Page and his associates have described their occurrence and course in some detail. These "nonspecific" reactions (I object to the term nonspecific for a mechanism which follows a predictable course of altered physiology) do not account for all the effects observed with the extracts, since their occurrence has not been of the daily or weekly character which occurs with injections of pyrogens such as typhoid vaccine. Such activity did participate in some of our results, but that we had accepted the wholly "nonspecific" activity of the extracts was not, I am sure, the impression that Dr. Goldblatt wished to convey.

DR. HARRY GOLDBLATT, Cleveland. Although Dr. Wakerlin insists that antirenin is not the factor responsible for the prevention and cure of experimental renal hypertension which can be accomplished by daily intramuscular injections of renin, yet we are of the belief that our own experiments do definitely indicate this possibility. More work will have to be done to prove this important point. I can tell Dr. Corcoran that we are already using the Macaque monkey in our studies, but it is too early to report results.

Nature of Renin Activator and the Reaction Between It and Renin

DRS. ALBERT A. PLENTL and IRVINE H. PAGE, Indianapolis. Several years ago investigations conducted in the Lilly Clinic showed that renin was vasoactive unless allowed to interact with a globulin fraction of plasma with the formation of angiotonin. While several reasons were given for the thesis that the reaction was enzymatic in nature, no strict proof was presented that this was so. Braun-Menendez suggested the same thesis but also offered no strict proof. Such proof can be furnished only by a kinetic analysis.

Enzymatic reactions are the biologic counterparts of catalytic reactions, hence the catalyst (enzyme) does not take part directly in the reaction, yet its presence is essential for the reaction to occur. Such reactions must follow the course prescribed by a monomolecular reaction (first order reaction).

The action of renin on renin activator was studied and the reaction constant (velocity) found to be directly proportional to the renin concentration. Plotting the logarithm of the concentration of the product (angiotonin) against time produces a straight line. These observations constitute proof that the reaction rigorously satisfies the requirements of a monomolecular reaction. Renin is therefore the enzyme and renin activator the substrate.

Renin activator is usually obtained from the globulin fraction of hog or cow serum. Electrophoretic analysis of a representative sample indicated that it is a mixture of alpha, beta and gamma globulins and a small amount of albumin, its major constituent being alpha globulin (56 per cent). Repeated fractional precipitation of globulins within narrow limits of ammonium sulfate led to the isolation of each constituent in reasonably pure form. Incubation of renin with beta and gamma globulins as well as albumin did not give any angiotonin, while alpha globulin gave twice as much as the original "renin activator". The substance referred to as "renin activator" is therefore identical with or has the same electrophoretic mobility as alpha globulin.

An appreciable quantity of angiotonase could be demonstrated in the albumin fraction, while none could be found in the globulins.

Mechanism of Auricular Paroxysmal Tachycardia

DRS. PAUL S. BARKER, FRANK N. WILSON and FRANKLIN D. JOHNSTON, Ann Arbor, Mich. Auricular paroxysmal tachycardia cannot readily be induced or studied in experimental animals. Speculations as to its nature must be based on pertinent observations on man. We wish to examine the evidence that this disorder is due to circus rhythm in the auricles, the path of which involves one of the specialized auricular nodes.

The available evidence suggests that somehow these nodes are involved in the abnormal mechanism. In all but 2 of 100 unselected cases the form of the auricular deflections was consistent with their origin in or near the auriculoventricular node or some part of the sinoauricular node. The slowing and termination of attacks by vagal stimulation and by digitalis are most logically explained by their effects on the nodes, as is the occasional acceleration of the rate by exercise. Furthermore, atrioventricular block is rare, especially in paroxysms arising in or near the auriculoventricular node.

That the abnormal mechanism is a circus rhythm is suggested by the abrupt onset and termination of attacks, by the remarkable stability of the rate, by the slowing and termination of attacks by quinidine and by the occasional alternation of cycle length.

Nevertheless the circus rhythm of auricular paroxysmal tachycardia must be of a special kind, different from that of auricular flutter and fibrillation. This is indicated by the slowing and termination of attacks by vagal stimulation and by digitalis, by the acceleration of the rate by exercise, by the relatively slow rate and long cycle length and by the separation of the auricular deflections by isoelectric intervals.

No one of these features of auricular paroxysmal tachycardia is of itself decisive, but all together point strongly toward circus rhythm involving one of the nodes. This mechanism alone can account adequately for the abrupt onset and termination of the paroxysms, the stability of the rate, the form of the auricular deflections and their separation by isoelectric intervals, the relatively slow rate and long cycle length, the occasional alternation of cycle length, the rarity of atrioventricular block and the impossibility of producing it in most cases, the acceleration of the rate by exercise, and the slowing and termination of attacks by vagal stimulation, digitalis and quinidine.

DISCUSSION

DR. G. E. WAKERLIN, Chicago. From a physiologic standpoint the vagus is relatively insensitive to direct pressure. When one speaks of stimulation of the vagus by pressure in man one really means stimulation of the carotid sinus with reflex increase in the inhibitory effects of the vagus.

DR. PAUL S. BARKER, Ann Arbor, Mich. I used the term "vagal stimulation" for brevity.

(To be continued)

Current Medical Literature

AMERICAN

The American Medical Association has published the American and Canadian Medical Literature for a period of three days. The journal is published weekly at a price of \$1.00 per copy. The journal is published by the American Medical Association, 535 North Dearborn Street, Chicago, Illinois. The journal is published by the American Medical Association, 535 North Dearborn Street, Chicago, Illinois. The journal is published by the American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

Titles marked with an asterisk (*) are of special interest.

American Journal of Hygiene, Baltimore

37 1-120 (Jan) 1943

- *Immunologic Reactions in Subclinical Trichinosis. S. I. C. and Ann. Arl. Mich.—p. 1.
- Experimental Attempts to Infect Man with Asian Malaria. S. B. McEwen. Columbia S. C.—p. 19.
- Hisidric Admittance of Virus of Fox Encephalitis. J. C. Patton. St. Helena Ore. and R. C. Green. Minneapolis.—p. 21.
- Family Studies in Eastern Health District. I. General Characteristics of Population. I. J. Keel, W. T. Hales and G. I. Baker. Baltimore.—p. 37.
- Resistance Against Toxicogenic *Corynebacterium Diphtheriae* in Patients Following Injections of Neurotoxic Diphtheria Bacilli. M. Froehner. Tr. and Elizabeth I. Pa.—p. 53.
- Moué Adapted Lining Strain of Poliomyelitis Virus. I. Study of Neutralizing Antibodies in Acute and Convalescent Serum of Poliomyelitis Patients. T. B. Turner and I. F. Young. Baltimore.—p. 67.
- Id. II. Quantitative Study of Certain Factors Affecting Felibility of Neutralization Test. L. E. Young and Margaret Merrell. Baltimore.—p. 80.
- Duration of Immunity Following Vaccination with 17D Strain of Yellow Fever Virus. J. P. Fox and A. S. Cabral. Rio de Janeiro, Brazil.—p. 97.

Immunologic Reactions in Subclinical Trichinosis—

To determine the value of the intradermal and precipitin tests and the eosinophilic leukocyte count in the diagnosis of subclinical or old unrecognized trichinosis Gould performed them on 3398 routine hospital patients, 103 inmates of a Jewish home and 1231 consecutive necropsies. Among the 1231 subjects who came to necropsy, 388 had been tested during life. The press method of examining 10 Gm. of diaphragmatic muscle taken from near the tendinous insertion is recommended as the single method which is likely to isolate the largest percentage of *Trichinella spiralis* in cases of old trichinosis as encountered at necropsy. The chance of exposure to infection with *T. spiralis* was directly related to age. In subclinical trichinosis the majority of infestations were mild. It is believed that reinfection does occur in man. Even in heavy infestations the clinical history cannot be relied on to reveal any symptoms attributable to the infection. There appeared to be a progressive diminution in cutaneous response to trichina antigens in older persons with subclinical trichinosis due either to the failure of cutaneous antibodies to develop or to their disappearance sometimes after trichinosis infection. The cutaneous response to trichinosis infection on the average, was judged to persist less than ten years. In the aged Jewish patients the observations indicated a high degree of specificity of the antigens used. The intradermal tests with trichina antigens are of little value in the diagnosis of old subclinical trichinosis. Nonspecificity to trichina antigens may be due to sensitization from nonviable trichina material in ingested pork. The absence of immediate intradermal reactions in five heavy infestations is believed to constitute strong evidence against the permanent persistence of trichina antibodies in the skin. There was no evidence to support the contention that allergic patients tend to react to trichina antigens. The duration of reactivity is believed to be shorter than the life of the encysted larvae. With three antigens in high dilution the immediate intradermal test was more sensitive and easier to read than the delayed test. The precipitin reactions appeared to be related to recently acquired infections. There was no correlation between the occurrence of subclinical trichinosis and of eosinophilia; apparently eosinophilia was lost earlier than either the precipitin or the intradermal reaction. The occurrence of a well defined eosinophilia is not apt to be the result of an old subclinical or unrecognized trichina infection.

American Journal of Public Health, New York

33 1-112 (Jan) 1943

- Occupational Medicine and Hygiene: Its Role in Britain in Wartime. J. K. A. Merewether. Aberdeen, Scotland.—p. 1.
- War and the Health Department. A. Across the Nation. C. P. Taft. Washington, D. C.—p. 1.
- II. B. In a Western County. W. J. Halverson. Los Angeles.—p. 23.
- Id. C. In an Eastern City. A. I. Purdum. Hartford, Conn.—p. 26.
- Exotic Criteria for Qualified Leadership in Environmental Sanitation. From I. J. Halverson. Jackson, Miss.—p. 31.
- Legislative of Local Health Authorities in War Emergency. J. W. Martin. Washington, D. C.—p. 3.
- Hygienic Relationship of Water Supplies to Poliomyelitis. K. F. Mayer. Baltimore.—p. 51.
- Joint Facilities and Direct Services of the Health Department in Environmental Sanitation. J. J. Barrow. Montreal, N. Y.—p. 56.
- Tetanus Toxoid: Its Use in the United States Army. A. P. Long. Washington, D. C.—p. 5.
- Survey of the Nutrition of Populations. Description of Population General Methods and Procedures and the Findings in Respect to Energy Intakes (Calories) in a Rural Population in Middle Tennessee. Part II. I. B. Youmans, I. W. Atton and Ruth Kern. Nashville, Tenn.—p. 58.

Use of Tetanus Toxoid in the United States Army—

The present experience of the active immunization against tetanus of American troops is discussed by Long. The agent selected was fluid or plain tetanus toxoid. While no large scale studies for the determination of blood antitoxin levels have been made the antitoxin content of the serums of several small groups has been determined and from this it seemed reasonable to assume that adequate protection based on active immunity is attained after the initial series of three injections of tetanus toxoid has been completed and that the use of prophylactic antitoxin is not necessary after this immunity has been established. The circulating antitoxin that results from active immunization is potentially more significant immunologically than is that of passive immunization. Serum specimens obtained from individuals just before and one week after a stimulating dose of toxoid given one year after the initial doses were found to contain 0.001 to 0.1 unit of antitoxin per cubic centimeter before the stimulating dose and usually more than 0.6 unit one week after the stimulating dose. These titers correspond closely with those obtained by others under more or less similar circumstances. Under ordinary conditions the incidence of tetanus in the army and in the civil population of this country is low. Since June 1941, when the present tetanus immunization program was adopted only 4 cases have been reported from the entire army. None of these occurred in an immunized individual. No cases of tetanus have been reported from battle casualties. This may assume some significance when considered with the fact that other anaerobic infections have been reported and that in at least one of the combatant areas considerable potential danger from tetanus infection exists. It is believed that the present plan of tetanus immunization affords our fighting forces maximal protection.

Anesthesiology, New York

4 1-112 (Jan) 1943

- Trichlorethylene Anesthesia and Cardiac Rhythm. R. M. Waters. O. S. Orth and N. A. Gillespie. Madison, Wis.—p. 1.
- Improved Intratracheal Technique. J. E. Grimm and R. T. Knight. Minneapolis.—p. 6.
- Refrigeration Anesthesia for Limb Operations. F. M. Allen. New York.—p. 12.
- Geriatrics and Anesthesia. J. W. Baird. Hartford, Conn.—p. 17.
- Anesthetic Management for Drainage of Abscess of Submandibular Space (Ludwig's Angina). J. H. Bennett. Cincinnati.—p. 25.
- Effect of Cyclopropane Anesthesia on Glucose and Epinephrine Levels of Blood. W. B. Youmans, C. P. Wangeman, H. E. Griswold Jr. and A. I. Karstens. Portland, Ore.—p. 31.
- Fish Assay for Anesthetic Effect of Steroids. H. Selve. Montreal, Canada, and R. D. H. Heard. Halifax, N. S. Canada.—p. 36.
- New Oxygen Therapy Apparatus. Preliminary Report. A. W. Bortin. Roslyn, N. Y.—p. 48.
- Critical Analysis of Use of Intravenous Morphine. D. Presman and S. Schatz. Chicago.—p. 53.
- Critique of Intravenous Anesthesia in War Surgery. F. J. Halford. Honolulu Territory of Hawaii.—p. 67.
- Intravenous Anesthesia with Pentothal Sodium in Case of Gunshot Wound Associated with Accompanying Severe Traumatic Shock and Loss of Blood. Report of Case. R. C. Adams and H. K. Gray. Rochester, Minn.—p. 70.

Bulletin of Los Angeles Neurological Society

7 157-214 (Dec) 1942

- Present Status of Experimental Neuroembryology. Reevaluation of Fundamental Principles of Development of Nervous System. C. B. Cornville, Los Angeles—p. 162
- *Syphilis of Central Nervous System. Comparative Study of Clinical and Pathologic Diagnoses in 115 Verified Cases. C. Marsh, Los Angeles—p. 182
- Hemiplegia in Tuberculous Meningitis. Its Etiology and Incidence. C. W. Olsen and A. I. Brown, Los Angeles—p. 169
- Hemiplegia in Hemiplegia. Report of 5 Cases. A. P. Friedman, Los Angeles—p. 194
- Albuminocytologic Dissociation in Spinal Fluid with Xanthochromia. Report of 2 Cases. K. O. von Hagen, Los Angeles—p. 198
- Psychomotor Hyperkinesia Due to Anoxia. J. M. Nielsen and A. P. Friedman, Los Angeles—p. 202

Syphilis of Central Nervous System—Marsh has tried to find some of the reasons for the frequent discrepancy between the clinical and pathologic diagnosis of 115 verified cases of neurosyphilis at the Los Angeles County Hospital. The 115 cases were collected from the protocols of 25,000 necropsies. The most common errors in diagnosis were due to (1) incomplete study of the patient because of sudden death soon after admission (2) failure to recognize the minimal signs of chronic meningitis (3) the tendency to call all cases of neurosyphilis syphilis of the central nervous system, "C N S lues," with no effort at accurate classification and (4) inaccurate classification of well defined cases of neurosyphilis. A review of the serologic reactions of the group revealed that all but 1 patient with dementia paralytica had positive blood and spinal fluid Wassermann reactions, in this 1 the reaction was anti-complementary. The colloidal benzoin reactions were typically paretic in each instance. Of the 37 patients who had tabes dorsalis and who had had serologic reactions performed, 14 had a negative blood Wassermann reaction and 7 a negative spinal fluid Wassermann reaction. Of the 22 who had had the colloidal benzoin test done only 8 had a typical tabetic curve. In 60 of the 80 with meningovascular syphilis a positive blood Wassermann reaction was recorded, while the spinal fluid Wassermann reaction of 43 was recorded as positive. The colloidal benzoin curve of only 22 was typically meningitic. The various types of neurosyphilis are proved pathologically to be fairly clearcut entities. The chief exception is chronic meningitis, which obviously may produce few changes easily overlooked. The diagnosis of combined types of neurosyphilis such as tabes with dementia paralytica usually proves to be erroneous. Its widespread symptoms are due to multiple vascular lesions or to a syphilitic entity plus some other disease, usually arteriosclerosis. The objective of a refined diagnosis is more worthy of scientific medicine and more productive of intelligent effort at therapy than the noncommittal and indefinite designation of "C N S lues."

Delaware State Medical Journal, Wilmington

15 1-16 (Jan) 1943

- *First Aid in Chemical Warfare. R. C. Holcomb, Upper Darby, Pa.—p. 1

First Aid in Chemical Warfare—The twenty warring chemicals that the Medical Division of the Office of Civilian Defense considers are subdivided into seven classes: lung irritants, blister gases, tear gases, irritant smokes, incendiaries, screening smokes and systemic poisons. An ideal protective ointment against vesicants is known as Protective Ointment MIV by the Chemical Warfare Service, but it is not apt to be available for civilian use. Of the neutralizing agents, bleach powder has been used successfully, but as it is not always available the ideal is to cleanse the skin thoroughly with soap and water. Bleaching solutions of sodium hypochlorite have been suggested when other preparations are not readily available in an emergency. For lewisite the neutralizing agent is an 8 per cent solution of hydrogen peroxide, but the U. S. P. 3 per cent solution may be used when the stronger and more preferable one is not available. Some of the solvents recommended are unleaded gasoline, alcohol, kerosene and carbon tetrachloride (pyrene). The irritant must not be spread by an excess of the solvent. Of the detergents, soap will mechanically remove vesicants from the skin. Holcomb also lists first aid treatment for the other agents.

Florida Medical Association Journal, Jacksonville

29 293-344 (Jan) 1943

- Safeguards in Cataract Surgery. I. I. Burch and E. P. Burch, St. Paul—p. 307
- Management of Severe Craniocerebral Injuries, with Special Reference to Compound and Penetrating Wounds. J. G. Isely, Jacksonville—p. 311
- Mechanism of Vertigo. M. A. Nickle, Clearwater—p. 320
- Encephalitis Complicating Measles. H. A. Carrithers Jr., Jacksonville—p. 324

Southern Medical Journal, Birmingham, Ala.

36 87-166 (Feb) 1943

- Penetrating Gunshot Wounds of Abdomen. F. L. Loria, New Orleans—p. 87
- Treatment of Minor Injuries and Early Treatment of Major Injuries. R. A. Moore, Winston-Salem, N. C.—p. 94
- Effects on Hearing of Acoustic Trauma in Industry and War. S. L. Fox, Baltimore—p. 97
- Medicine Looks at War. F. W. Rankin, Washington, D. C.—p. 101
- After the War What Next? I. I. Sutton Jr., Richmond, Va.—p. 105
- *Incidence and Recognition of Riboflavin and Niacin Deficiency in Medical Diseases. Grace A. Goldsmith, New Orleans—p. 108
- Preventive and Public Health Aspects of Rheumatic Fever in Children. Louise Ivy Galvin, Richmond, Va.—p. 116
- Etiologic Factors Producing Asphyxia Neonatorum in Infants Delivered by Cesarean Section. A. Blossom, Houston, Texas—p. 121
- *Intravenous Use of Digitalis Glycosides. J. S. LaDue, New Orleans—p. 124
- Angiomatous Basal Cell Tumor. J. H. Lamb, Oklahoma City, C. F. Geschlechter, Baltimore, and F. S. Linn, Oklahoma City—p. 133
- Postpartum Sterilizations: Indications and Results. F. R. Lock, R. C. Lorman, and N. M. Webster, Winston-Salem, N. C.—p. 138
- Present Status of Gynecologic Organotherapy. E. Novak, Baltimore—p. 145
- Recent Developments in Treatment of Pilonidal Sinus. R. L. Bennett, Warm Springs, Ga.—p. 152
- Nail Polish Lezemia. I. A. Simon, Louisville, Ky.—p. 157

Riboflavin and Niacin Deficiency—To determine the frequency of vitamin deficiency in medical diseases, Goldsmith studied 200 patients admitted to the medical wards of Charity Hospital, there were 50 each of white and Negro males and females whose ages varied from 5 to 82 years. The clinical criteria for suspecting niacin and riboflavin deficiency were those suggested by the Subcommittee on Medical Nutrition, Division of the Medical Sciences, National Research Council. Forty per cent of the patients showed definite and 67 per cent probable evidence of deficiency of niacin and/or riboflavin. Changes in the tongue were the most common abnormal signs, while lesions of the skin, eyes and lips occurred in this order of frequency. Severe and characteristic manifestations were present more often in white than in Negro patients. Signs of deficiency were present in all persons with hyperthyroidism, cirrhosis of the liver and chronic alcoholism, and in two thirds or more of those who had infections, diabetes mellitus, carcinoma and diseases of the gastrointestinal tract. Inadequacy of riboflavin was the most frequent cause of deficiency disease. The high incidence of deficiency was not surprising, as most of the persons examined had been living on an inadequate diet for months or years, either because of poverty or because of poor food habits. With the onset of disease their insufficient intake of vitamins did not supply the minimal requirements. Many patients had evidence of deficiency of vitamin A and ascorbic acid, as well as of the vitamin B complex.

Intravenous Use of Digitalis Glycosides—LaDue gave 83 patients (62 with auricular fibrillation and 21 with regular sinus rhythm) with heart failure consequent to valvular disease, hypertension or arteriosclerosis lanatoside C by vein, and 85 patients (40 with auricular fibrillation and 45 with regular sinus rhythm) took the drug orally. All the patients were given "digitalizing" and maintenance doses. There was no statistically significant difference in either group in the average rate of improvement as measured by a fall in venous pressure and circulation time, a rise in vital capacity and diuresis. Within two hours of an intravenous injection of 1.6 mg. of lanatoside C, 10 patients with congestive heart failure with regular sinus rhythm responded with a decrease in the diastolic heart volume and an increase in the stroke output, minute output and work of the heart, therefore the mechanical efficiency of their hearts was increased. Lanatoside C intravenously is recommended in uncomplicated, severe congestive heart failure. It is a safe and effective way to achieve rapid digitalization.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. For a single entry its full title of new drug is usually omitted.

British Journal of Dermatology and Syphilis, London

55 1-50 (Jan) 1943

- Cutaneous and Subcutaneous Nodules with Juxta Articular Infiltrations and Rheumatoid Synovitis J. I. Weller—p. 1
Treatment of Lichen Planus by Exposure of Same to Large Doses of X-rays P. J. Helher—p. 11
Dermatitis Venenata Caused by Spoke J. A. Landor—p. 17

British Medical Journal, London

1 61-90 (Jan 16) 1943

- Abdominal Wounds in War Treatment of Individual Lesions J. Walton—p. 61
Caloric Control New Dietetic Treatment of Diabetes Mellitus A. C. Crooke and H. A. Scott—p. 64
Action of Radiant Heat Cradles G. M. Brown, D. S. Evans and K. Mendelsohn—p. 66
Syphilis Treated with Daily Multiple Injections of Mapharsin J. H. Hutchinson—p. 69
Three Comments on Prevention of Sterility I. Schleyer—p. 71

1 91-120 (Jan 23) 1943

- Generalized Vaccinia A. A. Jubb—p. 91
Trogno is in Civilian Head Injuries F. Guttmann—p. 94
Excitation of Diaphragm Case A. J. F. Mills—p. 97
Significance of Pleurisy and Pleural Effusion in Differential Diagnosis R. Trail—p. 98
Transuterine Insufflation and Salpingography A. Leech Wilkin—p. 100
Pitresin Diagnosis of Idiopathic Epilepsy W. Blith—p. 100

Prognosis in Civilian Head Injuries—In addition to the organic damage the prognosis of accidents depends on economic, social and psychologic factors which profoundly influence the patient's health, happiness and working capacity after an accident. Among 300 consecutive admissions of head injury there were 255 civilians available for study. The accidents were mainly road accidents of a mixed urban and rural area. Ten of the 255 patients died and 2 were permanently incapacitated as the result of cerebral damage. More than 80 per cent of patients were discharged from the hospital within two weeks of admission. All who stayed in the hospital four weeks or longer did so because of fractures. The average working time lost by wage earners was eight weeks. In those with a post-traumatic amnesia of one hour or less the average working time lost was four to five weeks, in those with post-traumatic amnesia of one to twenty-four hours it was five to six weeks, in those with post-traumatic amnesia of one to seven days about nine weeks and in the severest cases it was fourteen weeks. Eight patients were off from work for twenty-six weeks, 2 because of cerebral damage. With the exception of those with cerebral damage, it could be shown that patients who stayed away from work for an unusually long time did so for social and psychologic reasons rather than because of the physical effect of the accident. The results emphasize the need for prophylactic management and after-care until the patient has returned to full time work.

Journal of Royal Naval Medical Service, London

28 309-408 (Oct) 1942

- Vapors and Dyspeptic Feelings R. W. Mussen—p. 309
Crush or Compression of Limbs with Impairment of Renal Function J. A. Shepherd—p. 314
More Recent Additions to Our Knowledge of Effects of Compression and Decompression on Man and Application of This Knowledge to Practical Problems Connected with High Flying and Deep Diving S. G. Rainsford—p. 326
Gynecomastia or Male Mammary Hypertrophy W. G. Gill—p. 333
Investigation of 78 Cases of Seabees G. Ollerenshaw—p. 342
Detention from Medical Aspect R. R. Prewer—p. 346
Management and Treatment of Early Syphilis in His Majesty's Ships S. J. Wheeler—p. 351
Notes on Treatment of Bacillary Dysentery D. C. Wilson—p. 357
Abnormal Mental States in Survivors with Special Reference to Collective Hallucinations E. W. Anderson—p. 361

Crush or Compression of Limbs and Renal Impairment—A classification depending on the history and the relevant detail of crush injury or compression is adopted by Shepherd, who divides such injuries into three types (1) com-

pression of a limb or limbs in a homogeneous manner by loose rubble or other debris (2) pinning of a part or parts of a limb or limbs by localized pressure and (3) mixed compression by rubble, masonry and orders involving various parts of the body. Recognition of the mode of injury will give some guide to a rational therapy. 'Compression syndrome' rather than 'crush syndrome' should be reserved for cases in which typical local lesions and secondary renal effects develop. The first type of damage with immediate or prolonged effects, is due to prolonged ischaemia of the limb. Elevation of the limb after bandaging and then gradual release of the supporting bandage should result in a gradual return of circulation. Surgical intervention (amputation) is not necessary unless definite and extreme tenderness of muscle compartments exists when multiple tension relieving incisions are indicated. It is doubtful whether peripheral edema can be reduced by concentrated serum given intravenously. Inhalation of oxygen is worth trying in the early stages; it may help to counteract the local anoxic effects. The local treatment of group 2 cases is the same, except that when acute ischaemia is not explained by the tension of edema the main artery should be explored and freed. Arterial spasm from local injury is likely to be a feature. In group 1 and 2 cases the danger of renal injury is proportionate to the local injury, dehydration and prolonged low blood pressure. The two latter factors must be corrected. If the circulation is impaired seriously the transfusion of plasma and oxygen therapy must be intensive. Plasma should be reserved for patients with true hemoconcentration and diminished blood volume; it may harm other patients. With renal impairment or after plasma transfusion excretion is best assured by the slow infusion of isotonic sodium sulfate. The effect of toxins may be diminished by rapid and adequate renal secretion. Drastic diuresis is to be avoided. Blood transfusion is contraindicated. In the third group specific local treatment is a secondary consideration, as the lesions are numerous and varied. Gross dehydration and its associated acidosis require immediate attention. With these patients extreme starvation and physical exhaustion have been added to the effects of trauma. The fact that they have reached the hospital alive suggests that the organism has adapted itself at least temporarily, to a low and disordered metabolism and normality can be reached only gradually. Overheating must be avoided and fluid loss must be made up slowly, if possible by mouth or by rectal or intravenous therapy. Protein intravenously is to be avoided, alternate dextrose saline and sodium sulfate is preferable. The chief cause of renal failure in these patients is acidosis, and its gradual correction will control the associated uremia. The danger of pulmonary edema because of prolonged intravenous therapy when a blast lesion of the lungs is present must be risked, oxygen therapy may help to control such effects. Convalescence is protracted.

Medical Journal of Australia, Sydney

1 23-44 (Jan 9) 1943

- Lymphogranuloma Inguinale Historical Review and Pathologic Aspects H. F. Bettinger—p. 23
Clinical Aspects of Lymphogranuloma Inguinale F. M. McDonald—p. 25
Laboratory Findings in Lymphogranuloma Inguinale H. H. Johnson Jr. with comment by F. M. Burnet—p. 28
Pyoderma Ulcerosum Tropicum O. Alpini—p. 30

Practitioner, London

150 65-128 (Feb) 1943

- Modern Views on Early Diagnosis and Treatment of Pulmonary Tuberculosis G. S. Todd—p. 65
Massive Collapse of Lung G. Marshall and A. F. Foster Carter—p. 71
Early Diagnosis of New Growths of Lung W. D. W. Brooks—p. 75
Scope of Modern Chest Surgery O. S. Tubbs—p. 82
Diagnosis and Treatment of Acute Infection of Lower Respiratory Tract in Children D. Hubble—p. 89
Genitourinary Problems in the Care of the Soldier in Training E. W. Riches—p. 95
Psoriasis E. Puley—p. 105
Psychology in General Practice II Classification and Methods of Case Taking A. S. Paterson—p. 112

Annales Paediatrici, Basel

158 177-232, 1942

- Glycogenosis (Syndrome of von Gierke) J. Murs —p 177
 Rat Bite Fever: Case in Girl Aged 2 N. Festschli —p 216
 Antidiphtheric Vaccination D. Oltmann —p 223
 Suggestion for Treatment of Allergic Conditions J. Suranyi —p 231

Suggestion for Treatment of Allergic Conditions—

Suranyi points out that the oral administration of nicotinic acid amide produces in some cases erythema of extensive areas, a feeling of heat and itching, that is symptoms similar to those elicited by the parenteral administration of histamine. The toxin involved in allergic reactions has sometimes been identified as a histamine like substance and on this basis therapeutic methods have been suggested which involve histamine and decomposition of histamine. The similarity between histamine action and the effect of nicotinic acid suggested to the author the possibility of using nicotinic acid in children with allergic disorders. He gave a number of allergic children three weeks of treatment, giving twice daily, between meals, 0.025 or 0.05 Gm of nicotinic acid, depending on the age. The treatment was instituted only in those cases in which an oral nicotinic acid test resulted in erythema. Urticaria, asthma and spastic bronchitis were found to respond favorably, exudative eczema was influenced slightly less.

Schweizerische medizinische Wochenschrift, Basel

72 933-956 (Aug 29) 1942 Partial Index

- *New Method for Reinfusion of Blood in Abdominal Cavity: Technique of Suctioning Off of Fluids from Body Cavities L. Anderes and M. Laszcower —p 933
 Experimental Contribution to Treatment of Carbon Monoxide Intoxication A. Thurnherr —p 938
 Gastrocric Polycystitis and Tetany Helene Roesli —p 944
 New Apparatus for Suction Drainage of Pulmonary Cavities H. Alexander —p 945
 New Pneumometer for Determination of Expiration Force (Maximal Force of Expiration) W. Hildorn —p 946

Reinfusion of Blood in Abdominal Cavity—Anderes and Laszcower developed a method of reinfusing blood in the abdominal cavity which does not interfere with the surgeon's chief task, that is, rapid hemostasis by clamping of the tube. The blood is withdrawn from the abdomen by means of a suction pump, and by means of a specially constructed filter it is drawn directly into the transfusion tube. In this way not only is handling and air contact avoided but the danger of secondary infection is reduced. After illustrating and describing the apparatus and its use, the authors say that so far they have used it in 15 cases. The results were always favorable. The advantages of reinfusion having been stressed by other investigators, the authors do not repeat them. In the cases in which reinfusion is not possible on account of excessive coagulation, inflammation of the abdominal organs or overaged blood (hematocoele) the authors prefer the transfusion of donor blood.

Schweiz Ztschr. f. Path. u. Bakteriolog., Basel

5 1-136, 1942 Partial Index

- *Investigations on Tissue Reaction to Thorotrast if This Substance is Used for Diagnostic Purposes in Human Subjects T. Wohlwill —p 21
 Malherbe's Epithelioma W. F. Muehlon —p 53
 Cavernous Hemangioma of Ovary H. Ackermann —p 79
 Organ Specificity of Renal Extracts P. Kallos —p 119

Tissue Reactions to Thorotrast—Wohlwill examined 38 human cadavers, 8 extirpated cerebral tumors and 3 other excisions for the effects of the diagnostic injection of thorotrast. The description of his observations is illustrated with photomicrographs. The direct effect of undiluted thorotrast solution for instance in mammography and ventriculography is local retention accompanied by necrosis and various inflammatory reactions. Following intra-arterial injection thorotrast first accumulates within the capillary lumens, then it migrates through the walls and finally it is deposited in the perivascular tissues. In the reticuloendothelial system thorotrast is first diffusely stored, particularly in Kupffer's star shaped cells, later it is taken up by the symplasmatic cell group situated in the portobiliary centers of the liver. Thorotrast is stored by the tumor cells of meningiomas and neurinomas. The histologic reactions are largely dependent on the amount and the concentration of the injected thorotrast.

Revista Clínica Española, Madrid

6 281-360 (Sept 15) 1942 Partial Index

- Exanthematic Typhus J. Gullardo and J. Sanz Ibañez —p 281
 *General Denutrition ("Hunger Edema") C. Jimenez Diaz, L. Lorente, C. Marina, I. Ortiz de Landazuri and J. Roda —p 289
 Epilepsy with Frontal Focus with Rare Symptoms V. Gilsanz Garcia —p 309
 Hemophenic Purpura Due to Ingestion of "Sedormit" J. Pelaez Redondo —p 324

"Hunger Edema"—Jimenez Diaz and his collaborators observed several cases of general denutrition with edema and diarrhea, the so called hunger edema which occurred during the Spanish war and immediately afterward. The disease was due to dietary deficiency in all cases. The authors review the clinical symptoms and the course of the disease which develops in three periods. The main symptoms are progressive asthenia, anemia, progressive emaciation, increased thirst, polyuria, frequent fainting, diminished body temperature, bradycardia, arterial hypotension, edema, diarrhea, atrophy of the skin, paresthesia in the limbs and pigmentation of the hands, legs and face. The velocity of sedimentation of the erythrocytes is high and the figures of total proteins in the plasma are diminished. The symptoms are mild during the first period of the disease. The appetite for food is moderate. Edema and diarrhea appear in the second period, which begins with acute attacks of fever, diarrhea and edema either simultaneously or in succession. Edema begins suddenly in the lower limbs. Later on it appears in the face, the hands, the arms, the abdomen and the thorax. Sometimes it grows to true anasarca. Diarrhea is abundant and liquid. In rare cases there are discharges of mucus and blood and it is associated with colic pain. Symptoms of the disease, especially asthenia and emaciation, become acute. Lack of appetite, dryness and inflammation of the buccal and pharyngeal mucosae and, later on, glossitis, pharyngitis and ulcerous stomatitis appear. The "black tongue" is observed in some cases. During this period the subcutaneous tissue disappears and the muscular tissue diminishes in more than 40 per cent of its volume. The skin wrinkles. Parasitic diseases, especially scabies, are frequent and folliculitis, multiple cold abscesses, chronic ulcers, pilar keratosis and impetigo appear. The patients have a tendency to develop acute diseases from latent ones, such as for instance acute pulmonary tuberculosis. Diseases of the respiratory tract and local and general infections are followed by acute complications. The third and last period of the disease is complicated by intractable vomiting, tympanites, somnolence and final peripheral collapse, coma or acute convulsions. The treatment consists of rest in bed and progressive feeding with diets in which the number of calories and the amount of proteins (milk, cheese, eggs and meat) are gradually and slowly increased. Patients in the first period of the disease rapidly improve, but the recurrences are frequent unless the disease is controlled by administration of a proper diet during more than three months. Patients in the second period show sudden disappearance of edema when they are put to bed. The general symptoms improve in some cases very slowly. The diet should be carefully controlled and administered for as long as polyuria and rapid sedimentation of the erythrocytes persist. Blood transfusion or plasma injections are indicated in cases of acute edema and when the figures of proteinemia are very low. A large number of patients who are observed in the second period of the disease and all those who are seen in the last period die. Death may be due to aggravation of a latent disease (pulmonary tuberculosis), an intercurrent disease, acute complications of the cutaneous, buccal and pharyngeal diseases or general cachexia. In the last event it may occur with sudden collapse or else with either acute edema of the lung or violent convulsion in rare cases, and with coma and slow peripheral collapse in the majority of the cases. General denutrition of the muscular tissues and moderate diminution of the size and weight of the viscera are the only findings during necropsies on cadavers of patients who died from "hunger edema" without complications. The diminution of the size and weight of the viscera, in order of frequency, is as follows: kidneys, liver, pancreas, spleen and heart. The heart has the aspect of the heart in brown atrophy. The other viscera are pale but otherwise normal.

Book Notices

Renal Lithiasis. By Charles C. Higgins, M.D., Cleveland (Ohio) Cleveland, Ohio: Ishikawa, Tokio, 5". 1 p. 136 with 18 illustrations. Springfield, Illinois: C. C. Thomas, 1943.

In this volume the author presents the results of ten years' study of the etiology and treatment of renal lithiasis. Seventy of the one hundred and twenty pages are devoted to etiology. The relationship between the formation of stone and the absence of certain essentials in the diet has been noted by many observers and is duly considered. The results of the author's experiments in the production and cure of stones are presented in great detail so that any one interested has immediate access to this information without extensive search through the literature. Although most of the text is devoted to this phase of the subject other factors in the etiology including the subject of renal calculus due to sulphyridine are also given. Symptoms and diagnosis are well presented. The author stresses the importance of careful and complete preoperative study by routine ray pyelography, functional tests and bacteriologic examinations of the urine. The surgical treatment is brief, to the point and well illustrated. As one might expect in a book of this type a detailed presentation of the dietetic treatment is given. Sixteen pages are devoted to diets, so that those interested in prescribing a suitable diet can do so with great ease. Unfortunately, one misses a chapter on pathologic changes due to renal stone. In his preface the author states: "I hope to have prepared this little volume in such a way as to make it a quickly and easily accessible reference work for both the student and the established urological surgeon." In this he has succeeded.

The Kenny Treatment for Infantile Paralysis. An Orthopaedic Report and Comparison of Results on Forty Eight Cases Treated by This Method. By Robert Bingham, M.D., Captain, Medical Corps, Army of the United States, Board. 1 p. 50. Camp Van Dorn, Mississippi. The Author, [n. d.].

An orthopedist's attempt to evaluate the Kenny treatment of infantile paralysis from a study of practical and measurable end results forms the basis for a study of 60 cases of the disease. These have been divided for the purpose of comparison into three groups, those having received only the conventional or orthodox treatment, those receiving a period of orthodox treatment superseded by Kenny treatment and those receiving Kenny treatment from the outset of therapy. The study was based on the symptoms described by Miss Kenny, viz. muscular spasm, alienation and incoordination, rather than purely on muscle paralysis as in the past. The results indicate that treatment of these conditions will reduce the disability from the disease. The study brings out that the patients treated with the Kenny technique prove to have less residual paralysis and better functional use of retained muscles, show fewer deformities, and required fewer braces and surgical procedures than those treated by the orthodox methods or than those treated by the orthodox plus the Kenny method. Control cases of infantile paralysis are difficult because of the wide variation in the involvement of individuals afflicted. Estimation of the value of a clinical procedure can for the present be based only on impressions gained by those accustomed to dealing with the after effects of this disease. Dr. Bingham's study represents a sincere attempt to evaluate the Kenny methods.

Victory Over Fear. By John Dollard. Cloth. Price \$2. Pp. 213. New York: Reynal & Hitchcock, 1942.

"Some people hit upon the art of conquering fear early in life. Others never learn." Perhaps it is strange that man should have begun to learn about fear only in the past two generations. Yet every physician knows that anxiety, apprehension and restlessness are characteristics which frequently make or break the entire lives of many a man and woman. Dr. Dollard, who is a member of the staff of the Institute of Human Relations of Yale University, classifies seven deadly fears as basic; these are the fears of failure, sex, self defense, trusting others, thinking, speaking and being alone. One need not necessarily be equally afraid of all these at one time or perhaps of any one of them all the time, yet there is probably no human

being who has not at one time or another had one of these fears in some proportion. For any one with ordinary intelligence, victory over fear will be aided by a careful study of this book. It is full of important practical advice based on studies of actual cases which are related in interesting form. The book is dependent on the Freudian approach but does not have the Freudian atmosphere. Especially interesting is the chapter on security, a subject already discussed by many other psychologists and also by the psychiatrists. While it is true that feelings of inferiority and anxiety are more or less the opposite of feelings of security, there is something to be said for the importance of the fear of insecurity as an incentive. "Every one is more afraid today than he was a year ago." Yet the fear of death has always been with us and we can consider that fear today in the light of the great advances in medical science which make less threatening the possibility and more comfortable the approach. "The long shadow of social change is falling on our society. Many people fear this change. Social changes are inevitable. Yet incentive has always depended on finding a reward for great striving. The fear of change inhibits progress. Most important is intelligent analysis of the need for change and correct guidance so that the trend may not destroy values which should be conserved."

Regional Analgesia for Intra Abdominal Surgery With Special Reference to Amethocaine Hydrochloride. By Norman R. James, M.D., F.R.C.S. D.A. Cloth. Price \$4. 1 p. 57 with 21 illustrations. London: J. & A. Churchill Ltd., 1943.

This monograph describes lucidly and in detail the author's technique of analgesia for upper abdominal operations for patients who are seriously ill. The method is reminiscent of that published by Bartlett (R. W. Bifurcated Intercostal Nerve Block for Upper Abdominal Surgery, *Surg. Gynec. & Obst.* 71: 194 [Aug.] 1940) although several modifications are utilized. In the lateral position the sixth to twelfth intercostal nerves are blocked on each side by an injection of 1,000 concentration of pontocaine below the rib at a point 4 fingerbreadths from the vertebral spines. Then a posterior splanchnic block with 1,200 concentration of pontocaine is performed with the patient in the same position. The author recommends the use of carefully individualized doses of opiates given intravenously. Doses of omnopon varying from $\frac{1}{2}$ to $1\frac{1}{2}$ grains (0.02 to 0.10 Gm.) or morphine $\frac{1}{4}$ to $\frac{3}{4}$ grain (0.01 to 0.05 Gm.) are suggested. One may question whether the method described creates a lesser hazard than the methods which it is designed to supplant in "poor risk" patients, namely profound inhalation or "high" spinal anesthesia. Several authors have deplored the confusion in nomenclature arising from taking over foreign patents. The local agent described in this book is marketed in the United States as pontocaine. It was introduced in Germany as pantocain, later marketed in other countries as decicain, tetracaine and butethanol, and is referred to by James as amethocaine hydrochloride, which is now available to him from a British manufacturer as anethaine.

Diseases of the Skin. By Oliver S. Ormsby, M.D., Rush Professor of Dermatology, University of Illinois, Chicago, and Hamilton Montgomery, M.D., M.S., Associate Professor of Dermatology and Syphilology, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota, Rochester. Sixth edition. Cloth. Price \$14. Pp. 1,360 with 660 illustrations. Philadelphia: Lea & Febiger, 1943.

This is actually the latest descendant of the original Montgomery and Hyde textbook of diseases of the skin. This volume apparently completes a cycle, since a descendant of the original Montgomery is now the associate author. The book is reliable and authoritative. Its form has tended to become a model for works of a similar character.

The introductory section constitutes a manual of something over a hundred pages giving a general discussion of the anatomy and physiology of the skin and the general symptomatology, etiology, pathology, diagnosis, prognosis and therapy of skin diseases. Then come the sections covering skin diseases in various classifications, such as the hyperemias, hemorrhages, hypertrophies, atrophies, pigmentary disturbances, metabolic disorders, tumors, specific inflammations, neuroses, parasitic diseases and conditions affecting the sweat glands, the hair, the nails and the mucous membranes. A study of the table of con-

tuation of hypertension or albuminuria with fluid retention, with or without symptoms, occurring only in the latter half of pregnancy and subsiding before or soon after delivery. From a clinical, pathologic and laboratory standpoint, this vascular syndrome which was superimposed on a previous hypertension is indistinguishable from the preeclampsia and the eclampsia occurring in patients whose blood pressure and urine were normal before pregnancy. We have called this condition toxemia superimposed on prepregnant hypertension. This condition has been referred to by other authors as "nephritic toxemia," "chronic nephritis," "essential hypertension," "vascular renal disease" and, in its less severe phases, "low reserve kidney," "kidney of pregnancy" and so forth. The clinical course of a patient with toxemia superimposed on prepregnant hypertension is represented in figure 3.

Figure 4 illustrates diagrammatically the various types of hypertension which occur during pregnancy. On rare occasions other types of hypertension may by coincidence have their onset during pregnancy, in which case they resemble the same disease as it occurs in nonpregnant patients. The most striking example of this is acute glomerulonephritis. Because of its rarity, it will not be discussed further.

DEFINITION OF TOXEMIA OF PREGNANCY

The hypertensive toxemia of pregnancy (preeclampsia and eclampsia) may be defined as the appearance in the latter half of pregnancy of (a) an abnormal elevation of blood pressure above the prepregnant level (regardless of the presence or absence of hypertensive disease before the onset of pregnancy) or (b) an increase above the prepregnant level of albumin in the urine in the absence of other obvious cause, (c) gen-

A significant increase above preexisting levels in the second half of pregnancy is the basic characteristic. The desirability of obtaining blood pressures and urinalyses before, during the first half and during the second half of pregnancy is apparent.

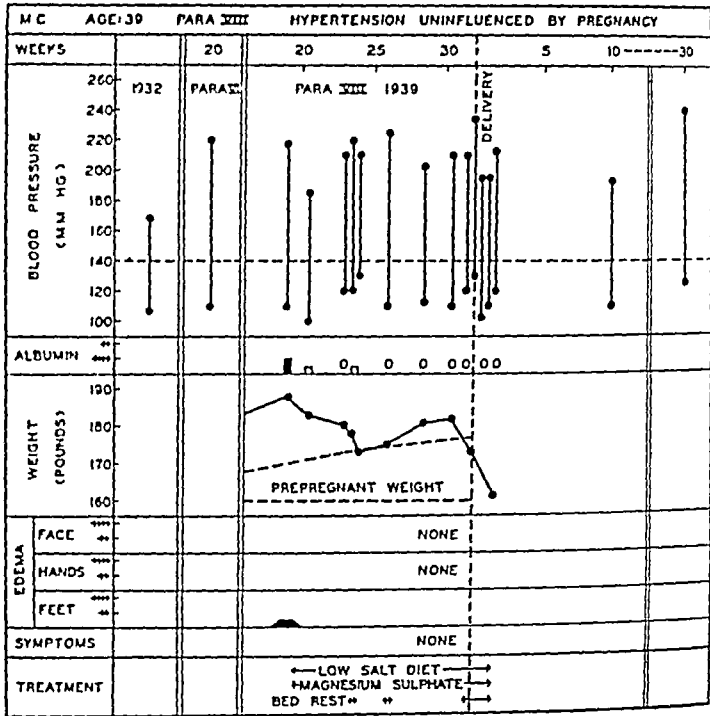


Fig 2 (M C)—Clinical course of hypertension uninfluenced by pregnancy. Despite a severe hypertension before pregnancy, no aggravation occurred during pregnancy or for at least seven months post partum.

CHARACTERISTICS OF TOXEMIA OF PREGNANCY

From the foregoing discussion it is apparent that toxemia of pregnancy is an acute vascular disease entity resembling closely acute glomerulonephritis in its clinical characteristics. Etiologically and pathologically the two diseases differ. The most important factors predisposing to the development of toxemia are hypertensive vascular disease of any cause or any degree of severity and the generalized edema of pregnancy. In our study toxemia developed in approximately one half of those with hypertension before pregnancy. We were unable to predict before its actual onset the hypertensive patients in whom toxemia would develop. It was our impression, however, that those with a low renal reserve or with malignant hypertension were especially prone to it. Generalized edema in pregnancy is usually unaccompanied by toxemia. The onset of toxemia, however, is nearly always characterized by the development of edema or its accentuation. The relation of the vascular manifestations to salt and water retention is striking, as Strauss⁷ has demonstrated experimentally, although in the absence of toxemia edema is rarely significant. It should be emphasized, however, that the basis of therapy of toxemia of pregnancy rests on elimination of this retained fluid. Without diuresis, improvement rarely takes place. Less important factors, predisposing to toxemia are primiparity,⁸ diabetes,⁹ twin pregnancies¹⁰ and perhaps hydatidiform moles.¹¹

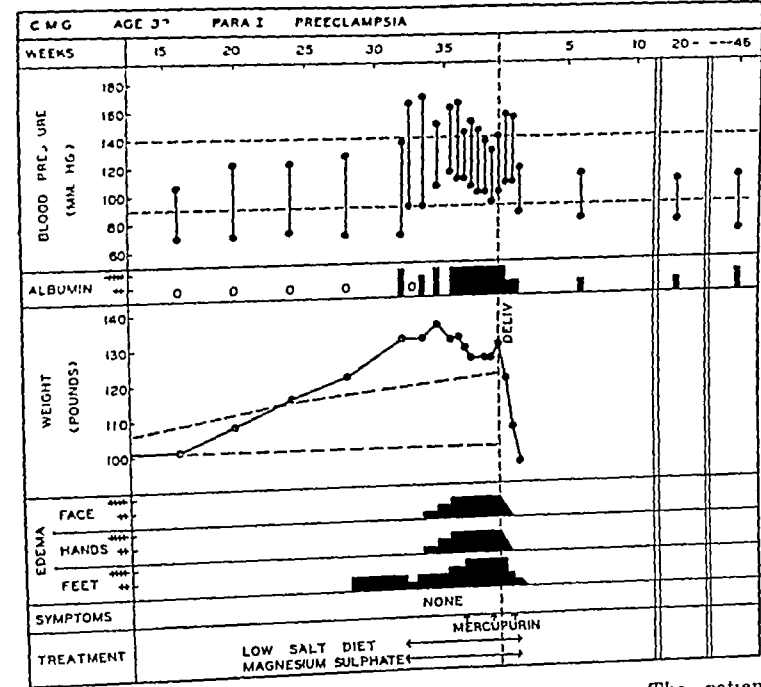


Fig 1 (C McG)—Clinical course of preeclampsia. The patient had normal blood pressure and urine until the thirty-first week of pregnancy, when hypertension, albuminuria and generalized edema appeared. Under treatment, some improvement occurred before delivery, and post partum all abnormalities subsided rapidly except that some albuminuria persisted for at least ten months.

eralized edema in association with the foregoing in the majority of cases, and (d) a rapid diminution of these abnormalities before or soon after delivery. Symptoms may or may not be present. Elevation of blood pressure and albuminuria do not, therefore, necessarily indicate that toxemia is present.

7 Strauss, M B. Observations on the Etiology of the Toxemia of Pregnancy. II. Production of Acute Exacerbation of Toxemia by Sodium Salts in Pregnant Women with Hypoproteinemia, *Am J Sc* 194 772 (Dec.) 1937.
8 Hinselmann H. Allgemeine Krankheitslehre, in Die Eklampsie, Bonn, Friedrich Cohen, 1924, p 1. Stander¹⁰ Irving¹⁰ and Weiss¹¹.
9 White, Priscilla. Pregnancy Complicating Diabetes Surg, Gynec & Obst 61 324 (Sept.) 1935.
10 Irving, F C. A Textbook of Obstetrics New York, Macmillan Company, 1936.
11 Page¹⁰ Stander¹⁰ Irving¹⁰.

Toxemia is peculiar to the second half of pregnancy, the average time of onset in our patients being at the thirty-fourth week. We have assumed that the hypertension and albuminuria are manifestations of the same underlying process, i. e. a vascular disease. The symptoms of toxemia of pregnancy like those of acute glomerulonephritis appear to result from a combination of fluid retention and hypertension. In the absence of either one symptoms are uncommon or if they are present, they are usually mild. When both are present however, cerebral symptoms frequently appear and consist of frontal headaches, scotomas blurred vision and blindness with or without demonstrable changes in the eyegrounds, nausea, vomiting, abdominal pain, lassitude drowsiness twitching coma convulsions and a variety of bizarre neurologic manifestations. As in acute nephritis, symptomatic improvement follows diuresis. Physical examination of the patient with toxemia of pregnancy usually reveals a puffy face and hands. There is a striking absence of scrous effusions unless cardiac failure supervenes. The eyegrounds are usually normal, although in the more advanced stages of the disease there may be papilledema retinal detachment, hemorrhages and exudates. Spasm of the retinal arterioles have been described.¹² The heart is usually normal when toxemia is mild, but severe toxemia with pronounced generalized edema is frequently associated with manifestations of cardiac insufficiency. The liver is not enlarged as a result of toxemia. When palpable it indicates independent disease or cardiac failure.

Patients may improve spontaneously or as a result of therapy before delivery or within twelve to twenty-four hours after delivery. The first definite sign of

to its initial level within a few hours and at other times falling slowly over a period of days, weeks or, in rare instances, months. Albuminuria gradually diminishes over the course of days or weeks. Until diuresis has occurred, the patient may become worse

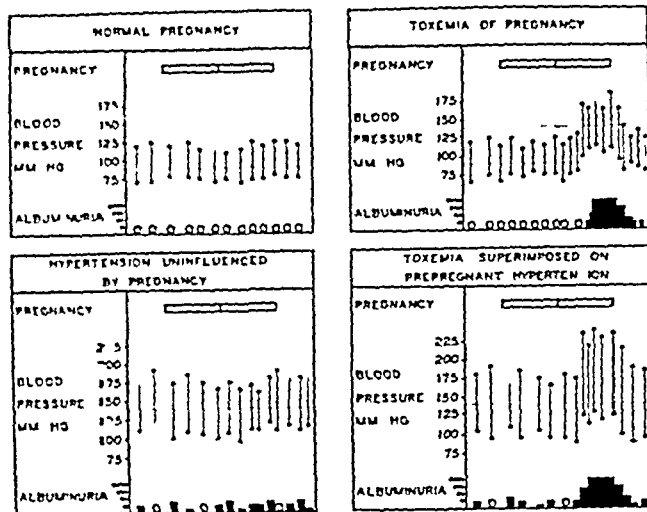


FIG. 4.—Schematic representation of the clinical course of normal and hypertensive patients during pregnancy.

In our experience, postpartum eclampsia always occurs before diuresis is well under way, i. e. before seventy-two hours after delivery. All instances of coma and convulsions observed by us after this time have invariably been attributable to some other puerperal complication.

LABORATORY STUDIES

Our observations have indicated that capillary and venous pressures, circulation time (cyanide method), basal metabolic rate and liver function tests (icteric index, Takata-Arr test and bromsulphalein test) are essentially the same in toxemia as in normal pregnancy, except in cases of eclampsia, in which certain abnormal findings were occasionally found, as might be expected in a state which is nearly terminal. Capillary permeability to proteins was found to be normal, as indicated by a protein content of less than 0.3 Gm per hundred cubic centimeters in edema fluid. With 2 exceptions, there were no electrocardiographic changes in toxemia. There are essentially normal values for nonprotein nitrogen, blood urea nitrogen, carbon dioxide combining power, chlorides,¹³ sodium,¹⁴ blood sugar¹⁵ and blood calcium.¹⁶ Blood uric acid is frequently elevated in the mild and almost always in the severe cases.¹³ In eclampsia, in which the organism is in a state of disruption, striking changes in blood chemistry may occur, but these abnormalities have been considered a result rather than the cause of the syndrome.¹⁷ While the plasma proteins are usually lower in toxemia than in

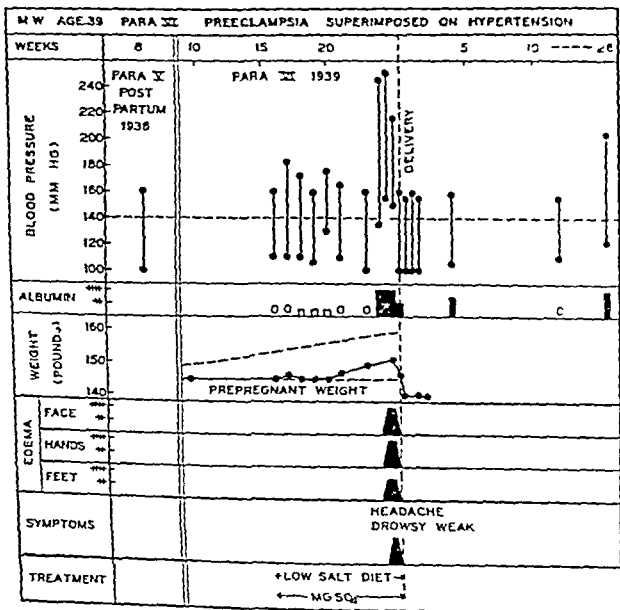


Fig 3 (M.W.)—Clinical course of preeclampsia superimposed on prepregnant hypertension. Severe hypertension was present before and during the first twenty-two weeks of pregnancy. At the twenty-third week pronounced elevation of blood pressure, copious albuminuria and massive generalized edema appeared together with drowsiness and headaches. These abnormalities subsided rapidly after delivery.

improvement is diuresis and loss of edema, concomitant with which symptoms disappear rapidly. The blood pressure falls slowly or abruptly, at times returning

12. Mylius K. Spastische und tetanische Netzhautveränderungen bei der Eklampsie. Ber u d Versamm d deutsch ophth Gesellch 47: 379 (1929).
Wagener H. P. Arterioles of the Retina in the Toxemia of Pregnancy. J A M A 101: 1380 (Oct 28) 1933.
Schultz J. F. and O'Brien C. S. Retinal Changes in Hypertensive Toxemia of Pregnancy. Report of 47 Cases. Am J Ophth 21: 767 (July) 1938.

13. Stander H. J. Duncan E. E. and Sisson W. E. Chemical Studies on the Toxemias of Pregnancy. Bull Johns Hopkins Hosp 36: 411 (June) 1925. Dexter and Weiss.

14. Taylor H. C. Jr. Warner R. C. and Welsh C. A. The Relationship of the Estrogens and Other Placental Hormones to Sodium and Potassium Balance at the End of Pregnancy and in the Puerperium. Am J Obst & Gynec 35: 748 (Nov.) 1939.

15. Hurwitz D. Toxemias of Pregnancy. A Critical Review of the Recent Literature. New England J. Med 209: 1281 (Dec 21) 1933.

16. Stander H. J. and Harrison E. P. H. Jr. Carbohydrate Metabolism in Eclampsia. Am J Obst & Gynec 18: 17 (July) 1929.

17. Krieger V. Observations on the Guanidine Glucose and Calcium Content of Blood in Eclampsia. M J Australia 2: 746 (Dec. 8) 1934.

18. Feinberg S. M. and Lash A. F. The Blood Calcium in Eclampsia. Surg Gynec & Obst 42: 255 (Feb.) 1926.

19. Krieger V. Equilibrium in Abnormal Pregnancy. J Biol Chem 98: 241 (Oct.) 1932.
Stander H. J. Eastman N. J. Harrison E. P. H. Jr. and Cadden J. F. The Acid Base Equilibrium of the Blood in Eclampsia. ibid 55: 233 (Dec.) 1929.

normal pregnancy, this is an inconstant finding even in the presence of pronounced generalized edema.¹

The significance of albumin in the urine has been emphasized. Addison counts¹⁸ reveal a slight increase in the number of erythrocytes, white cells and casts of all sorts. Microscopic hematuria in the sediment centrifuged in the usual way is rare except in cases of eclampsia. Their presence in considerable numbers suggests the possibility of acute glomerulonephritis. Casts are common. Pyelonephritis recently emphasized by Peters¹⁹ was an uncommon finding in our cases.

Although renal function as indicated by our use of the urea clearance test at times showed a depression of function in the acute stages of severe toxemia this was not a regular finding. This is in keeping with observations by others.²⁰ Recent studies of renal clearances in several laboratories²¹ have indicated that during the acute phase of toxemia the renal blood flow is normal and the glomerular filtration is decreased. This change has been attributed to the thickened basement membrane of the glomerulus or to spasm of the afferent arteriole of the glomerulus.

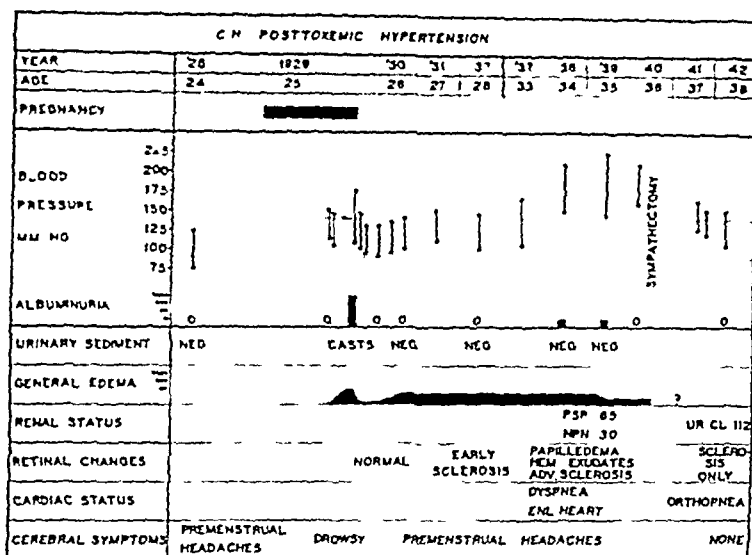


Fig. 3 (C.H.)—Clinical course of post-toxic hypertension. Previous to pregnancy in 1929 blood pressure and urine were normal. Toxemia appeared in the twentieth week and persisted until the thirtieth week at which time labor was induced. Post partum a low grade hypertension persisted and became progressively more severe after 1937. A renal biopsy at the time of sympathectomy by Dr. Reginald Smith in 1941 revealed advanced nephrosclerosis.

Blood guanidine is not uniformly elevated in toxemia and when it is it follows rather than precedes the rise in blood pressure.²² The present status of the role

played in toxemia of the anterior and posterior pituitary hormones, thyroid and ovaries has been reviewed elsewhere.²³ Although indirect evidence is suggestive that an endocrine abnormality exists and may ultimately be demonstrated to be responsible for the disturbance in water metabolism and in the vascular system, too little is known of the state of the endocrine system in toxemia at the present time to come to any definite conclusions concerning the role it may play in its production. To our knowledge, the excretion of adrenal cortical hormones has not been studied in toxemia.

Thus the laboratory has as yet yielded little insight into the actual mechanism and etiology of toxemia of pregnancy. The eternal search for some toxin from which the syndrome derives its name, has shed little light on the disorder.

SIGNAL

A high incidence of spontaneous prematurity, still births and neonatal deaths occurs in toxemia of pregnancy. In preeclampsia without preceding hypertension the fetal mortality has been reported to vary between 5 per cent in the mild and 25 per cent in the severe cases,²⁴ while in those with preexistent hypertension it has varied from 12 per cent in the mild to 69 per cent in the severe.²⁵ The studies of Neugarten²⁶ and Tyson and Bowman²⁷ showed that provided the fetus successfully survived the neonatal period there were no demonstrable ill effects later from preeclampsia and eclampsia. We did not detect hypertension or water retention in the newborn babies of toxemic and edematous mothers.¹

The maternal mortality from preeclampsia is but a fraction of 1 per cent in most series that have been reported.²⁸ In eclampsia, the maternal mortality varies greatly from clinic to clinic but it approximates 20 per cent in the country at large.³⁰

The late effects of toxemia of pregnancy on the mother have received the attention of only a few observers but merit emphasis. The careful follow-up studies of Herrick and Tillman,³¹ Dieckmann and Brown,³² Reid and Teel³³ and others indicate that approximately 25 per cent of those with normal prepregnant blood pressure who develop toxemia during pregnancy are left with a permanent postpartum hypertension. It is also recognized³⁴ that a similar percentage of hyper-

18 Liden, C. A., Sinclair, F. D. Jr. and Rogers, W. C. The Effect of the Toxemia of Pregnancy on Renal Function. *J. Clin. Investigation* 15: 317 (May) 1936.

19 Peters, J. P. The Nature of the Toxemia of Pregnancy. *J. A. M. A.* 110: 329 (Jan. 29) 1938.

20 Dieckmann, W. J. Renal Function in the Toxemia of Pregnancy. *Am. J. Obst. & Gynec.* 29: 472 (April) 1935. Elden, Sinclair and Rogers.

21 Chesley, L. C., Connell, E. J., Chesley, L. R., Kitz, J. D. and Glissen, C. S. The Diatriz Clearances and Renal Blood Flow in Toxemia of Pregnancy. *J. Clin. Investigation* 19: 219 (Jan.) 1940.

22 Chesley, L. C. The Question of Glomerular Damage Following Toxemia of Pregnancy. *Am. J. Obst. & Gynec.* 42: 229 (Aug.) 1941.

23 Corcoran, A. C., and Page, J. H. Renal Function in Late Toxemia of Pregnancy. *Am. J. M. Sc.* 201: 385 (March) 1941. Welsh, C. A., Wellen, I. and Taylor, H. C., Jr. Renal Blood Flow, Filtration Rate and Tubular Excretory Mass in Patients with Specific Toxemia of Pregnancy. *J. Clin. Investigation* 20: 438 (July) 1941. Wellen, I., Welsh, C. A. and Taylor, H. C., Jr. The Filtration Rate Effective Renal Blood Flow, Tubular Excretory Mass and Phenol Red Clearance in Specific Toxemia of Pregnancy. *ibid.* 21: 63 (Jan.) 1942. Dill, L. V.

24 Isenhour, M. A., Cadden, M. A., and Schaffer, N. K. Glomerular Filtration and Renal Blood Flow in the Toxemia of Pregnancy. *Am. J. Obst. & Gynec.* 43: 32 (Jan.) 1942. Taylor, Wellen and Welsh.

25 Footnote deleted on proof.

26 Neugarten, L. Leber das Schicksal der Kinder eklampsischer Mutter. *Zentralbl. f. Gynäk.* 49: 308 (Aug. 29) 1925.

27 Tyson, R. M., and Bowman, J. E. Offspring of Eclamptic and Preeclamptic Mothers. *Arch. Pediat.* 48: 270 (April) 1931.

28 Cruickshank, J. N., Hewitt, I. and Couper, K. L. The Toxemia of Pregnancy. A Clinical and Biochemical Study. Medical Research Council Special Report Series 117. 1927. Reid and Teel. Dieckmann and Brown.

29 Strander, H. J. Toxemia of Pregnancy. *Medicine* 8: 1 (Feb) 1929.

30 Herrick, W. W. and Tillman, A. J. B. Toxemia of Pregnancy. Its Relation to Cardiovascular and Renal Disease. *Clinical and Necropsy Observations with a Long Follow Up.* *Arch. Int. Med.* 55: 643 (April) 1935.

31 Dieckmann, W. J. and Brown, I. Do Eclampsia and Preeclampsia Cause Permanent Vascular Renal Pathology? *Am. J. Obst. & Gynec.* 37: 762 (May) 1939.

32 Teel, H. M., and Reid, D. F. Eclampsia and Its Sequelae. A Clinical Follow Up of all Cases at the Boston Lying In Hospital Over a Twenty Year Period. *Am. J. Obst. & Gynec.* 34: 12 (July) 1937.

33 Reid and Teel.

34 Heynenmann, Theodor. Spätfolgen der Eklampsia und ihrer Vorstadien unter besonderer Berücksichtigung der Nierenveränderungen. *Zentralbl. f. Gynäk.* 58: 3010 (Dec. 22) 1934. Herrick and Tillman.

35 Dieckmann and Brown.

tensive patients who develop toxemia during pregnancy have a higher blood pressure and more albumin in the urine after their pathologic pregnancy than before which again emphasizes the permanently harmful action of toxemia on the mother

In a careful follow-up study, Reid and Leel¹¹ found that permanent vascular disease developed with far greater frequency in those whose toxemias had been mild than in those who had had eclampsia. From our own observations we are in accord with their conclusions. It appears that the duration of the vascular disorder during pregnancy is of greater importance than its severity in giving rise to permanent vascular disease. We have advocated termination of pregnancy after three weeks of conservative therapy of toxemia in order to avoid this late vascular damage. For the same reason Peckham³ has recently suggested terminating pregnancy after a toxemia of four weeks duration.

Although after a toxemic pregnancy hypertension and albuminuria usually disappear within a few days or a few weeks, they may persist for as long as a year and then disappear permanently. Such cases are not rare. These cases merge imperceptibly into those in which the hypertension or albuminuria are permanent. The course is then one of chronic progression indistinguishable from other types of chronic hypertensive disease such as chronic glomerulonephritis or benign or malignant "essential" hypertension. Figure 5 is illustrative of a typical case of post-toxemic hypertensive vascular disease. Elsewhere we³⁶ have discussed in detail the clinical course of post-toxemic hypertension.

HISTOPATHOLOGY OF TOXEMIA OF PREGNANCY

In toxemia the main morphologic changes occur in the kidney, liver and placenta, although inconstant changes have been observed in many other organs.

The earliest changes in toxemia occur in the kidney rather than in the liver, as is usually stated. Renal lesions are diffuse and are primarily degenerative in character. The term glomerulonephrosis which has been applied to this condition by Fahr³⁷ would seem the most suitable. The epithelial cells of the convoluted tubules are swollen and contain numerous hyaline droplets. Varying amounts of fat are present. The epithelium of the glomerular tufts shows degenerative changes similar to that of the tubular epithelium. The basement membrane of the tufts is thickened to a variable degree owing to reduplication. The glomerular capillaries appear bloodless in most cases but occasionally congested (fig 6). An increase in the number of endothelial cells of the capillaries of the tufts is occasionally seen. In several instances acute sclerotic changes, such as were described by Fahr³⁷ and Bell³⁸ have been observed in the afferent arteriole. Similar changes have been observed by us¹ and by others² in cases of pre-

eclampsia but not in pregnant women dying from causes other than toxemia.¹⁰

Liver lesions in cases of eclampsia are inconstant and were present in only 13 of 25 cases studied by us. Liver changes, as described by Fahr³⁷ and others, are characterized by capillary dilatation, hemorrhage, thromboses, stasis, hydropic and fatty degeneration and necrosis of hepatic cells and lymphocytic infiltration usually at the periphery of the lobule. Occasionally these changes are focal or are located in the midzone of the central portion of the lobule.

Infarcts are often present in the placenta. Microscopically, the placental lesions consist primarily of a premature aging process.¹¹ The normal full term placenta shows a certain amount of syncytial degeneration. Quantitatively this normal aging process involves



Fig. 6—Renal glomerulus in eclampsia. Note thickened basement membrane, aneurysmal narrowing of capillaries and degenerative tubular epithelium. Aniline blue stain. Reduced from a photomicrograph with a magnification of 600 diameters.

only 10 per cent to 50 per cent of the small villi at term. In toxemia however, the extent and severity of changes in the syncytium are greater. In severe cases, all the small villi may be involved. This difference is all the more significant because most of the toxemic placentas examined were delivered prematurely.

TREATMENT

The treatment of toxemia of pregnancy is prophylactic and therapeutic.

Prophylaxis—Perhaps the greatest strides in the control of toxemia have been in its prevention. Prophylactic treatment should consist in recognizing those

³ Peckham C H. Time of Onset and Duration of the Toxemias of Late Pregnancy in Relation to the Development of Permanent Vascular Damage. *Am J Obst & Gynec* 42: 638 (Oct.) 1941.

³⁶ Golden A, Dexter Lewis and Weiss Soma. Vascular Disease Following Toxemia of Pregnancy (Preeclampsia and Eclampsia). Observations on Its Clinical Course. *Arch Int Med* to be published.

³⁷ Fahr T. Die pathologisch-anatomischen Veränderungen der Niere und Leber bei der Eklampsie. In Hinselmann H. Die Eklampsie. Bonn: Friedrich Cohen, 1924.

³⁸ Bell F T. Renal Lesions in the Toxemias of Pregnancy. *Am J Path* 8: 1 (Jan.) 1952.

³⁹ Kelloff G S. Toxemias of Pregnancy. *Am J Surg* 35: 300 (Feb.) 1947. Heymann T. Der anatomische Befund in präklinischen Stadium der Gestations-eklampsie. *Archiv f. path. Anat.* 274: 413 1925. Lige F W, and Cox A J. Renal Changes Following Toxemias of Late Pregnancy. *West J Surg* 46: 463 (Sept.) 1938. Bell.

⁴⁰ Baird D and Dunn J S. Renal Lesion in Eclampsia and Nephritis of Pregnancy. *J Path & Bact* 37: 291 (Sept.) 1933. Dexter and Weiss.

⁴¹ Tenney Benjamin Jr and Parker Frederic Jr. The Placenta in Toxemia of Pregnancy. *Am J Obst & Gynec* 29: 1009 (June) 1940.

patients in whom toxemia is prone to occur, i. e. those with prepregnant hypertension, and in preventing if possible the development of generalized edema, which is the most frequent sign found by us to precede or accompany the onset of toxemia. Periodic examination of all pregnant women beginning as early in pregnancy as possible should include weight, blood pressure, urinalysis and examination for the presence of edema. All patients should be instructed to report at once the appearance of generalized edema or toxemic symptoms. With the appearance of edema, more than the usual supervision should be given even though in most cases it is by itself innocuous. The edema is preventable in many instances by maintaining adequate nutrition with a diet containing 100 Gm. or more of protein, a low value of salt, a high carbohydrate level and a caloric value of about 2,000. The diet should include lean meats and eggs with abundant fruits and vegetables. Fats, with the exception of a moderate amount of butter, should be eliminated. When patients adhere to a diet of low salt content there is no need to restrict fluid intake. Sodium bicarbonate and sodium containing preparations should not be used for heartburn. Preparations devoid of sodium such as magnesia magma or "amphojel" should be prescribed in the treatment of this symptom. In the more resistant cases diuretics are employed. Potassium chloride in 2 Gm. doses three to four times a day, ammonium chloride in 1 Gm. capsules six times a day for three days and repeated after an interval of three days⁴² or magnesium sulfate 8 Gm. daily by mouth may be beneficial in promoting loss of edema. Mercurial diuretics have met with little success in our hands. If the edema is pronounced and symptoms exist the patient should be put to bed for seven to ten days and placed on a 1,200 to 1,500 calory diet composed mainly of fruit juices, sugar and skim milk.

Treatment of Preeclampsia—The discovery of hypertension or albuminuria with or without edema in the first half of pregnancy indicates that vascular or renal disease exists independently of pregnancy (hypertension uninfluenced by pregnancy). Such patients should be watched with extreme care for the development of edema and toxemia. Preeclampsia is signaled by the appearance of a rise of blood pressure or an increase in albuminuria during the second half of pregnancy. When preeclampsia develops, we advocate that the patient should either be hospitalized or be put to bed at home and visited daily. Aside from bed rest and sedation for adverse symptoms, practically all effective therapy in preeclampsia (and eclampsia) consists in producing water elimination, whether by purges, restriction of salt and sodium bicarbonate in the diet, administration of diuretics or, finally, evacuation of the uterus. The dietary and fluid regimen and the administration of diuretics described in the preceding paragraph should be followed. If gastric disturbances exist a diet of fruit juices and skim milk suffices. Daily observations of weight, blood pressure, urine, edema and symptoms are essential for judging the progress of the disorder. Diuresis usually results from this regimen. Cerebral, visual and gastrointestinal symptoms can usually be controlled by sedation, preferably magnesium sulfate (10 cc. of a 25 per cent solution intramuscularly) or the barbiturates (e. g. sodium amytal 0.2 Gm. subcutaneously). If the condition of the patient becomes worse,

as evidenced by failure of diuresis or by maintained or rising blood pressure, albuminuria and other symptoms, evacuation of the uterus under the most favorable conditions offers the only consistently effective method of treatment. Before undertaking delivery all available general measures should be used in order to improve the bodily state of the patient. Accouchement force and cesarean section should be avoided as far as possible. We advocate rupture of the membranes or insertion of a Voorhes bag if the condition of the cervix warrants. Should the hypertension and albuminuria, even if slight, persist for a period of three weeks, we advocate considering termination of pregnancy as a safeguard against the development of permanent postpartum hypertension or albuminuria.

Treatment of Eclampsia—The appearance of coma or convulsions (eclampsia) or symptoms suggesting its approach are of considerable gravity to both mother and fetus. Therapeutic principles to be followed should consist in (1) general measures, (2) control of symptoms, (3) promotion of diuresis, (4) control of blood pressure and (5) possible evacuation of the uterus.

1 General Measures. These consist of bed rest in a warm, quiet, darkened room with constant observation. Recording of temperature and urine volume (by retention catheter) every two hours and recording of pulse, respiration and blood pressure every half hour should be maintained. Nothing should be given by mouth until the patient is conscious. Oxygen is indicated to combat cyanosis. A gentle soapsuds enema is given for elimination.

2 Control of Symptoms. For convulsions or for preconvulsive symptoms, heavy sedation is required. The three groups of sedatives most widely and successfully used are magnesium sulfate, barbiturates and chloral hydrate. The use of these sedatives as well as of morphine, veratrum viride and lumbar puncture has been described in detail.⁴³

3 Diuresis. Our observations have indicated clearly that the most reliable sign of improvement is diuresis, and until diuresis occurs improvement rarely takes place. For this reason an indwelling catheter with a two hourly recording of urinary output is serviceable. Pulmonary edema, cardiac decompensation, water intoxication, acidosis and other manifestations are secondary to the water retention and progressive renal shutdown. Should these complications develop, therapy should be directed toward their relief, but it is usually of little avail while oliguria or anuria persists. Venesection and plasmapheresis at this time increase rather than lessen the oliguria. Renal decapsulation is usually a harmful procedure. The administration of saline solution enhances edema formation and is contraindicated, as is also the administration of large amounts of parenteral fluids in the presence of edema.

Many factors enter into the excretory function of the kidney, two of the most important being maintenance of an adequate osmotic pressure of the blood and of an adequate blood pressure (see next paragraph). Diuresis may be aided and abetted by the slow administration intravenously of 50 cc. of 50 per cent dextrose. Transfusion or administration of concentrated protein solutions is the most important measure for promoting diuresis. It must be given slowly (500 cc. in two to three hours) with the patient in the orthopneic position in order to avoid pulmonary congestion.

4 Control of Blood Pressure. Although an extreme hypertension in eclampsia is of danger to the patient,

⁴² The administration of potassium and ammonium salts to patients with nitrogen retention is definitely contraindicated.

⁴³ Footnote deleted on proof.

⁴⁴ Footnote deleted on proof.

it has been our experience that the earliest sign of impending disaster is almost always an insidious, progressive fall in arterial blood pressure terminating in shock and death. This fall in blood pressure is often due in part to excessive use of sedatives, in part to indiscriminate blood letting and in part to the disintegration of the body as a result of the disease. Only too often are sedatives administered with the primary object of creating a hypotension rather than of controlling the convulsive seizure. This has already been emphasized. Venesection has been in vogue for several centuries. A rational consideration of its indications, however, reveals that it should be reserved for pulmonary edema alone. Maintenance of the blood pressure at normal or somewhat hypertensive levels is important. The blood pressure is more easily and reversibly controlled by the administration of magnesium sulfate or other sedatives given intravenously or intramuscularly than by venesection. Should the blood pressure fall to hypotensive levels, transfusion or administration of concentrated protein solutions is the most important measure for checking the progress of circulatory collapse. Although venesection may lower blood pressure, transfusion does not raise blood pressure above the normal level. If the process advances to the stage of outright shock with low blood pressure, pulmonary congestion, gasping respirations, cyanosis, coma, cold clammy extremities and the like, the prognosis is usually grave because irreversible changes have set in. Transfusion and cardiac and respiratory stimulants such as caffeine, nikethamide, digitalis and hypertonic dextrose and sucrose may be of some help.

5. Evacuation of the Uterus. When all measures fail, evacuation of the uterus is invariably followed by relief, provided the process has not entered an irreversible stage. The astonishing disappearance of the symptoms and signs after delivery is truly dramatic. In the majority of cases of eclampsia there is improvement within twelve to eighteen hours of the institution of good medical therapy. An early effort should be made, however, to promote delivery. Unless the process has advanced to the stage of irreversibility, diuresis followed by other signs of improvement set in usually between twelve and twenty-four hours of delivery. The method by which pregnancy is terminated depends on many factors. If the cervix is "ripe," labor can usually be successfully induced by rupture of the membranes or insertion of a bag. Eclamptic patients are not good anesthetic or operative risks. We favor as the most satisfactory therapy the so-called middle course treatment which condemns routine accouchement force and cesarean section and which advocates improving the general condition and carrying the patient along until spontaneous delivery or delivery enhanced by dilation of the cervix is feasible.

COMMENT

Considerable mystery has surrounded the nature of the hypertensive toxemia of pregnancy.

It is a disease entity peculiar to the latter half of pregnancy with a clearcut pattern of characteristics which set it apart quite distinctly from other types of hypertension clinically and pathologically. Its closest analogue in the nonpregnant is acute glomerulonephritis, from which of course it differs etiologically and pathologically. Both represent however, an acute type of vascular disease characterized by hypertension, albuminuria and water retention. In each there is a diffuse involvement of the glomeruli of the kidney. Both may

leave irreparable renal damage and permanent vascular disease in their wake. Like acute glomerulonephritis, toxemia of pregnancy differs strikingly from the chronic forms of hypertensive vascular disease ("essential" hypertension, chronic glomerulonephritis, and so forth).

Post-toxemic hypertension and albuminuria are usually attributed to the persistence of a previously latent hypertension which has been made apparent by pregnancy. With this statement we are not in agreement. Evidence reviewed elsewhere⁴⁶ indicates to us that toxemia per se initiates the hypertensive process which becomes permanent after pregnancy. Clinically, this post-toxemic hypertension differs little if at all from the syndromes of benign or malignant nephrosclerosis of different etiologies. At autopsy, we have not detected any characteristic lesion in the kidneys of these patients. Indeed it is a common observation that the chronic effects of various types of initial renal lesions are identical or at least similar. The histologic lesion common to all is that of benign or malignant nephrosclerosis.

Many investigators have described animal syndromes which bear a superficial resemblance to human toxemia. On close examination, however, there are distinct differences.¹ Dill and his co-workers,⁴⁷ for example, have reported that experimental renal hypertension may be induced in pregnant rabbits and dogs with more ease than in nonpregnant animals and that delivery causes a distinct improvement in the hypertension. Their work has not been confirmed by Dawson, Cressman and Blacklock⁴⁸ in dogs. The syndrome produced in the rabbits resembled malignant hypertension with renal insufficiency rather than toxemia of pregnancy. Furthermore, when pregnancy occurs in animals hypertensive from renal ischemia, the blood pressure usually falls somewhat⁴⁹ as in human beings.⁵⁰ It would be fortunate if toxemia of pregnancy could be induced in animals, because it would open up a whole new field of investigation for the better understanding of the human disease.

Toxemia of pregnancy has been referred to as the "disease of theories," as indeed it is, which only indicates our lack of knowledge of its etiology. Space does not warrant more than a few brief etiologic observations here. More complete discussion will be found elsewhere.¹ It is apparent, however, that toxemia is not due primarily to uremia, liver insufficiency, hypoglycemia, electrolyte imbalance, hypocalcemia, guanidine intoxication, pyelonephritis, hypothyroidism, overactivity of the posterior pituitary gland or hypoproteinemia. Conclusive evidence is still lacking that a specific "toxin" is responsible for toxemia. Too little is known of hormone abnormalities in toxemia to evaluate the role they may play in its causation. From our own observations,¹ it appears that toxemia cannot be attributed to the fetus or to the uterine mass pressing

⁴⁵ Footnote deleted on proof.

⁴⁶ Dexter and Weiss.¹ Golden and Dexter.²

⁴⁷ Dill L. V. and Erickson C. C. Eclampsia like Syndrome Occurring in Pregnant Dogs and Rabbits Following Renal Artery Constriction. *Proc. Soc. Exper. Biol. & Med.* 29: 562 (Nov.) 1938. Dill L. V., Isenhour C. E. and Cadden J. F. The Effect of Quantitative Reduction of Renal Blood Flow on the Pregnant Rabbit. *J. Clin. Investigation* 18: 641 (Nov.) 1939. Goldblatt Harvey in discussion on paper by Erickson C. C. and Dill L. V. Observations on the Effects of Renal Ischemia in Pregnant Dogs and Rabbits. *Am. J. Path.* 15: 621 (Sept.) 1939. Dill L. V. and Erickson C. C. Effect of Constriction of the Renal Arteries in Pregnancy and in Certain Endocrine States of Rabbits. *Arch. Path.* 31: 68 (Jan.) 1941.

⁴⁸ Dawson I. R., Cressman R. D. and Blacklock Alfred. Experimental Hypertension and Pregnancy in Dogs. *Am. J. Path.* 17: 31 (Jan.) 1941.

⁴⁹ Corbit J. D., Jr. The Effect of Pregnancy on Experimental Hypertension in the Rabbit. *Am. J. M. Sc.* 201: 276 (June) 1941.

⁵⁰ Goldblatt, Dawson, Cressman and Blacklock.
⁵¹ Dexter and Weiss.¹ Hare and Karm. *Symons and Ramm.* et al.

⁵² Footnote deleted on proof.

⁵³ Footnote deleted on proof.

on adjacent structures such as ureter or renal artery. Evidence has been presented indicating the placenta as playing the primary role. The method by which the placenta produces this dyscrasia is not known.

SUMMARY

1 Results of a study of 100 normal pregnant patients, 100 pregnant patients with generalized edema and 80 patients with hypertension during pregnancy were correlated with and amplified by salient reports in the literature.

2 Approximately 75 per cent of all pregnant patients have easily demonstrable generalized edema which is only rarely of pathologic significance to the mother or fetus in the absence of hypertension and albuminuria. Its cause is unknown.

3 More than 90 per cent of previously normal patients have no vascular complications during pregnancy. Approximately 50 per cent of previously hypertensive or albuminuric patients suffer no aggravation of their hypertension or albuminuria during pregnancy regardless of the degree of hypertension or albuminuria before pregnancy. Since this lack of complications during pregnancy in hypertensive patients is not generally appreciated we have referred to it as "hypertension uninfluenced by pregnancy." Although the mother fares well there is a high incidence of miscarriages and stillbirths in this group.

4 Six to 9 per cent of previously normal patients have hypertension or albuminuria in the latter half of pregnancy, a syndrome known as toxemia (preeclampsia or if coma or convulsions occur eclampsia). Fifty per cent of our previously hypertensive patients had toxemia in the latter half of pregnancy. We were unable to predict which hypertensive patients would have toxemia on becoming pregnant.

5 Toxemia of pregnancy is an acute vascular disorder of the latter half of pregnancy which disappears before or soon after delivery. Clinically it resembles closely acute glomerulonephritis in respect to hypertension, albuminuria and generalized edema. Frequently there is development of permanent vascular disease subsequently.

6 The most important factors predisposing to the development of toxemia are generalized edema during pregnancy and prepregnant hypertensive vascular disease.

7 While the immediate maternal mortality in preeclampsia is almost negligible, in eclampsia it is high in the country at large.

8 There are no late effects of toxemia on the fetus. Permanent hypertensive cardiovascular renal disease of the mother occurs in approximately 25 per cent of patients with toxemia of pregnancy.

9 Post-toxemic hypertension and albuminuria are conditioned more by the duration of toxemia during pregnancy than by its severity. We advocate termination of pregnancy when toxemia, no matter how mild, has persisted for three weeks in spite of conservative therapy.

10 Post-toxemic hypertension differs in no essential details clinically or pathologically from other types of chronic hypertensive disease. At postmortem examination the characteristic lesions consist of nephrosclerosis.

11 Pathologically, the most characteristic and constant lesions in toxemia are in the kidney and consist of a glomerulonephrosis (Fah). Liver lesions are inconstant but when present consist typically of lesions in the periphery of the lobule. Placental lesions are

characterized by infarction and premature syncytial degeneration.

12 There is danger in venesection and excessive sedation. Interruption of pregnancy after three weeks of conservative therapy to prevent the occurrence of permanent vascular disease in the mother is advocated.

13 The etiology of toxemia of pregnancy is unknown, although evidence points to the placenta as being primarily responsible for the condition.

CONTINUOUS CAUDAL ANESTHESIA
OR ANALGESIA

A CONSIDERATION OF THE TECHNIC, VARIOUS
USIS AND SOME POSSIBLE DANGERS

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To the many recent advances in the rapidly expanding field of anesthesiology another new method has been added namely continuous caudal anesthesia or analgesia. The method was introduced as a new means of producing obstetric anesthesia and analgesia but it also has possibilities as a method of anesthesia for certain surgical operations.

Throughout the ages, physicians have been attempting to arrive at a method of anesthesia which would render labor and delivery painless without increasing the hazard to either mother or child. Few, if any, of the methods heretofore developed have even remotely satisfied these three demands. There are certain indications which lead many physicians to believe that continuous caudal anesthesia will meet these demands in most cases. It is only natural that the apparent answer to such an important problem should create intense interest among both the medical profession and the public.¹ Many successful results have been reported up to this time and the use of the method is increasing rapidly.

Although we are convinced that the principles of this new method are sound and that its use will continue to expand we wish to point out to those who contemplate using the method that the technic may be difficult and that it may be accompanied by certain potential dangers and complications. If continuous caudal anesthesia is to be employed with safety, the anesthetist must be both adept in the technic of the method and fully aware of all the potentialities involved. In this paper we wish to emphasize the technic of the method together with its potential hazards as well as its desirable features.

DEVELOPMENT OF THE METHOD

Continuous caudal anesthesia has been founded on a number of earlier methods, among which are caudal block,² transsacral block,³ high caudal block,⁴ peridural block and combinations of these methods.

From the Section on Anesthesia, Mayo Clinic. Because of lack of space, this article is abbreviated here. The complete article appears in the authors' reprints.

1 Fishbein, Morris. A New Step Toward Painless Childbirth, *Your Life* 12: 44-47 (Feb.) 1943. Hingson, R. A. and Southworth, J. L. Continuous Caudal Anesthesia. *Am. J. Surg.* 58: 93-96 (Oct.) 1942.
2 Hingson, R. A. Personal communication to the authors.
3 Lundy, J. S. *Clinical Anesthesia*, Philadelphia: W. B. Saunders Company, 1942.
4 Lundy, J. S. A Method of Producing Block Anesthesia of the Sacral Nerves. *Am. J. Surg.* 4: 262-270 (March) 1928.
5 Campbell, W. C. Sacral Block and High Caudal Block. *Anesth. Proc. Staff Meet., Mayo Clin.* 10: 667-673 (Oct. 16) 1935. Lundy, J. S. High Caudal Block Anesthesia. *S. Clin. North America* 17: 1271-1275 (Oct.) 1945.

Continuous caudal anesthesia was originated and developed by Edwards and Hingson⁶ and the preliminary report of their results appeared in September 1942. Its preliminary trial in October 1941 involved its use for several surgical procedures on the perineum and lower extremities. Its first obstetric application was carried out by Hingson and Edwards on Jan 6, 1942. Up to the present they have used the method and studied the results in 600 cases. In their earlier cases Hingson and Edwards employed a type of equipment similar to that which Lemmon⁷ used for continuous spinal anesthesia, namely a malleable needle of the Lemmon type to which was attached an extension tubing to permit the administration of additional doses of the local anesthetic solution throughout the course of labor and delivery. Subsequently they modified the equipment somewhat (fig 1).

After a preliminary trial of the method of Hingson and Edwards we devised an alternative technic (fig 2). This involved the use of a ureteral catheter inserted into the caudal canal through a large caliber needle and through which the local anesthetic solution was injected. This apparatus was developed with the idea of preventing possible breakage of and trauma from a semirigid needle in the caudal canal and to help permit greater freedom of movement of the obstetric patient during the course of her labor without the hazards of trauma or breakage of the needle.

After instituting this technic and using it in a number of cases we learned that Manalan of Indianapolis had employed a ureteral catheter in a number of cases to produce anesthesia and analgesia for obstetric delivery, although not as a continuous method for the relief of pain during the course of labor.⁸ Thus as often happens in medical development, two similar techniques

1940 to Nov 15 1941. The preliminary report of his work appeared in October 1942.

We have used and are continuing to use the method of Hingson and Edwards and the one developed by us in both obstetric and surgical cases. Both methods have certain advantages and certain disadvantages according

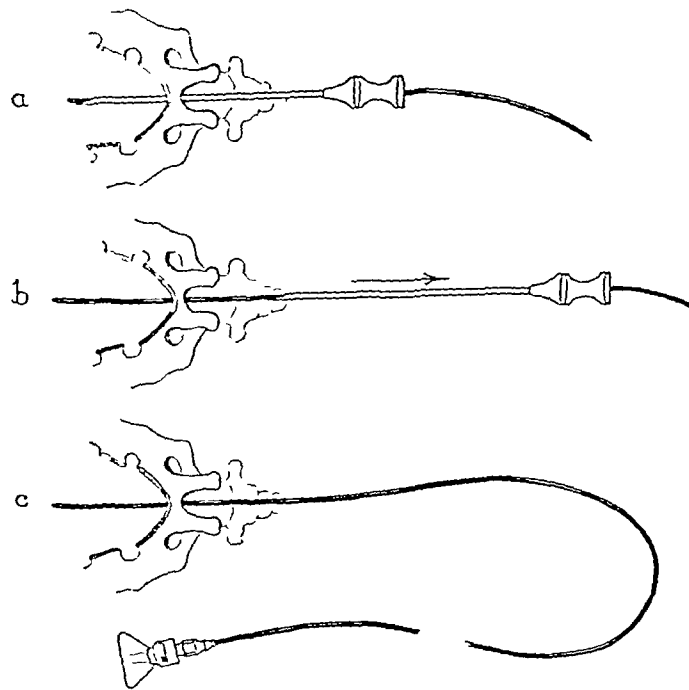


Fig 2.—Diagrammatic representation of the relationship of the 13 gauge needle and that of the catheter to the caudal canal: a, needle in place, catheter inserted through needle so that point of catheter is flush with the point of needle; b, catheter held in place and needle being withdrawn; c, catheter in place, needle has been removed.

to our present concepts. Throughout the following pages the technic of both methods will be described. Neither of these methods should be attempted by physicians who are not experienced in the use of caudal-sacral block anesthesia. It is suggested that those who contemplate the use of the method should first familiarize themselves with the technical features of the method in general. Tuohy¹⁰ has applied the catheter technic to continuous spinal anesthesia in a limited number of cases and feels that this method may be applicable in certain cases in which continuous spinal anesthesia is indicated.

Technic—The needle is inserted into the midline of the caudal canal through the sacral hiatus which is covered by the sacrococcygeal ligament. Its point is advanced to the level of the third sacral foramen and never higher than the level of the second sacral foramen, owing to the possibility of puncturing the dural sheath.

Anesthetic Agents—Various local anesthetic agents have been employed but a 1.5 per cent solution of mepivaine has been preferred by most authors. Isotonic solution of sodium chloride is used as the solvent and the amount of the solution required will depend on the desired concentration of the anesthetic agent and whether or not it is supplied in a concentrated solution or in a solid form. The accompanying table shows the method of diluting the contents of a 5 cc ampule of a 20 per cent solution of mepivaine in order to prepare weaker solutions of this drug.

10. Tuohy, E. B. Personal communication to the author.

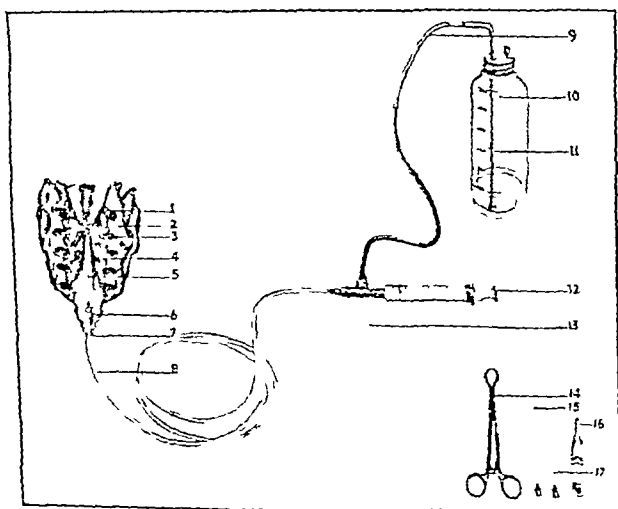


Fig 1.—Diagrammatic representation of the Hingson and Edwards apparatus for continuous caudal anesthesia showing the relationship of the needle to the sacral nerves in the caudal canal (with authors permission).

were evolved independently by Manalan and ourselves. Manalan⁹ employed this method of anesthesia and analgesia in obstetric delivery in 46 cases from Aug 13,

6. Edwards, W. B. and Hingson, R. A. Continuous Caudal Anesthesia in Obstetrics. *Am J Surg* 57: 459-464 (Sept.) 1942.
7. Lemmon, W. T. A Method for Continuous Spinal Anesthesia. *Ann Surg* 111: 141-144 (Jan.) 1940. Lemmon, W. T. and Pachal, C. W. Jr. Continuous Spinal Anesthesia with Observations on the First Five Hundred Cases. *Pennsylvania M J* 44: 975-981 (Mar.) 1941.
8. Irving, Francis. Personal communication to the author.
9. Manalan, S. A. Caudal Block Anesthesia in Obstetrics. *Indiana M J* 75: 564-565 (Oct.) 1942. Personal communication to the author.

THE METHOD OF HINGSON AND EDWARDS

The special apparatus devised by Hingson and Edwards, which has been described is depicted in figure 1. The needle was specially designed for this technique. It is made of stainless steel, it is semiflexible and malleable, it is of 19 gage and is $3\frac{1}{2}$ inches long.

Preparation of Different Solutions of Metycaine by Adding Isotonic Solution of Sodium Chloride to the Contents of a 5 cc Ampule of a 20 per Cent Solution of the Drug

Strength of Final Solution, per Cent	Isotonic Solution of Sodium Chloride, cc and
0.5	200 cc
1.0	100 cc
1.1	75 cc
1.5	66.6 cc
2.0	50 cc

The needle is inserted while the patient is in the knee-elbow or the lateral flexed position. It is inserted into the caudal canal a distance of 1 to 2 inches.

In the series of cases reported by Hingson and Edwards¹¹ the average duration of anesthesia was six and a half hours and the average total dose of metycaine was 2.6 Gm. According to these authors there was no alarming fall in blood pressure or any toxic reaction and the babies were born in vigorous condition. Nausea occasionally occurs but even patients who are nauseated may take fluids and food during the course of labor. In most instances this method produces complete relief of pain during both delivery and labor and is satisfactory for such operative procedures as episiotomy and perineal repair.

AN ALTERNATIVE METHOD

An alternative method of continuous caudal anesthesia entails the use of a ureteral catheter. This method was first employed in June 1942 and was evolved in order to eliminate the danger of breakage of needles and the possibility of trauma during labor. It is applicable for both obstetric and surgical procedures. In addition it was felt that the use of flexible equipment might permit greater freedom of movement on the part of the patient, particularly during the course of a long labor.

Preliminary Medication—Premedication with a barbiturate such as pentobarbital sodium is employed particularly to guard against untoward effects of the local anesthetic. This drug is administered orally in comparatively small doses, that is, $1\frac{1}{2}$ to 3 grams (0.1 to 0.2 Gm). It may or may not help to relieve the preliminary pains of labor.

Equipment and Solutions—The same equipment and solutions may be used for obstetric or surgical procedures.

Equipment A sterile "continuous caudal tray" (fig 3) should be prepared. This tray should contain

- One number 5 ureteral catheter
- One 13 gage Love-Barker intraspinal needle with stylet
- One 20 cc Luer-Lok syringe or a 10 cc Lundy syringe with Lundy-Luer adapter
- One Lundy 50 mm needle
- One Lundy wheel needle
- One Luer wheel needle

- One 18 or 20 gage Luer intravenous needle $1\frac{1}{2}$ inches long
- One 22 gage Luer hypodermic needle
- One Luer needle plug
- One Luer adapter
- One 200 cc graduated cup

Solutions The following ampules of solution are sterilized and placed on the "continuous caudal tray"

- Two 5 cc ampules of a 20 per cent solution of metycaine
- Two 1 cc ampules of 1:2,600 solution of epinephrine
- Isotonic solution of sodium chloride

We have also used a 1.5 per cent solution of procaine hydrochloride, but we prefer a 1.5 per cent solution of metycaine because the duration of the resulting anesthesia is greater than the duration of anesthesia produced with procaine hydrochloride. Unless the patient's blood pressure is abnormally high, 1 cc of a 1:2,600 solution of epinephrine is added to 66.6 cc of the 1.5 per cent solution of metycaine. This increases the duration of anesthesia and permits the use of smaller total doses of metycaine.

Administration—The following description of the administration of an anesthetic to produce continuous

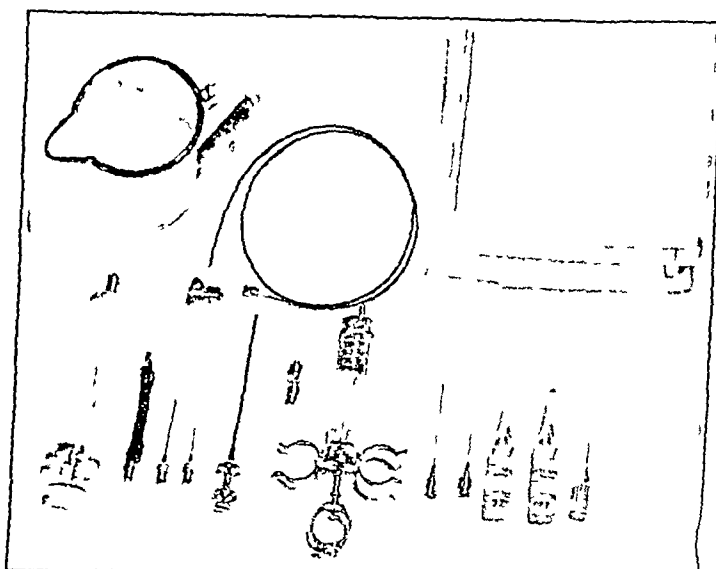


Fig 3—Sterile continuous caudal tray. The Lundy syringe, needles and Lundy-Luer adapter may be omitted from this tray and only the Luer syringe and needles may be used for the preliminary infiltration but the use of the Lundy-Luer syringe facilitates the accomplishment of the first part of the injection.

caudal anesthesia will pertain chiefly to the use of this method of anesthesia in obstetric practice.

For primiparas the administration of the anesthetic solution is begun when the diameter of the dilating cervix has reached 2 to 3 cm and when the labor pains have become severe. For multiparas and when labor is advancing rapidly the solution is injected somewhat earlier. For these patients the injection may be administered while they are on the delivery table, but when labor is more protracted the solution may be injected in the patient's room or in the predelivery room. The type of anesthesia and its effects should be explained to the patient before the administration of the anesthetic agent is begun.

The patient is placed in the knee-chest position or in the modified Sims position. When the modified Sims position is used, most physicians place the patient on her left side, however, Mousel¹² has expressed the opinion that the insertion of the needle and catheter can be facilitated by placing the patient on her right side. The anesthetist should face the patient. The patient is

11 Hingson, R. A., and Edwards, W. B. Continuous Caudal Anesthesia During Labor and Delivery, *Anesth & Analg* 21: 301-311 (Nov-Dec) 1942.

12 Mousel, L. H. Personal communication to the authors.

moved close to the edge of the bed or delivery table. When this method of anesthesia is used for surgical operations the patient is placed in the prone position and her hips are elevated with pillows or a sacral rest.

The sacral region is sterilized widely about the proposed site of injection and the patient is draped. A skin

The needle should be introduced slowly and cautiously, and it is desirable that the bevel of the needle does not scrape the bone of either the anterior or the posterior wall of the canal, since this can result in trauma to the venous plexus lining the canal. The point of the needle is advanced to about the level of the third sacral foramen but never as high as the level of the second foramen. In many instances it is necessary to insert the needle only 1 to 1½ inches into the caudal canal.

After the needle has been inserted to the correct position, the stilet is removed and a number 5 ureteral catheter (woven silk or, preferably, nylon) is passed through the needle and into the caudal canal. It is advanced so that as determined by previous measurement its tip will rest at about the level of the third sacral foramen or between the second or third foramen (fig 5). If the ureteral catheter is of the graduated type its position at the proper level of the caudal canal may be determined more accurately.

The catheter is then grasped distal to the needle to maintain it in the proper position while the 13 gage needle is withdrawn over it by combined pull and rotation. The catheter is left in place in the caudal

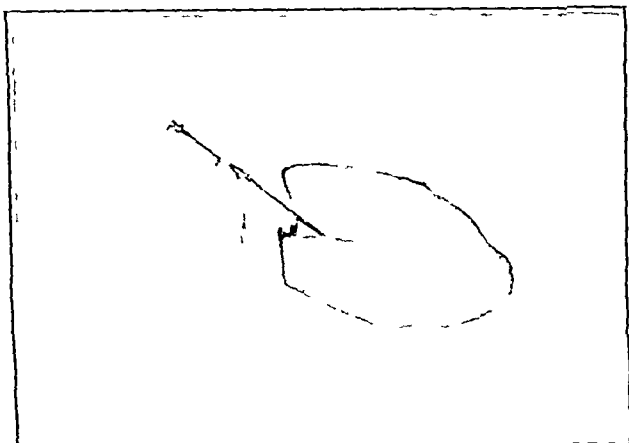


Fig 4—The 13 gage needle has been inserted into the caudal canal up to the level of the third sacral foramen. The stilet has been partially withdrawn.

wheel is raised over the middle portion of the sacral hiatus. A 20 gage intravenous needle 1½ inches long is attached to the syringe containing the anesthetic solution and is inserted through the skin wheel and through the sacrococcygeal ligament at an angle of 45 degrees. After the needle has pierced the sacrococcygeal ligament and has come to rest lightly on the anterior wall of the sacrum 5 cc of the solution of metcaine is injected. Even this preliminary injection into the lower part of the caudal canal sometimes will produce partial analgesia.

This needle is withdrawn and a 13 gage Love-Barker needle^{12a} with its stilet in place and with the bevel directed upward, is inserted at an angle of about 45

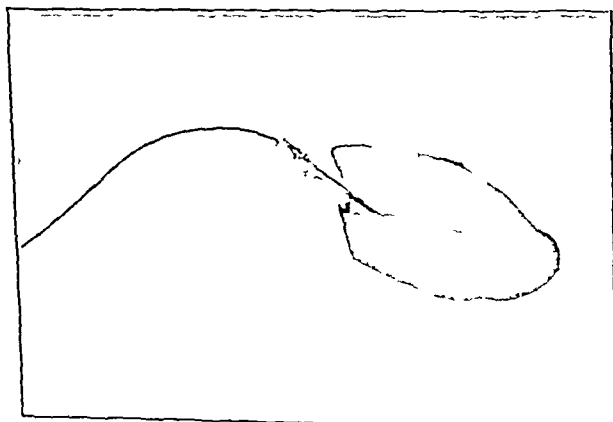


Fig 5—The stilet has been withdrawn from the 13 gage needle and the catheter has been introduced through it into the caudal canal.

degrees (fig 4) and introduced through the sacrococcygeal ligament. When this needle touches the anterior wall of the sacral canal its bevel is turned downward and its hub depressed after which it may be cautiously advanced upward along the midline of the caudal canal.

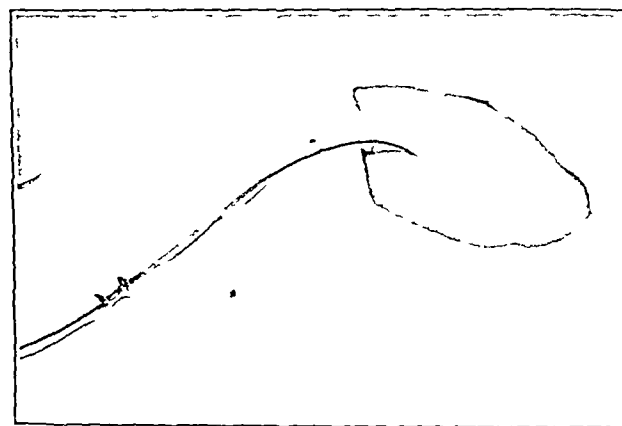


Fig 6—After the catheter has been inserted to the proper level in the caudal canal the 13 gage needle is withdrawn over the catheter.

canal (fig 6). The patency of the catheter should be checked before it is inserted. After the 13 gage needle has been withdrawn, 5 cc of the local anesthetic solution is injected through the catheter into the caudal canal to check the patency of the lumen of the catheter and also to test for any possible untoward reaction to a small dose before larger doses are injected (fig 7).

It is important during these maneuvers that the external end of the catheter be kept sterile. When the catheter is in place in the caudal canal a 22 gage Luer hypodermic needle the bevel of which has been cut off square is inserted into the catheter end and is held there with a small piece of adhesive tape. A sterile Luer cap is then applied to the hub of this needle, this will block any backflow of solution and will keep the end of the needle sterile.

Before the adhesive tape is applied, the skin about the site of the catheter is painted with a solution of mastic of benzene and a small sterile piece of sponge rubber or rubber dam is slipped over the catheter and is pressed firmly against the skin which has been painted with the adhesive preparation. This forms a tight seal around the catheter and its point of exit and helps to prevent soiling and contamination by any secretions.

12a Love I C. Continuous Subarachnoid Drainage for Meningitis by Means of a Ureteral Catheter. *J A M A* 104 1392-1397 (May 4) 1935.

Several pieces of waterproof adhesive strapping are applied to the catheter at its exit from the skin both to hold it in position and to form a seal around the exit of the catheter to prevent contamination from vaginal or rectal soiling. The remaining portion of the catheter is curved laterally and strapped to the skin of

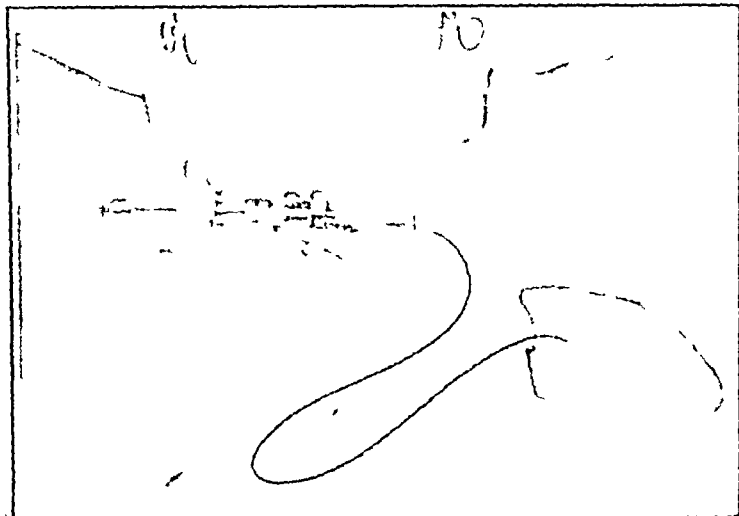


Fig. 7—Preliminary injection of 1.5 per cent solution of metycaine through the catheter into the caudal canal prior to the fixation of the catheter with adhesive tape.

the flank by adhesive tape the end of the catheter being left in an accessible position for repeated injections (fig. 8).

Thirty cc of the anesthetic solution is injected very slowly, about 10 cc at a time. This slow injection is important, since a large volume of solution injected rapidly at one time may cause pain, nausea, headache and other untoward effects which result from excessive pressure within the caudal canal or from rapid absorption of the anesthetic agent. Such reactions are an indication that the anesthetic solution has entered the caudal canal. If the anesthetic solution is warm when it is injected its effectiveness will be increased, that is, the period of induction will be shortened and the degree of anesthesia will be increased.

After the injection has been made the patient may be turned on her back and during the course of her labor she may lie in any position in which she is comfortable. She may change her position at any time without assistance, provided the catheter has been securely fixed at its point of exit from the skin. There is little danger of dislodging it and there is no danger from trauma.

Additional injections of 10 cc, but not more than 20 cc, of the solution of metycaine are administered at the first signs of reappearance of the labor pains. Once the catheter has been inserted and anesthesia obtained, the subsequent anesthesia parallels that obtained by the needle technic. The catheter is removed after the delivery or other operative procedures have been completed and before the patient is returned to her room. The site of puncture is painted with an anesthetic solution, and a small sterile dressing is applied.

POSSIBLE COMPLICATIONS AND PRECAUTIONS

Those Associated with the Needle Technic—The possible complications to caudal block¹³ in general have been frequently emphasized, and these apply equally to continuous caudal anesthesia. Most of the dangers and untoward effects occur at the time of the injection

Variations in the bony formation of the sacrum, obese patients in whom the bony landmarks are difficult to palpate, previous injuries and deformities in the sacral region and faulty position of the patient at the time of injection serve to increase the difficulties and the possibility of untoward effects or inadequate anesthesia.

Faulty Position of the Needle A common error, which occurs particularly when the patients are obese, is to miss the sacral hiatus and insert the needle over the posterior wall of the sacrum. It thus comes to lie underneath the skin overlying the sacrum, and no anesthesia will be obtained since the anesthetic solution will be deposited subcutaneously.

Intravenous Injection It is possible, by scraping the point of the needle along the anterior or posterior bony wall of the caudal canal, to pierce the venous plexus within the canal. Unless this is determined by aspiration before injection and the point of the needle is adjusted, it is possible to inject a toxic dose of the local anesthetic agent into the venous system. This will produce untoward and perhaps fatal reactions.

Subarachnoid Injection If the point of the needle is kept below the level of the second sacral foramen it is not likely that the needle will pierce the subarachnoid space. It is advisable to insert the needle to a point well below this level. Frequent aspirations should be carried out to see if spinal fluid can be withdrawn, before any local anesthetic solution is injected. Severe collapse and possibly death can occur if an overdose of a local anesthetic agent is administered intraspinally in this manner.

Broken Needles Breaking of a needle has occurred more frequently during the early phase of the development of the method than it has in recent months. Hingson and Edwards have experienced little difficulty since the development of their new needle, which is supported at the hub. They did, however, instruct their patients to maintain a lateral position during the course of the anesthesia and to turn in bed with caution in order to prevent undue pressure on the needle. We feel that this

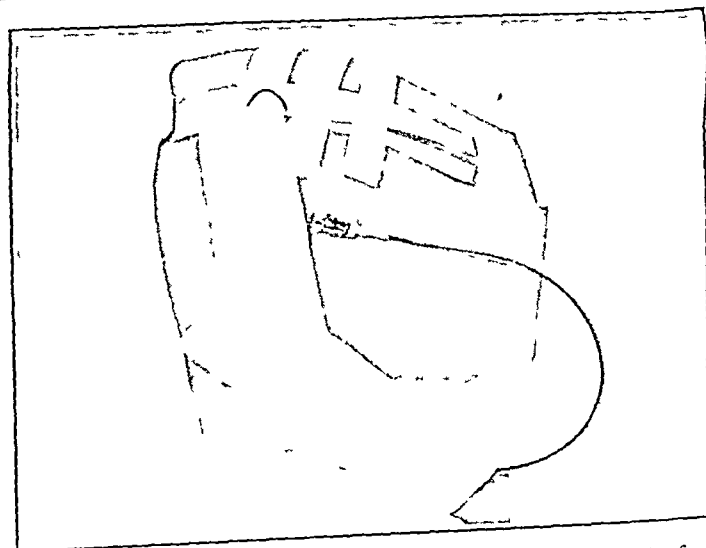


Fig. 8—The exit of the catheter from the skin is thoroughly fixed with waterproof adhesive tape both to hold it in place and to prevent contamination of the point of exit by soiling. The catheter is carried across laterally and fixed to the skin over part of its length by adhesive strapping. A 20 gauge Luer needle has been inserted into the distal end of the catheter and fixed in place by a small piece of adhesive tape. Between injections the hub of this needle is protected and kept sterile by a Luer cap. The end of the catheter is carried around to the flank so that it rests in accessible position for repeated injections.

is a wise precaution when any type of needle is employed in this technic for the following reasons:

1. Since the point of the needle may impinge on bone within the caudal canal, any pressure on the hub of the

¹³ Adams, R. C., and Tuohy, E. B. Sacral Block Anesthesia: A Consideration of the Unusual Difficulties Encountered and a Report of Two Unusual Cases, *Minnesota Med.* 21: 397-402 (June) 1938.

needle will predispose to bending of the needle or to trauma inside the canal, if not in actual breakage of the needle

2 If, by the patient's movements, the hub of the needle is made to move from side to side, it seems reasonable that the sacrococcygeal ligament will act as a fulcrum and that a corresponding movement will be set up in that portion of the needle within the caudal canal. It will appear that under certain circumstances this could produce trauma to the nerves and vessels

3 Breakage of a needle in the caudal canal may necessitate incision for removal and in some cases has necessitated laminectomy. These are serious procedures in an obstetric case and demonstrate the necessity of both technical skill and careful institutional supervision. One of the chief methods of prophylaxis against breakage of needles during continuous caudal anesthesia is the use of one needle in only 4 or 5 cases. Should there be any doubt as to the needle being defective or weak, another needle should be substituted. If breakage of a needle within the caudal canal should occur, it should be removed with the least possible delay in order to prevent the increasing danger of irritation and infection. It is wise to remove it within twenty-four hours.

Unilateral Anesthesia This has occurred in a few cases, presumably owing to lateral deviation of the point of the needle. This can usually be corrected by adjustment of the needle so that the anesthetic solution reaches the nerve trunks of the unanesthetized side.

Those Associated with the Catheter Technique—Although the use of the catheter obviates the danger of breakage of the needle and of trauma, other possible complications peculiar to its use must be borne in mind.

Trauma The 13 gage needle through which the catheter is introduced is large and can produce trauma if two or more attempts are made to insert it. If only one insertion is necessary, the trauma can be kept minimal as the needle need not be inserted into the caudal canal for a distance of more than 1 or 2 inches and it remains in the canal only for a matter of seconds or minutes.

If more than one puncture is required, trauma may occur. This will increase the possibility of irritation and infection. If a second puncture in a different location has been made, leakage of the local anesthetic solution through the original site of puncture has occurred. This lessens the chances of complete anesthesia and increases the possibility of infection. On this basis we do not feel that multiple punctures should be made if the first one is unsuccessful.

Care of Catheters Catheters should be carefully examined for defects before use and old or cracked ones discarded. Catheters are sterilized by boiling in an antiseptic solution. When not being used, they are stored in a container which prevents kinking or buckling.

Intradural Injection Although the danger of puncturing the dura with the catheter is remote, incomplete anesthesia may result from inserting the catheter too high in the caudal canal. This causes the solution to be deposited at too high a level and thus it may not get in contact with all the sacral nerves. However even if the danger of inserting the tip of the catheter through the dura is remote, there is nothing to prevent the catheter entering the dura when the 13 gage needle is inserted too high a level in the caudal canal. It is both unnecessary and unsafe to insert this needle higher than the level of the third sacral foramen.

Curling of the Catheter The catheter may become curled within the caudal canal and its tip may thus be deflected to one side or the other or backward toward the hiatus. This also may result in incorrect distribution of the anesthetic solution and lead to incomplete or unilateral anesthesia.

Fearing the Catheter If the catheter has been advanced too far into the caudal canal and it becomes necessary to withdraw it to the proper level, the 13 gage needle should be withdrawn as well and both the needle and the catheter reinserted. If an attempt is made to withdraw the catheter without withdrawing the needle, the catheter may become caught on the sharp bevel of the needle. Traction on the catheter under such circumstances may result in shearing off its tip in the caudal canal.

Manipulation of the Catheter The catheter may be so slender that it may be difficult to manipulate properly.

MISCELLANEOUS EFFECTS COMMON TO THE TWO METHODS

Very rapid injection of the anesthetic solution or the injection of a large amount of solution at any one time may produce headache, dizziness, a feeling of pressure in the legs or over the sacrum and momentary syncope-like effects. Some patients experience headache of varying duration during the postpartum period. This might be attributed to the anesthetic in some cases. In some cases the blood pressure drops during the period of anesthesia, but this reaction seldom has been acute or alarming. Gready and Hesseltine¹⁴ reported a case in which the method was employed for an anticipated abdominal cesarean section in a case of toxemia and hypertension. The systolic blood pressure, which had been 190 mm of mercury, fell to an indeterminate level. The patient recovered after the administration of oxygen by inhalation and of ephedrine hypodermically, but no operation was performed at the time.

Certain contraindications have been noted. Such conditions as placenta previa, inertia uteri, hysterical or psychotic states and disproportion between size of the child and pelvis are definite contraindications to the use of the method. It therefore is obvious that the nature of the case should be thoroughly understood before the choice of the anesthetic is made. Gready and Hesseltine said that the method is contraindicated for difficult rotation and versions, since complete uterine relaxation is desirable for these procedures. Other contraindications include a history of hypersensitivity to local anesthetic agents, infective processes over the sacrum and sacral hiatus, and congenital or traumatic malpositions of the vertebral column, especially of the sacral segment.

Hingson and Edwards¹⁵ expressed the opinion that a solution of epinephrine should be withheld from the local anesthetic solution as it might predispose to uterine inertia. It is our feeling that this possible undesirable effect may be outweighed by the increased duration of anesthetic effect produced by its use in suitable cases. We have not found the use of epinephrine to be disadvantageous. It is omitted, however, from the local anesthetic solution if the patient has any type of hypertension or if there is a history of idiosyncrasy to the drug. There is possibly less fall in blood pressure as a result of the caudal anesthesia in cases in which epinephrine is employed. If there is no contraindication to the use

14. Gready, T. G. Jr. and Hesseltine, H. C. Continuous Caudal Anesthesia in Obstetrics. *J. A. M. A.* 121: 229-230 (Jan. 23) 1933.
15. Hingson, K. A. and Edwards, W. B. Continuous Caudal Anesthesia in Obstetrics. *J. A. M. A.* 121: 222-229 (Jan. 23) 1933.

of epinephrine we employ it in the following amounts. One cc. of a 1:2,600 solution or 6 minims (0.4 cc.) of a 1:1,000 solution is added to 66.6 cc. of a 1.5 per cent solution of metycaine. If total doses larger than 66.6 cc. of the 1.5 per cent solution of metycaine are required the epinephrine may be omitted from the subsequent doses, particularly if the patient's blood pressure becomes elevated above normal.

One advantageous feature of this method of anesthesia is that if complete anesthesia is not obtained there does not appear to be any contraindication to the supplementary use of suitable anesthetic agents by inhalation.

If the cardiovascular system is normal or nearly normal, injection may be administered while the patient is in the knee-chest or the modified Sims position, but if a cardiovascular lesion such as severe cardiac decompensation is present the knee-chest or the knee-elbow position should not be used. If orthopnea is present, the patient cannot be placed in this position with safety and the modified Sims position will be indicated.

COMMENT

We have used both of these methods of continuous caudal anesthesia. Our results will be published subsequently in addition to the results obtained in a series of cases in which operations were performed on the anus and lower part of the rectum, perineum, vagina, uterus, urogenital tract and adjacent parts. The method is still comparatively new and there is much to learn concerning further details and safeguards related to its technic.

We are of the opinion that for the present, at least, its use should be confined to institutional practice and in obstetric clinics where its administration will be accomplished and supervised by physicians experienced in the various technics of caudal anesthesia and its possible indications and contraindications. This precautionary attitude concerning the use of the method generally has been stressed by Hingson and Edwards and others. A recent editorial¹⁶ in *THE JOURNAL* contained the following statement: "The technic is one which demands the competent art of the specially trained anesthetist or surgeon and the practice of a high order of obstetric science. It is not a method for indiscriminate use in the home or by those who have not been especially trained in its technic or in a realization of conditions which might contraindicate its use."

The method, in general, is undoubtedly a decided step forward in obstetric anesthesia and analgesia. The pioneer work of Hingson and Edwards has laid the foundation for those who will use the method in future years, and these investigators are to be complimented on their well controlled experimental and clinical researches. Except for earlier difficulties associated with technical phases of the injection, which have been noted by all who have employed the method, it would appear to produce satisfactory results for both the mother and the baby.

SUMMARY

Two methods of continuous caudal anesthesia appear to have certain advantages and certain drawbacks. Certain technical difficulties associated with the early clinical trial of both methods are being avoided by improved equipment and increased experience in the application of the methods. There are certain dangers and precautions which apply to both single dose and continuous caudal anesthesia. Both methods have certain advantages

and disadvantages. The disadvantages include complications due to breakage of needles, intravenous injection, trauma, subdural injection and infection. Certain suggestions have been made concerning the technic of both methods in order to obviate these untoward occurrences. Fundamentally, the method produces excellent anesthesia and analgesia for both labor and delivery and should carry a wide margin of safety for mother and child. Careful anesthetic records of the technic and course of anesthesia should be kept. Since most of the dangers, drawbacks and untoward effects have been associated with certain technical difficulties which could not be foreseen in the early phases of the work by even experienced physicians, it is suggested that for the present, at least, the use of the method be confined to institutional practice by persons trained and experienced in caudal anesthesia.

AN OUTBREAK OF HALOWAX ACNE ("CABLE RASH") AMONG ELECTRICIANS

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The first observations on the development of acne-like lesions among workers in the United States coming in contact with chlornaphthalenes and chlordiphenyls as well as acute yellow atrophy of the liver occurring among such workers were reported¹ in 1935. Since that time many authors have reported similar observations.

Despite the fact that these compounds, if used without proper safety precautions, cause a high incidence of skin conditions and, in certain processes such as coating wires, also entail the serious hazard of acute yellow atrophy of the liver, they are still being used as dielectrics and insulators, because they are waterproof and have excellent heat resisting and flame proof properties.

Since our entrance into the war, the speed-up in our shipyards has in many instances resulted in failure to install the proper safety precautions necessary when handling wires insulated with these substances.

Reports have been received by the U. S. Public Health Service from several shipyards of acne-like lesions occurring among electricians installing heat and flame proof cables in ships. Investigations have always shown that the cables causing the trouble were coated with chlornaphthalenes and chlordiphenyls (halowax). The most recent investigation was made in response to a request from the health officer of one of our Western states for an investigation of an outbreak of dermatitis among electricians working in the shipyards of that state. The electricians had become alarmed because some among them had developed acne-like lesions; they had read in the newspapers of three workers who had died of acute yellow atrophy of the liver at the plant where the wires with which they worked were made. It was only with great difficulty that these electricians were persuaded to remain at their work until the arrival of the representative of the U. S. Public Health Service to make an investigation.

Immediately on his arrival, a conference was arranged to bring together representatives of the workers' unions,

From the Dermatoses Investigations Section, Division of Industrial Hygiene, National Institute of Health, U. S. Public Health Service.
¹ Schwartz, Louis. Dermatitis from Synthetic Resins and Waxes. *J. Pub. Health* 26: 586 (June) 1936.
¹⁶ Continuous Caudal Analgesia in Obstetrics. A Method for Safe, Painless Childbirth, editorial, *J. A. M. A.* 121: 260-261 (Jan. 23) 1943.

representatives of the state health department and superintendents of the shipyards. At the meeting it was decided to visit all shipyards where the so-called "cable rash" was reported and to examine the workers suspected of having "cable rash" in order to ascertain whether all the cases of dermatitis were caused by handling cables.

In the first shipyard visited it was found that dermatitis was limited to cable "strippers." The work was performed in the intercommunication room of the ship. In plant A, 8 persons were presented for examination as suffering with "cable rash." Seven of these were found to have halowax acne. In plant B, 22 cases, all halowax acne, were presented, all of these occurred in electricians engaged in "stripping" cable. In this shipyard, electricians affected worked for several months on "stripping" cable in the intercommunication room. They stated that about two months had elapsed before they noticed signs of the acne on the face. Those who had worked longest were most severely affected. None of the workers showed signs of systemic poisoning. Samples of the wire which the workers "stripped" were examined. It was noted that one of the cables made by the company where deaths had been reported contained considerable amounts of halowax impregnated into asbestos and wrapped around the wire as insulation. The halowax was loosely contained in the asbestos and flaked off easily as the wires were being "stripped."

In the second shipyard visited it was found that the "strippers" worked only part time at "stripping" and at other electrical work the rest of the day. It was also found that the type of cable described was not being used. There was being used, however, another type of cable made by the same company from which the halowax did not flake off so readily. Twenty-one electricians who had been engaged at various times in "stripping" were presented for examination. While various skin conditions were noted, such as insect bites, impetigo and pruritis hiemalis, there were no cases of halowax acne.

In the third shipyard visited it was again found that cable being "stripped" was not the type from which the halowax flaked easily and the electricians worked only part time at "stripping." Nineteen cases of so-called cable rash were presented for examination but none of them proved to be halowax acne. They were the various skin diseases such as those found among workers in the second shipyard inspected.

In the fourth shipyard inspected the operation performed by the electricians was the same as observed in the other yards. Among 12 cases of so-called cable rash presented for examination there were no cases of halowax acne.

Samples of cables from all four yards were compared. It was found that the cable most used at the first shipyard and to which the workers attributed the "cable rash" was so coated with halowax that in the "stripping" operation the halowax flaked off easily and scattered on the hands and clothes of the "strippers." Moreover, at this shipyard more halowax coated cable made by the company where the deaths had been reported was used than at any of the other yards. Workers at this shipyard had been engaged in "stripping" for a longer time than in the other shipyards and "stripped" all day instead of only part of the day as in the other shipyards. Cables made by other companies were found to have halowax insulation, but the halowax

was more tightly held against the wire and more firmly impregnated into the asbestos so that it did not flake easily.

From this investigation it seemed evident that the constant handling of cable in which halowax is loosely packed and flakes off is responsible for the acne occurring among the "strippers" in the first shipyard inspected.

When this conclusion was reached, a meeting with the dermatologists of the city was held and cases of halowax acne were presented. This was done with the purpose of acquainting physicians with the disease and outlining for them approved methods of treatment.

The diagnosis of halowax acne was determined by (1) the history of industrial exposure to halowax, (2) the appearance of the lesions and (3) their location. The history will show that the worker was engaged in



Fig. 1.—Halowax acne on an electrician. Note cysts behind ears and on ear cartilages.

an occupation in which he came in contact with halowax or its fumes for a period of a month or more before the lesions began to appear. In this case the occupation was "stripper" of wires on heat and flame proof cables insulated with halowax. Lesions are pinhead to pea size pale straw colored cysts formed by plugging of the orifices of the sebaceous glands, resulting in retention of the secretion and in the keratinization of the lining membrane. Cysts are located on the face, lobes of the ears, retroaural folds back of the neck, shoulders, abdomen around the navel, thighs and wherever the halowax soiled clothes may touch the skin. It is not unusual to see similar lesions in the wife and children of the worker caused by contact with the soiled work clothes if they are worn or washed at home.

Once seen, halowax acne (fig. 1) cannot be mistaken for anything else except perhaps coal tar pitch acne, from which it can be differentiated by the history of the occu-

pational exposure. Acnes caused by chlorthalphenyl chlornaphthalenes and chlorthalphenyl oxide are identical in appearance with halowax acne. It is possible for the uninitiated to confuse acne vulgaris with halowax acne especially if the halowax acne occurs in a patient of acne age.

The differential points other than age and occupational exposure are given in table 1.

The microscopic examination of a typical halowax cyst (fig. 2) made by Surgeon Samuel M. Peck (R) is as follows:

The epidermis shows relatively little except for some scaling without parakeratosis. We see the evident widening of the follicular openings and the formation of hyperkeratotic plugs. Here are seen horned cysts down in the cutis and in the deeper portions of hair follicles both in and around it there is a

reaction which is often associated in acne with the escape of sebaceous gland contents into the surrounding tissues. It differs from acne in that the plugging of the follicular openings is due almost exclusively to a hyperkeratotic process which seems to include not only the mouth of the hair follicles, but also extends downward, following the invagination into the

TABLE 1—Differential Points

Halowax Acne	Acne Vulgaris
Usually occurs on face, behind ears on neck, chest, abdomen	Usually occurs on face, back and chest
Comedones, while present, are not a prominent feature	Comedones are a predominant feature
Acnelike lesions are usually pale straw-colored noninflammatory cysts	Lesions are inflammatory
Contents of cysts consist mostly of keratin plus sebaceous matter	Contents of lesions consist of sebaceous matter and inflammatory exudate
The skin may be dry	The skin is greasy
The lesions are persistent	Individual lesions are transient

associated structures. In acne we ordinarily have a combination of follicular hyperkeratosis and excessive secretion of the sebaceous glands. The last seems to play a very little role in this process. There is no real comedo present, but more like the follicular hyperkeratosis seen in ordinary vitamin A deficiencies.

Of most importance in the treatment of these cases is the treatment of the skin with tincture of green soap or a synthetic wetting agent. The synthetic wetting agent is to be preferred and should consist of 10 percent aqueous solution of either Igepon, Duponol, Santomene, Naccanol or Aerosol. It is not advisable to add a sulfonated fatty oil to the wetting agent because the sulfonated fatty oils decrease, if anything, the defatting powers of such a solution of wetting agent as is given.

Comedones should be expressed and cysts evacuated two or three times each week. The comedones may be expressed by the nurse in the plant, but a physician should perform all operations which require incision of the skin in order to evacuate cysts. A mild peeling solution such as lotio alba is advised for use at night. If x-rays are used, they should be administered with great

TABLE 2—Tetral Protective Cream

	Per Cent
Shellac	12.96
Isopropyl alcohol	30.82
Bodied linseed oil	3.70
Stearic acid	0.62
Flexol	0.62
Carbitol	3.08
Talcum powder	20.18
Ferric oxide	0.15
Titanium dioxide	9.88
Sodium bicarbonate	3.08
Sodium perborate	14.91

caution especially if the patient is beyond the acne age, as in these patients the skin is usually dry and further depression of the function of the sebaceous glands is not desirable.

At the final meeting of the representatives of the health department, the workers and superintendents of the shipyards the following recommendations were made:

2. Schwartz, Louis, and Barlow, Frank A. Chloracne from Cutting Oils, Pub. Health Rep. 57: 1747-1752 (Nov. 20) 1942.



Fig. 2—Biopsy section of chloracne from chlornaphthalenes and chlorthalphenyls (reduced from photomicrograph originally published in Public Health Reports.)

marked inflammatory reaction. An almost tuberculoid granulation tissue is seen consisting of dense accumulations of both foreign body and Langerhans type of giant cells. Between these giant cells are many histiocytes and lymphocytes, the histiocytes in many instances having the characteristics of epithelioid cells. In the serial sections it can be seen that these horned cysts situated in the middle cutis are extensions of the enlarged hyperkeratotic follicles in which the whole follicular apparatus has been replaced by a huge invaginated structure full of horny material which has pressed against the rest of the structure causing atrophy with the resultant formation of horned cysts. Also from the serial sections it is evident that the dense mass of foreign body granulation tissue reaction is situated in and around remnants of sebaceous glands and hair bulbs.

Interpretation—The process is analogous to acne in that we have plugging of the follicular openings, follicular and perifollicular inflammatory reactions and a foreign body giant

Since no cases of halowax acne were found in three of the yards, there need not be any special precautions taken by the electricians in these yards as long as they handle the same kind of cables as they have been handling and as long as they do not spend most of their time in "stripping", however, if at any time they must handle the special cable with the loose halowax insulation, they should also take these precautions

1 It is recommended that workers engaged in "stripping" cable containing either chlornaphthalene, chlordiphenyl or chlordiphenyl oxide be supplied with hood respirators. It is preferable to have these hood respirators made from a transparent synthetic resin such as plexiglass or lucite or perhaps a fireproof cellophane. The eye piece should be a large flat plate of lucite rather than the conventional double lenses. The respirator should be closely fitted to the nose and contain such filters as will efficiently filter out dust and wax.

2 The "strippers" should be supplied with clean coveralls daily, the coveralls to be laundered at the shipyard.

3 "Strippers" should wear long underclothes cleaned daily at the shipyard.

4 "Strippers" should be required to take a shower bath before going home and they should be furnished with toilet soap for this purpose.

If, for any reason, the hood respirator advocated cannot be obtained or used, a substitute not quite as good will be found in protective ointments for the face, neck and ears. The ointments should be of the type that coat the skin with a dry film that prevents the halowax from touching the skin and also prevents the soiled fingers from getting in contact with the skin. It is believed that the tetryl protective cream developed by the U. S. Public Health Service would answer this purpose. The formula for this cream is given in table 2. This preparation is now being manufactured.

The tetryl protective cream consists essentially of an alcoholic solution of shellac mixed with sodium perborate and zinc oxide. When it is applied to the skin the alcohol evaporates in about ten minutes and leaves a dry adherent coating on the skin which is difficult to remove unless it is washed off with soap and water. A somewhat similar preparation consists essentially of an aqueous solution of casein and zinc oxide and is also being manufactured.

If these ointments are used they should be applied before going to work, washed off before going to lunch, reapplied after lunch, and again washed off before going home. The clean coveralls and clean underclothes should be compulsory even if the ointment and hood are used.

It is also recommended that those workers who have halowax acne be given precautionary liver function tests, not because it is thought that they have liver damage but rather in order to make certain they have not. Liver damage does not ordinarily occur in workers handling the dry chlorinated hydrocarbon waxes. It has been found usually to occur among workers handling the molten waxes or the waxes in solution. In such instances the fumes are inhaled.

Safety directors of the shipyards were advised to report to the industrial hygiene division of the state board of health any cases of acne occurring among electricians in order that investigations may be made in time to prevent further outbreaks.

THE IDENTIFICATION AND MEASUREMENT OF THE PSYCHONEUROSES IN MEDICAL PRACTICE

THE MINNESOTA MULTIPHASIC PERSONALITY INVENTORY

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AND

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MINNEAPOLIS

Many a medical man has wished for an easily applicable measuring device which would identify and characterize the psychoneurotic patient with a minimum use of the time consuming interview technique that is conventional in the psychiatric approach. One may not desire to deal with the psychoneuroses in one's practice, but the physician or surgeon is indeed insensitive to the problem or very young in the profession who has not been plagued by his inability appropriately to assess the role of the neurotic element in some of his patients.

Without wishing to belabor the topic of the neuroses unnecessarily, because much has been published on it, we should like to remind the reader of a few general points that are pertinent to this report. Competent internists have estimated variously that from 30 to 70 per cent of the ambulatory patients who appear for medical attention come primarily because of one or more complaints that turn out to be psychoneurotic in nature. It is not implicit in this statement that no concomitant organic disease is ever discovered on examination, but more frequently than otherwise the complaint is not directly ascribable to such positive manifestations as the physician may elicit. In other words, a considerable proportion of medical patients are beset by and wish for relief from emotional states rather than from bodily disease of seriously crippling importance. Furthermore, many patients with more or less severe organic disease are simultaneously suffering from undesirable emotional reactions which may definitely impede improvement or produce a worsening of the organic condition, often these patients are as much influenced for the better by reassurance, suggestion and encouragement as by those measures directed at the organic state.

In surgical practice the percentage of severely psychoneurotic patients is probably somewhat smaller. Of course, psychoneurotic patients may have surgical conditions requiring operation. Aside from emergencies, however, most experienced surgeons have learned by one or more bitter lessons that in the presence of certain types of neurosis it is indeed wise to proceed with caution and to operate only after giving appropriate attention to the attitudes and morale of the patient and his family.

Recognizing this problem and desiring to contribute to its solution, we began work in 1937 on the development of an objective personality test which is simple to use, easy to interpret and conserving of time. We have chosen to name this test the Minnesota Multiphasic Personality Inventory. The statistical techniques involved

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in this study have been reported by us elsewhere,¹ the details will not be repeated at this time but only a general description of the makeup and mode of administration of the schedule and a discussion of some of its principal applications for the medical men are given in the present paper. Likewise only those portions of the inventory which deal with hypochondriasis, hysteria and reactive depression will be discussed.

THE PSYCHOMETRIC INSTRUMENT

Initially the assumption was made that statements by patients given verbally to the physician were probably not much more reliable or valid than if the same meanings were conveyed to him by sorting them on cards into the categories of "True," "False," or "Cannot Say," accordingly as the patient thinks they apply to himself. Subsequent tests of this assumption proved its truth to a very satisfactory degree. In accord with this supposition informational items with probable medical or psychiatric significance were collected; these were statements that a lay person would probably be capable of comprehending and reporting on. They were located by systematically culling them from several standard published directions for performing medical, neurologic and psychiatric examinations, from several published schedules for social and personal attitudes and from our own clinical experience. Five hundred and fifty items were retained and they constitute the basis for the Minnesota Multiphasic Personality Inventory. Each was stated in simple language, usually in the first person singular, and was separately printed on a card. An example is the item "There seems to be a lump in my throat most of the time." The groupings into which these items may be classified are as follows:

- 1 General health (9 items)
- 2 General neurologic (19 items)
- 3 Cranial nerves (11 items)
- 4 Motility and coordination (6 items)
- 5 Sensibility (5 items)
- 6 Vasomotor, trophic, speech, secretory (10 items)
- 7 Cardiorespiratory (5 items)
- 8 Gastrointestinal (11 items)
- 9 Genitourinary (5 items)
- 10 Habits (19 items)
- 11 Family and marital (26 items)
- 12 Occupational (18 items)
- 13 Educational (12 items)
- 14 Sexual attitudes (16 items)
- 15 Religious attitudes (19 items)
- 16 Political attitudes—law and order (46 items)
- 17 Social attitudes (72 items)
- 18 Affect, depressive (32 items)
- 19 Affect, manic (24 items)
- 20 Obsessive, compulsive (15 items)
- 21 Delusions, hallucinations, illusions, ideas of reference (31 items)
- 22 Phobias (29 items)
- 23 Sadistic, masochistic (7 items)
- 24 Morale (33 items)
- 25 Items primarily related to masculinity-femininity (55 items)
- 26 Items to indicate whether the individual is trying to place himself in an improbably acceptable light (15 items)

In order to locate items which would characterize a given psychoneurotic or other psychiatric type of personality deviation, it was necessary first to discover their individual frequency of placement in the "True" or "False" category for a group of "normal" individuals

These normal individuals were visitors to patients in the University Hospital who stated that they were not under a physician's care and considered themselves to be in good health. The schedule was administered to about 700 such persons. They were reasonably representative of the occupational and social levels of the University Hospital patients. As an additional check we collected inventory records on groups of students entering college and on WPA workers numbering more than 200 each. To obtain data on the placement of items by clinical groups, the items are administered to all cooperative neuropsychiatric inpatients.

An approximate idea of the method by which the various personality scales were developed can be gained by a brief review of the development of the hypochondriasis scale. A group of 50 hypochondriacal patients falling into the diagnostic category with acceptable uniformity was carefully selected on the basis of the clinical observation. The location of an item having significance in differentiating hypochondriasis from normality is a simple statistical matter. If 5 per cent of normal persons declare, for instance, that they commonly suffer with discomfort in the pit of the stomach, whereas 80 per cent of the hypochondriacal group make the same declaration, then this is an item tending to characterize hypochondriasis. In itself the item might have several other possible significances, but 60 or 70 similarly differential items identify a pattern of responses which characterizes the hypochondriacal person. Such a group of experimentally discriminative items may be spoken of as a hypochondriacal scale, since the degree to which an individual may be similar to definite clinical hypochondriacs can be determined by merely counting the items which the person answers identically with the hypochondriacal group of patients.

Although the foregoing description of the development of the scale for hypochondriasis is oversimplified, it is by such procedures that the various scales have been developed from the personality inventory. To date we have well tested scales for hypochondriasis, depression and psychasthenia and tentative scales for hysteria, psychopathic trends of the amoral type, masculinity-femininity and paranoia; several other scales are merely awaiting the appearance of sufficient clinical material to permit the statistical work for their development. Corrections have been calculated for age and sex, and the scoring has been reduced to a standard such that arbitrarily 50 represents the average score for a group of normal persons, 10 points above or below 50 represent one standard deviation from this mean value and 20 points represent two standard deviations, and so on. By the use of the standard scale, the scores for the various characteristics become comparable with one another and can be entered together on a single profile chart. This is of great convenience in the interpretation of the findings in the individual case, since the limits beyond the normal range can be expressed by a single number. Thus any score above 70 but below 80 is between two and three standard deviations above the average score of a series of normal individuals and indicates a probable abnormality for the characteristic under consideration, a score of 80 is three standard deviations above the average normal score and indicates practically certain abnormality. Scores lower than the normal average appear up to the present time to have no particular significance.

In the actual administration of the inventory, the patient is given a box containing the five hundred and

1 Hathaway, S. R., and McKinley, J. C. A Multiphasic Personality Schedule (Minnesota). I. Construction of the Schedule, *J. Psychol.* **10**: 249 (Oct.) 1940. McKinley, J. C., and Hathaway, S. R. II. A Differential Study of Hypochondriasis, *ibid.* **10**: 255 (Oct.) 1940. Hathaway, S. R., and McKinley, J. C. III. The Measurement of Symptomatic Depression, *ibid.* **14**: 73 (July) 1942.

fifty cards and the three guide cards marked "True" "False" and "Cannot Say". His attention is called to the directions in the cover of the filing box, which read as follows:

Take out the first card in the front of the box.

Read the statement on it and decide whether or not it is true as applied to you.

If it is true or mostly true, put it in the back of the box directly behind the card that says 'True'.

If it is not usually or not at all true as applied to you, put it behind behind the card that says 'False'.

If the statement does not apply to you, or if it is something that you don't know about, put it behind the card that says 'Cannot Say'.

Do this with every card in the box.

There are no right or wrong answers.

Remember to give your own opinion of yourself.

The sorting time of the patient varies considerably, depending on his mental status. Normal, alert, intelligent persons will run through the cards in thirty to fifty minutes. Individuals with dull normal intellects will require up to an hour and a half. The moron group will need two hours or more but are usually capable of giving reliable responses. Depressed patients, especially if there is psychomotor retardation, may require several hours and several sittings for completion, and urging by an attendant may be necessary. Hypomanic patients usually give reliable responses. Patients with grossly psychotic syndromes are generally incapable of sorting the cards. However, these conditions are usually not such subtle problems from the diagnostic standpoint as are those borderline mental states in which the patient remains capable of reliable cooperation and in which the test is designed to be most useful. An accurate clerk can be readily taught to record and score the tests and a trained clerk will spend only twenty or twenty-five minutes in producing the finished profile after the patient has sorted the cards.

It is intended in this report to present several type cases which illustrate some of the interpretations that seem permissible to us on the basis of the personality profiles as derived from the inventory, the clinical features of the cases are then discussed for comparison.

REPORT OF CASES

CASE 1—A man aged 43 was admitted to the University of Minnesota Hospital on Sept. 23, 1940 for surgical attention because of a probable ulcer. In the course of the routine workup of the ulcer possibility certain psychoneurotic features impressed the cooperating internist sufficiently so that psychiatric appraisal of the case was requested.

Following a brief introductory psychiatric interview, the Minnesota Multiphasic Personality Inventory was administered on September 30 with the resultant scores hypochondriasis 87, depression 83, hysteria 78.

The scores on the other available scales were definitely at normal levels and are essentially noncontributory to this report. Thus it appeared from the inventory that the patient was severely hypochondriacal and depressed and that hysterical features also very likely were complicating the picture. The presence of these psychologic factors in the patient's illness was quickly confirmed although on interview he tended to avoid the issues relative to his emotional reactions. The hypochondriasis came out in the following statements. The patient said he was greatly concerned about his health especially in relation to his 'duodenal ulcer,' the malfunctioning of his intestine, his loss of weight and his inability to handle a full diet without great discomfort. In consequence he stated that he was depressed over the ominous future which seemed inevitable particularly in consideration of the lack of progress that he had made under a careful ulcer regimen during the previous several months. In discussing his symptoms he related his

distress during attacks, which were rather obviously hysterical. These were especially frequent in the weeks just preceding admission. They began with a sense of gas in the stomach and of pressure on the heart and in the chest. Very soon tachycardia and palpitation and then shortness of breath would appear, and the patient would become panic stricken for fear of suffocation. He would call his wife, have her open all the windows in his room and help him to a window so that he could get air. More recently he had been so weak that he had to be content to have her support him sitting up in bed during these spells. He would calm down after fifteen to twenty minutes but felt exhausted afterward.

The history of the duodenal ulcer dated back about eighteen months, when he began having rather indefinite abdominal distress. Roentgenograms taken shortly after the onset demonstrated a small duodenal ulcer, and this was confirmed later in a second series of films taken at another clinic. At the same time it was determined that, in spite of a strict Sippy regimen with large quantities of alkali, he had a total gastric acidity up to 114 degrees and a hyperchlorhydria of 100 degrees.

The medical investigation at the University of Minnesota Hospital was essentially negative except for the following findings. The patient was considerably emaciated, he had some generalized abdominal tenderness. Gastric analysis during fasting revealed 97 cc of contents with a total acidity of 107 degrees and a free hydrochloric acid titer of 102 degrees. Fractional analysis after histamine revealed a total acidity range from 67 to 103 degrees and free hydrochloric acid from 60 to 98 degrees. X-ray studies demonstrated decided hypermotility of the gastrointestinal tract. The duodenal shadows showed some irregularity suggesting duodenitis but evidences of ulcer were lacking. Routine blood and urine examinations gave negative results. There was no blood in the feces. The blood urea nitrogen, carbon dioxide combining power, blood chlorides and plasma proteins were all within normal limits.

Although the surgeon in charge felt that duodenal ulcer had not been satisfactorily excluded as a possibility, it was agreed in view of the test results that a combined medical and psychiatric approach was worth a trial and that surgical intervention could be safely postponed for a few weeks. In consequence the patient was told that his diet would be rapidly expanded and that he would be carefully observed for danger signs if they should appear. The possibility of some discomfort was admitted and it was agreed that his reports on it would be given due weight, but he would be expected to eat what was placed before him. For the first twelve days of the hospital stay, previous to the new regimen, the patient's intake averaged only 1,120 calories daily. During the next six days, with daily reassurance and urging this was increased to an average of 1,310 calories. At the end of this time his food was changed to a general bland diet of three meals a day with a caloric intake varying from 1,790 to 5,800 and averaging 3,380 daily for the remaining twelve days of the hospital stay. The patient's pulse was at first extremely variable, ranging from 76 to 140, and his temperature spiked occasionally, once going to 102 F. After the new regimen was instituted the temperature remained normal and the pulse curve steadied within the range of 70 to 90. The symptoms of abdominal distress and pressure on the heart and chest rapidly disappeared. The patient became hopeful and then cheerful, joked and conversed in animated fashion and insisted finally that he was feeling too well to remain in the hospital. He said that some business matters needed his attention and that it would relieve his mind considerably if he was allowed to return and take care of them. He was therefore discharged several days before the date previously suggested to him as a possibility. A letter from him several months later stated that he was feeling better than he had for years that he had been indulging in his favorite sports of hunting and fishing and that he was taking proper care of his business.

Just before discharge the Minnesota Multiphasic Personality Inventory was again administered and the scores were now hypochondriasis 67, depression 65 and hysteria 62.

On the day of discharge repetition of the fractional gastric analysis after histamine showed a total acidity range of 44 to 60 degrees and a free hydrochloric acid range of 38 to 65.

It is rather difficult to make a definite statement about earlier manifestations of ulcer, but on the patient's arrival at the University Hospital the early recognition of the psychoneurotic and reactive depressive phase of his condition provided the cue for appropriate management. The support of the psychiatric opinion provided by the Minnesota Multiphasic Personality Inventory was no small factor in convincing the surgical staff of the desirability of a psychiatric approach with rapid expansion of the diet to a normal balance and of putting off an operation which would surely have been ill advised. Then too the improvement was measured not only by weight increase, disappearance of symptoms, decreased gastric acidity and a relief of the psychoneurotic tensions but also by lowered scores to the borderline normal range of the inventory.

Incidentally it may be pointed out that many cases which clinically are diagnosed as simple hypochondriasis actually show on the inventory profile the mixed picture of hypochondriasis and hysterical tendencies with a rather high depression score. We interpret the depression as the emotional reaction to the concern over health and as the apprehension regarding an assumed hopeless future involving crippling illness.

CASE 2—A woman aged 22, unmarried, admitted to the University Hospital Jan. 22, 1942, presented a host of complaints which had been present off and on since childhood. A partial list of her symptoms included "stomach trouble," sharp pain in the flank, occasional transient episodes of blindness, painful cramps in the extremities, chest pain, "awful headaches," low back pain, "drawing feeling in shoulder and neck," dizziness, fainting spells and particularly after meals, vomiting. Administration of the Minnesota Multiphasic Personality Inventory on January 26 showed a score of 93 on hysteria, 86 on hypochondriasis and 67 on depression; the other scores were clearly within normal bounds. Thus the patient appeared to be both severely hysterical and hypochondriacal and tended to be moderately depressed.

She had first been seen in the outpatient clinic in June 1940, when she complained primarily of pain in the neck, shoulders and upper extremities. Although she presented many psychoneurotic features at the time, the essential complaints referred very suggestively to possible brachial plexus involvement and the x-ray demonstration of very long cervical ribs led to a consensus favoring their removal. This was done on one side but the patient's symptoms continued after removal in almost exactly the same degree and of the same character as previously, in consequence, the opposite anomalous rib was not removed. Subsequently she continued visiting the outpatient department and failed to show any improvement. She appeared rather listless and was a continuous problem because of an occasional seemingly bona fide complaint. For example, during the past year she had noted spontaneous ecchymoses, and the cuff test showed that she did have somewhat fragile capillaries. On Jan. 1, 1942 at the gynecology clinic she complained of intermenstrual bleeding and sufficiently impressed the staff so that dilation and curettage were performed. Microscopic study showed the curettings to be normal endometrium. Since then she has abandoned her household duties, complained of extreme weakness, has been vomiting after meals and has apparently settled down to chronic invalidism.

The patient has always been frail. At the age of 14 she had jaundice, measles and mumps. At 15 tonsillectomy and appendectomy were performed. Following the appendectomy, hemianesthesia developed which persisted for about three weeks. She had German measles in 1940.

The patient completed high school at the age of 15 and was valedictorian of her class. Following graduation she served as school librarian for three years. The patient has always shown some rigidity of makeup, has had unbending religious convictions and has been comparatively sensitive. She was a diligent, conscientious worker. She tended to be withdrawn and somewhat unemotional, she did not cry at all at her mother's funeral.

The family circumstances have long been unsatisfactory. The father was described as congenial with every one except his family, in the family he was overbearing and rather despotic. He was said to have beaten the children brutally at times. He deserted the family a year before the death of his wife. The patient's mother was argumentative, disagreeable and difficult to please. Her death occurred four years before from a carcinoma. After the mother's death the patient tried to take over the household responsibilities for the five younger children but had to have constant help from another woman.

The physical examination revealed no particularly significant abnormalities. The stump of the partially removed left cervical rib could be easily palpated in the supraclavicular region. Generalized weakness of the extremities was present but was paradoxical and variable, so that it seemed apparent rather than real. Laboratory and x-ray studies were negative except for the cervical ribs.

On direct psychiatric examination she appeared preoccupied with her numerous somatic complaints and said especially that she could not keep her food down and that she had stomach (epigastric) pain. The sensorium was intact but her general knowledge seemed considerably restricted to religious topics. Her intelligence quotient was 110. It is difficult to understand how she became the high school valedictorian unless the scholastic competition was very poor in her class. Her mood was indifferent, she was unenthusiastic and her responses were somewhat inadequate. Her ideas were poorly expressed and were at times so loosely stated as to be difficult to understand. There was considerable blocking. The patient appeared somewhat restless and uncomfortable when asked leading questions. Her insight was poor. Her movements were all slow and she leaned against the wall while walking in order to obtain support. She was soft spoken and very passive in her attitude toward the physician and nurses.

Throughout her stay in the hospital she continued to have emesis after meals without preceding nausea. Some new symptoms appeared, she would let her head fall to one side and said she could not hold it erect, similarly she declared that she could not elevate one eyelid which drooped. She complained that she was unable to "think correctly." Two attempts at hypnosis were unsuccessful. For a time she remained uncooperative and wore a self-satisfied smile, for short intervals her behavior bordered on really negativistic reactions. Two weeks prior to discharge, however, she became more accessible, participated in some of the ward routine and developed a slight amount of initiative. On the decision of her guardian, who refused the suggestion of voluntary admission to a state hospital, she was discharged and returned to her home, where it was arranged that an older person would assume most of the household responsibilities.

The diagnosis was considered severe psychoneurosis of the mixed type (hypochondriasis and hysteria). While certain features were decidedly schizoid, it was felt that a diagnosis of schizophrenia was not justified at this time.

The diagnosis on the basis of clinical observation is in accord with the high scores that the patient attained on the inventory in regard to hypochondriasis and hysteria. The borderline depression score of 67 likewise seems indicative of the patient's inner thinking in consideration of the clinical syndrome, though the depression could not be spoken of as beyond that of normal.

CASE 3—A man aged 22, unmarried, entered the University Hospital on April 1, 1940 because of headache, tinnitus and tenderness of the scalp. He had been followed in the medical and neuropsychiatric clinics for about two months and was then hospitalized because he was making very little progress and intensive management seemed indicated.

The relevant scores on the Minnesota Multiphasic Personality Inventory were hysteria 84 and hypochondriasis 67. The other scores were well within normal bounds, though the depression score was slightly elevated, namely 58.

The patient's illness began in the summer of 1937, when he was working in an ore mine in Bemidji. He was unable to keep up with the amount of work the other boys of his age were accomplishing, they teased him about his low output.

After a time he began to have mild pain in the back and his appetite decreased. He began then to use these symptoms as the reason for his inability to keep abreast of the others. On returning home in the autumn he consulted an irregular practitioner, who placed him on a meat free diet which he observed for over a year. Subsequently he became anemic and because of this, he said his friends particularly the girls, began to avoid him and he turned gradually from a life of physical activity to one of concentration on his junior college studies and interest in trumpet playing. In October 1939 he first noted a dull headache which was bothersome only when he was studying. This gradually became more severe and by Christmas time he could not study at all. The headache disappeared during Christmas vacation and he worked well in school for three days after the holidays, but then it recurred so severely that he quit school entirely. The headache was persistent from that time and kept him continually at home until he appeared at the outpatient department seeking relief.

The patient had always been a fairly well liked boy, somewhat inferior physically but respected for a relatively superior intellect. He was described as kind unselfish well behaved and not suspicious. However, he desired to be a leader among the boys and he would make excuses when he could not function as the leader. His moral code has always been high. He was rather shy and afraid that people were ridiculing him for some indefinite reason.

The family was Slavonian by derivation. The father had been working on WPA, making about \$45 a month. The mother had been very solicitous of the patient and acted toward him as if he were the baby of the family needing her protection against the others.

The examination and laboratory studies revealed no serious abnormalities.

The patient's mental status in the hospital corresponded with the anamnestic data. He continually worried about his health and as to whether he would be able to return to school and become a journalist. He complained about many vague and indefinite aches and pains such as eye strain headaches, backache and anorexia. He asked 'Why must I have these headaches' and said 'These headaches are real to me and are severe even though people might not think so.' He stated that he desired to get well and go home. He was oriented in all spheres, did arithmetical problems rapidly and accurately, was well informed on general topics and displayed common sense in matters not connected with his illness. He appeared somewhat anxious sad and depressed. He declared that he understood that the headaches were functional and could define what is meant by a functional headache; however, his general demeanor was not altogether in accord with this verbal insight. He talked slowly and tried to recite accurately and in detail all of his bodily complaints. On one occasion he made up a list of his complaints so that he could approximate completion of his descriptions of himself in order to make sure that he got all the topics assembled. His attitude and manner and his general appearance were usual for his social level. He was open and accessible to the examiner. On occasion he appeared relatively happy and joined in the activities in the ward with obvious enjoyment.

The patient gradually improved under the hospital care. Following a lumbar puncture a second headache developed which he recognized as quite different from his ordinary cephalalgia; both slowly disappeared. Five days after the puncture he also complained of a pain in the back which he ascribed to the puncture but he located this pain two vertebral levels above the actual site. This too disappeared and then all of his complaints began to diminish until finally they were gone. He became interested in his surroundings and requested his discharge because he was feeling so well that he thought he should return home and go back to his school work. He was discharged on April 24 1940.

The final diagnosis was psychoneurosis, hypochondriasis. The notation was made that considering the rapid improvement in the hospital environment the outlook for this boy was probably good if he is not placed under much stress.

Although there is an apparent conflict in the presence of the high score of 84 on the hysterical scale and of a borderline score of 67 on hypochondriasis as contrasted with the clinical diagnosis of psychoneurosis, hypochondriasis in actuality the case draws attention to a point which has been driven home to us as a result of the use of the inventory. It has become rather obvious as our cases have accumulated that we were diagnosing as hypochondriasis two different types of case both of which present the complaint of excessive concern over presumed physical disorder.

In the one the patient expresses the belief that something is seriously threatening his health. He may be convinced as was our patient 1, that he has a gastric ulcer and that his very life is threatened by the pathologic process. Such an idea may attach itself to a variety of organs (heart lungs, kidneys or gastrointestinal tract, for example). Most of these conditions appear to grow out of tension states in which some actual bodily change such as palpitation, tachycardia, definite weight loss or muscular twitching gives the patient the notion of bodily disease. Such patients tend to test high on the hypochondriasis score.

The other type is exemplified by patient 3. In this group of individuals there seems to be an environmental setting from which the patient seeks escape or in which he has something to gain by the development of conversion symptoms. While many of these symptoms are often clearly of the conversion type, still in many instances the patient's verbalizations about them are suggestive of true hypochondriacal concern. Yet on the inventory these persons test high on the score for hysteria. Of course many of the clinical examples of the psychoneuroses are mixed both on the inventory profile and on ordinary psychiatric interpretation. Such cases may easily be mistaken clinically for simple hysteria or hypochondriasis if one does not run exhaustively through one or more detailed interviews.

CASE 4—A woman aged 25 first came to the University Hospital outpatient department in October 1936, at which time she complained of diplopia when looking to the right, blurred vision numbness and tingling of the radial portion of the right arm and hand and numbness of both legs. These symptoms had been present for only a few days. The patient said that she had had headaches all her life which were worse in damp weather and appeared mornings and disappeared during the course of the day.

Direct examination medically and neurologically was essentially negative except for a slight decrease in hearing bilaterally and on ophthalmoscopic examination slight probably physiologic blurring of the left disk margins. Most of these symptoms disappeared within a few weeks except for numbness in the finger tips. It was considered that the patient was suffering with a psychoneurosis but multiple sclerosis could not be satisfactorily ruled out.

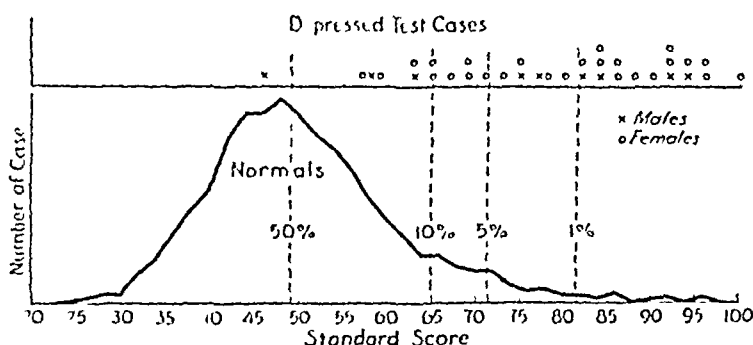
In November 1937 she had a tooth pulled and shortly thereafter there was partial blindness in the right eye. The blindness disappeared within a few weeks but about a month later following an attack of tonsillitis the blindness recurred. Tests for visual acuity at this time revealed 1/100 in the right and 20/15 in the left eye. It was noted that she had some sinus tenderness and the ophthalmologist thought that she had an optic neuritis on the right with a central scotoma probably the result of the tonsillitis. The tag of a tonsil was removed and vision returned to 20/25 within a few weeks. She complained somewhat at the time of pain in the back or the neck. She stated that she was rather nervous.

She had no trouble then until December 1939 at which time numbness and tingling recurred in the right leg and her gait became somewhat unsteady with a tendency for her to fall toward the right side. She stated that she had had occasional

attacks of numbness and tingling of short duration in the left lower extremity and in the left hand. Examination now revealed the following findings. The knee jerks were rather strongly increased and the abdominal reflexes were absent except in the upper quadrants where they were reduced but equal. She had paresis in flexion and extension of the right leg and in plantar flexion of the right foot; she was unable to perform dorsal flexion of the foot. There was decreased sensibility to cotton and pin from the right hip downward.

The examinations were still equivocal for slightly indistinct margins. During examination she cried several times and indicated that she was not happy in her family relationships but would not discuss the matter at all. Multiple sclerosis still seemed a distinct possibility, but the staff was more impressed at this time by the emotional reactions of the patient. She returned in April 1940. The examination revealed slight nystagmus and hyperactive knee jerks. The left biceps was increased over the right. There was definite weakness of the right leg. Vibration sense seemed reduced but the patient's responses were somewhat equivocal. It was then considered for the first time that the patient definitely had multiple sclerosis. Subsequently her condition has developed into a typical severe multiple sclerosis.

During her hospital stay in 1940 the personality inventory was administered and it was somewhat surprising to find her scores all within the normal limits: hypochondriasis 62, hysteria 49, psychasthenia 42, depression 46. Evidently this patient was well equilibrated in her basic affect. Most of the symptoms



(Composite polygon comprising 690 normal cases constructed with the abscissa scaled in standard scores. Above the polygon are plotted the scores of 35 patients selected at random who had been judged clinically to have depression as a prominent symptom. (Reprinted by permission of the Journal of Psychology.)

that had given rise to the impression of hysteria were actually early evidences of the disseminated sclerosis. Her peak score of hypochondriasis 62 probably represented her concern over her illness, which was indeed organic.

The findings of a normal personality profile in this patient, who was long suspected of presenting conversion symptoms, were potent evidence of the probable mistake in such an interpretation. In retrospect it is obvious clinically that multiple sclerosis was developing and that the fluctuating sensory and motor symptoms actually represented the onset of the disease. This diagnostic dilemma in differentiating hysteria from multiple sclerosis is an old one which is still bothersome even to the experienced neurologist. The inventory is thus shown to have value not only in demonstrating the presence of a psychoneurosis but also when it is within normal range, in giving precision to one's thinking in ruling out psychoneurotic reactions in cases of uncertainty.

VALIDITY OF THE INVENTORY

For the purposes of a paper like the present one, it would of course be a simple matter in a series of cases as large as the one we have accumulated to select those for report which illustrate most vividly the positive correlation between clinical opinion and inventory profile, thus leaving a more favorable impression of one's work

than would be warranted on examination of the complete data. Without getting into a detailed discussion of the statistical reliability and validity of the various scales, because this is being presented in our other papers, we should like merely to call attention to the results of one of our scales (depression), as illustrated in the chart. This is approximately representative of the other scales that have so far been developed from the inventory.

This chart shows the results in terms of a frequency polygon of scoring 690 normal persons within the age range 16 to 65 on the scale for depression. The horizontal coordinate (abscissa) gives the standard score, with 50 representing the average for the normals on this scale and 10 points representing one standard deviation, 20 points two standard deviations and so on above or below this average. The 1, 5, 10 and 50 per cent points are marked as they were obtained with the origin at the depressed end of the distribution. The percentages refer to the proportion of patients among normals scoring above each of the points indicated. Thus only 1 per cent of normal persons obtain a depression score above 82. Since there is considerable skewness to the curve these percentage points do not coincide with standard values mathematically predictable for a normal distribution curve. Above the polygon, plotted on the same standard abscissa are the individual scores of 35 depression cases which were assembled to test the validity of the depression score. Thirty-four of these test patients obtained scores higher than 50 which was the average of the normals. It is apparent that there is considerable overlap between the upper group of normals and the depressive test patients. Doubtless several factors may be operating to explain this state of affairs. On the one hand, for example, the clinical diagnosis of depression is not always necessarily correct, thus some of the test patients may have been selected with more or less clinical error involved, although all the persons used were intensively studied by the psychiatric staff. Furthermore, the reactive depressions tend to recover rather promptly, and some of our test patients were given the inventory following improvement. Such an improvement is exemplified by case 1. Then, too, an undertermined number of the normal persons were probably actually depressed at the time they were tested. This may be particularly true of a random sample of hospital visitors whose relatives or close friends are involved in serious health problems, it is to be kept in mind that our "normals" were made up primarily of such a group of visitors.

REACTION OF PATIENTS TO ADMINISTRATION OF THE INVENTORY

Objection has occasionally been raised against this kind of a technic in psychiatric cases because of an assumed mental trauma from the suggestion of symptoms or attitudes contained in some of the items making up the inventory. Indeed at the beginning of this study the first few clinical subjects were picked with the thought that those particular individuals would not be disturbed by any of the items. We soon learned, however, that the subject was indeed a rare one who showed sufficient curiosity about the matter to do more than ask a few questions. As a matter of fact, some patients with psychoneurotic tensions express relief after responding to the items because they feel that they have reported on many points to the physician about which they otherwise might not have told him. In these cases the

inventory acts in similar fashion to the conventional mental catharsis so often made use of by the psychotherapist

GENERAL COMMENT

Because of its ease of administration and its valid characterization of persons psychiatrically in quantitative terms, the Minnesota Multiphasic Personality Inventory has proved very useful in the University of Minnesota Hospital. That similar advantages would accrue to its use in general medical and surgical practice seems evident to us. The identification of the psychoneurotic individual and the determination of the degree of his hypochondriacal hysterical phobic and depressive reactions provide warning signals for the surgeon and give an indication of the need for psychotherapeutic management regardless of the presence or absence of material organic disease. The other scales which are available in tentative form, provide data concerning the person which are also of considerable psychiatric importance but discussion of these scales will be deferred for a later communication. To some extent the profile identifies not only the psychoneurotic person but also certain types of the major psychoses. As yet a satisfactory detector for schizoid tendencies is not available, but progress is being made in this direction which indicates that the inventory² contains the items necessary for detection of such trends.

SUMMARY

1 The Minnesota Multiphasic Personality Inventory is an aid in the detection, characterization and measurement of psychoneurotic trends.

2 The cases presented demonstrate the value of this technic in assessing the strength of the neurotic element in differential diagnosis in medical and surgical as well as in psychiatric practice.

3 The inventory is also valuable in ruling out psychoneurotic trends when they are absent and thus sharpens one's thinking as to the likelihood of the presence of subtle early symptoms of confusing conditions, such as multiple sclerosis.

4 The inventory is simple to use and to interpret and provides a large amount of psychiatric information about patients with a minimal amount of the physician's time.

² The sets of materials for the Minnesota Multiphasic Personality Inventory are produced and are on sale by the University of Minnesota Press, Minneapolis.

Indigestion in Wartime—Modern war waged on an unprecedented scale, has brought about conditions which have never been encountered before in the history of the world. Not only has the method of waging war been completely altered, but war today has entered every household and brought about conditions unparalleled in all the experience of the human race. The dislocation of our method of living—economic and social—apart from the immediate military problems has resulted in changes which are bound to find their repercussions in the life of every individual. The war has been responsible for uncovering latent disease, revealing weaknesses in our structural make up, and it has often demanded sudden and severe changes in our methods of living. Despite the great advances which science has made in the promotion of human health and happiness, the demands of a modern wartime economy are so severe as to threaten the life and outlook of every one seriously. The transition to wartime conditions has revealed situations which were scarcely understood in the peacetime era.—Relifuss, Martin E. *Indigestion: Its Diagnosis and Management*, Philadelphia: W. B. Saunders Company, 1943.

THE MORPHOLOGY OF TREPONEMA PALLIDUM IN THE ELECTRON MICROSCOPE

DEMONSTRATION OF FLACELLA

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In a recent issue of *THE JOURNAL* we published a short note on the appearance of *Treponema pallidum* when seen under the electron microscope.¹ All the preparations were specimens recovered directly from human material, for the most part primary and secondary lesions.

When the preparations were examined in the electron microscope we were unable to discern flagella.

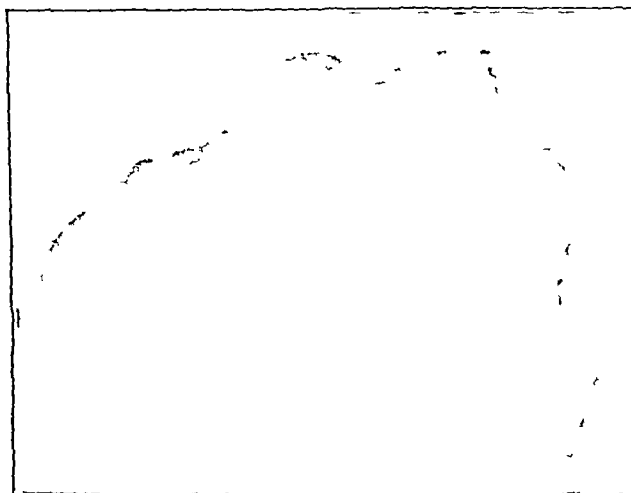


Fig. 1—Reduction from 80,000 diameters of a portion of *Treponema pallidum* showing flagella.

despite all the evidence which points to their presence when visualized in the living state by darkfield illumination.

In a footnote in our original contribution we stated that flagella-like processes were demonstrable by careful inspection of the photographic plate. This apparent difference between what can be seen on the fluorescent screen of the microscope and what is evident on the photographic plate is due to the lesser resolving power of the fluorescent screen.

In the investigation of bacteria including *Treponema pallidum*, with the electron microscope a magnification of approximately 9,000 diameters has been found to give the best operating conditions although magnification of at least twice this amount is possible with the instrument.²

In order to study the flagella-like processes more carefully, we enlarged the photographic reproductions tenfold. The processes resemble in all respects flagella which have been demonstrated in other bacterial forms.

This work was aided by a grant from the Board of Governors of the Horace H. Rackham School of Graduate Studies.

¹ Wile, U. J., Picard, R. G., and Kearney, Edna B. *The Morphology of Spirochaeta Pallida in the Electron Microscope*. *J. A. M. A.* 119: 830 (July 11) 1942.

² Picard, R. G. *Thesis*.

occurring at different levels of the organism, but as yet we have not succeeded in finding them at the end. There is, however, every reason to believe that they occur here as well as elsewhere.

The detection of flagella-like processes in preparations of *Treponema pallidum* has been a sufficiently frequent finding to justify the assumption that they are an integral part of the organism and probably are invariably present. The technical difficulties attendant on the preparation of fresh specimen from the human host together with the frequency with which debris interferes with good reproduction, accounts for their not being an entirely uniform finding.

An electron micrograph of *Treponema pallidum* appeared shortly after our first contribution in an article by Mudd, Polevitzky and Anderson.³ In their paper flagella are shown in a photographic reproduction. The organism, however, which these authors studied came from a culture on cysteine-ascetic fluid broth which was derived from the well known Noguchi rabbit strain. The occurrence of similar processes in the organism



Fig. 2—Somewhat higher magnification showing larger number of flagella-like processes in detail.

derived from the rabbit testis and carried through culture is confirmatory evidence of our observation.

In discussing the morphologic features of the Nichols strain of *Treponema pallidum* as revealed by the electron microscope, Morton and Anderson⁴ mention flagella-like filaments and terminal filaments. These are shown and appear to be identical with those described herein. In their material, as in the article referred to by Mudd, Polevitzky and Anderson, organisms from cultures were examined. Not only are these morphologically different from those taken fresh from syphilis lesions when seen in the electron microscope, but they differ also when seen fresh in the darkfield. It is also noteworthy that organisms from such cultures after several generations are no longer pathogenic to rabbits.

However, except for the fact that the gross morphology of the organism is different from that seen in our fresh specimens, the flagella-like structures are identical with those described by us from the human strain.

THE EFFECT OF SULFONAMIDE DRUGS ON THE BLOOD PLATELETS

REPORT OF TWO CASES OF THROMBOGENIC PURPURA AND EXPERIMENTAL STUDIES ON PATIENTS RECEIVING SULFONAMIDE DRUGS

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It is now a well recognized fact that the entire group of sulfonamide compounds can be added to those which may produce various disorders of the blood. Thus the rather high incidence of acute hemolytic anemia in patients receiving these drugs is now well established, as well as is the fact that the drugs are capable of producing acute agranulocytosis. Furthermore, in some instances they are capable of stimulating granulopoietic activity to the point of producing leukemoid reactions. This makes it all the more remarkable that very few reports have been presented indicating that these compounds are capable of affecting the blood platelets.

During the past eighteen months we have had an opportunity to study 3 cases in which thrombogenic purpura presumably developed because of the administration of sulfathiazole. Reports of 2 of these are incorporated in this paper, the third being omitted because of circumstances whereby we are unable to obtain detailed information.

REPORT OF CASES

CASE 1—A woman aged 40, admitted to St. Joseph's Hospital, Atlanta, Ga., Aug. 1, 1941 as a patient of Drs. Avery Dimmock and John Turner, complained chiefly of excessive vaginal bleeding during the preceding ten days. She had never had irregularity in menstruation before. During these ten days the bleeding had been more or less continuous, requiring the uninterrupted use of a large number of pads.

Physical examination revealed a decided pallor because of the excessive loss of blood. Otherwise there were no physical manifestations of importance. There were no purpuric spots on the skin nor was there any other evidence of hemorrhage except the constant oozing of blood from the uterine canal. The temperature was 102 F., the pulse rate 90 and respiratory rate 24 a minute.

Examination of the blood on admission showed 40 per cent hemoglobin and 2,800,000 red cells and 4,500 white cells per cubic millimeter with a normal differential cell count. The coagulation factors, including the coagulation time, bleeding time, clot retraction time and prothrombin time, were normal. The platelets were not counted by a direct method but were estimated on the blood film to be more than 300,000 per cubic millimeter. A tentative diagnosis of incomplete abortion was made, with a second diagnosis of a bleeding submucous uterine fibroid. The patient was given a blood transfusion and this was followed by uterine dilation and curettage. The tissue obtained showed only blood clot with no products of conception. The vagina was packed, and because of her septic course she was given 3 sulfathiazole tablets every three hours for twenty-four hours, then 2 tablets every four hours for the second two days, thus receiving 16 Gm. in three days. After three days the medication was changed to sulfapyridine, and after one day this was omitted. Twenty-four hours after the first administration of sulfathiazole the patient had bleeding in the gastrointestinal tract as shown by bloody vomitus and dark

³ Mudd, Stuart, Polevitzky, Katherine, and Anderson, T. F. *Bacterial Morphology as Shown by the Electron Microscope*, Arch. Path. 34:199 (July) 1942.

⁴ Morton, H. E., and Anderson, T. F. *Some Morphologic Features of the Nichols Strain of Treponema Pallidum as Revealed by the Electron Microscope*, Am. J. Syph., Gonorr. & Ven. Dis. 26:565 (Sept.) 1942.

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tarry stools. The uterine bleeding continued unabated. She vomited blood on several occasions and after forty-eight hours there were numerous ecchymotic areas and petechial hemorrhages over the trunk, extremities and face. Examination of the blood at this time showed 2,200,000 red cells per cubic millimeter, hemoglobin 40 per cent and 3,000 white cells and the differential count was essentially normal except for a slight shift to the left in the granulocytes. The platelets were extremely few and estimated to number less than 5,000 per cubic millimeter. A careful examination of the blood showed no immature white cells indicative of a leukemic process. There was a positive tourniquet test. In addition to the admission diagnoses, a diagnosis was then made of thrombopenic purpura, presumably following the administration of sulfathiazole. The patient was given multiple transfusions but continued to run a septic course and died August 15, two weeks after admission to the hospital.

The autopsy findings included many hemorrhagic areas beneath the skin, in the mucous membranes and in the gastrointestinal tract. The kidney pelvis were filled with blood clot. About the uterus in the cul-de-sac there was a considerable amount of purulent material. The tubes were quite large, adherent to the ovaries and surrounded by inflammatory exudate. The uterus contained a large submucous fibroid tumor that was pedunculated, soft and dark red with a bleeding surface. The autopsy diagnosis was abscess of the pelvis and cul-de-sac, presumably arising from the tubes, multiple hemorrhages of the small intestine, trunk, face and extremities and a submucous pedunculated bleeding fibroid tumor.

This report indicates that the patient's original uterine bleeding prior to admission to the hospital was caused by the fibroid tumor and that pelvic inflammatory disease accounted for her febrile course. The important feature in this case was that her blood platelets were entirely normal on admission to the hospital and she showed no evidence of blood coagulation defects to account for her bleeding; this condition developed only after a moderate amount of sulfathiazole had been administered. Consequently, it is believed that the thrombopenic purpura was caused by the administration of that drug, since no other drugs were employed during this period that could account for the sharp platelet depression.

CASE 2—A white woman aged 23 was admitted to Piedmont Hospital, Atlanta, Ga., on March 1, 1941 and died on March 5. She was a patient of Drs. H. C. Sauls and Carter Smith. On admission her chief complaint was severe backache, general malaise, nausea, vomiting and sore throat. For two days before she had passed only a small amount of red bloody urine. She had been well up until eleven days before admission at which time a sore throat developed. At that time her family physician gave her 10 grains (0.65 Gm.) of sulfathiazole every two hours for two days. On the third day she began to have pain in her back, passed small amounts of red urine and had nausea, vomiting and some swelling of the face. This continued until admission to the hospital.

Her temperature was 99.6 F., pulse rate 76, respiratory rate 18 and blood pressure 140 systolic and 90 diastolic. She was quite listless and almost semicomatose. There was no lymphadenopathy or splenomegaly. The admission diagnosis was streptococcal pharyngitis and acute hemorrhagic nephritis, presumably from sulfathiazole. On the second hospital day only 12 ounces (360 cc.) of urine was excreted and on the night of the third day numerous purpuric spots developed over the arms and trunk with uterine bleeding and expectoration of bloody sputum.

On admission to the hospital examination showed 4,300,000 red cells and 14,000 white cells per cubic millimeter, hemoglobin 13 Gm. and a slight shift to the left of the granulocytes. No platelets were seen on the stained smear. The blood coagulation factors, including coagulation and prothrombin times, were normal. Bleeding time by skin puncture was more than thirty minutes and the tourniquet test was strongly positive. The clot failed to retract and no platelets were found on the

blood film. Finally the patient had retention of nitrogenous products until March 5, the day of her death.

The patient was given no drugs other than sulfathiazole prior to the development of her purpuric disease. The Kahn test gave negative results on two occasions. Although she had received no sulfathiazole for a period of nearly one week prior to admission to the hospital, on the second hospital day sulfathiazole determinations of the blood showed 18 mg. per hundred cubic centimeters.

This appeared to be a clearcut case of severe thrombopenic purpura which presumably followed the administration of a relatively small amount (about 10 Gm.) of sulfathiazole over a period of only two days, associated with kidney damage producing retention of nitrogenous products and death. The course of events in this case was probably an original streptococcal sore throat in a previously healthy person, the administration of sulfathiazole, the development of kidney blockage, hematuria, thrombopenic purpura and finally pulmonary hemorrhages and death. Unfortunately, consent for autopsy could not be obtained.

TEN REPORTED INSTANCES

When compared to the number of cases of acute hemolytic anemia and acute agranulocytosis reported from the administration of the sulfonamide drugs, reports of thrombopenic purpura have been relatively infrequent. We have been able to find records of only 10 patients in whom thrombopenic purpura presumably developed after the administration of these drugs.

Schonberg's¹ patient was treated for dermatitis of the vulva with left inguinal streptococcal adenitis and was given 120 grains (8 Gm.) of sulfanilamide on the first day and 40 grains (2.6 Gm.) for two subsequent days. On the fourth day urticaria developed, associated with a typical purpuric rash. This patient recovered and one month later she was given one 5 grain (0.3 Gm.) tablet of sulfanilamide which was followed by a generalized urticarial eruption. In this instance the purpura presumably was not thrombopenic but developed because of widespread capillary damage.

Markel and Rike's² patient was a man aged 59 being treated with sulfanilamide for postoperative cystitis. He received 30 grains (2 Gm.) on the first day, 15 grains (1 Gm.) on the second, 30 grains on the third and 30 grains on the fourth day, at which time his stools contained gross blood with bloody urine and widespread purpura. Examination of the blood showed a depressed platelet count and delayed clot retraction with other coagulation factors normal. These authors concluded that the bleeding in their case was caused by the sulfanilamide.

Other instances of purpuric disorders have been reported following administration of sulapyridine. Thus Aubertin and May-Darhovsk's³ patient was a white woman aged 38 being treated for arthritis with sulapyridine. Over a period of ten days she received slightly more than 300 grains (20 Gm.). On the twelfth day there was a petechial eruption on the lower extremities and the blood platelets numbered 130,000 per cubic millimeter. The bleeding time was prolonged and the coagulation factors were normal. Cessation of administration of the drug was followed by recovery of the patient.

1. Schonberg, I. L. Purpuric and Scarlatiform Eruption Following Sulfanilamide. *I. A. M. J.* 109: 1033 (Sep. 23) 1937.

2. Markel, C. and Rike, P. J. Symptomatic Urticaria Hemorrhagica Following the Administration of Sulfanilamide. *Re. L. M. M. J.* 36: 791 (Nov.) 1937.

3. Aubertin, C. and May-Darhovsk. Purpura Due to Sulfapyridine. *Bull. et Mem. Soc. Méd. de Paris* 36: 363 (Aug. 7) 1937.

The patient of Goldbloom and his associates⁴ was a woman aged 50 treated with about 60 grains (4 Gm) of sulfapyridine one day and 90 grains (6 Gm) the second day this being followed by development of hemorrhages in the form of bloody sputum, hemorrhagic masses in the mucous membranes, moderate vaginal

TABLE 1—The Diluting Fluid Used in Oles' Method

Sodium metaphosphate (Howe & French)	1.0 Gm
Sodium chloride	0.1 Gm
Dextrose	0.1 Gm
Sodium bicarbonate	0.1 Gm
Brilliant cresyl blue	0.1 Gm
Distilled water	100.0 cc

TABLE 2—Normal Daily Variations in Platelets in Healthy Adults

Normal Subject	Daily Platelet Count (in Thousands)									
	1	2	3	4	5	6	7	8	9	10
1	111	480	480	55	271	19	60	11	6	211
2	211	17	407	281	110	91	507	91	111	111
3	270	24	427	288	211	60	90	07		
4	07	11	27	118	86	452	411			
5	12	28	21	28						

bleeding and diffuse purpura of the skin. After the drug was discontinued these manifestations disappeared. In this instance the purpura developed on the fourth day of treatment and the platelet count was 25,000 per cubic millimeter, associated with a leukemoid reaction to the extent of 35,000 white cells per cubic millimeter.

Hoffman's⁵ patient was a man aged 57 with a post-operative urethral discharge from a transurethral prostatic resection being treated with 60 grains (4 Gm) of sulfapyridine in one day. This was followed by bloody urine, bleeding from the gums and a hemorrhagic rash on the lower extremities. This patient was in the

TABLE 3—Platelet Determination by Three Methods in Normal Subjects

Subject	Direct Method	Ionios Method	Oles' Method
1	212,000	143,520	485,100
2	270,000	291,200	365,760
3	125,000	445,410	456,520
4	235,000	333,760	378,210
5	274,000	367,920	443,520
6	224,000	481,320	492,780
7	200,000	303,750	252,350
8	215,000	378,020	378,020
9	224,000	374,000	204,250
10	209,000	351,000	369,000
11	276,000	269,960	319,160
12	312,000	310,600	364,800
13	354,000	374,320	361,260
14	265,000	340,180	407,420
15	391,000	419,220	493,200
16	299,000	252,450	362,610
17	219,000	202,350	276,900
18	244,000	283,930	291,830
19	367,000	450,300	677,150
20	209,000	300,300	373,230
21	420,000	425,200	463,200
22	258,000	300,000	423,150
23	243,000	337,400	404,880
24	428,000	501,000	527,940
25	342,000	333,000	397,600
26	180,000	240,000	350,620
27	294,000	328,400	351,740
Averages	277,000	351,000	400,000

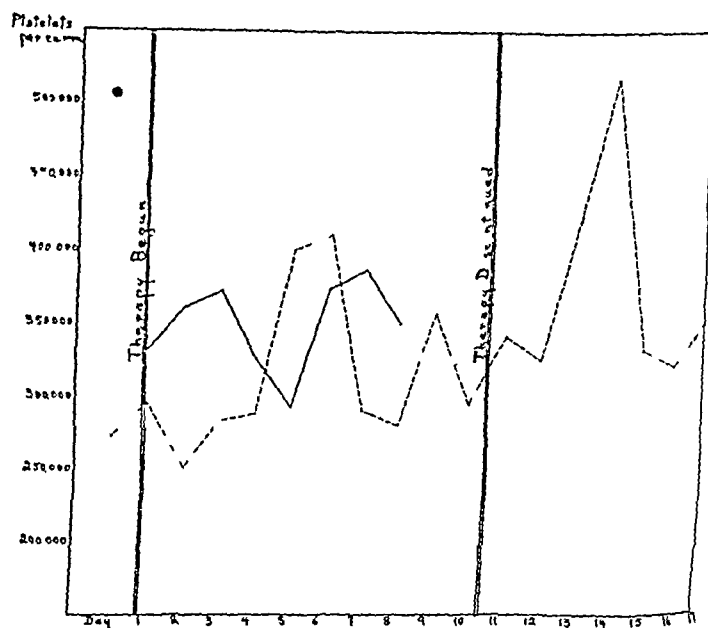
hospital for several weeks under close study before the drug was given, and no hemorrhages had been present before.

Russell and Page⁶ have reported 2 cases of thrombopenic purpura resulting from administration of sulfa-

pyridine. The first report was of a Negro man aged 41 with lobar pneumonia. During a period of ten days he received 45 Gm of the drug. On the eleventh day he had generalized purpura involving the entire body, epistaxis and oozing from the gums. The platelets were estimated to be 45,000 per cubic millimeter. The patient eventually recovered. In this instance the blood sulfapyridine level was only 2.9 mg per hundred cubic centimeters.

Their second report was of a white man aged 60 with lobar pneumonia who received 18 Gm of sulfapyridine in four days, on the fourth day hematuria and generalized purpura developed. Acute hemolytic anemia with moderate leukocytosis developed and the platelets numbered less than 1,000 per cubic millimeter. He had prolonged bleeding time and normal coagulation factors. He died on the fourteenth day and bone marrow studies revealed no findings of particular significance.

Up to this time there have been reported 3 instances of thrombopenic purpura after the administration of sulfathiazole. Quick and Lord's⁷ patient was a white



Average daily variation in the number of platelets in normal subjects (solid line, details in table 2) and in patients during and after sulfathiazole therapy (broken line, details in tables 4, 5 and 6).

youth aged 19 who had been given 70 grains (4.5 Gm) of sulfathiazole for infection of the gums following extraction of teeth. Severe acute hemolytic anemia developed and on the ninth day a purpuric rash appeared over the entire body which presumably was caused by the administration of the drug, since other factors were fairly well eliminated.

The second instance of thrombopenic purpura from sulfathiazole was reported by Rosenfeld and Feldman.⁸ A white man aged 37 was being treated for cystitis, pyelitis and pyelonephritis with sulfathiazole. After taking 5.5 Gm of the drug he began to bleed from the nose and gums and also had hematuria. After the drug had been given three days his platelets numbered only 2,000 per cubic millimeter. The drug was discontinued and the patient recovered. It is interesting to note that several weeks later he was given 15 Gm of sulfathiazole in a period of five days, but after this administration there was no thrombopenia and no development of purpura.

4 Goldbloom, A. A., Greenwald, Louis, and Reinstein, Harry. Toxic Reactions to Sulfapyridine, *J. Lab. & Clin. Med.* 27: 139 (Nov.) 1941.
5 Hoffman, C. A. A Report of a Case of Hemorrhagic Purpura Due to Sulfapyridine, *West Virginia M. J.* 36: 169 (April) 1940.
6 Russell, H. K., and Page, R. C. Thrombocytopenic Purpura Due to Sulfapyridine, *Am. J. M. Sc.* 200: 495 (Oct.) 1940.

7 Quick, E. W., and Lord, F. D. Acute Hemolytic Anemia Following Sulfanilamide Administration. Report of a Case with Recovery, *J. A. M. A.* 117: 1704 (Nov. 15) 1941.
8 Rosenfeld, Samuel, and Feldman, Frederic. Thrombopenic Purpura Due to Sulfathiazole, *J. A. M. A.* 118: 974 (March 21) 1942.

Werner's⁹ patient developed only a cutaneous rash after receiving 14 Gm of sulfathiazole but twenty days later complete thrombopenia developed after administration of only 1 Gm of the drug. Such instances would suggest that a patient may become sensitized by the first administration of these drugs.

Thus in a summary of the reported cases of purpura caused by these drugs 2 of them have resulted from the administration of sulfanilamide, 5 from sulfapyridine and 3 from sulfathiazole. To this we add the 2 cases reported in this paper, making a total of 12.

A STUDY OF THE PLATELETS IN PATIENTS RECEIVING SULFONAMIDE COMPOUNDS

After observing 3 patients who had been treated with sulfathiazole and who subsequently had severe hemorrhages with ultimate death of all we decided to investigate the effects of sulfathiazole on the platelets of patients who were receiving this drug in routine hospital practice.

It became necessary to select a satisfactory method for the estimation of platelets and we first made platelet determinations by the three standard methods on 27 normal subjects. The platelets were estimated by the direct method, Fomo's method and Olef's method. The blood for the three tests was taken from the normal subjects at the same time.

The direct method consists of puncturing the finger, wiping away the first drop of blood, drawing diluting fluid to the 0.5 mark and then blood to the 1.0 mark in a red cell pipet and then diluting fluid to fill the pipet. The fluid used was that of Rees and Lcker and is an aqueous solution containing sodium citrate and solution of formaldehyde with a small amount of brilliant cresyl blue. After proper shaking of the pipet the counting chamber is filled and allowed to stand for fifteen minutes on damp filter paper in a petri dish. The platelets are then counted. By this method the platelet count is usually between 250,000 and 350,000 per cubic millimeter, with extremes of 200,000 and 450,000 per cubic millimeter. The average platelet count on 27 normal subjects was 277,000 per cubic millimeter.

Fomo's smear method consists of puncturing the finger and at once placing a drop of 14 per cent magnesium sulfate over the puncture before the blood begins to flow. The blood then flows into the drop until the proportion is about one part of blood to one part of magnesium sulfate solution. A small drop is then placed on a slide and a thin smear is made. The magnesium sulfate is then wiped away and an ordinary red cell count is done by the usual technique. The smear is stained with Wright's stain, the platelets are counted with the oil immersion objective until 1,000 red cells in various microscopic fields have been simultaneously enumerated. From these data the number of platelets is computed. In the group of 27 normal persons the average platelet count was 351,000 per cubic millimeter.

The third method used is known as Olef's paraffin cup method. The finger is punctured, the first drop of blood removed and a drop of diluting fluid placed over the puncture. The formula for the diluting fluid used in Olef's method is given in table 1. The blood then flows into the fluid in approximately equal amounts, and this mixture is received into a small paraffin cup which contains more of the diluting fluid. After being stirred with a paraffin coated applicator and allowed

to stand for two minutes, it is transferred to a slide in the form of a small drop sufficient to spread under a cover glass. After standing for fifteen minutes, simultaneous counts are made of platelets and red cells and the number is then computed. By this method the usual range is 350,000 to 400,000 per cubic millimeter.

After this preliminary study, we decided to use Fomo's smear method for further studies. We based this decision on the fact that this method has the

TABLE 4—Platelet Counts in Patients Under Sulfathiazole Therapy

Patient	Day of Therapy								
	0	1	2	3	4	5	6	7	8
1*		700	900	600	600	200	600	600	840
2	300	500	300	300					
3		740	300	370	300	400	470		
4		370	410	390	400	600			
5		470	510	400	340	400			
6		400	370	500	400				
7		350	400	340	370				
8	900	440	340	370					
9		300	500	450	500	300	310		
10		250	400	400	300	300			
11		270	250	240	250	300			
12		400	500	600	910	610	300		
13	250	250	220	250	210	220			
14		240	320	330					
15		200	470	300					
16		400	360	500	400				
17	350	410	350	410					
18		350	400	360					
19†		200	200						
20	400	300							
21	300	300	290	250	300	310	220		
22‡		270	150	300	300	260	260	200	200
23	180	200	250	300	200				
24	210	230	210	200					
25		130	250	260					
26		200	300	290	350				
27	340	360	250	250	200	260	260		
28	380	310							
29		250	160	260	210				
30		280	240	240	260				
31		450	340	330					
32	280	290	300	300					
33	220	300	160	230					
34	170	200	220	200					
35	100	200	210	190	200				
36	230	300	250	290					
37	300	350	390	250					
38		311	149	249					
39		308	304	251	167	761			
40					65	196			
41			305	253					
42			341	235					
			317	304					
43			290	246	254	230		687	367
44			149	217	206				
45			209	397	354	250		301	259
46			257	121	406				202
47			313	197		326			
48			640	409	507	862	641		
49			427	451	273	390	249		
50			155	205	473	258			
51			199	109	200	283	200	251	204
52		375	259	200	356	508			
53			350	220	412				
54		220	217	199	247				
55		263	257	203	203	170	260	303	
56		312		240	210				
57			617	450	676	468	300	250	200
58		504	452	332	564	512	350	427	502
59		448		270	304	518			
60		500	511	500	708	747	440		
61			234	271	161		277		

* Patients 1 through 18 and 47, 55, 59, 60 and 61 were infants and children aged 4½ months to 12 years.

† Patients 19 through 38 as they appear in the table were aged 13 to 81 years. Patients 34 through 37 were over 70 years of age.

‡ Patient 42 received sulfathiazole for two days, had chemotherapy discontinued for five days and received a second course of the drug for three days.

§ Patient 22 was continued on sulfathiazole therapy for ten days and showed a platelet count of 400,000 on the ninth and on the tenth day.

advantages of simplicity and second of providing a permanent preparation. The results obtained by this method are within 10 per cent of those obtained by the Olef method which is probably more accurate. In any event once a method has been chosen for routine purposes it should be used to the exclusion of all others, so that platelet estimations will have comparative value. The individual counts in this study of 27 normal persons is given in table 3.

⁹ Werner, W. I. Thrombocytopenic Purpura Following Administration of Sulfathiazole. *Circulation* 26: 49 (Feb.) 1942.

Since the platelet counts may vary widely in the same individual from day to day this has to be taken into account in an evaluation of the platelet fluctuations of patients under treatment. We decided to carry out daily platelet counts at approximately the same hour of the day on 5 normal subjects for a period of ten days. The results of this can be seen in table 2.

It can be seen from this study that the platelet count may vary from 261,000 to 511,000 per cubic millimeter in a normal person and in another subject from 261,000 to 407,000 per cubic millimeter so it is obvious that great variations occur from day to day in the normal platelet count of the same individual, even when the counts are made at the same time of day with a standardized carefully worked out technique.

Platelet determinations were begun on patients who were admitted to the hospital for various causes and who were receiving or were to receive sulfathiazole therapy for a variety of conditions. This series included 61 patients all of whom received therapy over a variable number of days usually ranging from three days to eight days, and longer in an occasional instance. In a group

TABLE 5—Average Platelet Counts in Patients with Sulfathiazole Therapy

	Day of Therapy									
	0	1	2	3	4	5	6	7	8	9
Children	256	171	76	119	176	469	366	437	717	
Adults	257	291		81	309	101	411	29	251	357

TABLE 6—Average Platelet Counts in Relation to Days After Discontinuance of Sulfathiazole

	Day After Discontinuance						
	1	2	3	4	5	6	7
Children	117	492	632	821*	551		
Adults	1	36	421	517	333	332	35

* Count made in 1 case only

of 23 of these 61 patients it was possible to obtain platelet counts before the institution of drug therapy. The results obtained on each patient can be seen in table 4, and in table 5 is a summary of the results.

These results indicate that there is but little significant difference between the platelet counts of the patients before drug therapy is given and the counts obtained on the first, second and third days of therapy, but in nearly all patients after therapy has been discontinued there is a fairly sharp rise in the number of platelets. These averages are expressed in table 6 and are presented graphically in the chart.

Thus in 23 patients the average platelet count on the day before drug therapy was 275,000, on the first day of therapy nearly 300,000 and on the second day of therapy 250,000, which was below the average level in the beginning. On the day that therapy was discontinued the average platelet level was nearly 350,000 but on the following day it rose to 525,000 and then again fell back to its normal level.

The results would seem to indicate that in patients receiving sulfathiazole therapy there is a slight depression of the platelets on the second day of therapy and a decided increase in the number on the day after therapy has been discontinued. Because of the wide

variation in normal platelet counts, conclusions to be drawn from the platelet values of these 61 patients cannot be done with any degree of certainty. We can merely state that there seems to be a trend toward slight platelet depression after the institution of therapy and a considerable increase in the number of platelets after cessation of therapy. This trend, coupled with the 2 cases reported in this paper and those in the literature, indicates that in some instances platelet depression may occur to the point of thrombopenic purpura.¹⁰

CONCLUSIONS

1 There appears to be accumulating sufficient evidence to indicate that in occasional patients being treated with the sulfonamide compounds the blood platelets may be depressed to the extent of producing severe thrombopenic purpura.

2 A comparative study on normal subjects indicates that Fomo's method is sufficiently reliable and simple to be preferred as a routine procedure.

3 Daily platelet counts in normal persons over a period of ten days revealed decided variations in the number of platelets in the same individual.

4 Daily platelet estimations were carried out in 61 patients being treated with sulfathiazole and the results indicate that there is a slight platelet depression on the first day of treatment and a rather decided increase of platelets on the first day after cessation of treatment.

5 The fact that the sulfonamide compounds appear to be capable of depressing platelets in an occasional person makes it all the more important that these drugs should be used with caution only under supervision of physicians and that hematologic studies should be done frequently to determine any untoward effects on the blood.

ABSTRACT OF DISCUSSION

DR. DAVID I. MACHT, Baltimore: I was pleased with the call for a more intensive study of the morphology of the blood and other histologic changes as to the sulfonamide compounds. I would advocate not only hematologic but pharmacologic studies of the blood after the administration of these valuable therapeutic agents. I have been interested in the skin reactions after all the sulfonamide drugs because one of these resembles a fatal disease, pemphigus. Pemphigus eruptions have been described after sulfathiazole and other sulfonamides. I have made experimental studies on the subject. We gave various sulfonamide compounds to rabbits and studied the pharmacology of the blood by so-called phytopharmacologic methods—the effect on living plant protoplasm which is very sensitive to blood toxins—and it was surprising to find that after all these compounds the blood of these animals was less toxic than the normal blood of the same animals. Similar studies were made on the pharmacology of blood samples from patients receiving the various compounds and they also showed a lesser toxicity for living plant tissues than normal blood plasma. All this goes to show that after all sulfonamide drugs there are probably profound changes taking place in all the tissues and particularly in the fluid tissue, the blood, which ought to be watched in the course of chemotherapy in order to prevent dangerous accidents.

DR. HARRY J. CORPER, Denver: The sulfonamide drug, especially promin, recently have attracted attention in tuberculosis the treatment of which of necessity is of long duration. We do not recognize the real value of sulfonamides as yet but

¹⁰ Since this paper was submitted for publication we have observed 2 other patients in whom severe thrombopenia developed after the administration of moderate amounts of sulfathiazole, followed by death of both patients.

those who have worked on them enthusiastically and were encouraged in their action point out that there is a striking difference in the toxicity in animals and in man. This difference in toxicity is especially applicable to promethazine. I should like to ask Dr. Kracke whether he has observed such differences and whether he can explain it.

DR. ROY R. KRACKE, Emory University, Ga. I am unable to give any definite answer to Dr. Corper's question. The most important thing to remember about the administration of sulfonamide drugs is the knowledge on the part of all people who administer such drugs that they are capable of producing the most serious and bizarre effects on the blood cells. Also that such effects can include a depression of the thrombocytes. The drugs, of course, should not be used indiscriminately. I have been concerned in seeing some of the surgeons literally spray the peritoneal cavity with whatever agent happens to be popular at the moment. We should all realize that high blood stream levels can occur from peritoneal absorption as well as intestinal absorption.

Clinical Notes, Suggestions and New Instruments

RECOVERY FROM EIGHT GRAMS OF BARBITURATES IN ATTEMPTED SUICIDE

C. J. FRANCE, MD, MORTON BARNETT, MD, AND
F. F. YONKMAN, MD, DETROIT

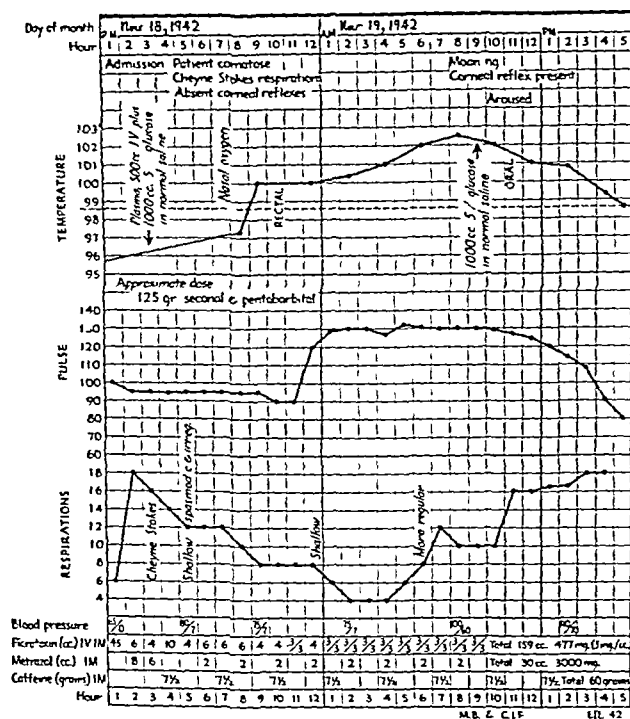
Barbiturates in its various forms has been responsible for numerous suicidal attempts many of them successful. The unsuccessful cases can be attributed to either insufficient dosage ingested or to proper antagonistic therapy as is illustrated by the case reported here. In relation to the report of Hambourger¹ on the frequency of use of barbiturates as suicidal agents it behooves one to consider this class of drugs as chief offender in this modern age. Hambourger states (1939) that more than two million doses of barbiturates were sold daily in the United States and that from 1932 to 1936 the national incidence of suicide by means of barbiturates was 4.2 per cent of that for all poisons except gases, the incidence in large cities ranged from 2 to 16 per cent. These figures also behoove us to concern ourselves with the most satisfactory modern and accepted form of therapy in barbiturate poisoning.

The first clinical report of successful antagonism of phenobarbital overdosage by picrotoxin in a 3½ year old child is given by Arnett.² The rationale of his therapy was no doubt based on the experimental work in animals by Maloney, Fitch and Tatum,³ who demonstrated the restorative actions of picrotoxin and other analeptics in the presence of poisonous doses of barbiturates. Combinations of analeptics such as picrotoxin and ephedrine,² picrotoxin and metrazol⁴ or strychnine and ephedrine⁵ may often be more desirable than a single agent. Arnett's patient recovered from 0.4 Gm (6 grains) of amytal. Weiss's patient from 475 Gm (71 grains) of phenobarbital and our patient from 8 Gm (125 grains) of barbituric acid derivatives, two thirds of which was pentobarbital and one third secobarbital. According to Fantus⁶ the fatal dose is in general,

from fifteen to thirty times the therapeutic dose. The dose of barbiturates which is nearly always fatal is about 10 Gm, that of phenobarbital from 6 to 8 Gm and that of dialet about 2.4 Gm.

REPORT OF CASE

M. D., a white woman aged 32, was admitted in shock one hour after ingestion of 125 grains (8 Gm) of a mixture of soluble pentobarbital and secobarbital. Respirations were only 8 per minute and of Cheyne-Stokes type. Blood pressure was 60/0 and there was complete areflexia. Twenty-five mg of picrotoxin was cautiously injected throughout fifteen minutes on admission and 100 mg was then slowly infused in 1,000 cc of 5 per cent dextrose and saline solution intravenously. Shock was treated with intravenous plasma and other customary antishock therapy. At this point she was transferred to the ward. Inadvertently the stomach was not lavaged and there was no emesis at any time. In the ward picrotoxin in dosage of approximately 12 mg was injected intravenously every half hour and 300 mg of metrazol every three hours. In addition, 7½ grains (0.5 Gm) of sodium with caffeine benzoate was injected intramuscularly every three hours. The patient received



This chart presents the important features of the clinical course of a patient who was severely poisoned with barbiturates. It indicates improvement of temperature, pulse, blood pressure, respiration and other signs after treatment with plasma, dextrose in isotonic solution of sodium chloride, oxygen, picrotoxin, metrazol and caffeine. Amounts of remedial agents used and time of their administration are also noted.

3,500 cc of fluid intravenously within twenty hours. Her condition remained critical for the first eighteen hours, respirations dropped at one stage to 4 per minute, then gradually rose to 18-20 per minute. Blood pressure remained practically constant at 65-75/0 then slowly rose to normal within twenty hours especially after the eighteenth hour. On the eighteenth hour corneal reflexes were noted and subsequently there was gradual return of all reflexes. She began to groan and was aroused at the twentieth hour at which time all medication was withheld. There were no seizures or convulsions noted at any time not even the slightest twitching. It was noted after each dose of picrotoxin that breathing increased in depth and frequency but only temporarily. A similar experience was encountered with metrazol but favorable results although appearing sooner were less enduring than after picrotoxin. As the chart indicates the patient improved steadily after the first eighteen to twenty hours but for the next twenty-four hours a toxic psychosis with confusion and delirium developed.

From the Department of Psychiatry of the Detroit Receiving Hospital and the Department of Pharmacology and Therapeutics, Wayne University College of Medicine.

¹ Hambourger W. E. Study of Promiscuous Use of Barbiturates. Their Use in Suicide. J. A. M. A. 112: 1340-1343 (April 8) 1939. II. Analysis of Hospital Data. ibid. 114: 2015-2019 (May 18) 1940.

² Arnett F. H. Ephedrine and Picrotoxin Used Successfully in Amytal Poisoning. J. A. M. A. 100: 1593 (May 20) 1933.

³ Maloney A. H., Fitch R. H. and Tatum A. L. Picrotoxin as Antidote in Acute Poisoning by Shorter Acting Barbiturates. J. Pharmacol. & Exper. Therap. 41: 465-482 (April) 1931.

⁴ Koppman J., Theodor C., Lingner C. R. and Dille J. M. Studies on Barbiturates. J. Pharmacol. & Exper. Therap. 58: 119 (Oct.) 1936.

⁵ Wei S. Soma. Internat. Clin. 1: 38 (March) 1936. Goodman Jones and Gilman. Alfred The Pharmacological Basis of Therapeutics. New York: Macmillan Company. 1941. p. 145.

⁶ Fantus Bernard. The Therapy of Barbiturate Poisoning. J. A. M. A. 115: 17 (Aug. 17) 1940.

Gradually the confusion and delirium subsided, however, and she was transferred forty-eight hours later to another hospital in good mental and physical condition.

X-ray examination had revealed no pulmonary complications, and no kidney or liver damage was noted at any time. Urinalysis was repeatedly negative. On admission to the hospital the patient's temperature was 96.4 F. It rose to 102.1 rectally at the time of reaction and steadily dropped to normal, the pulse followed a similar course, reaching the highest point of 130 at the time of reaction and gradually returning to normal.

COMMENT

We believe this case to be of considerable interest chiefly because it demonstrates the value of immediate and persistent combined specific therapy. Caffeine with sodium benzoate no doubt was of value here, but adequate fluid balance with plasma and repeated sustained injections of picrotoxin and metrazol should receive the most credit for recovery. Numerous cases are available which indicate that the latter two agents have restored barbiturized patients without the use of caffeine with sodium benzoate, hence the latter drug need not be used in this type of case because its action is similar to but less intensive than that of picrotoxin or metrazol. Pharmacologically, all three of these analeptics stimulate the respiratory and circulatory regulatory mechanisms of the medulla oblongata but also act as general stimulants of the entire central nervous system. The action of metrazol is the first to become evident, but it is not as enduring or as sustained as that of picrotoxin. Therein lies the virtue of a combination of the two drugs in successful treatment of barbiturate poisoning. The drugs should either be given together or preferably intermittently, one alternating with the other at appropriate intervals. Frequency of injections is determined by signs of improvement, such as increase in respiratory rate or volume, improvement in pulse and pressure, return of corneal and pupillary reflexes and skeletal muscle tone and twitchings. One can nicely titrate, if persistent and meticulous, the speed of intravenous infusion of picrotoxin and metrazol by the signs enumerated. As improvement maintains or accelerates, infusion is lessened so as to obviate the danger of central nervous system stimulation to the point of convulsions. Should the latter supervene, intravenous barbiturate in finely fractionated doses is of value. Constant observation of the patient, however, precludes the probability of increased hyperexcitability to undesirable degrees.

SUMMARY

A woman aged 32 had ingested 8 Gm of barbiturates and recovered after a total dose of 0.477 Gm of picrotoxin and 3 Gm of metrazol. Caffeine with sodium benzoate and plasma with 5 per cent dextrose and saline solution were also administered.

For successful treatment of barbiturate poisoning the following points should be strictly followed:

- 1 Immediate antagonistic treatment with adequate and safe initial doses of picrotoxin and metrazol, dosage to depend on the condition of the patient and the amount of barbiturate ingested, if known.

- 2 Immediate hospitalization with prompt antishock therapy, including plasma, dextrose, saline solution, an indwelling catheter, warmth and bed stilts, and any other agent or technique which might assist in the defeat of shock and promote excretion.

- 3 Copious, high enemas and early gastric lavage followed by 10 to 15 Gm of sodium sulfate solution left in the stomach for catharsis. The sodium sulfate is preferred to the depressing magnesium ion in this condition.

- 4 Constant observation with appropriate, sustaining and alternating doses of picrotoxin and metrazol, dosage again depending on the condition of the patient.

High estimated or known dosage of barbiturates ingested need not discourage heroic treatment, since this case represents

the upper limit of the average fatal dose stated by Fantus; but treatment must be immediate and multiple although suitable and sustained. Constant observation until recovery is mandatory.

TRANSPORTATION OF HUMAN SPERMATOZOA BY AIRPLANE FOR ARTIFICIAL INSEMINATION

FRANCES I SEYMOUR, M.D., ALFRED KOERNER, M.D.,
NEW YORK, DAVID COSTON, M.D., MONTREAL

We report the first case of pregnancy resulting from artificial insemination in man using spermatozoa transported by airplane 500 miles. The child has proved to be a bright, normal healthy youngster.

The patient's husband gave an essentially negative history. The couple had been childless over a ten year marital period. A semen examination by the attending physician showed azoospermia. The physician then recommended cross artificial insemination as a last recourse.

Physical examination of the husband, which included a blood count, serologic test and urine studies were found to be negative. Investigation of a fresh coital seminal specimen, as well as a testicular puncture, substantiated the original diagnosis of azoospermia.

The wife's history was negative as to familial hereditary diseases. Examination, including blood studies, evaluation of gonadotropic substance, urine examination and uterosalping ography, proved essentially negative by the criteria at our disposal. The patient was accepted as a suitable case for cross artificial insemination.

In cases for cross artificial insemination it is essential to establish the husband's absolute sterility. Adjustment to the child produced by cross artificial insemination would be greatly jeopardized if a second child entered the family group resulting from a mistaken diagnosis of absolute sterility on the husband's part.

The examination of both husband and wife having been completed, the consent forms for artificial insemination which we have previously described¹ were signed and duly notarized.

Analysis of the findings corroborated the verdict of the reporting physician that the sterility of the couple was due to the husband's azoospermia. Artificial insemination with the aid of a donor was thus the only solution.

The responsibility² of selecting suitable donors is a great one. Not only must the donor's semen be normal and the donor free from venereal disease but he must have a good family history free from inheritable diseases or tendencies to disease. Furthermore, the physician must select as a donor a man whose eyes and hair have the same color as the husband's, and there should be some other common physical characteristics of the donor and husband. It would be most inadvisable to select a donor who is short and dark if the recipient's husband is tall and blond.

The selection³ of a donor entails the impersonal procurement by the physician of semen from a healthy fertile male of good character and favorable heredity—one without evidence, clinical and serologic, of ever having had either gonorrhea or syphilis. The donor must, moreover, be unknown to the couple. The donors selected should be married men whose wives begat children by them.⁴ This acts as a clinical check of fertility.

After deliberate consideration we selected a donor whose personal history was negative, whose family tree was free of

1 Seymour, Frances I., and Koerner, Alfred. *Medicolegal Aspect of Artificial Insemination*, J A M A **107** 1531-1534 (Nov. 7) 1936.

2 De Lee, J. B., and Greenhill, J. B. *Year Book of Obstetrics and Gynecology*, 1941, editorial discussion of Seymour and Koerner's article on Artificial Insemination. Present Status in the United States as shown in a Recent Survey, p. 361.

3 De Lee and Greenhill. *Year Book* 1941, discussion on S. Leon Israel's Scope of Artificial Impregnation in the Barren Marriage, p. 359.

4 Seymour, Frances I. *Sterile Motile Spermatozoa, Proved by Clinical Experimentation*, J A M A **112** 1817-1819 (May 6) 1939.

trunt of hereditary disease or dyscrasia, who personally as well as the members of whose ancestral tree, had a good educational background and a record of accomplishment in life, and who matched the husband physically. He was married and had children. On physical examination he was found free of any and all pathologic conditions. His wife knew and consented to his participation.

On April 11 we began the cross artificial inseminations. This was the eighth day of the patient's cycle. Inseminations were repeated on alternate days on six consecutive occasions. The patient returned to Canada and ten days later menstruated irregularly and scantily. Her physician made an Aschheim-Zondek test, which was negative.

The patient, in spite of being told not to expect results immediately (the first time or so), became bitterly "disappointed and depressed." In addition to being depressed (as all these patients are with the recurrence of each menstrual period) she could not afford another trip to New York, so we agreed to ship the specimens to Montreal, Canada. Her physician agreed to perform the inseminations, as he was aware of the fact that we had been shipping specimens of semen by plane for some time.

A new donor was chosen at this point because the viability index of the original donor's specimen was too short for the long Montreal trip. The second donor was matched in the same meticulous manner as the first had been.

On January 27, 29 and 30 three specimens were shipped by airplane via the regular New York to Montreal route. These specimens were unsuccessful in producing pregnancy.

The flight route between New York and Montreal via the Colonial Airlines, Inc., is at a level of 8,000 feet. Usually packages are placed in the baggage compartments situated in the wings of the plane, which are unheated and where the temperature maintained is the same as outside the plane. The weather for our next attempt was freezing. We therefore had to take the precaution that the specimen be carried in one of the moderately heated compartments of the airplane.

All specimens are placed in glass bottles embedded in cotton (acting as a cushion) and then put into a cardboard container. This in turn is sealed with regular commercial paper tape (gummed) to prevent opening in transit.

Through the courtesy and cooperation of the Canadian Customs Department, the local postmaster general waived all examinations of the parcels shipped by us to Dr. C. This of itself was very unusual, as the customs division of the Canadian government insists on chemical analysis of all fluids or products entering Canada.

February 24 we shipped a specimen which again leaked out. February 26 the successful specimen was shipped. We ship small quantities of fluid. This shipment contained 0.5 cc of fluid. Dr. C. retrieved 0.2 cc in a tuberculin syringe and inseminated intracervically. Examination showed the sperm to be very active, much more so than any of the previous specimens. On April 1 both Aschheim-Zondek and Friedman tests were positive. After an uneventful nine month gestation period a baby boy was born whose blond hair and physiognomy becomes more like the patient's husband daily. This child is over 2 years of age now.

CONCLUSIONS

1 Long range transportation of human spermatozoa by airplane can effect pregnancy.

2 Although pregnancy occurred from a single insemination on the twelfth day of the patient's cycle, persistence is a virtue which should not be forgotten when immediate success is not obtained.

3 Small amounts of semen—as little as 0.2 cc—are effective in producing pregnancy.

51 East Ninety Sixth Street

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

OVARIES (See New and Nonofficial Remedies, 1942, p. 373)

The following dosage forms have been accepted

JOHN WIETH & BROTHER, INC., PHILADELPHIA

Ampoule Solution of Estrogens (in oil) 1 cc and 5 cc
Each cubic centimeter contains the equivalent of 5,000 international units of estrone and 0.5 per cent phenol as a preservative in corn oil.

Ampoule Solution of Estrogens (in oil) 1 cc and 5 cc
Each cubic centimeter contains the equivalent of 10,000 international units of estrone and 0.5 per cent phenol as a preservative, in corn oil.

Ampoule Solution of Estrogens (in oil) 1 cc and 5 cc
Each cubic centimeter contains the equivalent of 20,000 international units of estrone and 0.5 per cent phenol as a preservative in corn oil.

NICOTINIC ACID AMIDE (See New and Nonofficial Remedies 1942, p. 562)

The following dosage forms have been accepted

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Nicotinamide (Powder) bulk

Sterile Ampoules Solution Nicotinamide, 100 mg per cc 2 cc

Tablets Nicotinamide 50 mg and 100 mg

WALKER VITAMIN PRODUCTS, INC., MOUNT VERNON, N. Y.

Tablets Nicotinamide 20 mg, 50 mg and 100 mg

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1942, p. 56)

The following dosage forms have been accepted

GEORGE A. BREON & COMPANY, INC., KANSAS CITY, MO.

Ampul Procaine Hydrochloride Solution 1% 2 cc
Each cubic centimeter contains 0.01 Gm in physiological solution of sodium chloride.

Ampul Procaine Hydrochloride Solution 2% 2 cc
Each cubic centimeter contains 0.02 Gm in physiological solution of sodium chloride.

PHENOBARBITAL SODIUM (See New and Nonofficial Remedies, 1942, p. 470)

The following dosage form has been accepted

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Sodium Phenobarbital Solution in Propylene Glycol 0.325 Gm (5 grains) in 2 cc ampules

LIPIODOL, 40% IODINE (See New and Nonofficial Remedies 1942 p. 306)

The following dosage form has been accepted

E. FOUGERA & COMPANY, NEW YORK

Lipiodol, 40% Iodine 20 cc neoprene-capped flask

NICOTINIC ACID-U S P (See New and Nonofficial Remedies 1942, p. 561)

The following dosage form has been accepted

PITMAN-MOORE COMPANY, INDIANAPOLIS

Tablets Nicotinic Acid 20 mg and 50 mg

NICOTINIC ACID AMIDE (See New and Nonofficial Remedies 1942 p. 562)

The following dosage form has been accepted

PLINT, EATON & CO., DECATUR, ILL.

Sterile Solution Nicotinamide 50 mg per cc 15 cc rubber capped vial

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SATURDAY MAY 15 1943

GRAVE DIPHThERIA

During the past fourteen years there have been repeated references in the medical literature to peculiarly severe outbreaks of diphtheria most of them located in various districts of Europe. A recent review of this subject by McLeod¹ indicates not only that there are numerous records of unusually severe diphtheria but also that the results of serum treatment in many of the outbreaks proved singularly disappointing in spite of the great advance in the potency of antitoxic serums. The contrast in effectiveness of serum treatment between the incidence and severity of diphtheria in North America and in many parts of Europe especially central Europe, has been particularly striking. Does this difference depend, McLeod asks, entirely on the more enthusiastic adoption of prophylactic inoculation in the New World? How far do questions of nutrition play a part? Are there complex and insufficiently understood aspects of the development of mass immunity independent of artificial prophylaxis? Finally, are different varieties of diphtheria bacillus endowed with different epidemic potentialities involved?

There seems to have been an unwillingness to accept the most probable explanation, namely that the diphtheria in one place is different from the diphtheria in another and that it may change in the same place over a period of years. Although serum is highly valuable in the over-all picture, there may exist a variety of diphtheria in which its effect is disappointing. Some of the experiences, notably those in Australia, seem to show that with certain varieties of diphtheria in certain persons it will always be impossible to give serum in time to be of use—that is, as long as we are limited to the forms of antiserum now available. There are two other aspects of diphtheria as it has appeared in

Europe in the last ten years which reflect a change from the diphtheria at the beginning of the century. These are a shift of the main incidence to school children from those of the age group 1 to 5 years and a definite diminution of laryngeal diphtheria.

The explanation for most of the observed facts is now established and depends on the existence of three well defined cultural types of diphtheria bacillus for which the designation *gravis*, *intermedius* and *mitis* have been suggested. A small percentage of strains do not correspond closely to any of these types. These atypical strains are significant only if they appear with sufficient frequency and are found to be definitely associated with serious clinical diphtheria. Their relative proportions vary from place to place and are highest where the diphtheria is mild or of moderate severity. They are commonly found among carriers and convalescents and are more rare in association with severe or fatal illness. They have not been observed to develop an epidemic tendency. The *mitis* strains are ordinarily associated with mild diphtheria, and when they cause death, they do so mostly in infants because of obstructive phenomena and pneumonic complications. The *intermedius* strains are close to the *gravis* strains in the severity of the clinical conditions which they produce, although the over-all associated case death rate is less than with *gravis* infections. Furthermore the *intermedius* strains disappear more rapidly in convalescence and do not have the same tendency to epidemic spread as *gravis* infections. Clinically severe *intermedius* and *gravis* diphtheria are characterized by essentially toxic and hemorrhagic phenomena, myocardial weakness and pareses. The *gravis* strains possess a greater and more constant pathogenicity for animals, a deeper penetration of tissues in the human body and a greater epidemic potency.

It now seems probable that the numerous severe outbreaks of diphtheria described in Europe in 1927-1937 which were specially intractable to serum therapy were due to the *gravis* type of diphtheria bacillus. Likewise the similar serious epidemics in Britain and Australia appear to have been predominantly due to the *gravis* or *intermedius* strains. Consequently the question whether the brilliant results of prophylactic inoculation recorded in North America owe their superiority to those obtained in Europe to more comprehensive adoption and better execution or to the absence of *gravis* diphtheria in the former areas remains to be determined. Although the value of prophylactic and therapeutic inoculation has been proved beyond dispute, the present state of knowledge concerning the control of diphtheria is not conducive to any state of complacency in this country.

¹ McLeod, J. W. The Types *Mitis*, *Intermedius* and *Gravis* of *Corynebacterium Diphtheriae*, *Bact. Rev.* 7: 1 (March) 1943.

REFRIGERATION ANESTHESIA IN
MAJOR AMPUTATIONS

Not long ago the newly recognized importance of cooling the body in shock was discussed in these columns.¹ Refrigeration in conjunction with bloodlessness as an anesthetic in major amputations represents another application of cryotherapy. The fundamental work in the introduction of this form of anesthesia was done by Frederick M. Allen and his collaborators in the City Hospital of New York and experiments to extend the application are being continued in New York Medical College. The basic principles and the main results so far of the new method were reviewed by Allen and Crossman² at the American Congress of Physical Therapy in Pittsburgh last December.

For some time it has been known that tissues can be kept alive for many days at ice box temperature provided they are not frozen. In experiments Allen has demonstrated that the cooling of limbs and other parts with ice water or ice cracked or pulverized, down to near the freezing point say 5 C (40 F), is harmless. There is a temporary suspension of life with resumption of cellular activity as the temperature returns to normal. In refrigeration of limbs for anesthetic purposes, complete stoppage of the circulation is effected by careful application of the tourniquet. Such in brief is refrigeration anesthesia, which becomes complete after refrigeration for one to two hours. Needless to say, freezing must be avoided.

A human limb can be kept bloodless and anesthetic below the tourniquet for at least eight hours and the indications are much longer, even up to forty-eight hours without injury while the rest of the body remains warm. Amputation is done without pain, loss of blood or strength and also without shock. The nerves in the cooled, bloodless tissues cannot transmit painful impulses or harmful reactions. Toxic products are not absorbed from the refrigerated limb, and infection or its extension is prevented. Refrigeration anesthesia provides for a bloodless and shockless amputation, apparently without interfering with the healing of the stump which can be cooled as desired by gradual removal of the refrigeration. Proper cooling will restrain the circulation in the stump, prevent edema and obviate pain. So far, the reports of the results of major amputations by this method have been uniformly favorable. The mortality in amputation above the knee in diabetic gangrene has been reduced by the method.³

¹ Cooling in Shock editorial J A M A 121 432 (Feb 6) 1943. Environmental Temperature and Mortality in Burns ibid 121 13 2 (April 24) 1943.

² Allen F M. Experiments on Pelvic and Abdominal Refrigeration with Special Reference to Traumatic and Military Surgery. Am J Surg 55 41 (March) 1942.

³ Allen Frederick M. and Crossman L W. Suggested Uses of Refrigeration Anesthesia Including War Surgery. Arch Phys Therapy 27 711 (Dec) 1942. (See also Handbook on Amputations American Medical Association 1943 p 15).

⁴ Crossman L W. Ruggiero W F. Hurley Vincent and Allen F M. Reduced Temperatures in Surgery. II Amputations for Peripheral Vascular Disease. Arch Surg 41 139 (Jan) 1942.

Refrigeration anesthesia undoubtedly is destined to increasing use under civilian conditions as well as in war. In trauma of the limbs, for instance, which is common in war, refrigeration anesthesia will be of special service not only in amputation, but also in the control of hemorrhage, pain, progressive shock and infection during transportation of the patient when adequate treatment cannot be applied on the spot. The methods of refrigeration anesthesia are being standardized. In the New York City Hospital a controllable electric refrigeration apparatus is in use, light equipment has been devised for connection with the engine of motor vehicles and the problems of the tourniquet are receiving attention. Obviously the field of refrigeration anesthesia, besides the great variety of injuries, will include also the vascular diseases that endanger the life of limbs. Refrigeration anesthesia is an important advance in treatment. For the sake of its great practical significance the work under way in this field should be pushed ahead and the clinical application of the method expanded. Among the developments under immediate trial are refrigeration as an anesthetic for skin grafting⁵ and for the treatment of frost bite.

STERILIZATION OF THE AIR OF
CLOSED SPACES

The circumstances of modern warfare frequently necessitate the herding together of large numbers of people in air raid shelters. The control of air borne infections in confined areas has therefore become a particularly urgent problem. Several studies of this problem have been previously noted in THE JOURNAL.¹ A necessary preliminary to the scientific study of a problem of this nature is the establishment of experimental methods by which the various factors involved can be satisfactorily varied and controlled. For this purpose Edward Elford and the late Sir Patrick Laidlaw have described a method for the experimental investigation of aerosol systems formed by the atomization of suspensions of viruses into the atmosphere. They have performed observations on the physical properties of such systems and found an experimental approach to certain practical problems connected with air borne virus infections. Thus they found that mice placed in an atmosphere into which the respective virus had been atomized contract the diseases of influenza and infectious ectromelia in a manner closely analogous to naturally occurring air borne infection. This method of infection the authors believe may be used with

⁵ Mock H E Jr. Refrigeration Anesthesia in Skin Grafting. Bull Am Coll Surg 25 6 1943.

¹ Fumigation and Humidity editorial J A M A 120 625 (Oct 27) 1942. Control of Air Borne Infection ibid 121 261 (Jan 23) 1943.

² Edward D C F. Elford W J and Laidlaw P P. Studies on Air Borne Virus Infection. I. Experimental Technique and Preliminary Observations on Influenza and Infectious Ectromelia. J Hyg 43 1 (Jan) 1943.

advantage in studying lesions of the lung microscopically and in obtaining more uniform infection of large batches of mice

In additional work also from the National Institute for Medical Research in London, Edward, Lush and Bourdillon³ describe quantitative studies carried out early in 1940 on the killing effect of ultraviolet radiation on aerosols of three different viruses—influenza A, vaccinia and herpes simplex. Using the experimental methods now established as reliable for observations of this kind, these workers showed that rapid and effective sterilization of atmospheres containing atomized particles of influenza and vaccinia viruses and probably also of herpes simplex virus, can be obtained by ultraviolet radiation of wavelength 2537 angstroms. These results support the work of Wells and his associates⁴ and indicate that "germicidal" lamps are likely to be useful in reducing the infectivity of air contaminated with particles from persons suffering from virus infections of the respiratory tract.

An additional recent contribution to the subject by Challinor⁵ of the University of Edinburgh is concerned solely with the action of hypochlorite on the total bacterial content of the air of an occupied closed room under fixed conditions of ventilation. He obtained a substantial reduction in the bacterial content of the air of an empty room infected with *Bacillus prodigiosus* (or with *Staphylococcus albus* or a diphtheroid bacillus) by means of hypochlorites introduced into the air by atomization or by spraying from an insecticide gun. The relative humidity of the air has been shown to be a factor of great importance in the effectiveness of air disinfection. In Challinor's experiments likewise effective air disinfection was not obtained at low relative humidities at temperatures ranging from 54 to 74 F. More accurate determination of the critical lower limit of relative humidity is desirable. Ultraviolet irradiation, propylene glycol vapor, as reported by Robertson and his colleagues,⁶ and now hypochlorite solution all appear to exert bactericidal and bacteriostatic effects on the atmosphere of closed air spaces. The experimental methods for controlling the factors involved are now available, so that it remains only to choose what method or combination of methods can be most effectively employed in actual practice. Possibly

the bactericidal agent may have to be varied, depending on special circumstances such as the time of year or the degree of humidity in the area. Nevertheless a partial solution at least to the problem of controlling the spread of infectious diseases in closed spaces is now at hand.

THE CONSCIENTIOUS OBJECTOR

The term conscientious objector came into use in the first world war, although reference to the problem appears in Gibbon's "Decline and Fall of the Roman Empire." The Mennonites were exempted from military service in the Netherlands in 1575. In the United States members of some religious denominations were exempted from general military service during the Civil War. At the commencement of the first world war there were in the United States, according to Hoag,¹ about 300,000 males classified as conscientious objectors. About 30 per cent of these were of military age. In June 1918 the Surgeon General's Office sent out to various camps a special form for examination of conscientious objectors. May,² in his report to the Office of the Surgeon General, presented the then available information concerning the intelligence, education, grounds of objection and social and political history of conscientious objectors. The report covered twenty camps and represented about 1,000 objectors. May pointed out that the intelligence of the conscientious objectors, as measured by the Army mental tests, was on the average, above that of the white draft of the Army as a whole. At least 97 per cent of the men had sufficient intelligence to know what they were doing. About 50 per cent were Mennonites, less than 10 per cent of these went beyond the eighth grade. The 12 per cent of the total series who reached college were either Socialists, Dunkards or Friends. The various religious sects involved, with the possible exception of the Friends, believe in the literal interpretation of the Scriptures. The grounds of objection were in general, three religious, social and political. The religious objector makes his appeal to the Bible, church creed and to conscience, the social objector to individual freedom, the political objector usually bases his objection on the ground of alien citizenship.

Stalker³ of Edinburgh reports the results of an examination of 12 persons with psychiatric states who were also conscientious objectors. They represented three types of personalities—the introverted-asocial group, the antisocial group and the mixed group. Two patients suffered from schizophrenia, 1 from a schizoid state and 1 from a mixed paranoid and manic state.

3 Edward, D. G. ff., Lush, Dora, and Bourdillon, R. B. Studies on Air Borne Virus Infections. II. The Killing of Virus Aerosols by Ultraviolet Radiation, *J. Hyg.* **43**: 11 (Jan.) 1943.

4 Wells, W. F., and Brown, H. W. Recovery of Influenza Virus Suspended in Air and Its Destruction by Ultraviolet Radiation, *Am. J. Hyg.* **24**: 407 (Sept.) 1936. Wells, W. F., and Henle, Werner. Experimental Air Borne Disease. Quantitative Inoculation by Inhalation of Influenza Virus, *Proc. Soc. Exper. Biol. & Med.* **48**: 298 (Oct.) 1941.

5 Challinor, S. W. Bacteriologic Observations on the Air of Occupied Premises. I. Air Disinfection with Hypochlorites. A Simple Practical Method of Disinfecting the Air of Occupied Premises, *J. Hyg.* **43**: 16 (Jan.) 1943.

6 Robertson, O. H., Loosh, C. G., Puck, T. T., Bigg, Edward, and Miller, B. F. The Protection of Mice Against Infection with Air Borne Influenza Virus by Means of Propylene Glycol Vapor, *Science* **94**: 612 (Dec. 26) 1941. Robertson, O. H., Bigg, Edward, Puck, T. T., and Miller, B. F. The Bactericidal Action of Propylene Glycol Vapor on Micro Organisms Suspended in Air, *J. Exper. Med.* **75**: 593 (June) 1942.

1 Hoag, D. E. The Psychology of the Conscientious Objector. *New York M. J.* **111**: 187 (Jan. 31) 1920.

2 May, Mark A. The Psychological Examination of Conscientious Objectors (Published with the Approval of the War Department), *Am. J. Physiol.* **31**: 152, 1920.

3 Stalker, Harry. Conscientious Objectors with Psychiatric States, *J. Ment. Sc.* **89**: 52 (Jan.) 1943.

There is thus a certain preponderance of schizophrenic types, as found by previous writers. The meager reports from continental European countries, whose laws do not provide for conscientious objectors, deal almost entirely with persons mentally involved. Thus, among 31 objectors studied by Schulthess⁴ there was only 1 sane person, 15 were psychopaths, 4 of them feebleminded and 6 schizoid. Of his own psychotic patients all were schizophrenic except 1 with dementia paralytica.

Prompt discharge from the army and appropriate institutional treatment are the effective solution of the problem of the psychopathic objector. The problem of the sane objector is much more complicated. There is, of course, no intention on the part of our government to compel the genuinely conscientious religious objector to enter the armed services, for that would amount to violation of his constitutional rights, something we must guard against even in time of war. However, the degree of sincerity of his beliefs is difficult to determine. In the first world war, of 2,100 persons 1,500 were found to be sincere objectors and recommended for farm or industrial furloughs, 219 were found to be sincere objectors to combatant but insincere as to noncombatant service, 156 were found to be sincere objectors of combatant but willing to accept noncombatant service, 15 were found to be sincere objectors to combatant service but willing to work in reconstruction hospitals and 122 were found to be insincere as to both combatant and noncombatant service.

In this war many of our conscientious objectors are young men of good education, often of good family training. No doubt the same proportions prevail in relation to religious and political objectors as in previous wars. Fortunately the problem was given attention early by the Selective Service Administration, so that today many of these boys are engaged in occupations in the field of medicine, in hospitals and in similar activities, where they are rendering a genuine service to the war effort. A number have volunteered to serve as subjects for important experiments in testing the value of life saving techniques in the services to be given to our troops in China and in the South Pacific. There are functions which the conscientious objectors can perform and for which many of them have already volunteered without demanding participation in combat.

Numerically the problem of the conscientious objector is of little importance. From an ethical point of view the problem is one of reeducation, of instilling in the individual the appreciation of his civic responsibilities and of awakening in him a feeling of national conscience and national unity.

Current Comment

BLOOD DONATIONS BY WAR WORKERS

Industrial concerns recently have been apprehensive about the effect of blood donations on war workers. A number of medical consultants to the Industrial Hygiene Foundation have concluded that ill effects need not be expected if standard procedure is followed closely. Although there may be some temporary lassitude on the part of indoor sedentary workers, eligible donors are not as a rule made weaker nor is there greater susceptibility to upper respiratory infections or other complications in the immediate period following the donation. It was the consensus that industry need not be concerned about the matter from the point of view of absenteeism or lowered production.

THE CASTORIA INCIDENT

In the week previous to April 27 the Centaur Company at Rahway, N. J., began to receive occasional reports that persons who had been given Castoria had responded with severe vomiting and nausea. The gradual accumulation of such reports led the representatives and chemists of the company, therefore, to test the product on themselves, with a result that four who tested the product also developed nausea and vomiting. Animals responded in a similar manner. The Food and Drug Administration was immediately informed and after consultation the decision was made to call in all of the product involved. Preliminary investigations failed to reveal any toxic substance or any break in the processes of manufacture. The only change in the formula has been a reduction in the sugar content as a result of the restrictions on sugar by the War Production Board. Once the decision was made to call in the product, three thousand telegrams were sent to all customers of record. Representatives of the entire Sterling Drug Products Company organization (more than two hundred in number) were instructed to call personally on all retailers and wholesalers with a view to having the product reclaimed. Radio stations throughout the nation and newspapers everywhere were requested to publish and give publicity to an announcement developed by the company. All together five hundred thousand telegrams were sent to obtain return of the product. At the time *THE JOURNAL* goes to press there seem to have been three deaths in which the physicians reporting the incidents feel that the toxicity of the product was responsible. Preliminary tests made in the laboratories of the Centaur Company and in several other laboratories which have been investigating the product failed to reveal any substance on which the responsibility can be placed. Innumerable theories have been offered including bacterial contamination, a toxin or a decomposition product of senna as the toxic substance yet not one of these theories has as yet been substantiated by any acceptable evidence. Just as soon as any specific cause can be determined announcement will be made.

⁴ Schulthess, Peter. *Ueber Militardienstverweigerung aus krankhafter Ursache*. Schweiz. Arch. f. Neurol. u. Psychiat. 23: 92 (heft fascicule 1) 1944.

THE LOCAL USE OF SULFATHIAZOLE IN THE NASOPHARYNX AND LARYNX

Fenton¹ and Freeman² report that the local use of sulfathiazole is highly beneficial in acute nasopharyngeal as well as laryngeal infections of streptococcal and staphylococcal nature. Fenton found that acute nasopharyngitis and laryngotracheitis due to streptococci yielded quickly to small quantities of finely powdered sulfathiazole blown into the nostrils, pharynx and larynx. He found also that gargling with a solution in a fourth of a cup of hot water of a 77₁₀ gram (0.5 Gm.) tablet of sulfathiazole often brings relief from local swelling and discomfort. He did not find that sulfathiazole had any beneficial effect on the ulcerations of Vincent's angina or the local lesions of tuberculosis or carcinoma of the larynx. Freeman found from well planned experiments that in the usual acute nasopharyngeal infections the free application of powdered sulfathiazole to the nasopharyngeal mucous membrane by means of a compressed air powder syringe quickly produced subjective and objective relief and shortened the course of the infection. The dose varied from 1 to 2 Gm. per treatment which is inexpensive, easily carried out on ambulatory patients and so far, apparently free from danger. These reports indicate that sulfathiazole may be a practically effective antibacterial agent in nasopharyngeal and probably in other similar infections. There seems to be need for a simple gargle with definite antibacterial powers for popular use. Fenton points out that rarely sensitivity to sulfathiazole may develop from its local use, an effect that needs further early and careful study. There seems to be no way by which the danger of sensitization can be determined in advance of the use of the drug.

MEDICAL RECRUITMENT FOR INDUSTRY IN INDIANA

Development and recruitment of medical personnel for industry has been a difficult problem. The physician who serves full time or nearly full time in plants engaged in the manufacture of war materials or which operate under priority ratings has been generally regarded as performing duties essential to the war effort. A dependable means of attracting new medical personnel into industrial practice has received serious consideration by the procurement agencies and by the Council on Industrial Health of the American Medical Association. An experiment is now in progress in Indiana which is intended to aid the solution of this problem. The plan calls for a preliminary two day conference at which both physician and employer may concurrently learn about objectives and procedure in modern industrial health service. Subsequently, opportunities for most intensive training will be made available to any physician who is attracted to this field or who is willing to volunteer for industrial work as

his contribution to winning the war. The general details of both programs have been organized by the committee on industrial health of the Indiana State Medical Association with invaluable assistance from the Bureau of Industrial Hygiene of the State Health Department and the Indiana University School of Medicine. The two latter agencies will provide the intensive training so arranged that very small groups can be accommodated for training to start at almost any time. Experience in Indiana already has demonstrated a better understanding of industrial health objectives and a most cooperative attitude among the principal agencies involved. The use of facilities at hand on a voluntary basis to meet an urgent situation merits a successful outcome in Indiana.

REGISTRATION UNDER THE HARRISON NARCOTIC ACT AND THE MARIHUANA TAX ACT

On or before July 1 every physician registered under the Harrison Narcotic Act or under the Marihuana Tax Act or both, must, unless he is in service, reregister with the collector of internal revenue of each district in which he maintains an office or a place for the treatment of patients. Failure to reregister within the time allowed by law adds a penalty of 25 per cent to the annual tax payable at the time of registration and in addition makes the physician in default liable to a fine not exceeding \$2,000 or to imprisonment for not exceeding five years or to both. In recent years the Commissioner of Internal Revenue has given some tardy registrants the choice between paying sums by way of compromise in lieu of the penalties for their offenses or, as an alternative, accepting criminal prosecution with resultant publicity and liability to fines and possible imprisonment. This was an act of grace on the part of the commissioner, he might have instituted criminal prosecutions without allowing the offending physicians any choice in the matter. If the course that the commissioner has adopted does not produce the desired promptness in registration, he will have no recourse other than criminal prosecution to attain that result. A physician in the armed forces need not reregister. Such a physician when he receives the application form for reregistration should return it to the office of the collector of internal revenue from which it was sent, together with a statement showing that he is in the armed forces, that he does not have in his possession any narcotics and requesting that the registration number previously assigned to him be reserved. The several offices of the collectors of internal revenue have or will notify each registrant in detail of the course he should follow if he is in service. A physician on entering service should return all unused order forms to the collector's office and should dispose of all narcotics on hand, either by returning them to the wholesale concern from which purchased, if the packages are in unbroken form, or by transferring the narcotics to another physician after having obtained permission for such transfer from the office of the collector of internal revenue.

¹ Fenton, Ralph A. Local Use of Sulfathiazole in Otolaryngologic Practice, Arch. Otolaryng. 37:491 (April) 1943.
² Freeman, Marvin S. Local Use of Sulfathiazole Powder for Acute Pharyngeal Infections, Arch. Otolaryng. 37:496 (April) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

PROCURING PHYSICIANS, DENTISTS AND VETERINARIANS IN THE FIELD

The Director of the Field Operations Branch of the Officer Procurement Service Army Service Forces, War Department, Washington, D C, on May 1 issued the following memorandum which supplements the basic instruction on this subject contained in FT-34, Feb 27 1943 See also FT-38, FT-40, FT-42, FT-45 FT-47 and FT-52

Lag in the Surgeon General's Program

The War Department is concerned over the lag in obtaining the number of physicians and dentists required by the Surgeon General's program for 1943

As previously stated in FT-34, this program called for appointments at the following monthly rates physicians 575, dentists 400 veterinarians 75

The Officer Procurement Service now has completed three months' processing operations under FT-34 The composite results of such operations (at April 22 1943), contrasted with the three month requirement of the Surgeon General's program have been as follows

	Physi- cians	Den- tists	Veteri- narians	Total
1 Cases received by field offices from state P & A chairmen	2 975	3 121	328	6 424
2 Less cases closed through candidates refusal and so on	1 297	691	62	2 050
3 Net cases available for completion of processing	1 678	2 430	266	4 474
4 Cases on April 22 in process or suspense	872	1 003	75	2 050
5 Cases completely processed and sent forward to SGO	806	1 427	191	2 424
6 SGO program 3 month appointment requirement	1 725	1 200	225	3 150

Of the cases completely processed and sent forward to the Surgeon General, a considerable percentage do not mature to the commissioned stage (physically disqualified not recommended, refusal of grade, and so on) Accordingly, actual appointments of physicians during the three month period are seriously below the required level of 1,725 appointments and actual appointments of dentists are somewhat below the required level of 1,200 appointments The veterinary appointments are to date adequate for current demands (see FT-52)

Change of Procedure in Processing of Physicians and Dentists

FT-34, paragraph 7, states the basic processing procedure in effect previous to this time After receipt by a district office of an availability clearance form (form 97) in regard to a particular individual, the office requests the individual to complete all papers and take all steps required of him within fourteen days If no reply is received from the individual or if he declines to act as requested a report will be transmitted by the district office to the appropriate state Procurement and Assignment chairman In other words, under the procedure heretofore authorized no obligation to follow up an available candidate who is unwilling to cooperate is placed on the district office which discharges its duty by promptly reporting the facts to the Procurement and Assignment Service

With the approval of the Surgeon General and the War Manpower Commission the following change of procedures in processing physicians and dentists has been authorized Effective immediately district offices are authorized to contact any

individual whose "availability" clearance form has been received from a state Procurement and Assignment chairman in California, Connecticut Massachusetts New York or Wisconsin and to urge on him his duty as a citizen to take steps to qualify for a commission Persuasion should be exercised in a dignified manner, but district offices receiving such "availability" clearance forms are expected to do a real selling job to convince "available" persons who are apparently suitable for appointment that it is their patriotic duty to apply for a commission even though it may involve financial sacrifice In many cases it will not involve a financial sacrifice if advantages from army pay from a tax standpoint are considered It will be appropriate for district offices to enlist the assistance of qualified medical and dental professional societies in bringing to the person's attention his individual responsibility to his country in the existing war emergency The Surgeon General's representatives in the service commands will be authorized to cooperate in presenting the subject to the individual Every prompt and proper effort must be taken in the states enumerated to increase the number of physicians (and to a lesser extent dentists) to be processed and submitted to the Surgeon General under FT-34

If, in spite of the efforts referred to an "available" and apparently suitable individual is unwilling to proceed with the processing of his case or to make reply to the district office, the facts will be reported to the appropriate state Procurement and Assignment chairman as soon as such impossibility of processing is determined by the district office

In other respects the standard processing procedure outlined in FT-34, paragraph 7, as amended is confirmed

MEDICAL TRAINING PROGRAMS OF ARMY AND NAVY

Last week (p 120) the details of the Army and Navy programs for training medical students were published in THE JOURNAL Medical students who now hold commissions in the Medical Administrative Corps or in the Officers Reserve Corps and who are on inactive service for the purpose of completing their professional training may remain in that status pending completion of internship if they choose to do so and provided they fulfil training requirements In this event they will continue to pay all of their own expenses and will also receive instruction in medicomilitary subjects They may however resign their commissions and enlist in the Enlisted Reserve Corps they will then be called to active duty at the end of the current academic period In the event that this choice is made they become soldiers ordered to college They have the privileges and responsibilities of enlisted men including pay and allowances hospital care and subordination to military discipline

Medical students in good standing in approved schools who are not now under army jurisdiction are inducted under Selective Service subsequent to June 30 1943 (they may apply for voluntary enlistment and transfer to the Enlisted Reserve Corps prior to that time) may be assigned with the least practicable delay to the Army's specialized training unit at the institution which they have previously attended

Premedical students in the Enlisted Reserve Corps are to be called to active duty and assigned for continuation of their preprofessional or professional training Premedical students not in the Enlisted Reserve Corps are inducted under Selective

Service subsequent to the present academic period may be, if they attain a score of 115 or better on the Army General Classification Test, if practicable, assigned for the army specialized training program.

Medical officers will be assigned to army medical units in colleges holding army contracts in order to instruct trainees in medicomilitary subjects. Medical instruction for all groups will follow the standard curriculum in force in the medical school. Only those schools which can give the standard medical training in thirty-six months elapsed time will be considered for contract. This includes, of course, the so-called five year schools. The number of men desiring premedical and medical training will doubtless, as in civil life, exceed the number of vacancies, so that disappointments are inevitable.

The navy program differs little in regard to the choice offered medical and premedical students. The published program does not discuss students taken by Selective Service. It does state that a small percentage of premedical students will be taken by the Navy from the successful applicants who passed the test given on April 2, 1943 in high schools and colleges throughout the country or who pass subsequent similar tests. Although neither the Army nor the Navy makes any promises to complete these medical programs, it may be safely assumed that all students, whether in reserve or in active enlisted status, if their scholastic and military records remain satisfactory, will be allowed to complete their medical training through the intern year.

RELOCATIONS OF PHYSICIANS

Reports received by the War Manpower Commission's Procurement and Assignment Service for Physicians, Dentists and Veterinarians show that about 600 physicians have changed their places of residence and practice in the last few months, Chairman Paul V. McNutt announced, March 30. The Procurement and Assignment Service, a division of the Bureau of Placement, makes an effort to accomplish such relocations when the medical needs of the civilian population would be better served. Figures compiled by the Procurement and Assignment Service come from forty of the forty-eight states. Of a total of 587 relocations in these forty states, 340 were directly due to action by the Procurement and Assignment Service. Five of the relocated physicians are women. A total of 214 of the 582 relocated male physicians are either over 45 years of age or, if younger, disqualified for military service. There have also been relocations in Kentucky, Delaware, Louisiana, Minnesota, Virginia, West Virginia, Oklahoma and Vermont, but the figures as yet have not been reported. In many instances, the Procurement and Assignment Service reported, the assumption of increased duties by a decreased number of physicians remaining in an area has been seen as the best solution to a community's health problem. In a number of states ingenious medical care plans have been worked out locally which enable fewer physicians to care for more civilians. Among such states are Maryland, California, Oregon, Michigan and Arkansas.

ARMY

NEW BRIGADIER GENERALS

The President sent to the Senate, May 4, recommendations that sixty-three officers of the army be given temporary promotions and among those recommended to be brigadier generals were Col. George C. Beach, Jr., M. C., originally from Topeka, Kan., and Col. Ralph H. Goldthwaite, M. C., originally of Boston.

GENERAL KING AWARDED MEDAL

Brig. Gen. Edgar King, M. C., U. S. Army, who was surgeon of the Hawaiian Department at the time of the Japanese raid on Pearl Harbor, has been awarded the Distinguished Service Medal for outstanding service in formulating plans for caring for the wounded in Hawaii. General King was responsible for preparing plans of the medical department in that area for operations in case of battle, and on Dec. 7, 1941 he carried out those plans with "such consummate skill as to save an unprecedented proportion of the wounded and elicit the admiration of the medical world." General King was born in Arkansas in 1884 and has served in the Medical Corps of the United States Army for the last thirty-six years.

JAPANESE PRISONERS

According to the Chicago *Tribune* the War Department informed his parents on April 27 that Capt. Max H. Bernstein, a former resident at Cook County Hospital, Chicago, is now a prisoner of the Japanese in the Philippine Islands. Captain Bernstein was commissioned in the army in January 1941 and went to the Philippine Islands in October of that year.

Relatives disclosed on April 13, according to the New York *Times*, that Capt. Harold W. Keschner and Capt. Samuel Bloom of Brooklyn, both members of the U. S. Army Medical Reserve Corps, are now prisoners of the Japanese. Both of these physicians interned at Mount Sinai Hospital, New York, where Captain Keschner's father is on the staff. Both of these young physicians served at Manila, Bataan and Corregidor.

THE FIVE THOUSANDTH GRADUATE

Graduating exercises were held on April 14 at the Medical Replacement Training Center, Camp Barkeley, Texas, for another class of the medical administrative corps officers candidate school, and in this large class a special honor was paid

to John E. King of Detroit, who was the five thousandth graduate since the school's inception in May 1942. In this instance the diploma was personally awarded by Brig. Gen. Roy C. Hefschower, commandant of the school, who also delivered the commencement address. Others participating in the ceremony were Col. George E. Armstrong, assistant commandant of the school, and Lieut. Col. Charles H. Discoll, M. A. C., executive officer, who administered the oath of office. Medical administrative corps officers are especially trained to carry on in the medical department the work of supply, personnel, hospital administration and training, positions which heretofore have been fulfilled by medical and dental corps officers, thus relieving the latter for duty with troops in various theaters of operation.

THE VALLEY FORGE GENERAL HOSPITAL

The Public Relations Officer of the Valley Forge General Hospital, Phoenixville, Pa., writes that through an error in his office the name of Capt. Victor H. Kugel was inadvertently omitted from the list of medical members of the staff of the hospital as published in *THE JOURNAL*, April 10, page 1224. Captain Kugel is the assistant chief of the general medical section. The Public Relations Officer also notes that Lieutenant Bregman's name was erroneously listed as Lieut. Gregman.

Since the article was published, the following additions to the staff have been made: Major Josiah T. Showalter, new chief of the neuropsychiatric section, vice Major Walter E. Barton, relieved; Capt. Edward R. Mountain to the eye, ear, nose and throat section, and 1st Lieut. Louis C. Burket to the outpatient department.

LIFE FOR THE WOUNDED

At a luncheon in Washington, D. C., May 18, the president of Reichel Laboratories of Kimberton, Pa., will present to the medical corps of the U. S. Army a painting entitled "Life for the Wounded," which depicts the administration of blood plasma by transfusion to a wounded soldier at the battle front. Reichel Laboratories has devised a plan whereby retail druggists may help the Red Cross increase its list of blood donors through a window display based on this painting. Every druggist using the display will receive a supply of folders explaining the routine of blood donation. Each customer is to be requested to telephone the local Red Cross blood donor service to make an appointment to give a pint of blood.

A HOSPITAL SHIP IN THE PACIFIC

The Bureau of Medicine and Surgery of the Navy has announced, according to the *Army and Navy Journal*, details concerning the care of some 4039 patients on a hospital ship during an extended period beginning with the offensive in the Solomon Islands in August 1942. Many were injured at Guadalcanal, others in battle at sea and in the air. The report was made by Comdr L K Ferguson and Lieut Comdrs R B Brown and J T Nicholson, all of Philadelphia, and Lieut Comdr H E Stedman of Ann Arbor, Mich, who remarked on the excellent condition of most of the patients taken aboard the hospital ship, especially those who had received treatment previously at field and base hospitals. The predominating injuries among the marines were wounds from fragments of shells and grenades, bullet and bayonet wounds and compound fractures. Sulfathiazole was sprayed into the simpler wounds and a pressure bandage of elastic webbing applied. The patient with a through and through wound of the leg was usually able to be up walking in four or five days from the time of the

injury and the wounds healed in a week or ten days. Not a case of infection developed in a patient treated in this manner and not 1 case of tetanus developed. All naval personnel are immunized against tetanus. About two thirds of the patients had received treatment at base and field hospitals ashore before being placed aboard the hospital ship. Of the entire group of patients treated, only 7 died, a mortality rate of 0.18 per cent.

Another report received by the Bureau of Medicine and Surgery was from Lieut George Crile Jr of Cleveland, M C, U S Naval Reserve, concerning 366 patients treated at the naval mobile hospital at Auckland and evacuated there by the previously mentioned hospital ship a day or two after the hospital had been established. The only death in this group was of a man who suffered burns over most of his body. Dr Crile said that the most striking feature of the casualties seen at this hospital was the rapidity with which the healthy young men recovered from trauma or disease, a phenomenon probably largely the result of the excellent medical care which was available to these patients from the moment of injury.

THE BROOKE GENERAL HOSPITAL

The Station Hospital at Fort Sam Houston, Texas, was named the Brooke General Hospital in honor of the late Brig Gen Roger Brooke of the Medical Corps on Sept 2 1942. The hospital, located on the large military reservation of Fort Sam Houston, consists of the old and new station hospitals with expansion units in battalion barracks located near the new station hospital building.

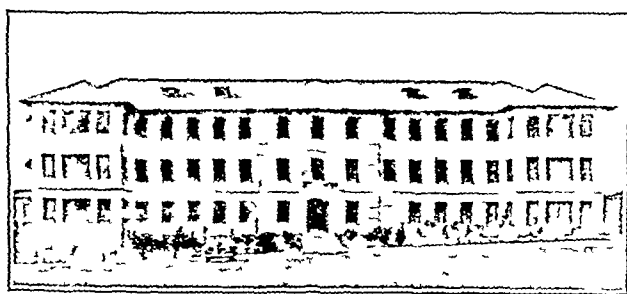
The construction of the buildings varies in type, but all buildings that house patients are of permanent construction. This hospital receives most of its patients from the various military posts in southwestern Texas and also acts as a station hospital for the post of Fort Sam Houston.

The commanding officer is Col George C Beach, medical corps, with the following medical officers on duty in key positions:

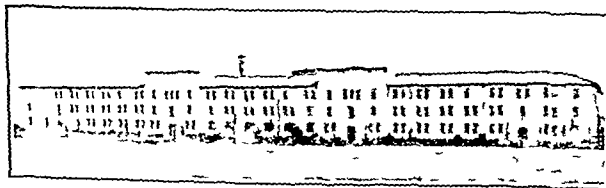
Lieut Col Emmett M Smith executive officer
Major Clyde Kernek hospital inspector and training officer
Major Robert J Jaehne registrar
Capt George M Hilliard receiving and disposition officer
Col Warren C Fargo assistant commandant medical department enlisted technicians school
Col John C Woodland chief of the medical service
Col John C Burch chief of the surgical service
Col Alfred R Thomas Jr chief of the laboratory service
Lieut Col Lee K Emenhiser chief of the eye, ear, nose and throat service
Lieut Col Glenn D Carl on chief of the x-ray service
Major James B Snow chief of the pediatrics section
Lieut Col Philip E Haynes chief of the outpatient service
Major Fred R Sloan chief of the gastrointestinal section



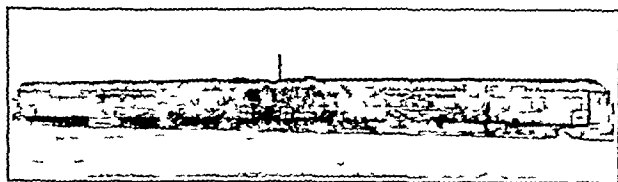
New hospital



New neuropsychiatric building



Annex number 2



Two cars of three car hospital train

Since before the first world war it has been one of the largest and most active hospitals operated by the Medical Department of the Army. It receives and treats all classes of medical and surgical cases and is designated as a pathologic center for the southern part of the United States and operates a training school for enlisted medical technicians. For six months the hospital has been operating a training school for physical therapists and on the 1st of July will open a school for dietitians. The hospital is also one of the few army hospitals designated for the training of interns, and a class of twelve will complete their training on June 30.

The Brooke General Hospital has a capacity of 2,225 beds at present and considerable expansion can be rapidly accomplished by taking over for hospital purposes some of the modern battalion barracks located nearby.

Major Mordecai M McDowell chief of the general medical section
Lieut Col James B Polka chief of the neuropsychiatric section
Major Edward A Swift chief of the cardiorenal vascular section
Major James B Snow chief of the pediatrics section
Capt Drury S Blair chief of the dermatologic section
Capt John T Richards chief of the infectious and contagious section
Capt Robert K Myers chief of the tuberculois section
Major William D Tigertt chief of the pathology section
Major Vincent D Vermooten chief of the urologic section
Lieut Col Percy M Girard chief of the orthopedic section
Capt Robert C L Robert on chief of the neurosurgical section
Major William A Millington chief of the plastic surgical section
Capt Frank P Coleman chief of the thoracic surgical section
Major Herbert C Fisher chief of the general surgical section
Major Thomas E Smith chief of the rectal surgical section
Lieut Col John W Winter chief of the anesthesiology section
Major James M Sietter chief of the obstetric section
Major Aubrey S McGee ward surgeon officers medical ward
Major Dale J Martin ward surgeon officers surgical wards
Major Samuel Millman ward surgeon women's medical wards
Lieut Col Robert G Swearingen ward surgeon women's surgical ward

NAVY

THE LOWEST NAVY VENEREAL
DISEASE RATE

The U S Navy annual venereal disease admission rate per thousand for 1942 was 29 per cent lower than for the previous year and was, it is said the lowest in naval history. The Division of Preventive Medicine of the Bureau of Medicine and Surgery reports that the 1942 rate per thousand for the entire navy was 36, in 1941 it was 51 and in 1940 it was 80. For the continental United States the navy venereal disease admission rate last year was 22, in 1941 it was 29 and in 1940 it was 40.

The section of venereal disease control in the Division of Preventive Medicine reports that the two venereal disease posters "Fight Syphilis and Gonorrhea" and "Easy to Get—Syphilis and Gonorrhea" have proved so effective that a second and larger edition has been published.

TOUR OF INSPECTION BY
ADMIRAL McINTIRE

A tour of inspection of numerous naval activities was recently completed by Rear Admiral Ross J. McIntire, Surgeon General of the Navy. The Surgeon General was of the opinion that special commendation should go to the Naval Hospital at Corpus Christi, Texas, one of the smartest of our newer hospitals, for the excellent indoctrination course it is giving to the Waves.

The medical department of the Parris Island Station is complimented on the handling of cases of neurosis in that it is finding gainful occupation for them on the station farm and the percentage of recoveries is said to be more than 70. The Bureau of Medicine and Surgery *Weekly Gazette* of May 3 states that the commanding officer of this station paid a high compliment to the service for the fine way the dentists were putting the recruits in order.

NAVY CONVALESCENT HOSPITALS

According to the Bureau of Medicine and Surgery *Weekly Gazette* of April 19, the U S Navy is considering the acquisition of the resort hotel at Sun Valley, Idaho, and of the Hotel Ahwahnee in Yosemite National Park, Calif., to be used as convalescent hospitals.

INSTRUCTION IN THE SPECIALTIES

A class of eight medical officers have been nominated for duty under instruction of internal medicine at the Naval Hospital, Philadelphia, and six medical officers have been assigned to the Mayo Clinic, Rochester Minn. for advanced instruction in general and reconstructive surgery.

COMMANDER HOGAN AWARDED MEDAL

The Secretary of the Navy Frank Knox, presented to Comdr B. W. Hogan (MC) USN, the Navy and Marine Corps Medal on April 15 for outstanding heroism in treating injured survivors of the U S S *Hasp*, even though severely burned and injured himself.

NEW BUILDINGS FOR NAVAL MEDICAL
SUPPLY DEPOT

The Naval Medical Supply Depot Brooklyn, has acquired new buildings and property at Edgewater, N. J., which will be known as the annex of the Brooklyn depot. It has an area of 29 acres and buildings which will provide 234,600 square feet of storage space with ample rail facilities, power plant and garage. When the present construction is completed the total storage space will be approximately 600,000 square feet.

MISCELLANEOUS

OFFICE OF DEFENSE HEALTH AND
WELFARE SERVICES ABOLISHED

The President by Executive Order 9338, dated April 29, has abolished the Office of Defense Health and Welfare Services and has transferred to the Federal Security Agency the functions, duties, powers, personnel, property, records and funds of that office and of the Health and Medical Committee and the other advisory committees and subcommittees appointed by the director of that office. The transferred functions, duties and powers will be hereafter administered under the direction and supervision of the Federal Security Administrator through an office to be established by him and to be known as the Office of Community War Services or through such other agency, officers and persons in the Federal Security Agency as he shall designate and in such manner as he shall direct.

WARNING—SUBSTITUTES FOR GLYCERIN

The present shortage of glycerin and the necessity of issuing available supplies for essential war needs has made it necessary to deny the use of glycerin in many instances. Many former users of glycerin who are now unable to secure supplies are using substitute materials when they are available.

In a recent memorandum the United States Department of Agriculture discussed the reasons for its inability to allocate glycerin to all uses as well as the methods for obtaining glycerin for approved end uses. The need of working out substitutes when possible also was mentioned. In using substitutes all consumers must investigate the toxicity of the substitute, since certain substitutes are definitely toxic. Among these toxic substitutes are ethylene glycol, diethylene glycol (diglycol), carbital and polyethylene glycol, and under no circumstance should these or other toxic substitutes be used in any product whether

food, drug or cosmetic which is likely to be taken internally or otherwise absorbed by external application.

The Department of Agriculture points out that a number of proprietary glycerin substitutes have been offered for sale. Before they are used, inquiry should be made of the manufacturer in order to determine whether or not any of the compounds mentioned or other toxic substitutes are present. When in doubt as to the use of any of these substitutes in food, drug or cosmetic preparations, one should inquire of the authorities in charge of administering the Food, Drug and Cosmetic Law.

USE OF COPPER IN RUBBER
HOSPITAL SUNDRIES

Use of copper in hot water bottles, syringes, ice caps, bulbs and similar supplies commonly referred to as "rubber hospital sundries" is restricted, but not completely prohibited, by the terms of Copper Order F-9-c, the Copper Division of the War Production Board pointed out on April 22. In brief, these are the applicable rules governing the use of copper and copper base alloy in such products. If the copper material was acquired before June 30, 1942 it may be used in manufacturing assembling or finishing rubber hospital sundries only on orders rated AA-4 or higher. However, a manufacturer may apply to WPB on Form PD-426 for authorization to fill lower rated orders. If the copper material was acquired after June 30 it may be used in the manufacture of the hot water bottles and other utensils without a preference rating, subject to the following conditions. The copper material may not be used where the use of a less scarce material is practicable, and the use of more copper material, or copper of a higher grade, than is necessary for the proper operation of the article to be manufactured is prohibited.

ORGANIZATION SECTION

OFFICIAL NOTES

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 5 p m Eastern War Time (4 p m Central War Time, 3 p m Mountain War Time, 2 p m Pacific War Time). An exception is the Chicago area, where the broadcasts are heard by transcription at 10 30 p m Saturdays over Station WMAQ.

The titles and guest speakers for the next four programs are as follows:

May 22 Flah Burns
Speaker Rear Admiral Ross T McIntire M C Surgeon General
United States Navy
May 29 Sick Call
Speaker Brig Gen John M Willis Commanding General Camp
Grant Illinois

June 5 Doctors for Tomorrow
Speaker Brig Gen Fred W Rankin President of the American
Medical Association
June 12 Medical Discoveries in Wartime
Speaker Morris Fishbein M D Editor of THE JOURNAL

BEFORE THE DOCTOR COMES

The American Medical Association program on Radio Station WLS (890 kilocycles) entitled 'Before the Doctor Comes' will be on the air every Thursday afternoon at 2 45 up to and including May 27. Mrs June Merrill will interview Dr W W Bauer, Director, Bureau of Health Education, on common home health problems. The titles for the last two programs are:

May 20 Nervous Habits
May 27 Immunization

WOMAN'S AUXILIARY

WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

Twenty-First Annual Meeting, June 7-9, 1943
Drake Hotel, Chicago

A most cordial invitation is extended to all Auxiliary members and the wives of physicians attending the American Medical Association meeting to attend the sessions of the twenty-first Annual Meeting of the Woman's Auxiliary to the American Medical Association. Mrs Rollo K Packard is chairman of the Chicago Committee.

Headquarters will be in the Grand Ballroom of the Drake Hotel, where all meetings will be held. Please register early and obtain your badge and program. Tickets may be purchased at the registration desk.

All meetings will convene at the time scheduled. Please be prompt.

Registration, in the French Room Foyer

Sunday, 2 to 4 p m
Monday, 8 30 a m to 4 p m
Tuesday, 8 30 a m to 4 p m

Preconvention Meetings

SUNDAY, JUNE 6

3 p m Nominating Committee meeting Parlor H (east mezzanine), chairman Mrs Robert E Fitzgerald
7 p m Finance Committee meeting chairman Mrs Harold F Wahlquist

PROGRAM

MONDAY, JUNE 7

9 a m Meeting of the Board of Directors Parlors F-G (east mezzanine), Mrs Frank N Haggard presiding
12 30 p m Luncheon in honor of the past presidents of the Woman's Auxiliary to the American Medical Association Gold Coast Room. Tickets \$2.25 (subject to market conditions and food administration regulations). Guest speaker Dr Frank P Hammond, chairman of the Advisory Committee of the Woman's Auxiliary to the Illinois State Medical Society. Subject: Doctors' Wives—Medicine's Closest Ally.

Convention Meetings

MONDAY, JUNE 7

2 p m Opening meeting of the House of Delegates of the Woman's Auxiliary to the American Medical Association Grand Ballroom (lobby floor east). Mrs Frank N Haggard President.

Invocation Rev Harrison Ray Anderson, Fourth Presbyterian Church, Chicago

Address of Welcome Hon Edward J Kelly, mayor of Chicago

Tribute to Deceased Members

Introduction of Mrs Rollo K Packard, chairman of the Chicago Committee

Presentation of the President-Elect Mrs Eben J Carey

Minutes of the Twentieth Annual Meeting Mrs Carlton F Potter, Secretary

Roll Call Mrs Carlton F Potter

Convention Rules of Order Mrs Silas S Smith

Credentials and Registration Mrs Arthur I Edison

President's Message Mrs Frank N Haggard

Reports of Officers

Recording Secretary Mrs Carlton F Potter

Corresponding Secretary Mrs Scott C Applewhite

Treasurer, Mrs David W Thomas

Auditor, to be read by the recording secretary

Reports of Directors

Mrs R E Mosiman

Mrs James P Simonds

Mrs John Baron Farley

Mrs W K West

Mrs Frank L Davis

Mrs David B Allman

Mrs William J Butler

TUESDAY, JUNE 8

9 a m General session of the Woman's Auxiliary to the American Medical Association Grand Ballroom Mrs Frank N Haggard presiding

Minutes Mrs Carlton F Potter

Announcements

Credentials and Registration Mrs Arthur I Edison

Resolutions Mrs James P Simonds

Reports of Chairmen of Standing Committees

Finance Mrs Harold F Wahlquist

Hygiene Mrs George R Dillinger

Legislation Mrs Luther H Rice

Organization Mrs T Mitchell Burns

Press and Publicity Mrs George H Ewell

Program Mrs William Hibbits

Public Relations Mrs Frank P Dwyer

Revisions Mrs Eustace A Allen

Report of Historian Mrs John I Ryan
 Report of Bulletin Circulation and Central Office Miss Margaret Wolfe
 Reports of state presidents
 12 30 p m Luncheon in honor of Mrs Frank N Hayward, President, Gold Coast Room Tickets \$2.25 (subject to market conditions and food administration regulations)
 Guest Speakers Brig Gen Fred Rankin, President, American Medical Association, Dr James E Paulin, President-Elect, American Medical Association, Dr Morris Fishbein, Editor, THE JOURNAL and HYGIEA
 2 p m Afternoon session
 Report of Nominating Committee Mrs Robert E Fitzgerald
 Election of Officers

Installation of Officers and Presentation of President's Pin Mrs R L Mosiman
 Inaugural Address Mrs Eben J Carey
 Minutes Mrs Carlton F Potter
 8 p m Opening Meeting of the House of Delegates of the American Medical Association, Palmer House, Grand Ballroom
 Members of the Woman's Auxiliary and guests are welcome

WEDNESDAY, JUNE 9

10 a m Executive Committee Meeting, Parlors F-G Mrs Eben J Carey, presiding
 10 30 a m Board of Directors Meeting, Parlors F-G Mrs Eben J Carey, presiding
 Dr James P Simonds, professor of pathology, Northwestern University Medical School, will speak on "The Effect of War on Medicine"

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status—Public hearings have been started by the Senate Committee on Education and Labor and by the House Committee on Interstate and Foreign Commerce, respectively, on S 983 and H R 2326 companion bills to provide training for nurses for the armed forces, government and civilian hospitals, health agencies and war industries through grants to institutions. S 875 has been reported to the Senate by the Senate Committee on Education and Labor, a bill to provide for the preparation of high school students for wartime service, to be known as the Victory Corps Act of 1943. A federal appropriation of \$912,513 for the fiscal year 1943 and of \$8,484,377 for each fiscal year thereafter is proposed for making payments to states which have submitted plans approved by the Commissioner of Education. Among other things, a state plan must make available appropriate medical examinations of students who may be inducted into the armed forces or who may be preparing for other essential war services. A total of \$3,009,300, it is contemplated, will be allotted annually for medical examinations. The authorizations contained in the bill will expire six months after the end of the war. S 885 has passed the Senate, a bill to establish a Civilian Supply Administration. The administrator of that administration it is proposed, will be authorized, among other things, to ascertain the quantities and types of goods and services (including but not limited to food, clothing, shelter, fuel, transportation and medical care) necessary to keep the civilian population healthy and functioning effectively and to apply to the appropriate government agencies which allot resources for military, naval, export and civilian purposes for the amounts and types of manpower, materials, facilities, transportation and other resources determined by him to be essential to produce and distribute the necessary goods and services. H R 2536 has been reported to the House by the House Committee on Education, a bill to enact the Vocational Rehabilitation Act. This legislation will be administered, it is proposed, by the Federal Security Agency. Among other things, it provides that the federal government will pay one half of necessary expenditures for designated rehabilitation services rendered under state plans to disabled individuals found to require financial assistance, including corrective surgery or therapeutic treatment necessary to correct or substantially modify a physical condition which is static and constitutes a substantial handicap to employment, necessary hospitalization, in no case to exceed ninety days, in connection with corrective surgery or therapeutic treatment, medical examination where necessary to determine eligibility for vocational rehabilitation, and such prosthetic devices as are essential to obtaining or retaining employment.

Bills Introduced—S 1033, introduced by Senator Clark, Missouri, and H R 2554, introduced by Representative Van Zandt, Pennsylvania, provide that all the provisions of existing law and of veterans' regulations applicable to veterans of World War I be extended to include veterans of the present war and their dependents.

STATE MEDICAL LEGISLATION

California

Bill Introduced—A 1928, to amend the health and safety code, proposes to eliminate therefrom the existing proviso that a drug shall be deemed to be misbranded if it is sold at retail for use by man and contains any quantity of amidopyrine, cinchophen, sulfanilamide or any of its preparations, compounds or derivatives, unless it is sold on a written prescription signed by a member of the medical, dental or veterinary profession who is licensed by law to administer such drug and its label bears the name and place of business of the seller, the serial number and date of such prescription, and the name of such member of the medical, dental or veterinary profession.

Bills Enacted—S 547 has become chapter 214 of the Laws of 1943. To amend the premarital examination law, it provides that certificate forms furnished by other states having comparable laws and by the United States Army or Navy for military personnel may be accepted. A 6 has become chapter 254 of the Laws of 1943. It amends the osteopathic practice act by eliminating the existing requirement that osteopaths, at the time of the annual renewal of their licenses, must present satisfactory evidence of the completion, during the preceding year, of a minimum of thirty hours of professional educational work as approved by the osteopathic board. A 1936 has become chapter 325 of the Laws of 1943. It amends the penal code by making it unlawful for any person to sell, furnish or give away any veronal, barbitol (acid diethylbarbituric) or other barbituric acid derivative and compounds thereof, except on the order or prescription of a physician and surgeon, dentist, chiroprapist or veterinary surgeon duly licensed to practice in the state of California. Such prescription shall not be refilled without the order of the prescriber except that a prescription for phenobarbital or any preparation, mixture or compound of phenobarbital may be refilled.

Connecticut

Bill Enacted—H 1265 has become chapter 166 of the Laws of 1943. It makes both husband and wife liable for the reasonable and necessary services of a physician and for hospital expenses rendered to the husband or wife or a minor child living with the parents.

Illinois

Bills Introduced—S 376 proposes the granting annually of cash awards of \$500 and \$250 to physicians in the employ of the department of public welfare other than those employed in the Illinois Neuro Psychiatric Institute and the Institute for Juvenile Research, for the purpose of stimulating creative research in the field of mental illness, its nature, causes and treatment. The awarding of these prizes would be under the direction of, and according to rules established by, the department of public welfare. H 512, to amend the law relating to premarital examinations, proposes that the required certificate may be executed by any duly licensed physician, rather than just by a duly licensed physician in this state as is presently required.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

ALABAMA

State Medical Election—Dr Frederick W Wilkerson, Montgomery, was elected president of the Medical Association of the State of Alabama at its recent annual meeting. Other officers chosen include Drs Benjamin W McNease, Fayette, and William Hill McCaslan, Union Springs, vice presidents. Dr Douglas L Cannon, Montgomery, continues in office as secretary-treasurer, his term not expiring until 1945. The 1944 meeting of the association will be held in Montgomery, April 18-20.

CALIFORNIA

Case of Spotted Fever in Siskiyou County—The first case of Rocky Mountain spotted fever in Siskiyou County was reported April 1. Newspapers stated that a woman residing in Horse Creek contracted the disease and was dismissed as improved from the Siskiyou County General Hospital, Yreka, after thirty-seven days.

New Hospital in Vallejo—Ground was broken on April 5 for the Vallejo Community Hospital, a 262 bed institution to be erected in one hundred and eighty days by the Emergency Operations Unit of the Public Buildings Administration of the Federal Works Agency at a cost of \$1,100,000. All buildings will be of wood construction because other materials are not available, but each wing will be cut off from the corridors by fire walls. Construction will be one story because elevators are not available.

Autopsy Surgeon Needed—Applications are being accepted by the Los Angeles County Civil Service Commission for the position of autopsy surgeon for work in the Los Angeles County Department of Coroner. The salary is \$4,800 a year. There will be no written examination. Candidates will be rated on their professional training and experience and their ability and personal suitability for the work as evidenced by investigation or interview. Applicants must be between 21 and 55 years of age with an M.D. degree from an approved medical school and have completed at least one year's internship in an approved hospital and two years of professional experience in the pathology laboratory of an accredited hospital, medical school or commercial laboratory or in a public agency. Applicants over 55 years of age may file for "duration" work. Applications must be filed on or before May 24 in the office of the civil service commission, room 102, Hall of Records, Los Angeles.

FLORIDA

State Medical Election—Dr John R Boling, Tampa, was named president-elect of the Florida Medical Association at its annual meeting in Jacksonville, April 16, and Dr Eugene G Peck, Ocala, was installed as president. Other officers include Drs Louie M Limbaugh, Jacksonville, Lloyd J Netto, West Palm Beach, and Carl E Dunaway, Miami, vice presidents. Dr Shaler A Richardson, Jacksonville, was reelected secretary-treasurer for the nineteenth year. Stewart G Thompson, DPH, Jacksonville, was confirmed to his post as managing director, which he has held for eighteen years.

MARYLAND

Study of Absenteeism—The labor-management advisory committee in Baltimore has just begun an absenteeism program which will provide specific information about job absences at each plant. A separate record will be kept for each worker the data to be made available to the worker's selective service board.

Personal—Dr Joseph Earle Moore, Baltimore, was given an honorary life membership in the American Social Hygiene Association recently. Dr Robert U Patterson, dean of the University of Maryland School of Medicine and College of Physicians and Surgeons and superintendent of the University Hospital, Baltimore, has been appointed consultant to the Baltimore City Health Department.

Night Health Service—To meet the health problem created by the rapid growth of population, the Baltimore Department of Health has expanded its baby clinics, venereal disease clinics and tuberculosis clinics and has rearranged hours so that they are open nights to serve war workers. In addition, its staff of inspectors has been increased and is campaigning vigorously against insanitary housing. According to the Office of War Information the city's health problems have been increased because of the large percentage of persons now coming to Baltimore from more isolated rural areas in North Carolina, West Virginia, Kentucky and Tennessee who lack the knowledge of and interest in health protection that most urban residents possess. At the end of 1941 toxoid inoculation against diphtheria had been given to 81 per cent of the children under 5 in Baltimore and to 94 per cent of those between 5 and 9. This percentage, which has been rising steadily for years, is now decreasing because of the newcomers, it was stated.

MASSACHUSETTS

Dr Wilinsky Awarded Civic Medal—Dr Charles F Wilinsky, executive director and superintendent of the Beth Israel Hospital, Boston, on April 12 was awarded the annual medal of the Boston City Club for distinguished civic service. Dr Wilinsky is chief medical officer of the Boston Public Safety Committee and his selection for the medal was "the outcome of his work in organizing the medical section of the city's civilian defense effort, and for his work during the Coconut Grove disaster." The gold medal is presented each year to the citizen adjudged by the club to have rendered the most outstanding civic service to greater Boston. Editorial comment was made in all the local papers concerning the presentation.

Changes in Program of Dental Medicine—Certain changes have been announced in the dental program at Harvard University now being carried forward by the new school of dental medicine, including the reduction of the course from five years, as set in 1940, to four academic years, or three calendar years under the accelerated wartime schedule, award of the D.M.D. degree only on completion of the course, and the permission of students successfully completing the course for the D.M.D. to register subsequently in the medical school and qualify for the M.D. degree on the completion of one and a half additional academic years or one additional calendar year in the medical school. According to an official release there will continue to be no segregation of candidates for the D.M.D. degree from the candidates for the M.D. during the first two academic years. Students in the school of dental medicine will be required to meet the same standards of scholarship that are demanded of medical students, and the successful completion of the courses in the first two academic years of the medical school curriculum will be necessary before the candidate for the degree D.M.D. can enter the third year in the school of dental medicine. During the first two years discussions in the field of dentistry will be presented to the combined class so that students planning to enter this field will be able to orient themselves for the third and fourth sessions. When the activities of the Harvard School of Dental Medicine were launched with funds of \$1,350,000 in July 1940 the plan provided for a five year course, at the end of which the successful student should be given both the M.D. and the D.M.D. degree. In an official statement James B Conant, president of the university, stated that it was predicted from the start that difficulty would be encountered under the plan because a man enrolled for the joint degrees of M.D. and D.M.D. might shift his interest to some other branch of medicine rather than continue with the course headed for D.M.D. "The prediction of difficulty was accurate. Whether or not this would have been the case except for the war no one can tell. Instead of the course of five academic years which we planned, army and navy regulations now make mandatory the limitation to three calendar years in courses leading to the medical and dental degrees," President Conant said.

MINNESOTA

State Tuberculosis Unit—The establishment of a tuberculosis control unit in the state division of public institutions has been announced. Dr Herbert A Burns, medical superintendent of the Minnesota State Sanatorium at Ah-gwah-ching has been placed in charge of the new unit. He has been succeeded at Ah-gwah-ching by Dr Francis T Callahan, formerly medical director of Pokegama Sanatorium, Pokegama.

Sentenced for Fraudulently Obtaining Morphine Prescriptions—On April 21 Alva George, 43 years of age, was found guilty by a jury in the District Court of Hennepin County of obtaining morphine prescriptions by fraud and sen-

tenced not to exceed two years in the Women's Reformatory at Shakopee. The investigation preceding her arrest disclosed that the defendant was obtaining morphine prescriptions simultaneously from seven physicians. At the trial, and prior to sentence being imposed, counsel for the defendant severely criticized the medical profession claiming that the defendant was given narcotic prescriptions without any reason.

NEW YORK

Institute for Family and Child Care Services—Vassar College, Poughkeepsie will conduct its second institute for family and child care services in wartime, July 1-30. The institute constitutes a training and demonstration center for parents, teachers, social workers and other professional workers. Community organizations child care out of school programs, personality development and preparation for service in China will constitute the five main fields of study for the institute.

New York City

The Harvey Lecture—Dr. Virgil P. W. Svedenstrom, professor of medicine, University of Georgia School of Medicine, Augusta, will deliver the eighth and last Harvey Society Lecture of the current series at the New York Academy of Medicine on May 20. His subject will be "Nutrition Under Wartime Conditions."

Physician Fugitive from Prison Term—Dr. Louis G. Small, who is said to be under a Sing Sing sentence of three to six years on his General Sessions conviction for operating an abortion mill with two other physicians, is the subject of a countrywide search ordered on April 19 by District Attorney Frank S. Hogan, the New York *Times* reported. Dr. Small was to have appeared before Judge Jacob Gould Schurman Jr. on April 19 for a new commitment to Sing Sing on the sentence after having lost an appeal in the Appellate Division. The *Times* reported that the casualty company which had furnished \$12,000 bail for him, pending the outcome of the appeal, had received word from Dr. Small from Fismun, Ga., that he would not return and the court issued a bench warrant for him. The *Times* further reported that after he had been found guilty of nine counts of abortion and one of conspiracy in the operation of an abortion mill at 116 East Sixty-Third Street, Dr. Small obtained a writ of reasonable doubt from Justice Samuel Null in the Supreme Court. The bail was accepted for him at the time. The appellate division handed down the decision affirming the conviction, April 16; it was stated.

Answer Criticisms on Alien Admissions to Membership—The committee on membership, the comitia minor, and the society itself can exclude candidates for membership only on the grounds of individual disqualification, the Medical Society of the County of New York stated April 24 in reply to "certain" criticisms made on the admission of a large number of foreign physicians to membership in the society. According to the New York *Times*, the comitia minor said that "they have no power, nor have they the desire, to discriminate against an individual candidate because of race, creed, color or national origin." It was emphasized that "all races and all nations have contributed to medical progress and that in organized medicine, at least, the profession remains a fraternity from which no deserving practitioner, whatever his origin, is barred. On practical grounds alone the comitia minor long ago recognized the desirability of bringing qualified foreign graduates into the society, thereby subjecting them to the same ethical restraints as govern native physicians. This is assuredly preferable to leaving large, unassimilated professional groups outside the jurisdiction of organized medicine," the report stated.

Fund for New Science Fellowships—Charles L. Mayer has given funds to the Committee on Medical Education of the New York Academy of Medicine to provide four fellowships of \$2,000 each for research with a view to advancement of knowledge in the following subjects:

- The use of choline and other lipotropic factors in the prevention and treatment of fatty infiltration of the liver and hepatic insufficiency.
- The action of ingested choline lecithin, methionine and inositol on precancerous lesions and disorders associated with neoplastic disease.
- The effects of riboflavin, certain amino acids, and casein on the development and growth of cancer.
- Study of the relationship between precancerous lesions of the mouth, hepatic insufficiency and gastrointestinal disorders.

Applications for consideration in these awards should state the name of the individual who will conduct the research, the name of the laboratory or institution in which the work will be conducted and the special qualification, interest or attributes of the investigator and institution which may justify the award. If the applicant has already conducted research in the specified field for which the award is sought, this fact should be stated

and reprints of publications in this work by the author should accompany the application together with any other facts or information deemed pertinent. An approval of the director of the laboratory should accompany the application, if the application is not made by the director. All applications should be sent in triplicate to Dr. Mahlon Ashford, secretary of the committee, not later than October 30.

OHIO

Centenary of Western Reserve Medical School—Western Reserve University School of Medicine, Cleveland, will observe the one hundredth anniversary of its founding, October 27, with a special program consisting of Drs. George H. Whipple, Rochester, N. Y., on "Blood Plasma Proteins: Their Production, Function, Substitution and Replacement", Alan Gregg, New York, "The Matrix of Medicine," and Reginald Litz, Boston, "The Crimson Thread."

Physician Honored by General Assembly—Dr. Errett Le Fever, Gloucester, member of the house of representatives, was honored by the Ohio General Assembly on March 9, which had been proclaimed "Le Fever Day." The House unanimously adopted House Joint Resolution number 28, proposing to honor Dr. Le Fever on his twenty-first year of service in the legislature. The resolution states that Dr. Le Fever is the only man in the history of the general assembly to have served for twenty-one years. He first represented Athens County in the house of representatives in 1900-1901. He has since held the same position in 1904-1905, 1921-1922, 1933-1934, 1939-1940, 1941-1942 and the current session 1943-1944. He was also a member of the state senate during the years 1923 to 1930, representing the Ninth-Fourteenth districts. Dr. Le Fever graduated at the Medical College of Ohio, Cincinnati, in 1890.

OREGON

Personal—Dr. Donald J. Bourg, The Dalles, recently health officer of Wasco and Sherman counties, has been named to a similar position in Benton and Polk counties with offices in Corvallis. —Dr. Claude C. Chick has been named health officer of Hood River.

Sommer Memorial Lectures—Ernest Carroll Faust, Ph.D., professor of parasitology and head of the department of tropical medicine, Tulane University of Louisiana School of Medicine, New Orleans, will deliver the third in a series of Ernst A. Sommer Memorial Lectures, May 17-22, at the University of Oregon Medical School, Portland, on the following subjects:

- Horizons of American Tropical Medicine, May 17
- Insects and Their Allies as Creative Agents and Transmitters of Disease, May 18
- Malaria, May 19
- Yellow Fever and Dengue, May 20
- Amebiasis and Related Infections of the Bowel, May 21
- Filariosis, May 22

New Dean at Oregon Medical School—Dr. David W. E. Baird Jr., acting dean, has been appointed dean of the University of Oregon Medical School, Portland, to succeed Dr. Richard B. Dillehunt, who resigned. Dr. Baird was born in Baker, Oct. 21, 1898. He graduated at the medical school in 1926. He was named assistant clinical professor in medicine in 1932 and in 1935 was named medical director of hospitals and clinics. He was appointed associate dean in 1938. Dr. Dillehunt, who graduated at Rush Medical College in 1910, has been associated with the Oregon faculty since 1912, first as professor of anatomy and assistant dean and later as clinical professor of orthopedic surgery and head of the department. He had been dean since 1920.

PENNSYLVANIA

License Revoked—The state board of medical education and licensure on March 26 revoked the license to practice medicine in Pennsylvania of Dr. John Herriott Boyd, Beaver town. The action was taken on evidence that Dr. Boyd was addicted to the use of narcotic drugs and alcohol to such an extent as to make him unfit for the practice of medicine, the board reported.

War Conference for Civilian Physicians—A combined meeting of the sixth and seventh councilor districts of the state medical society in Williamsport, May 14, constituted a war conference for civilian physicians. Among the speakers were Drs. Robert L. Anderson, Pittsburgh, on "Civilian Medical Practice in Wartime", Walter F. Donaldson, Pittsburgh, "War Participation and Organized Medicine," and Herbert J. Kelly, Philadelphia, "The Modern Science of Nutrition and Nutritional Deficiency." A feature of the meeting was the

presentation of fifty year testimonial certificates to Drs William J Campbell, Mount Union Isaac G Headings, McAlisterville Ella N Ritter, Williamsport Henry D Hart, Genesee, and Nathan W Church, Ulisses

Philadelphia

Fifty Year Citations Awarded—At the ninety-first annual commencement of the Woman's Medical College of Pennsylvania, March 11, citations were awarded to the following fifty year graduates. Drs Jessie W Fisher Middletown Conn Charlotte E Goodman, Mount Pleasant, Pa, Katharine S Munhall, Buffalo Ella N Ritter Williamsport Pa, Martha P Sanborn, Kingston, N H, Rhuv Wilson-Swan Ankonin Ohio Emma P Weeks Metzger Riverside N J Rachelle S Yarros La Jolla Calif, Ella M Anderson, M F McKirchian-Lions and Maria C Walsh

SOUTH CAROLINA

State Medical Election—Dr William R Wallace Chester was chosen president-elect of the South Carolina Medical Association at the annual meeting of the house of delegates recently and Dr William Atmar Smith Charleston was inducted into the presidency. Dr Arthur P McElroy Union was elected vice president and Dr Julian P Price, Florence, was reelected secretary-treasurer

WASHINGTON

Resigns as State Medical Adviser—Dr William E Steele, Olympia has resigned as chief medical adviser to the state department of labor and industries to engage in private practice in Seattle. Dr Steele, who held the state position for seven years, will be named consultant to the department in the Seattle area newspapers reported April 8

WEST VIRGINIA

Physicians Needed—The Merit System Council of West Virginia announces unassembled examinations for positions in the state health department and state department of public assistance. Applications will be accepted continuously but new registers will be established from applicants that file no later than June 26. Positions for which applications are being accepted and their respective salary ranges are listed herewith. Appointments may be made at above the minimum salaries

Director of maternal and child hygiene	\$4 200	\$4 800
Assistant director maternal and child hygiene	3 840	4 500
Director industrial hygiene	4 200	4 800
Director vital statistics	4 200	4 800
Director communicable diseases	4 200	4 800
Assistant director of communicable diseases (tuberculosis)	3 840	4 500
Assistant director of communicable diseases (venereal diseases)	3 840	4 500
Venereal disease consultant	3 840	4 500
Director Bureau of Dental Hygiene	3 840	4 500
Director of county health work	4 200	4 800
Senior health officer	3 840	4 500
Junior health officer	3 360	3 840
Health officer trainee	2 400	
Assistant director Hygiene Laboratory	2 640	3 240
Senior bacteriologist	1 800	2 400
Senior serologist	1 800	2 400
Consultant nurse in special fields	2 400	3 000
Public health nursing supervisor (state)	1 920	2 400
Public health nursing supervisor (local)	1 800	2 040
Chief of medical services	4 800	5 280

WISCONSIN

Lectures on Tropical Medicine—Dr Harold William Brown, dean of the University of North Carolina School of Public Health Chapel Hill N C lectured at the University of Wisconsin Medical School Madison April 28 under the auspices of the National Research Council. His subjects were Malaria and Parasitic Infections

Typical Home Front Physician Chosen—Dr Harry A Keenan Stoughton, has been selected by *Look* as the typical home front physician in wartime. As the choice of the magazine he represents the group on whom the community depends for protection and guidance in health and whose great burden is to double its work in order to relieve younger doctors for military service

Safety Conference—The sixteenth annual Rock River Valley Safety Conference will be held at the Hotel Rogers Beaver Dam May 16. Consideration will be given to women in industry absenteeism eye conditions of interest to industrial nurses employee training as it relates to accident prevention investigation of accidents for cause accident prevention in connection with women in industry safety programs for a county highway department dust explosion hazards and dangerous dusts

GENERAL

Warning on Fletcher's Castoria—The Centaur Company, Rahway, N J manufacturers of Fletcher's Castoria, in cooperation with the U S Food and Drug Administration on May 5 issued a national warning to all holders of Fletcher's Castoria to discontinue its sale and use because of the discovery that all such Castoria shipped since March 1, 1943 contains a foreign ingredient which causes nausea and vomiting. As neither consumers nor retailers can tell the difference between the packages made before March 1 and those produced thereafter, it is necessary to withdraw and recover all Fletcher's Castoria outstanding. All stocks should be returned to the manufacturer for a refund

Examinations in Internal Medicine—The American Board of Internal Medicine will hold regional oral examinations in Philadelphia on May 26-29, Chicago on June 9-11 and New Orleans and San Francisco on dates to be announced later. Oral examinations in the subspecialties will be given at the same time and place. The written examination of the board will be held on October 18. Applications for admission to this examination must reach Dr William A Werrell assistant secretary-treasurer, American Board of Internal Medicine 1301 University Avenue, Madison, Wis, before September 1. Exceptions will be made in the cases of candidates in the armed forces. Candidates desiring consideration in the subspecialties should file their application at the same time

Nicholas Appert Medal Awarded to Dr Prescott—The Nicholas Appert Medal of the Chicago Section, Institute of Food Technologists has been awarded to Samuel Cate Prescott, Sc D, Brookline Mass emeritus dean School of Science, Massachusetts Institute of Technology. Announcement of the award was made at the April 20 meeting of the Chicago Section and presentation will be made at the annual banquet session of the Institute of Food Technologists at the Statler Hotel, St Louis June 3. Eligibility for the award, established in 1941 is based on preeminence in the field of food technology and on contributions to the progressive development of food manufacture and processing. Dr Prescott received his honorary degree from Bates College Lewiston, Maine, in 1923

Free Supplement to U S P XII—Owners of all copies of the U S P XII should fill in and mail the post card order which is tipped inside the back cover of the U S P XII entitling the holder to a copy of the first U S P XII bound supplement soon to be issued. It was not expected that this supplement would be issued until about two and one-half years after the appearance of the U S P XII but changing conditions and wartime demands have necessitated its immediate publication. The supplement itself will carry a similar order form for a second bound supplement should the latter be required before the appearance of the U S P XIII. It is expected that the first U S P XII bound supplement will be available within two months and when it becomes available immediate shipment will be made without further cost to those who mail in their order cards as directed

Handbook on Rheumatic Fever—Rheumatic Fever in Children—Its Recognition and Management' a thirty-two page clinical handbook for the practicing physician has just been released by the Metropolitan Life Insurance Company and is being made available to physicians without charge chiefly through the 16 000 field representatives of the company. Physicians who wish a copy and who have not secured one by June 1 should write to Dr George M Wheatley New York assistant medical director Metropolitan Life Insurance Company 1 Madison Avenue New York. The book assembles the modern concepts of the disease its nature diagnosis and prognosis and the individual and community problems involved in the care of the patient. A group of clinicians in the following organizations assisted in the preparation of the book: American Heart Association American Academy of Pediatrics Children's Bureau of the U S Department of Labor and the U S Public Health Service. Other educational material has been developed by the Metropolitan Company in connection with its national program to reach the general public and the medical profession with information on rheumatic fever

CORRECTION

Wilson G Smillie—In his discussion on page 8 of *THE JOURNAL* of May 1 Dr Wilson G Smillie's first name was erroneously printed as Watson also in the ninth line in the second paragraph of Dr Smillie's discussion on this page the number of students should have been 3000 instead of 30000

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 3, 1943

The British Medical Association and the Beveridge Scheme

The meeting of the representative body of the British Medical Association to consider the national medical service proposed in the Beveridge scheme has taken place and the following resolutions have been adopted: 1 That the government's invitation to enter into discussions without commitment be adopted. 2 That a committee representative of the profession as a whole should in response to the government's invitation now enter into discussions with representatives of the minister of health on "a scheme for comprehensive health and rehabilitation services for the prevention and cure of disease and restoration of capacity for work available to all members of the community" (assumption B of the Beveridge report) in the light of the following undertakings now given:

1 That at the conclusion of the discussions and at the appropriate time during the discussions, but in any case before negotiations open and before any proposals are submitted to Parliament, the full machinery of the association including the council and its committees, groups, panel committees, divisions and the representative body, will be used to consider the government's proposals and to decide the association's view thereon.

2 That every practicable step will be taken to give all members of the profession, whether members or nonmembers of the association, an opportunity to express their views, and in particular that every practicable step will be taken to give members of the profession in war service an opportunity of expressing their views, to assess those views and to present them to the meeting or meetings of the representative body called to consider any proposals of the government.

The Employment of the Blind and Deaf

The total number of blind persons in Britain in 1941 was approximately 83,000, of whom about 42,000 were under 16 or over 65 years of age. Of the remainder about 9,000 are in employment. Some are employed in a selected group of ordinary industrial processes such as chocolate packing and testing precision instruments, in which delicacy of touch compensates for blindness. Others are employed in occupations regarded as specially suited to blind persons, such as telephonists, typists, masseurs and piano tuners, or in occupations such as basket and mattress making, which they have learned in blind training institutions. The majority—over 6,000—are employed in blind workshops or under home workers schemes. Of the remaining 32,000 in the 16-65 age group a considerable number have mental and physical defects which make them unemployable. Some do not need to work, such as the blind wives of sighted husbands, and a small proportion are receiving training in institutions.

The education and training of the blind is the duty of the local education authorities, and responsibility for their subsequent welfare is the duty of the local health authorities. These have no obligation to provide employment of a specific character, but nearly all have arranged, generally through a local voluntary association, for employment in workshops for the blind or in work at home. The Committee on the Rehabilitation and Resettlement of Disabled Persons considers that the local education authorities should have the obligation to provide vocational training.

Those blinded in war service are in the special charge of St. Dunstons, an institution established for the purpose after the first world war. This provides treatment on behalf of the Ministry of Pensions and subsequently undertakes full vocational training and assistance in obtaining employment.

Employment of the deaf is a much more limited problem. Local education authorities provide suitable education up to the age of 16 for all children too deaf to be taught in a hearing class and vocational training thereafter. On leaving school at 16 the large majority of deaf children have already received manual or practical instruction to assist them to obtain remunerative employment. In general, deafness is a bar to employment only in certain occupations.

The Electroencephalogram as Evidence Against Criminal Responsibility

The first use of the electroencephalogram in a criminal case as evidence on the question of responsibility was reported in a previous letter (*THE JOURNAL*, January 2, p. 64). It has just been used a second time. A student aged 20 was charged with the murder of his mother, who was an American, in her London flat. Two physicians gave evidence on his behalf. They knew that before he killed his mother he had drunk 4 pints of beer. They gave him this quantity of mild beer and found that his sugar content was lowered. Tested with the electroencephalograph, the impulses from his brain were found to be erratic and definitely abnormal when his blood sugar was reduced. Charts of these tests were studied by the jury when they retired to consider their verdict. They found him guilty of murder but insane when he killed his mother. He was therefore sentenced "to be detained during the king's pleasure," which means that he will be detained as long as his mental condition is considered dangerous.

Mr. Justice Asquith explained to the jury the celebrated McNaghten rules, which have just reached their centenary. They were laid down by judges in answer to questions put to them in the House of Lords after debates. They lay down that to establish the plea of insanity in a criminal case it must be proved that at the time of the offense the accused was laboring under such a defect of reason as not to know the nature and quality of his act or, if he did know it, he did not know that he was doing wrong. The medical witnesses in the present case agreed that the prisoner was abnormal, but they also said that when he killed his mother he knew what he was doing and knew that he was doing wrong. Mr. Justice Asquith therefore could not advise the jury that the McNaghten rules applied, thus summing up in favor of a verdict of murder simply. The jury would not follow the judge's advice, which they had a perfect right to reject. They were evidently influenced by the abnormal electroencephalograms produced at the trial.

Birth Rate for 1942 the Highest for Fourteen Years

The quarterly return of the registrar general for England and Wales, just published, shows that the total live births for the last quarter of 1942 were 160,679, the highest for any fourth quarter since 1926. For the whole of 1942 the number was 655,075, nearly 68,000 more than in 1941 and the highest since 1928. The rate per thousand of population was 15.8, which was 1.6 higher than in 1941 and the highest since 1931, when the rate was the same. Live births exceed total deaths (both civilian and noncivilian) by 175,168, compared with 52,048 in 1941 and an average of 99,585 for the five years 1936-1940. The improved vital statistics, during the war as well as the diminution of disease, excepting venereal diseases, tuberculosis and cerebrospinal meningitis, which are always increased by war, have been pointed out in previous letters.

Deaths

William Gustav Exton @ New York, Columbia University College of Physicians and Surgeons, New York, 1896, member of the American Public Health Association, American Urological Association, Association of Life Insurance Medical Directors, American Association for the Advancement of Science and the American Chemical Society, member and past president of the American Society of Clinical Pathologists, in 1914 became director of the laboratory of the Prudential Life Insurance Company in Newark, N. J., and three years later planned and began the direction of the company's longevity service, an inventor of many diagnostic devices, among them the gastroscope, turbidimeter, euscope, spectroscopic method of colorimetry, scopometer and photoelectric scopometer, in 1933 devised a method for measuring the number, diameters, volume and hemoglobin content of red blood cells, the recipient of the Burdick Memorial Medal of the American Society of Clinical Pathologists, served on the staffs of the Sydenham Hospital, St. Joseph's Hospital and the Mount Sinai Hospital, where he died, March 12, of pneumonia, aged 67.

W. Holbrook Lowell @ Boston, Harvard Medical School, Boston, 1902, specialist certified by the American Board of Ophthalmology, member of the American Ophthalmological Society and the New England Ophthalmological Society, an associate in ophthalmology at the Harvard Medical School, Courses for Graduates, consulting surgical ophthalmologist to the Massachusetts Eye and Ear Infirmary, Boston, the Lawrence Memorial Hospital, Medford, Lawrence (Mass.) General Hospital, Massachusetts General Hospital and the Winchester (Mass.) General Hospital, member of the medical advisory committee of district number 34 of Massachusetts during World War I, aged 67, died, March 31, at his home in Winchester of coronary heart disease.

Joseph Dean, Madison, Wis., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902, specialist certified by the American Board of Surgery, fellow of the American College of Surgeons, member and past president of the state board of health, from 1905 to 1921 associated with the Madison General Hospital one of the chief sponsors in the building of St. Mary's Hospital, where he was a member of the staff, a bronze plaque bearing his name was erected over the entryway of the hospital, in 1929 he and his brother founded the clinic which bears their name, aged 64, died, March 5, of coronary heart disease.

Adelbert Franklin Williams, Phippsburg, Maine, Dartmouth Medical School, Hanover, N. H., 1897, past president of the Sagadahoc County Medical Society, served in France as a captain in the medical corps of the U. S. Army during World War I, major in the medical reserve corps of the U. S. Army not on active duty was associated with the U. S. Veterans Bureau in Portland and the Veterans Administration facilities in Augusta and Togus, for ten years chief medical officer at the Portland regional office, aged 72, on the staff of the Bath (Maine) Memorial Hospital, where he died, March 11, of cerebral hemorrhage.

Charles Frederick McComb @ Duluth, Minn., Rush Medical College, Chicago, 1879, an Affiliate Fellow of the American Medical Association and member of the House of Delegates in 1909, 1910 and 1911, for many years coroner of St. Louis County, past president of the Minnesota State Medical Association, the first president of the Interurban Academy of Medicine, twice president and once vice president of the St. Louis County Medical Society formerly member of the state board of health, served during World War I, aged 85, died, March 3, of pneumonia and arteriosclerotic heart disease.

Lloyd Leroy Krebs @ Major, U. S. Army, retired, Sierra Madre, Calif., University of Pennsylvania Department of Medicine, Philadelphia, 1899, Army Medical School in 1902, entered the U. S. Army as an assistant surgeon in 1901 and was honorably discharged as a captain in 1911, was retired as a major in the medical corps of the U. S. Army in 1912 under a special act of Congress approved in the same year for many years a member of the staff of the Collis P. and Howard Huntington Memorial Hospital Pasadena, aged 68, died recently in Pasadena of myocardial infarction and coronary thrombosis.

Paul Virgil Winslow, New York, Albany Medical College 1908 member of the Medical Society of the State of New York, formerly sanitary supervisor of Dutchess, Greene and Columbia counties for the New York State Health Department instructor in larvngology at the New York Medical School and Hospital 1920-1921 at one time on the staffs of the Hudson River State Hospital Poughkeepsie, and the

Brooklyn State Hospital, examining physician at the Army Induction Station, aged 57, died, March 12, in the Flower and Fifth Avenue Hospitals of lobar pneumonia.

C. M. Anderson, Jonestown, Miss., Memphis (Tenn.) Hospital Medical College, 1903, member of the Mississippi State Medical Association, aged 62, died, March 16, in the Baptist Memorial Hospital, Memphis, of uremia.

Charles Victor Barley, Ithaca, N. Y., Stanford University School of Medicine, San Francisco, 1928, member of the American Academy of Pediatrics, assistant attending physician, Cornell University Infirmary and Clinic, aged 41, died, March 3, of dissecting aneurysm and coronary occlusion.

Royal August Becker, Atlantic, Iowa, State University of Iowa College of Homeopathic Medicine, Iowa City, 1910, member of the Iowa State Medical Society, served during World War I, on the staff of the Atlantic Hospital, aged 56, died, March 6, of congestive heart disease.

John Henry Belyea, Los Molinos, Calif., St. Louis College of Physicians and Surgeons, 1889, member of the California Medical Association, aged 78, died, March 6, in St. Elizabeth's Mercy Hospital, Red Bluff, of cerebral hemorrhage and arteriosclerosis.

Harry Walrod Blair, Mount Vernon, Ohio, University of Wooster Medical Department, Cleveland, 1892, member of the Ohio State Medical Association, served as a captain in the medical corps of the U. S. Army during World War I, for many years health officer, aged 77, died, February 19, of cerebral hemorrhage.

William C. Bovard, Apollo, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1878, aged 91, died, March 1, in the Citizens General Hospital, New Kensington, of coronary thrombosis.

John Clinton Boyer, Ocean City, N. J., Jefferson Medical College of Philadelphia, 1898, aged 70, died, March 12, of cerebral hemorrhage and arteriosclerosis.

Walter Miles Browning, Waurika, Okla., Memphis (Tenn.) Hospital Medical College, 1897, member of the Oklahoma State Medical Association, formerly a druggist, aged 73, died, February 5, in the Medical Arts Hospital, Dallas, Texas.

Francis E. Butler @ Menomonee, Wis., Milwaukee Medical College, 1903, president of the State Medical Society of Wisconsin and formerly counselor of the Tenth District, past president of the Dunn-Pepin Counties Medical Society, fellow of the American College of Surgeons, founded the Menomonee Clinic, on the staff of the Menomonee City Hospital, a member of the Menomonee Chamber of Commerce, the Rotary Club and the city council, aged 62, died, March 12, of carcinoma of the prostate.

Fred Allen Cobb, Toledo, Ohio, Toledo Medical College, 1894, member of the Ohio State Medical Association, formerly city councilman, served during World War I, aged 77, member of the emeritus staff of the Robinwood Hospital, where he died, March 9, of a fracture of the hip from a fall and paralysis agitans.

Warren Hamilton Conner, Los Angeles, State University of Iowa College of Homeopathic Medicine, Iowa City, 1893, aged 87, died, March 1.

Joseph Edgar Dibble, Kansas City, Mo., Meharry Medical College, Nashville, Tenn., 1895, veteran of the Spanish-American War, first lieutenant in the medical reserve corps of the U. S. Army not on active duty, on the staffs of the Wheatley-Provident Hospital and the Kansas City General Hospital, number 2, surgeon for the Kansas City Southern Railroad, aged 69, died, March 9, of cerebral hemorrhage and vascular hypertension.

Frank Newcomer Emmert, Chambersburg, Pa., Bellevue Hospital Medical College, New York, 1898, member and at one time vice president of the Medical Society of the State of Pennsylvania, past president of the Franklin County Medical Society, treasurer for many years and on the staff of the Chambersburg Hospital, aged 69, died, March 15, in Jacksonville, Fla.

Hicks C. Fenton, Portland, Ore., University of Oregon Medical School, Portland, 1893, aged 74, on the staff of St. Vincent's Hospital where he died February 6 of coronary occlusion.

Royce Day Fry, Euclid, Ohio, Western Reserve University Medical Department, Cleveland 1883, veteran of the Spanish-American War, aged 87, died February 21.

William H. Funkhouser, Evansville, Ind., Louisville (Ky.) Medical College 1882, aged 85, died February 7, in an Indianapolis hospital.

William W. Greenwood, Navasota, Texas, University of Texas School of Medicine, Galveston 1899, member of the State Medical Association of Texas, health officer of Navasota, served as president of the school board and as local surgeon for the Southern Pacific and Missouri Pacific railroads, aged 68, on the staff of the Brazos Valley Sanatorium where he died, March 2, of meningitis.

Maurice William Gumpert, Huntington Park, Calif., University of California Medical School San Francisco 1930, member of the California Medical Association, aged 42, died, February 24, in Los Angeles of carcinoma of the stomach.

Edwin Arnold Hyatt * St. Albans, Vt., McGill University Faculty of Medicine Montreal Que. Canada 1902, past president of the Vermont State Medical Society, member of the staff of St. Albans Hospital, aged 67, died, February 11.

Thurlock Milton Jewell, Milford, Iowa, Northwestern University Medical School, Chicago, 1929, aged 38, died, February 14, in Spencer of bronchopneumonia.

Emil E. Johnson * Cortez, Colo., Chicago College of Medicine and Surgery, 1912, past president of the San Juan Medical Society, formerly owner and superintendent of a hospital bearing his name, served as alderman, mayor, county physician and health officer for many years, aged 61, died, February 15, in Santa Monica, Calif., of coronary thrombosis.

Paul Vincent Joyce * Chicago, College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois 1912, served as a lieutenant in the medical corps of the U. S. Army during World War I, formerly a police surgeon, on the staffs of the Wesley Memorial Hospital, St. Anthony's Hospital and the Washington Boulevard Hospital, now closed, aged 59, died, April 30.

Frederick Anton Keller, Falls City, Neb., Emsworth Medical College, St. Joseph, Mo., 1902, aged 61, died, March 3, of diabetic gangrene.

Edward Martin Lawler, Cudahy, Wis., Marquette University School of Medicine, Milwaukee 1932, member of the State Medical Society of Wisconsin, aged 36, died suddenly, February 27, of coronary thrombosis.

Louis Loveman Lefkowitz * New York, University and Bellevue Hospital Medical College, New York, 1921, specialist certified by the American Board of Pathology, Inc., served as assistant professor of pathology at the New York University Dental School, was president of the Bronx Pathological Society, an assistant medical examiner of the Bronx, on the staffs of the Bronx and Montefiore hospitals, aged 44, died, March 6, of coronary thrombosis.

Gustav Herman Luedtke * Fairmont, Minn., University of Minnesota College of Medicine and Surgery, Minneapolis, 1899, for many years health officer of Fairmont, served as a major in the medical corps of the U. S. Army during World War I, on the staffs of the Fairmont Community and Hunt hospitals, aged 72, died, March 18, of carcinoma of the prostate.

J. Carroll Montgomery, Topeka, Kan., College of Physicians and Surgeons, Medical Department Kansas City University, Kansas City, 1901, formerly associated with the U. S. Public Health Service, at one time health officer of Sedgwick County and Cherokee County, formerly director of child hygiene and rural sanitation, Kansas State Board of Health, served as secretary of the Kansas Public Health Officers' Association, aged 68, died, February 2, of cerebral arteriosclerosis.

Hugh Lewers Murphy, Arkabutla, Miss., Louisville (Ky.) Medical College, 1905, member of the Mississippi State Medical Association, aged 60, died, February 20, in the City Hospital, Indianapolis, of cerebral hemorrhage.

Nathaniel Otis Owens, Quincy, Ill., College of Physicians and Surgeons, Keokuk, Iowa, 1897, member of the Missouri State Medical Association, aged 69, died, March 2, of heart disease.

William Bradley Palmer, Furman, Ala., Medical Department of Tulane University of Louisiana, New Orleans, 1898, aged 75, died, March 1, in a hospital at Atlanta, Ga., of coronary occlusion with rupture of the left ventricle, malignant nephrosclerosis and arteriosclerosis.

Halfdan Raasoch, Nelsonville, Wis., Rush Medical College, Chicago, 1896, for seventeen years school clerk, village president and for many years health officer, aged 70, died, February 19, of angina pectoris.

Roland Ray Reed * McCook, Neb., University of Nebraska College of Medicine, Omaha, 1910, served overseas with Field Hospital unit number 40 during World War I, aged 56, died, February 13, of coronary disease.

Martin Abraham Reichman, Morrisonville, Ill., University of Illinois College of Medicine, Chicago, 1929, member of the Illinois State Medical Society, served as a member of the local board of health, aged 38, died, February 27.

Charles Freelan Rosenberg, Milwaukee, University of Wisconsin Medical School, Madison, 1936, at one time a member of the staff of the Normandale, Madison, aged 33, died, February 27, in the Columbia Hospital of coronary thrombosis, secondary to emboli from osteomyelitis.

Frank Louis Sharpe, Statesville, N. C., University of North Carolina School of Medicine, Chapel Hill, 1904, member of the Medical Society of the State of North Carolina, aged 74, died, February 20.

Oliver O. Simpson, Norcross, Ga., Atlanta Medical College, 1882, formerly member of the state legislature, county commissioner of Gwinnett County and mayor of Norcross, aged 85, died, March 4, in the Emory University (Ga.) Hospital of thrombosis.

Douglas Bins Staggs, Monmouth, Iowa, Hahnemann Medical College and Hospital, Chicago, 1896, aged 71, died, February 13, in Anamosa of acute general peritonitis.

Tully A. Summers, Nevada, Texas, University of Tennessee Medical Department, Nashville, 1894, formerly on the staff of St. Paul's Hospital, Dallas, aged 70, died, February 27, of angina pectoris.

Carl Whit Sutton * Richlands, N. C., Medical Department of Tulane University of Louisiana, New Orleans, 1905, aged 60, died, February 20, in the Memorial General Hospital, Kingston of cirrhosis of the liver.

Routon Beverly Taylor, Jena, La., College of Physicians and Surgeons, Little Rock, 1911, aged 69, died recently at the Vaughan-Wright-Bendel Clinic, Monroe.

Willis Stimson Taylor, Columbus, Ohio, Eclectic Medical Institute, Cincinnati, 1885, for many years associated with the board of health of Franklin County, aged 83, died, February 14, in the Grant Hospital of thrombosis.

W. T. White, Ratchiff, Ark. (licensed in Arkansas in 1903), aged 60, died recently.

Allen Bishop Wilson, Hagerstown, Md., Leonard Medical School, Raleigh, N. C., 1902, aged 66, died, February 20, of pulmonary tuberculosis.

Frank Le Roy Young, Knoxville, Tenn., University and Bellevue Hospital Medical College, New York, 1906, member of the Tennessee State Medical Association, at one time professor of otology, laryngology and rhinology at the Lincoln Memorial University Medical Department, aged 63, died, February 18.

Claude Youtsey, Newport, Ky., Medical College of Ohio, Cincinnati 1903, member of the Kentucky State Medical Association, past president of the Campbell County Medical Society, served as president of the Campbell County Board of Health and for many years as a member of the board of health of Newport, chief of the medical staff and vice president of the board of directors of Speer's Memorial Hospital, Dayton, medical examiner for the Selective Service Board number 21, aged 61, died, March 5, of carcinoma of the right lung.

DIED WHILE IN MILITARY SERVICE

Lewis Edward Barrick, Chicago, Northwestern University Medical School, Chicago, 1940, first lieutenant in the medical corps of the Army of the United States, aged 29, died, January 9, in Denmark, Iowa, of injuries received in an airplane accident.

Jay Henry Caldwell, Long Beach, Calif., College of Medical Evangelists, Los Angeles, 1941, first lieutenant in the medical corps, Army of the United States, aged 33, died, February 27, in an airplane accident at Santa Ana.

John Morgan Clack, West Point, Ga., University of Tennessee College of Medicine, Memphis, 1929, member of the Medical Association of the State of Alabama, past president of the Chambers County (Ala.) Medical Society, first lieutenant in the medical corps of the Army of the United States, aged 37, died, January 30, in Edmonton, Canada, of a coronary thrombosis.

John Patrick Gavan, Cleveland, St. Louis University School of Medicine, 1929, a member of the staff of St. John's Hospital, captain in the medical corps of the United States Army Air Corps, aged 40, died, February 22, at Mitchel Field, Long Island, N. Y., of pneumonia.

Correspondence

THE PHYSICAL FITNESS PROGRAM

To the Editor —It was my privilege recently to visit one of the Navy preflight schools in which the emphasis is on indoctrination, certain phases of technical training, and physical fitness. At this school they have, in addition to the regular Navy line officers and a specially commissioned staff of physical education and athletic leaders, a remarkably fine medical and dental staff organization. These physicians and dentists are doing a splendid job in examination, surgery, care of injuries and illness, and guidance, as far as excuse from regular activity and class work for medical reasons is concerned. Infirmary and hospital facilities of an outstanding type are available and are being well used. In addition to the usual entrance medical examination this medical group is administering a mass x-ray examination of the lungs by use of a 35 mm film unit.

The program at this preflight school at one time involved approximately six hours of physical training per day. This has now been reduced to the equivalent of three hours of physical training a day, for various reasons. The usual physical training period for the Army and Navy, I am told, is one hour per day at the earlier and later aviation training stages.

The end results of this program have been evaluated in terms of physical measurements, speed and exercise tests based on pulse response to a modification of the step test. This testing program is conducted by the physical education phase of the school. The objective testing demonstrates average improvement in the physical speed and improved exercise response, and anthropometric measurements.

The medical group is doing a magnificent job, but it should be pointed out to the general medical profession in this country that, while the physical education group at the school is testing for objective results of this most intensive physical training program in history in America, the medical group and dental group at this station are limited pretty much to a clinical and empirical opinion as to the evaluation of what might be called medical results of the program. At certain advanced naval aviation training schools a research medical program is being administered.

It appeared to me that, with this tremendously intensive program of physical strain, medicine is overlooking a great opportunity for the obtaining of scientific knowledge of the medical results of intensive physical activity such as is being administered in this first experiment in American history. The medical officers themselves seem interested in such an opportunity, for example a more comprehensive entrance examination with an opportunity for a similar comprehensive follow-up examination at the end of the program under controlled conditions. Under present circumstances the staff is so limited, as is the very outstanding staff of the adjacent medical college that such follow up does not seem practical because as several stated, This is war.

Under the conditions of a great opportunity to do further investigation as to the results of intensive exercise on a level never before seen and a marvelous medical setup in a great medical center it remains for the Navy to allow the medical follow up program or for the physical fitness committee of the American Medical Association to set up and subsidize such a program, if the consent of the Navy could be obtained. It is such a wonderful opportunity to get facts heretofore not avail-

able that I urge its importance on the officials and the appropriate committee of the American Medical Association.

The research work now being done, for example in cardiology on the advanced flying basis, is magnificent, but this work is not being done on a group of potential aviators who are undergoing an intensive physical education activity program such as that which is being administered in the preflight schools. Statistics on the reasons for morbidity and "wash out" (academic and medical) are not fully available at the various preflight schools. The results of this intensive program cannot be said to be as yet scientifically evaluated. Such evaluation is a medical challenge, a physical education challenge, and I suggest the extreme desirability of the medical group attempting to make possible such investigation, so that future programs and the inevitable after war physical fitness program may be more intelligently, scientifically and less empirically approached.

I trust that this suggestion may not be misunderstood by anybody, as I believe a magnificent piece of work is being done by these preflight schools in toughening and training future naval aviators. My only point is that we cannot know scientifically what the end result of such intensive training may be, especially for certain men who enter training without having been particularly athletic, and such investigation would seem to be tremendously significant, particularly in respect to the possible cardiac, pulmonary, renal and neuropsychiatric effects as well as in its more obvious traumatic aspects.

J. W. WILCE, M.D., Columbus, Ohio

Director University Health Service,
Ohio State University

THERAPY OF SEVERE BURNS

To the Editor —An editorial comment (THE JOURNAL April 3 p 1157) on the 'Therapy of Severe Burns' calls attention to the report of Elman, Cox, Lischer and Mueller (*Proc Soc Exper Biol & Med* 51:350 [Dec] 1942). These authors working with experimental burns in rats demonstrated that the acute mortality was greatly elevated in animals kept at environmental temperatures of 32, 55 and 99 F as compared with groups of rats kept at 75 F.

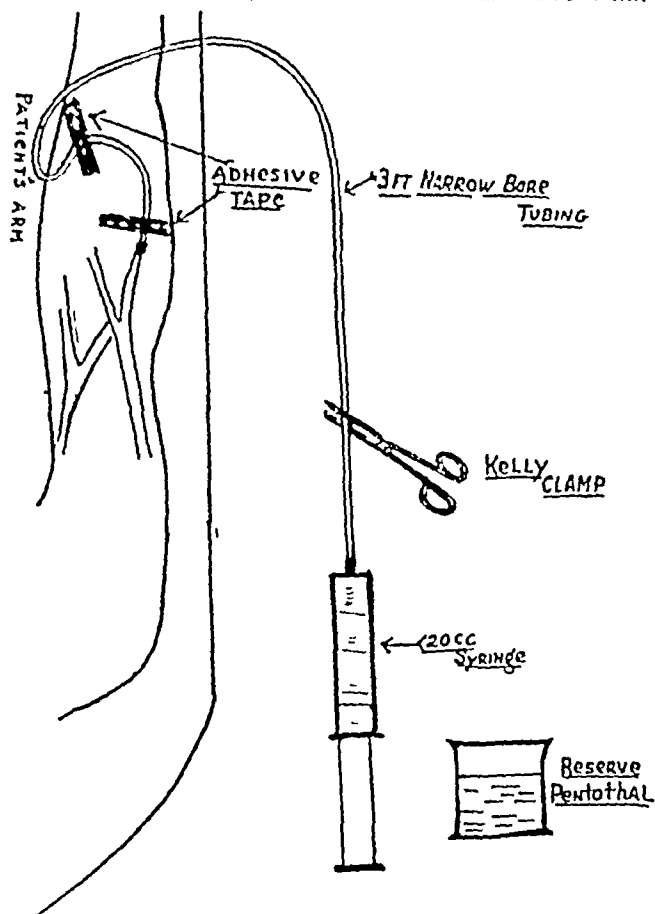
May I call your attention to the fact that I have reported similar results in mice in an article entitled 'Experimental Chemotherapy of Burns and Shock. I. Methods. II. Effects of Local Therapy on Mortality from Shock' (*Pub Health Rep* 57:1923 [Dec 18] 1942) which appeared simultaneously with the publication cited. Mention should also be made of the recent article of Wakim and Gatch 'Effects of Temperature on Shock' which appeared in THE JOURNAL March 20 page 905. They came to essentially the same conclusions as to the harmful effects of heat and cold in traumatic shock, as a result of their experiments on several species of animals.

Because of their possible clinical significance may I also mention the results I have recently obtained in the treatment of burn shock in mice (*Pub Health Rep* 58:513 [March 26] 1943). Evidence was presented that the acute mortality following a standardized burn is primarily related to a sodium deficiency since death can be prevented by therapy with sodium salts by mouth and this effect can be antagonized by potassium salts. Intravenous therapy was less effective than other routes of administration.

SAMUEL M. ROSENTHAL, M.D., Bethesda, Md.
Principal Pharmacologist U. S. Public Health Service

METHOD OF ADMINISTERING PENTOTHAL SODIUM

To the Editor —In the March 6 issue of THE JOURNAL, Capt Robert B Hope described a holder for the administration of pentothal sodium. We have at our institution a much simpler method which places the anesthetist at the head of the table where he believes so that he may administer oxygen and further observe the patient. The accompanying diagram tells the nature of the method. There is about 3 feet of narrow gauge tubing that fits on the end of a 20 cc syringe and has an adapter at the other end to take a 22 long needle. This is inserted in the vein and secured there with adhesive tape as noted. The tubing is pinched off when the injection is not being made with an old Kelly clamp, so that there is no backflow of blood into the needle tubing and syringe. The tubing holds about 3 cc of pentothal. With this arrangement we have done all types of operations and it has been uniformly satisfactory. For wartime use if there is a shortage of hands one could have a nurse



Details of method

or orderly at the head of the patient and the doctor could assist the operator in an emergency and still give the anesthetic if the tubing and the syringe with the pentothal was sterile and could be brought into the field. This method has been used in over five hundred operations and I pass it along with the hope that some one may want to use the technique.

F J PATTERSON, M D, Neptune, N J
Senior Anesthetist, Fitkin Memorial Hospital

"THE GOOD SURGEON"

To the Editor —A number of friends have called my attention to a quotation attributed to Dr John M T Finney which appeared on page 1312 of the Dec 19, 1942 issue of THE JOURNAL.

The quotation was taken from an editorial in the August 1918 issue of *War Medicine*, it was written by Dr George Crile but not signed. Later the material was used in an address read by Dr Crile before the American Surgical Association on June 16, 1919. Instead of the original title, "The Good Surgeon: The Most Important Factor in the Treatment of War Wounds," the heading was "The Most Important Factor in the Treatment

of War Wounds and the Most Important Factor in Civilian Surgery—the Good Surgeon." This was published in the *Annals of Surgery* in October 1919, the article being almost identical with the editorial in *War Medicine*. It also appeared in the Transactions of the Association.

I was much interested in this recent reference to an article written during the first world war and feel sure you will want to correct your statement regarding the authorship.

GRACE CRILE,
2620 Derbyshire Road, Cleveland Heights, Ohio

TREATMENT OF CEREBROSPINAL MENINGITIS

To the Editor —The editorial "Treatment of Cerebrospinal Fever" (THE JOURNAL, February 13, p 516) may create an erroneous impression as regards the mortality from the disease in this country. For instance, since Jan 1, 1937 all epidemic meningitis patients admitted to the Division of Contagious Diseases, City Hospital, Cleveland, have been treated according to the method described by Hoyne, i.e. with a continuous intravenous drip of meningococcus antitoxin and at the same time massive doses of sulfanilamide by mouth, if possible. Lumbar punctures were made only for diagnosis. In 75 consecutive cases there were five deaths—a gross mortality rate of 6 2/3 per cent, only 1 patient had a complication—loss of hearing. Among 5 who succumbed was 1 who died fifty-five minutes after admission and a 50 year old woman with diabetes and gangrene who had recovered from the spinal meningitis and whose spinal fluid, at the time of death from other causes, contained only 69 cells. If we exclude these patients the mortality rate would be 4.1 per cent. Of the remaining 3 persons 1 died nineteen and one half, 1 twenty and 1 twenty-eight hours after admission to the hospital.

JOHN A TOOMEY, M D
JOHN H DAVIS, M D

Department of Pediatrics, Western Reserve University, and
Division of Contagious Diseases City Hospital
Cleveland

EDIBILITY OF RABBITS USED FOR PREG- NANCY TESTS

To the Editor —The communication by Drs Weisman and Coates in THE JOURNAL, March 27, page 1109, starts with the unwarranted assumption that rabbits utilized for pregnancy (Friedman) tests are unsuitable for food and that therefore a less satisfactory test should be substituted.

If rabbits are apparently in good condition when killed in order to read the test, they are as edible as litter mates which are killed primarily for food. Various members of my staff have been eating test rabbits for years with no harmful effects. They are more sought after now than previously, because of meat rationing. The line forms on the right.

Why should such animals not be eaten? The urine which was injected into their veins came from human beings who passed all the urinary materials through the blood without any toxic effects, and the hormones which produced the ovarian changes are among the profession's modern panaceas.

Let's conserve our professional and nutritional resources by making the rabbits do double duty.

If you're not a Babbit,
You'll enjoy the rabbit
That entered into rest
To give a Friedman test
While it may seem funny,
You'll enjoy the bunny,
Who's done her double duty
For Victory and Beauty

E D PLASS, M D, Iowa City
Professor of Obstetrics and Gynecology, State University of Iowa
College of Medicine

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL May 8, page 133

BOARDS OF MEDICAL EXAMINERS

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WYOMING Cheyenne June 7-8 Sec Dr M C Keith Capitol Building Cheyenne

* Basic Science Certificate required

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Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts Power of Licensing Board to Reinstate Revoked License—Buonanno was licensed to practice medicine and surgery in West Virginia in 1927. In 1930, after notice and hearing the public health council, the state agency charged with the duty of examining and licensing applicants for licenses to practice medicine and surgery and with revoking or suspending licenses for causes stated in the medical practice act, revoked Buonanno's license on the ground of dishonorable conduct on his part in submitting to the council a fraudulent medical diploma in applying for the license he obtained. Buonanno did not appeal from the order of revocation. In March 1934 he applied to the council for reinstatement of the revoked license presenting a diploma purportedly issued to him by the Medical College of the University of Rio de Janeiro indicating the completion in that institution of a course of study in medicine and surgery. The council ascertained that the diploma was not genuine and denied the application. He made several other fruitless attempts to induce the council to reinstate his license. In January 1940 he petitioned the circuit court of Marion County, West Virginia, for a review of the action of the council. The trial court sustained the council's demurrer to the petition and dismissed the action. Buonanno took no appeal from the action of the court. In November 1941 he again applied to the council for reinstatement and was notified that the council would pass on the application at a meeting in March 1942. Thereon the West Virginia State Medical Association sought a writ of prohibition to prevent the council from considering further the restoration of Buonanno's revoked license. The association alleged that Buonanno was not legally qualified to practice medicine and surgery in West Virginia, that if he were permitted to practice it would tend to degrade the professional standards of its members and that the revocation of his license by the council had long since become final by reason of his failure to appeal from the order of revocation entered in 1930 and that the council had no jurisdiction to consider further the restoration of his license. Buonanno, on his own motion, was made a party to the proceedings and demurred to the petition for a writ of prohibition for the alleged reason that the council had the legal power, if it saw fit, to reinstate his revoked license and that the court was without jurisdiction to prohibit the council from doing so. The trial court overruled the demurrer and he appealed to the Supreme Court of Appeals of West Virginia.

The writ of prohibition, Buonanno contended on appeal, does not lie to control the action of a board, such as the council, having only administrative functions. True, said the court, if the public health council possesses only administrative powers, a writ of prohibition to control it in the exercise of those powers should not issue. But the council in addition to its purely administrative functions has and exercises quasi-judicial powers and jurisdiction with respect to the suspension and revocation of licenses. It is not a judicial tribunal but in its own sphere it may hear and evaluate the evidence on a contested matter and make a finding which is subject to review by courts. While there is no express provision in the medical practice act or elsewhere authorizing the council to reinstate a revoked license to practice medicine if it has that power as cognate to the powers of revocation and suspension that power and jurisdiction must necessarily be quasi-judicial. Since the council is a quasi-judicial body a writ of prohibition will lie to prevent it when acting in its quasi-judicial capacity from exceeding its legal authority. The trial court therefore had jurisdiction and in fact the council is attempting to exceed its jurisdiction and lawful power in restoring Buonanno's license. prohibition will lie to restrain the council from doing so.

The Supreme Court of Appeals then considered the right of the council under the circumstances present in this case to reinstate Buonanno's revoked license. After the revocation of

Buonanno's license, and the court, in 1930 by the council, the only course left to him was to present the necessary valid, qualifying certificate of graduation from an approved medical school and take a new examination or within thirty days after the entry of the order of revocation to perfect an appeal to the courts. Buonanno did not apply for a new examination but attempted repeatedly to induce the council to reinstate his license. He did not appeal to the courts from the order of revocation. In 1940 he instituted an action in the circuit court of Marion County to review the council's refusal to reinstate his revoked license, not to review the propriety of the order of revocation. The propriety of the order of revocation could not be reviewed by the courts unless the court proceedings were instituted within thirty days after the entry of the order of revocation. In the absence of a statutory provision otherwise specifically fixing the finality of an order of the council revoking a license we hold said the court that the statute limiting the time for an appeal determines that question and that an order becomes final for all purposes after the expiration of thirty days and cannot thereafter be set aside or vacated by the council. The order of revocation entered in 1930 is final for another reason. When the medical association instituted this proceeding more than eleven years had elapsed since the order revoking Buonanno's license was entered and the order had not been vacated, modified or successfully challenged during that time. There must be a finality to proceedings before the council. To hold otherwise would result in a state of uncertainty and confusion preventing the orderly performance of council duties. We believe that the lapse of time alone is sufficient to give the order of revocation finality and that the council is precluded from a reconsideration of its order especially in view of the proceedings instituted by Buonanno in the circuit court of Marion County for review and reversal of the council's refusal to reinstate the revoked license. We therefore hold that the license of Buonanno has been finally and completely revoked prior to commencement of this proceeding and that he now has the same status with respect to the practice of medicine and surgery as if a license had not been issued to him.

For the reasons stated the order of the lower court in effect prohibiting the council from considering the restoration of Buonanno's license was affirmed.—*Hest Virginia State Medical Assn v. Public Health Council of West Virginia* 23 S. E. (2d) 609 (H. 1 a 1942)

Society Proceedings

COMING MEETINGS

HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION CHICAGO BEGINNING JUNE 7 DR OLIN WEST, 535 NORTH DEARBORN ST., CHICAGO, SECRETARY

American Association of Genito-Urinary Surgeons, Stockbridge, Mass., June 10-12 Dr Charles C Higgins, 2020 East 93d St., Cleveland, Secretary

American Association of Industrial Physicians and Surgeons Rochester, N. Y. May 25-27 Dr E. C. Holmblad, 28 East Jackson Bldg., Chicago, Managing Director

American College of Radiology, Chicago, June 6 Mr Mac F. Cahal, 540 North Michigan Blvd., Chicago, Executive Secretary

American Ophthalmological Society, Hot Springs, Va., June 10-12 Dr Walter S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary

American Society of Clinical Pathologists, Chicago, June 4-6 Dr Alfred S. Giordano, 531 North Main St., South Bend, Ind., Secretary

Connecticut State Medical Society, New Haven, May 25-27 Dr Creighton Barker, 258 Church Street New Haven, Secretary

Illinois State Medical Society, Chicago, May 18-20 Dr Harold M. Camp, 224 South Main St., Monmouth, Secretary

Massachusetts Medical Society Boston, May 24-26 Dr Michael A. Tighe, 8 Fenway, Boston, Secretary

Minnesota State Medical Association, Minneapolis May 17-19 Dr B. B. Souster, 493 Lowry Medical Arts Bldg., St. Paul, Secretary

Montana Medical Association of, Billings, July 7-8 Dr Thomas F. Walker, 206 Medical Arts Building, Great Falls, Secretary

New Jersey Medical Society of, Newark, May 25-26 Dr Alfred Stahl, 55 Lincoln Park, Newark, Secretary

Rhode Island Medical Society, Providence, June 2-3 Dr William P. Buffum, 122 Waterman St., Providence, Secretary

West Virginia Medical Association Charleston, May 17-18 Mr Charles Lively, 1031 Quarrier St., Charleston, Executive Secretary

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Fifteenth Annual Meeting, held in Chicago, Nov. 6 and 7, 1942

The President, DR ARTHUR R. BARNES, Mayo Clinic, Rochester, Minn., Presiding

(Concluded from page 136)

Clinical Use of Papaverine in Coronary Heart Disease

DRS. LOUIS A. KATZ and STEPHEN R. EICK, Chicago. Papaverine, a non-habit forming opium alkaloid of the benzylisoquinoline group, has been used abroad in angina pectoris but has received practically no attention in this country for this condition. Experiments have shown that it is a powerful coronary vasodilator, and experiences in this laboratory have demonstrated that it can abolish ventricular fibrillation and premature ventricular systoles in the dog and can also act prophylactically to prevent their occurrence.

We have therefore investigated its action clinically on patients with angina pectoris and on those with premature systoles. Three groups of patients were studied. In the first group were 17 ambulatory patients with an established severe anginal syndrome given papaverine by mouth $1\frac{1}{2}$ grains (0.1 Gm.) four times a day alternately with control periods on placebo. These patients kept a diary and were closely followed over periods of from five to eleven months. The effect was judged by comparing frequency of anginal attacks, duration of each attack, number of blocks patient could walk without pain, and amount of glyceryl trinitrate used. Twelve showed definite improvement on papaverine, 3 were inconclusive and 2 were slightly improved.

In the second group, included among other arrhythmias, there were 12 patients with frequent premature systoles. The effect of intravenous papaverine 1 to $1\frac{1}{2}$ grains (0.06 to 0.1 Gm.) was followed. In all there was a definite reduction or abolition of the premature beats for two to ten minutes after the injection. In 1 case the use of a slow intravenous drip ($1\frac{1}{2}$ grains in 125 cc. of isotonic solution of sodium chloride) led, after 1 gram had been administered, to disappearance of the multiple ectopic beats for several hours.

In the third group, 5 patients with frequent premature systoles were hospitalized and the effects of periods under oral papaverine, $1\frac{1}{2}$ to 3 grains (0.1 to 0.2 Gm.) four to five times daily were tested and compared with control periods and with periods on quinidine. The premature systoles were counted three times a day (sometimes hourly) during the control and drug periods. In all cases papaverine had a definite effect in decreasing the frequency or in abolishing the premature systoles, and the effect was equivalent to that of quinidine.

It was concluded from these studies that papaverine is of value in the alleviation of pain in angina pectoris and in the eradication of premature systoles. There is no contraindication to its oral use and little to its use intravenously. Because of these two actions, and its definite sedative action, papaverine has a definite place in the treatment of chronic coronary disease complicated by anginal pain or premature systoles. In the latter it may be considered a measure which can be taken to lessen the risk of fatal ventricular fibrillation. It appears to carry none of the hazards of quinidine, since it does not depress the heart's contraction. When used orally it must be given in larger doses than those ordinarily employed.

DISCUSSION

DR GEZA DE TAKATS, Chicago. Since 1936 my associates and I have been using papaverine in acute vascular accidents intravenously in much smaller doses than the authors have mentioned. It was only natural to try to follow intravenous doses with oral doses in patients with peripheral vascular disease. We used 1 gram of papaverine three times a day orally. I cannot remember the exact number of patients but it must have been 20 to 25. The majority have become uncomfortable on these doses. Perhaps the massive doses that the authors mentioned might have counteracted the effect of smaller doses. Our patients would get out of bed and wander around. One patient had intractable obstipation. I should like to ask what the longest period was during which the authors used papaverine and what the effects were on withdrawal.

DR EDWARD MASSIE, St Louis I should like to ask if there were any other electrocardiographic effects of papaverine apart from its effect on the rhythm

DR PAUL NOTH, Detroit In view of all the difficulties in evaluating the subjective response to drug therapy in angina pectoris, would the tests performed before and during therapy, such as the measured amount of exercise required to induce an attack of angina pectoris or changes in the electrocardiogram following exercise, have any supplementary value in the present study?

DR L N KATZ, Chicago We did not have the unpleasant side effects mentioned by Dr de Takats when he used smaller doses. In some patients sweating did occur but was not too unpleasant. Constipation occasionally occurred but could be controlled readily with ordinary means. We were impressed with the absence of side effects. No withdrawal symptoms were encountered. It is true that many patients like the drug and asked for its continuation, but these requests were on the same basis as requests for digitalis and other drugs which the patients considered benefited them. When told that no more drug was available, they did not complain or show any symptoms of withdrawal. Similar reports have appeared previously in the literature. Papaverine, therefore, is not habit forming. We made no attempt to analyze the electrocardiographic changes induced by papaverine aside from its effect on the arrhythmias. Precordial pain is a symptom not necessarily related to any specific electrocardiographic alterations. An effect on pain need not parallel an effect on the electrocardiogram and vice versa, and we were interested in its action on anginal pain. There is no contraindication to the use of papaverine with or following digitalis. We have used papaverine after digitalis and we have also used it with quinidine. I know of no pharmacologic or clinical contraindications for such combined uses. We did not believe it worth while to study the effect of papaverine on exercise tolerance since in our hands the induction of anginal pain with exercise was found to be unreliable quantitatively. We felt that more information could be obtained from the reaction of the patient to his daily activity than from any set exercise test provided the data were cautiously interpreted.

Observations on Shock

DR L N KATZ, R ASHER and DR SAMUEL PERLOW, Chicago We have been able to produce shock in dogs with fatal termination, by nearly complete venous occlusion of one hind limb. This offers a simple way of studying the course of shock and the utility of some of the proposed therapeutic agents to counteract it. In our control series of 18 dogs 16 died in shock in three and one-half to twenty-one hours following the venous occlusion. All showed a definite drop in blood pressure, a rise in hematocrit and an increase in the occluded limb size amounting to 23 to 69 per cent of the body weight. The extensive loss of fluid into the occluded leg is the primary mechanism of this type of shock.

The effect of the following drugs on this type of shock was noted: (a) desoxycorticosterone acetate, (b) adrenal cortex extract and (c) paredrine hydrobromide.

Eleven dogs were treated with desoxycorticosterone acetate for twenty-four hours preoperatively and twenty-four hours postoperatively. Eight of these 11 primed dogs survived. The blood pressure showed no appreciable changes, the hematocrit was high during the early postoperative hours but subsequently returned to normal levels; some dogs developing a hemodilution. Although the occluded limb became edematous its average increase was not as great as those of the control series.

In 9 other dogs 3 received desoxycorticosterone acetate beginning two hours after the occlusion and continued for twelve hours while the other six received desoxycorticosterone acetate ten minutes to two and one-half hours preoperatively and during the first twelve postoperative hours. Of this group 7 died in shock, 1 of pneumonia and only 1 survived. The postoperative picture was almost identical with the control group.

Adrenal cortex extract was administered to 12 dogs twelve hours preoperatively and during the first twelve postoperative hours. Of this series 6 survived, 5 died in shock and 1 of bronchopneumonia. Our results show that adrenal cortex extract tends to reduce the amount of fluid lost into the

occluded limb, an action more striking than that of desoxycorticosterone acetate alone.

Paredrine showed no beneficial effects when administered to a group of six dogs. The drug was given postoperatively only. All animals died in shock within eleven hours following the operation.

In a group of 13 dogs we attempted to prevent the fluid accumulation into the occluded limb by mechanical means. Following the operation a rigid plaster cast was applied to both lower limbs, the groin and the lower abdomen. This cast was removed thirty-six hours later. Eleven of these animals survived, 1 died in shock and 1 of bronchopneumonia. No hemoconcentration occurred, the blood pressure showed no significant changes and the occluded limb was not edematous. However, edema did develop gradually after removal of the cast but had no deleterious effect on the animals. The absence of shock in this group of dogs emphasizes the fact that local accumulation of fluid determines this state not so much by the amount of plasma fluid lost but rather by the rate at which it is lost. This simple method of preventing shock caused by fluid loss, has practical application both in civil and in military practice.

DISCUSSION

DR HEINRICH NECHELES, Chicago I wonder whether the assumption of the authors that collaterals form is correct, because a traumatized leg will swell up to the limits permitted by the bandage. I think the same pressure on capillaries exists when one permits the leg to swell until the skin would limit further swelling. I do not think collaterals would form under any one of these conditions. Would not some other mechanism, like thrombosis, explain the phenomenon?

DR GEZA DE TAKATS, Chicago Would it not be simpler to use a snug wide rubber bandage instead of a cast? Undoubtedly the leg swells a great deal and if one puts on a cast there might be necrosis. I wonder if the authors have made observations with an Esmarch bandage, also if they have made any observations on renal involvement and whether they believe the entire picture is due to a fluid loss or to toxic substances which produce a hepatorenal syndrome.

DR L N KATZ, Chicago There was no question in our minds that collateral veins do develop. Otherwise there is no way of explaining the disappearance of edema in the leg with occluded veins in the animals that survived. We had contemplated the use of a rubber stocking instead of the cast for these dogs, but this would have been less convenient and we were primarily interested in the principle of preventing edema formation, which could readily be accomplished with a cast. We have not yet made observations on renal involvement in this form of shock. As to the action of toxic substances absorbed in the blood stream I do not know whether they are involved in inducing other forms of shock. However, it would appear that in shock produced by venous occlusion such toxic substances are apparently not involved nor are neurogenic stimuli. The role of toxic substances and neurogenic stimulation are still the subject of polemics just as they were in the last war and still may be after this war is over. All the evidence tends to show that oligemia and a decreased venous return to the heart leading to a slowing in the circulation to vital parts of the body is the important mechanism involved in shock. The secondary effects resulting from this should be intensively studied since they lead to the irreversibility of shock.

Production of Experimental Shock in Dogs by Use of Venous Tourniquets

DR CHARLES C SCOTT and E BROWN ROBBINS, BS Indianapolis By applying pneumatic venous tourniquets to both thighs of dogs swelling results accompanied by fall in blood pressure and reduction of blood volume. The shock which subsequently develops has the following characteristics: (1) It is irreversible without transfusion therapy. (2) The degree of shock in each animal can be adjusted at will. (3) Hemorrhage and infection are eliminated as factors and (4) complete recovery of the animal can occur with treatment.

From a series of 78 dogs a formula has been developed which makes possible the accurate determination of the duration of tourniquet application necessary in the individual animal to produce irreversible shock. The calculation is made during each experiment and depends on the degree of blood pressure fall

plus the length of time the tourniquets are applied. Thus the depth of shock can be controlled.

Plasma and solutions of gelatin and pectin have been used successfully as treatment for this type of shock.

Use of Concentrated and Normal Plasma in Shock

DR R. E. WILSON, DR S. O. LIVINGSON, MARTHA JANOTA, M.S., and DR HEINRICH NECHELES, Chicago. Shock was produced by graded bleeding in unanesthetized normal or dehydrated dogs. The severity of shock and the response to therapy were evaluated by the animal's general condition, circulating time, hematocrit, plasma volume, blood pressure, and arterial carbon dioxide content. Equal numbers of shocked animals in each group were infused either with normal (4-5 per cent) or with concentrated (15-20 per cent) canine plasma protein solutions. All animals received an equivalent amount of protein; the only difference between the two types of infusions being the total fluid volume.

Generally, following infusion, there was an improvement in blood pressure, circulating time, plasma volume and arterial carbon dioxide content. However, the response of the animals, both normal and dehydrated receiving normal infusions, was distinctly superior to that of those receiving the concentrated material, as shown by the more rapid and more pronounced clinical response. Furthermore, the blood pressure was better maintained subsequently when additional blood was withdrawn.

The arterial carbon dioxide gave the best index of the animal's condition after bleeding or infusion. Often although blood pressure, circulating time and plasma volume would return to normal levels, the carbon dioxide failed to rise above 10-25 per cent, and the animal would later die.

Despite an increase in plasma volume, the animals receiving concentrated solutions failed to survive as long as those receiving normal infusions. Apparently the gain in circulating intravascular fluid is at the expense of the extravascular and perhaps intracellular water with added damage to tissues already injured by oligemia and anoxia. In addition, rapidly infused concentrated solutions seemingly overburdened the heart for during and shortly after such infusions there often occurred a transient drop in the diastolic blood pressure and a bradycardia.

The state of hydration was important in determining the ability of an animal to withstand shock and respond to therapy. The dehydrated animals developed severe shock more rapidly than did the normal animals, and their response to therapy, particularly with concentrated solutions, was definitely inferior to that of the normal animals.

DISCUSSION

DR HEINRICH NECHELES, Chicago. When a dog or human being loses blood there is usually not hemoconcentration but hemodilution. The body tries to compensate for the loss of fluid and extracts available fluid wherever it can get it. Studies on dehydrated dogs subjected to hemorrhage have shown that available fluid decreases significantly. What happens when dehydrated dogs or human beings receive concentrated plasma or other concentrated colloidal solutions? They have to mobilize additional fluid in order to restore osmotic equilibrium of the blood. I believe, though we have no proof yet, that death may be due to dehydration of vital centers like the heart, kidney and centers of the brain. Another observation that we have made during these experiments is that with concentrated plasma, which contains large amounts of citrate, we may produce tetany. Concentrated plasma should not be used in cases that are dehydrated or in progressed shock. That brings up the advisability of using concentrated plasma in the armed forces. If we would have to transport double distilled water anyway, I wonder whether we should not use isotonic serum or plasma to begin with.

DR ELMER L. DEGOWIN, Iowa City. As some know, there is a controversy in this country among several groups of workers whether to use isotonic or concentrated plasma in the treatment of shock. The results of these experiments confirm observations made in England in the treatment of shock occurring in air raid casualties. I think there is no doubt from the evidence here presented and the work of others that isotonic solutions are better than are concentrated solutions. One word of explanation is required in view of the fact that soon there will be available to the armed forces a concentrated solution of

serum albumin for the treatment of shock. It has been realized that this is a compromise to conserve space, and directions on the packages of this product definitely emphasize the need for administering fluids either parenterally or by mouth to the patients who are under treatment.

DR R. E. WILSON, Chicago. It should be mentioned that at a recent meeting in New York Dr. C. P. Rhoads stated that the Committee on Blood Substitutes felt that hypertonic plasma solutions should be used with circumspection, particularly when dehydration is suspected. He contrasted the condition of the well hydrated patient in a hospital bed with that of the wounded soldier on the field of battle, not only is the latter often dehydrated before injury, but he loses additional fluid from his bleeding wounds and from vomiting. It is true that, in supplying blood substitutes for the armed forces, a compromise must be struck between the space allotted for storage of materials and the therapeutic efficiency of the materials used. But the ultimate consideration must be adequate and proper treatment for the wounded personnel. Consequently we should have more use of isotonic plasma protein solutions and less use of concentrated materials in the treatment of war casualties.

Experimental Studies on Burns

WILLIAM H. OLSON and DR HEINRICH NECHELES, Chicago. In previous work gastric motility was found greatly increased in most animals following body burns. Section of the vagus and splanchnic nerves did not affect this motility, but injection of atropine abolished it, suggesting at first that changes in the acetylcholine-esterase system might have occurred. Studies of the blood esterase of burned animals revealed no change.

An outstanding characteristic of burns is their immediate pressor effect on blood pressure in most experiments. A fall in blood pressure during the burn occurs rarely in a normal animal. This pressor effect appears to be due largely to vasoconstriction that causes a rise in blood pressure, although a severe loss in blood volume has occurred. These animals, although their blood pressure was relatively high, did not tolerate withdrawal of single or repeated small blood samples and often responded to this with a precipitous fall of blood pressure and even death. These animals with more or less normal or even high blood pressures were definitely in a state of shock, as shown by a high degree of concentration of the blood, low blood carbon dioxide (acidosis) and slow circulating time. One of the mechanisms responsible for this sustained blood pressure following burns may be the posterior pituitary gland, because we have been able to abolish the rise or maintenance of blood pressure following burns by hypophysectomy. Following this operation, blood pressure fell following burns, as is usually observed following traumatic shock.

The clinical application of these studies is that small doses of atropine should be given to all burned patients in order to avoid vomiting, ulceration of the stomach and so on. Secondly, blood pressure readings in burned patients may be misleading, and a normal or high reading may mask severe shock.

DISCUSSION

DR HEINRICH NECHELES, Chicago. We have done other experiments that Mr. Olson could not report. It is known from the fine experiments done at the Peking Union Medical College that there is a reflex afferent mechanism to the posterior pituitary gland. When this is interrupted, stimulation of sensory nerves will not be followed by an output of pressor substances and a rise in blood pressure. Therefore we have cut the pituitary stalk or the posterior lobe or performed total pituitectomy and have found that following this burns did not produce a rise in blood pressure. If we traumatize a limb we always see a drop in blood pressure. The pressor mechanism of burns seems to play quite a role in maintaining blood pressure until the animal dies, usually suddenly, at a level of blood pressure that may be called normal. At the same time other determinations indicated a serious physical condition of the animal, although the blood pressure was near normal. Pituitectomy may interfere with the capillary circulation, and consequent effects of burns may have nothing to do with the usual homeostatic mechanisms in shock. That remains to be shown. I believe we are dealing in part with a nervous and in part with a hormonal mechanism which both maintain or raise blood pressure in burns.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 192 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Review of Tuberculosis, New York

47 1-112 (Jan) 1943

- Development of Tuberculosis in the Apparently Healthy Adult A B Robins New York—p 1
- *Disappearance of Tuberculin Reaction in Children Under Treatment for Allergies F M Pottenger Jr and F M Pottenger Monrovia Calif—p 11
- *Tuberculin Sensitivity and Development of Tuberculosis in Nurses S Schwartz New York—p 19
- Treatment of Tuberculosis with Promin Progress Report H C Hinshaw Rochester Minn, K Pfuetze Cannon Falls Minn and W H Feldman—p 26
- *Pleural Effusions in Pulmonary Tuberculosis Clinicopathologic Study B Gordon R Charr and J W Savacool Philadelphia—p 35
- Tuberculin Reaction in Old Age P Amazon Brooklyn—p 41
- Ulcerative Tuberculosis of Stomach P H Hartz and A van der Sar, Curaçao, Netherlands West Indies—p 46
- Pentothal Sodium Anesthesia for the Tuberculous Patient V R Krueger Nopeming Minn—p 51
- Oxygen Therapy in Chronic Suppuration of Lung Report of 8 Cases A E Johnson and A Courmand New York—p 56
- Electrophoresis of Serum Serum Proteins in Tuberculosis and Other Chronic Diseases Florence B Seibert and J W Nelson Philadelphia—p 66
- *Experimental Pulmonary Tuberculosis in Dog Reinfection F D Gunn, M A Mills C C Shepard and E E Barth Chicago—p 78
- New Derivatives of Diaminodiphenylsulfone Their Therapeutic Effect in Experimental Tuberculosis of Guinea Pigs F F T Callomon with technical assistance of Loraine Groskin Philadelphia—p 97

Waning of Tuberculin Allergy—The Pottengers encountered 41 children whose tuberculin reactions changed from positive to negative while they were under treatment for bronchial asthma, hay fever and chronic bronchitis. They all were positive to the first dose of purified protein derivative at the beginning of treatment and, while under treatment, failed to react to a subsequent similar dose and in some instances to the second dose of purified protein derivative. The positive reaction of 1 other patient became negative and again positive, this shows a decided lability in the reaction. A reaction was not considered positive unless there was erythema and the induration was at least 0.5 cm in diameter. In the children who failed to react on the repetition of the first dose of purified protein derivative it must be assumed that the effect must have been brought about by improving the patient's physiologic mechanism which was probably done by changing his chemical and physical tissue reactions. If a larger amount of tuberculin had been used a reaction might have been brought about. The instability of the tuberculin reaction (allergic) may be important in explaining the fact that a certain proportion of people who do not react to the first dose of purified protein derivative will react to the second dose. It is probable too that the time when the dose is given is important in the reaction. The adrenal cortex produces substances which have an antiallergic effect, and diet increases resistance. Resistance is physiologic, and immunity is an exaggeration of the normal physiologic mechanism. Both diet and the adrenal cortex were probably factors in the phenomena reported.

Tuberculosis in Nurses—An analysis of the sensitivity to tuberculin and the later history of 270 nurses who were affiliated with the Trudeau Sanatorium from 1936 to September 1941 is discussed by Schwartz. On arrival, all graduate nurses and 77 per cent of the students were positive to 10 mg or less of tuberculin. Of the nonreacting student nurses 25 per cent became positive by the end of their affiliation. Relapse has occurred in 1 of the 10 graduate and 3 of the 6 student nurses who had pulmonary tuberculosis on arrival at the sanatorium. Lack of a previous period of treatment seemed to be the chief

factor coincident with relapse among the students. In none of the graduate nurses but in 36 per cent of the tuberculin negative and 23 per cent of the tuberculin positive student nurses who had no demonstrable pulmonary disease on entrance did pulmonary tuberculosis develop later. The reactors in whom lesions developed were originally relatively insensitive to tuberculin.

Pleural Effusions in Pulmonary Tuberculosis—The pleural effusions investigated by Gordon and his co-workers in 80 selected cases (35 at necropsy) were studied with special reference to their pathogenesis and the mechanical factors favoring progression. From the pathologic changes, which in a measure explain the clinical manifestations, it is evident that the greatest number of cases of pleural effusion complicating pulmonary tuberculosis were directly associated with extension of subpleural tuberculous lesions and that the formation of the fluid was the precursor of serious complications, even though the amount of fluid was insignificant. The more acute the tuberculous process, the more frequently was effusion a complication. The more chronic and proliferative were the tuberculous lesions, the less often and the less serious was the effusion. There was no instance of pleural fluid in pneumonococcosis complicating tuberculosis, a possible explanation for this is the tendency of pulmonary fibrosis to hold the tuberculous process in abeyance. The age of the patient had no definite bearing. However, in young patients with chronic and fibrotic lesions fluid seldom developed, and when it did it was nonpurulent though tuberculous. Sulfadiazine has been of value in controlling superimposed pyogenic infection of the fluid. Quinine and urea hydrochloride used as a sclerosing agent aids in obliterating residual pleural spaces and pleurocutaneous sinuses.

Experimental Pulmonary Tuberculosis—Gunn and his collaborators studied observable differences between infection with virulent tubercle bacilli by the bronchial route into the pulmonary parenchyma in previously infected and in primarily infected dogs. Hypersensitivity to tuberculo-protein appeared in most of the dogs within a few weeks after intrabronchial or intratesticular injection of virulent tubercle bacilli. The maximal cutaneous allergy was usually reached within sixty days. When the first dose of human or bovine type bacilli was relatively small (1 mg or less) the primary lesion usually healed completely with cicatrization, but hypersensitivity persisted for a year or longer after healing was complete. Reinfection with an equal or larger dose of virulent bacilli, introduced intrabronchially three to twelve months after the first infection, resulted in a pulmonary lesion which did not differ significantly in size, composition or ultimate outcome from the primary lesion, that is, there was no morphologic evidence of a 'primary type' and 'reinfection type' of tuberculous lesion. Caseation, calcification, cavity formation and fibrosis did not differ appreciably in the pulmonary lesions of primary infection from those of reinfection, but there was a greater tendency for caseation to occur in the regional lymph nodes of the primary complex. Differences in natural (inherited) resistance to tuberculosis and differences in the size of the dose appeared to influence the results to an important degree but under the conditions of the experiments, the effects of acquired specific immunity and hypersensitivity were comparatively insignificant.

Archives of Ophthalmology, Chicago

29 171-340 (Feb) 1943

- Aging Process in Eye and Adnexa C Berens New York—p 171
- Developmental Cataracts Results of Surgical Treatment in 131 Cases H F Falls Ann Arbor Mich—p 210
- Contact Roentgen Therapy of Superficial Malignant Lesions About Eye W E Howes and M R Camiel Brooklyn—p 227
- Thrombophlebitis of Cavernous Sinus Review of Reported Recoveries with Special Reference to Thrombophlebitis of Staphylococcal Origin W J MacNeal Frances C Frisbee and Anne Blevins New York—p 231
- Congenital Bilateral Anophthalmos Vera with Unilateral Polydactyly and Cleft Palate Report of Case A Appelbaum and M Marmelstein Carbondale Pa—p 278
- Role of the Medical Social Worker in Ophthalmologic Service Mabel Lee Price Philadelphia—p 265
- Flu and Toxicity of Ophthalmic Solution N C Elvin Brooklyn—p 270
- Kodachrome Fundus Prints New Technique D W Bogart New York—p 278
- Viruses and Virus Diseases of Eye I Properties and Nature of Viruses P Thigerson New York—p 283

Archives of Surgery, Chicago

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- *Effects of Lowering Temperature of Injured Extremity to Which a Tourniquet Has Been Applied A. Blalock, Baltimore—p. 167
- Deleterious Effects of Anoxia on Liver of Hyperthyroid Animal M. A. McIver and H. A. Winter, Cooperstown, N. Y.—p. 171
- Delayed Splenic Rupture: Clinical Syndrome Following Trauma: Report of 3 Cases with Analysis of 177 Cases Collected from Literature J. J. Zabinski and H. A. Harkins, Detroit—p. 186
- Inorganic Phosphorus Content of Serum in Shock G. W. Dunbar, Baltimore—p. 211
- Clot Resistance in Mice and Mechanism of Hemostasis J. J. Fitch, Kansas City, Kan., and A. I. Copley, New York—p. 221
- Surgical Anatomy of Internal Carotid Plexus J. Gardner, Stanford University, Calif.—p. 235
- Ice Graft Over Vitallium Tube for Bridging Gap in Common Bile Duct of Dog T. W. Ford Jr. and A. I. Chenoweth, New York—p. 245
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- Traumatic Hemorrhage of Internal Capsule A. Amstutz and N. Mitchell, Toronto, N. Y.—p. 265
- Total Circulating Plasma Proteins in Surgical Patients with Dehydration and Malnutrition: Indications for Intravenous Alimentation with Amino Acids W. I. Abbott, Cleveland, and R. C. Mellors, Baltimore—p. 277
- Anatomic Study of Venous Variations at Lower Ovary: Significance of Recurrences Following Ligations S. I. Glasser, New York—p. 289
- Intravenous Use of Vitamin K₁ Oxide W. A. Davis, H. A. Frank, A. Hurwitz and A. M. Selzman, Boston—p. 296
- Concentration of Procarine in Cerebrospinal Fluid of Human Being After Subarachnoid Injection: Third Report H. Koster, Brooklyn—p. 301

Application of Tourniquet to Extremity—Blalock's experiments to determine the systemic effects of the use of a tourniquet on an injured extremity reveal that its use should be avoided whenever possible but that if constriction is necessary the temperature of the distal ischemic and anemic part should if possible be lowered by artificial means.

Circulating Plasma Proteins in Dehydration and Malnutrition—Abbott and Mellors demonstrated that severe dehydration may exist even though vomiting has not occurred or has been minimal. They used unselected patients with carcinoma of the gastrointestinal tract or pyloric stenosis due to ulcer who had shown a moderate loss of weight and a diminished intake of food and fluid. Normal hematocrit values (erythrocyte counts and hemoglobin concentrations) and plasma protein concentrations may be obtained when dehydration is accompanied by malnutrition. In such conditions not only the plasma proteins but also the tissue proteins should be replenished. If adequate calories cannot be consumed orally intravenous or intrasternal alimentation should be resorted to. Adequate amounts of amino acids parenterally, will maintain a positive nitrogen balance when sufficient calories are given and thus an increase in the total circulating plasma proteins can be obtained.

Cancer Research, Baltimore

3 73-144 (Feb.) 1943

- Metabolism of Normal and Tumor Tissue XX. Comparison of Metabolism of Tumors of Liver and Skin with That of Tissue of Origin F. Dickens and H. Weil-Malherbe, Newcastle on Tyne, England—p. 73
- Studies in Esterase (Butyric) Activity II. Esterase Content of Livers of Mice and Its Excretion in Strains Susceptible or Insusceptible to Mammary Cancer R. G. Chittre and A. R. Karmolkar, Bombay, India—p. 88
- Testicular Tumors in Mice of Several Strains Receiving Triphenylethylene W. U. Gardner, New Haven, Conn.—p. 92
- Possible Carcinogenicity of Overcooked Meats: Heated Cholesterol, Acrolein and Heated Sesame Oil P. E. Steiner, R. Steele and F. C. Koch, Chicago—p. 100
- Diet and Epithelial Hyperplasia in Forestomach of Rats and Mice G. R. Sharpless, Detroit—p. 108
- Irradiated Benzpyrene and Inhibition of Urease Activity G. C. Mueller and H. P. Rusch, Madison, Wis.—p. 113
- Effect of *p*-Dimethylaminotoluene on Formation of Blood Proteins B. E. Kline, Madison, Wis.—p. 117

Connecticut State Medical Journal, Hartford

7 79-148 (Feb.) 1943

- Intelligent Gynecologic Examination G. G. Ward, New York—p. 81
- Management of Patient with Subarachnoid Hemorrhage W. J. German, New Haven—p. 88
- Summary of Endocrine Effects in Advanced Prostatic Cancer C. Huggins, Chicago—p. 90
- Chemotherapy in Brucellosis M. Finland, Boston—p. 92
- Sympathoblastoma in Newborn: Case Report M. R. Moore and G. H. Gildersleeve, Norwich—p. 101
- Periarthritis Nodosa: Brief Review and Case Report W. Finkelstein and P. J. Brennan, Waterbury—p. 104

Journal of Bone and Joint Surgery, Boston

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- *End Results of Bloodless Reduction of Congenital Dislocation of Hip B. Gill, Philadelphia—p. 1
- *Role of Sulfonamide Drugs in Treatment of Hematogenous Osteomyelitis J. C. Wilson and T. M. McKeever, Los Angeles—p. 41
- Thoracic Spine Fusion Method F. von Sall, New York—p. 49
- *Flexion Treatment for Low Back Pain: Indications, Outline of Conservative Management and New Spine Fusion Procedure L. W. Breck and W. C. Byrom, El Paso, Texas—p. 58
- Spondylolisthesis: Surgical Treatment and Results H. W. Meyerding, Rochester, Minn.—p. 65
- Nicola Operation for Posterior Subacromial Dislocation of Humerus H. May, Philadelphia—p. 78
- Full Active Abduction in Traumatic Paralysis of Deltoid O. S. Staples and A. J. Watkins, Boston—p. 85
- Paravertebral Abscesses Associated with Strümpell Marie Disease A. Oppenheimer, Iacona, N. H.—p. 90
- Tibial Collateral Ligament: Its Function, Its Bursas and Its Relation to Medial Meniscus O. C. Brantigan and A. T. Voshell, Baltimore—p. 121
- Results of Polymyositis in Baltimore R. E. Tenhard, Baltimore—p. 137
- Rotation Osteotomy of Ulna for Pronation Contracture of Forearm H. Milch, New York—p. 142
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- Paralytic Pelvic Obliquity: Transplantation of Origin of Hamstring Muscles to Symphysis Pubis P. M. Girard, Dallas, Texas—p. 169
- Zinc Peroxide: Valuable Adjunct in Treatment of Gas Bacillus Infection and Traumatic Wounds T. K. Holzwarth, Rochester, N. Y.—p. 171
- March Fractures H. E. Sweet and W. H. Kisner, Camp Croft, S. C.—p. 189
- Iatrogenic Possibilities of March Fractures E. Berkman, Camp Lee, Va.—p. 206

Congenital Dislocation of Hip—Gill has encountered 204 female and 49 male patients with congenital dislocation of the hip, 69 had bilateral dislocations. The dislocations of 206 were reduced bloodlessly. There were 4 patients with bilateral dislocations in whom reduction was not attempted because of extreme malformation and other congenital deformities. After all patients with faulty or incomplete records are excluded there remain 126 whose hips were bloodlessly reduced. The percentage that remained reduced after one, two, three, four, five, six and seven, eight or nine years was respectively 17.5, 43.7, 35, 26.2, 22, 21.4 and 11.9. The successive percentages are progressively lower, for during the nine years 63 patients disappeared from the clinic or their result was undetermined. However, the result in these 63 cannot be considered a failure as in many the result was perfect, excellent, good or satisfactory when they were last seen. The percentages are therefore only relative. During the nine years 48 were operated on because of redislocation and 9 were not operated on. The hips of 12 were reduced by manipulation. In 2 the result in both hips (followed ten years) was perfect, in 3 (followed thirteen to twenty-seven years) one hip remained reduced and became perfect, while the other hip became redislocated and was operated on. Thus the result in seven of twenty-four hips was perfect. The author in the past has advocated an acetabuloplasty (shelf operation) as soon as a hip redislocated or when open operation was necessary. More recent observations have led him to delay such an operation, if possible, until the fifth year, in the meantime maintaining the limb in abduction in a plaster cast or brace to preserve the relation of the head of the femur to the socket. Failure of the operation at an early age may be due to the fact that the acetabular roof is largely cartilaginous, and the operative procedure damages its blood supply and prevents its conversion into bone. This resorption of the shelf, or buttress, has not been observed in patients more than 5 years of age. In forty-two extracapsular-buttress operations, observed for three to twenty years after operation, there were only four poor results. Periodic roentgen study alone can indicate the ultimate success or failure of the operation. Bloodless reduction has resulted in normal function for 16.7 per cent of the patients and for 30 per cent of those whose end result for eight and more years was known.

Sulfonamide Drugs in Hematogenous Osteomyelitis—Wilson and McKeever studied the influence of the sulfonamides on hematogenous acute osteomyelitis in 31 consecutive children entering the Los Angeles Children's Hospital from January 1939 to December 1941. The greatest effect of the sulfonamides

was on the infected blood stream, which was usually promptly sterilized. The incidence of death and of multiple involvement of the bone was reduced by routine sulfonamide therapy. An occasional patient with mild acute hemitogenous osteomyelitis may recover with chemotherapy alone. Well timed surgical drainage of abscesses and pyogenic granulomas is not supplanted by chemotherapy in the treatment of acute osteomyelitis and it should never be assumed that recovery may or will result without drainage.

Flexion Treatment for Low Back Pain—A review of the literature suggested to Breck and Byson that flexion treatment of low backache due to a narrowed lumbar disk, regardless of whether the pain is due to a protruded disk or subluxation of the lumbo sacral or lumbar facets, is sound. Conservative flexion treatment utilizing new apparatus has been found efficient for home treatment. A new spine fusion procedure using a mortised inter-spinous bone block, has been successful in restoring the intervertebral inter-space to normal, in reducing accompanying subluxation and in giving internal fixation to routine spine fusion grafts.

Journal of Clin Endocrinology, Springfield, Ill

3 1-70 (Jan) 1943

- Thyroidal Action of Synthetic Thyroprotein F P Reimeke and C W Turner Columbia Mo—p 1
Effects of Various Thyroid Substances in Patients with Obesity S W Kalb Newark N J—p 7
Treatment of Gigantism: Observation on Pituitary Giant for Six Years L M Hursthal Boston—p 12
*Use of Adrenal Extract in Fever Therapy A Edelmann D I Mahanna L A Lewis I S Thatcher and F A Hartman Columbus Ohio—p 20
Diabetes Mellitus Without Other Endocrine Manifestations in a Case of Tumor of Adrenal Cortex R G Sprague I T Priestley and M B Dockerty Rochester Minn—p 28
Control of Diabetes Mellitus H J John Atlanta Ga—p 31
Endocrine Aspects of Hypertension M A Goldzieher and S Salmowitz New York—p 37
Comparison of Methods Used in Determining Time of Ovulation F E D'Amour Denver—p 41

Adrenal Extract in Fever Therapy—Edelmann and his co-workers tried to determine the underlying factors that caused adrenal extract to alleviate or reduce the severity of many of the ill effects (weakness, nausea, vomiting and herpes) of hyperpyrexia. The 12 subjects studied were suffering from syphilis of the central nervous system. They were treated once a week for ten weeks. Adrenal extract 6 cc was injected intramuscularly immediately after the first sample of blood was withdrawn and 4 cc after the patient was removed from the cabinet during control periods; placebos were injected. It appeared that adrenal extract prevented or reduced the fall in plasma sodium in some instances, had no effect on plasma potassium and may or may not have affected the plasma chloride. It appeared to have a decided effect in reducing fatigue and the rate of recovery after one or two treatments. In the results of five treatments with extract and the five without extract of each patient are averaged it is seen that the reaction is improved with extract. This was true whether the extract was used in consecutive or in alternate treatment. The first two fever treatments were tolerated better than subsequent treatments without extract. Although extract favorably affects fatigue and recovery the first time it is used, its effect is greater in subsequent treatments. The blood sugar fell in every instance in which it was determined when extract was not administered. When either extract or desoxycorticosterone was given the blood sugar rose somewhat. Extract caused a reduction in the concentration of sodium in the sweat. The total potassium excreted was reduced in some instances when extract was given. The results with total chloride were similar to those with total sodium. There were no significant variations in total protein, albumin, globulin and fibrinogen. The frequency and intensity of the other ill effects were also favorably affected. Desoxycorticosterone acetate had no beneficial effect. The retention of sodium when adrenal extract was given was insufficient to account for the amelioration of the unfavorable clinical reactions to fever therapy. It is suggested that extract may act on the central nervous system.

Journal of Experimental Medicine, New York

77 97-194 (Feb) 1943

- Immunologic and Electrophoretic Comparison of Antibody to C Polysaccharide and C Reactive Protein of Acute Phase Serum E Perlman J G M Bullowa and Ruth Goodkind New York—p 97
Swine Lungworm as Reservoir and Intermediate Host for Swine Influenza Virus III Factors Influencing Transmission of Virus and Provocation of Influenza R E Shope Princeton N J—p 111
Id IV Demonstration of Masked Swine Influenza Virus in Lungworm Larvae and Swine Under Natural Conditions R E Shope Princeton N J—p 127
Complement Fixation with Neurotropic Viruses W P Havens Jr D W Watson R H Green G I Lavin and I E Smadel New York—p 139
IS Antigen of Vaccinia III Physical Chemical Properties of LS Antigen and Some of Its Degradation Products T Shedlovsky A Rothen and J E Smadel New York—p 155
Id IV Chemical Analysis of LS and Effect of Chymotrypsin on LS J E Smadel C L Hoagland and T Shedlovsky New York—p 16
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Allergenic Relationship of Pollens of Lamiaceae and Giant Ragweed to Several of Their Botanic Relatives I A Simon Louisville Ky—p 185

Journal of Nat Cancer Inst, Washington, D C

3 227-348 (Dec) 1942

- Induction of Leukemia in Mice by Methylcholanthrene and N Raves D P McEndy Mary C Boon and I Furth—p 227
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Relationship Between Lethal Yellow (AY) Gene of Mouse and Susceptibility to Induced Pulmonary Tumor W E Heston—p 30
Technic Suitable for Quantitative Studies on Mammary Tumor Inoculation of Mice H B Anderson M B Shimkin and W R Bryan—p 309
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Intestinal Adenocarcinoma and Intra Abdominal Hemangioendothelioma in Mice Ingesting Methylcholanthrene White and H L Stewart—p 31

Journal of Pediatrics, St Louis

22 1-134 (Jan) 1943

- Studies on Measles IX Results Following Inoculation of Children with Egg Passage Measles Virus J Stokes Jr Philadelphia G C O'Neil Omaha M F Shaffer G Rake New Brunswick N J and Elizabeth P Maris Philadelphia—p 1
*Id X Results of Chance and Planned Exposure to Unmodified Measles Virus in Children Previously Inoculated with Egg Passage Measles Virus Elizabeth P Maris Philadelphia G Rake New Brunswick N J J Stokes Jr Philadelphia M F Shaffer and G C O'Neil Omaha—p 17
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Is Breast Milk Adequate in Meeting the Thiamine Requirement of Infants Elizabeth M Knott Sarah C Kleiger and F W Schlutz with technical assistance of G Collin Chicago—p 4
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Role of Colon Organism and Their Toxins in Epidemic Diarrhea of Newborn Infant W B McClure Toronto Canada—p 60
*Effect of Sulfathiazole in Treatment of Diarrhea in Children F Ruben M Kaplan M P Borovik and M I Blatt Chicago—p 70
Vitamin K in Hemorrhagic Diarrhea of Newborn Infant C E Snell with technical assistance of Winnifred Nelson Toronto Canada—p 71
Vaginal the Physical Condition of Children I Case Demonstration of Failing Growth and Determination of Parathyroid Method N C Wetzel Cleveland—p 72
The Families of the Child Research Council Study of Families Whose Children Are Similar to Those in Urban Pediatric Practice Dorothy Greene Dunlop Denver—p 111
The Pediatrician and the War Age a Factor in Susceptibility of Young Worker to Toxic Substance W M Schmidt Washington D C—p 121

Studies on Measles—Stokes and his colleagues inoculated 250 supposedly susceptible and 5 presumably unsuitable children with measles virus grown on the chorioallantois of the developing chick embryo for three to six serial passages. The inoculation was by intranasal drip, inhalation, intradural

or subcutaneous injection. Typical reactions of extremely mild measles occurred in most of the inoculated children, that is, with Koplik spots, rash, fever, conjunctivitis and coryza but rarely with cough or malaise. Because of the nature of the reactions the measles virus as inoculated was considered to be modified and to produce an attenuated disease. The passage of the attenuated measles virus again through human beings from evidence obtained by a single human passage through several 'contact control' children, showed that it did not regain its virulence by such passage. There were no significant differences in the reactions to different routes of inoculation, to two different methods of preserving the virus material or to different dilutions of the inoculum.

Studies on Measles—According to Maus and her colleagues, 22 children who had been previously inoculated with egg passage measles virus were exposed by chance up to one year after their inoculation to children with active measles. Typical measles developed in 3 mild measles in 1, an extremely mild disease distinguishable with difficulty as measles in 3 and no disease in 15. Twenty-four similarly previously inoculated children were exposed by challenging injections of blood from patients with active measles. Typical measles developed in 3, mild measles in 2, an extremely mild disease distinguishable with difficulty as measles in 5, no disease in 13, and 1 child showed a slight nasopharyngitis without fever, rash or Koplik spots. The injection into suitable control children and monkeys of the challenge material caused measles, typical for the species, to develop. The measles virus used gave sufficiently encouraging results to warrant its further trial in larger groups of susceptible children under field conditions. Forty of the 46 children inoculated appeared to be completely or partially protected.

Sulfathiazole in Treatment of Dysentery—Rubens and his associates used sulfathiazole in the treatment of 17 children who entered the Cook County Children's Hospital because of frequent watery stools containing blood and mucus. There were 29 control children. Sulfathiazole was started from two to four days after the patient's hospitalization and continued until the stools were normal in number, color and consistency and until the cultures of three weekly consecutive stools were negative. The average daily dose of the drug was $1\frac{1}{2}$ grains (0.1 Gm) per pound of body weight given in six equal doses at intervals of four hours. Nonspecific, supportive therapeutic measures, as indicated by the clinical condition, were employed. The 8 patients with clinical dysentery from whose stools positive cultures of *Bacterium dysenteriae* and *Salmonella* were obtained responded better to sulfathiazole than the 9 clinically identical patients whose stool cultures were negative. The ratio of the duration of disease after treatment was started is two and nine-tenths to four and seven-tenths days. The duration of diarrhea was shorter in the 8 patients after sulfathiazole was started than it was in the 13 similar patients treated identically but without sulfathiazole. The ratio of days of diarrhea after sulfathiazole was started was two and nine-tenths to eight and eight-tenths. Therefore sulfathiazole appeared to have definite value in the treatment of patients whose stool cultures were positive for dysentery or *Salmonella* organisms, but no statistically significant effect was demonstrable in those whose stools were negative for the organisms.

Kansas Medical Society Journal, Topeka

44 1-36 (Jan) 1943

- Fundamentals of Psychiatry. IV. Types and Classification of Mental Disorders. W. C. Menninger, Topeka—p. 1
 *Tannic Acid Jelly and Silver Nitrate Dressing for Wounds. M. A. Walker, Kansas City—p. 5
 Note on Platelet Counting. J. L. Lattimore and Lois Gnagy, Topeka—p. 6
 Medical Care for the Indigent. R. W. Callahan, Topeka—p. 8

Tannic Acid Jelly and Silver Nitrate Dressing for Wounds—Walker suggests the use of tannic acid jelly and then a 10 per cent solution of silver nitrate as a rapid dressing to simulate the natural scab formed by coagulation and drying of blood and tissue fluid. The method fulfills satisfactorily the requirements of hemostasis, antiseptics, protection, splinting and appearance. The dressing is inexpensive, is easy to apply, may be reinforced by subsequent applications and is particularly useful in sites at which gauze is difficult to apply. Its use would

greatly decrease the need for gauze and adhesive tape. The laceration, abrasion, excoriation or other similar wound is cleansed, the skin is drawn together if necessary, tannic acid jelly is applied to the wound, the excess is removed after a few minutes and the 10 per cent solution of silver nitrate is applied. The film that results is an entirely satisfactory dressing.

Nebraska State Medical Journal, Lincoln

28 33-64 (Feb) 1943

- *Surgical Relief of Intractable Pain. W. T. Peyton, Minneapolis—p. 36
 Athletic Injuries. M. H. Hobart, Evanston, Ill.—p. 44
 Atypical Pneumonia of Unknown Etiology. So Called "Virus Pneumonia." J. Conlin, Omaha—p. 47
 Diagnosis of Virus Pneumonitis in Infancy. J. L. Gedgoud, Omaha—p. 51

Surgical Relief of Intractable Pain—Peyton states that for the relief of intractable pain at the University Hospitals 59 patients received seventy-eight subarachnoid injections of alcohol between January 1935 and January 1941, 9 had rhizotomies, 5 had tractotomies and 16 had chordotomies performed between July 1937 and January 1941. Unless the relief obtained, whether complete or partial, persisted until death or for at least two months in those surviving that long, the patient was classified as having no relief. Of the 59 patients having subarachnoid injections of alcohol 33 obtained complete relief, 15 partial relief and 11 no relief. Of the 9 in whom rhizotomy was done 7 were completely relieved and 2 had partial recurrence of pain several months after rhizotomy. The 5 patients on whom tractotomy was performed obtained complete relief. A postoperative ataxia of 1 patient disappeared in two weeks. Complete relief was obtained by 81 per cent of the patients having chordotomy for the relief of pain from incurable cancer.

Surgery, St. Louis

13 1-176 (Jan) 1943

- Sympathectomy in Treatment of Peripheral Vascular Disease. H. B. Shumacker Jr., Baltimore—p. 1
 Measurement of Circulation Rate. Review of Methods. C. J. Bellis, Springfield, Mo.—p. 27
 *Circulation Rate After Operation, with Special Reference to Effect of Position. C. J. Bellis, Springfield, Mo., A. K. Doss, Fort Worth, Texas, and C. B. Craft, Bozeman, Mont.—p. 35
 Sequelae of Transfixation of Bone. R. Anderson, Seattle, and D. L. Linlyson, Price, Utah—p. 46
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 Effect of Intraperitoneal Injection of Gastric, Strangulated Intestinal and Appendiceal Loop Content on Leukocyte Count. F. C. Hill and B. J. O'Loughlin, Omaha—p. 87
 *Treatment of Small Bowel Obstruction. Procedure Used at University of Minnesota Hospitals. C. Dennis and S. P. Brown, Minneapolis—p. 94
 Penetrating Gunshot and Stab Wounds of Abdomen. Review of 336 Cases. J. E. Hamilton and E. Duncan, Louisville, Ky.—p. 107
 *Conservatism in Surgical Management of Acute Regional Enteritis. H. G. Smyth, Charleston, S. C.—p. 122
 Operative Cholangiography. R. B. Bettman, W. J. Trannenbaum and R. A. Arens, Chicago—p. 131
 Effect of Ligation of Arteries of Stomach on Acid Gastric Secretion and on Endoscopic Appearance of Gastric Mucosa in Dog. J. A. Layne, Great Falls, Mont., and G. S. Bergh, Minneapolis—p. 136
 Femoral Hernia. Description of a New Operative Procedure. S. W. Moore, New York—p. 145
 Acute Subdural Hydroma Simulating Syndrome of Extradural Hemorrhage. M. Scott, Philadelphia—p. 152
 *Thymus in Myasthenia Gravis. Observations on Normal Anatomy and Histology of Thymus. H. E. Sloan Jr., Baltimore—p. 154

Circulation Rate After Operation—Using the sodium cyanide method, Bellis and his associates determined the cubital to carotid and ankle to carotid circulation time in 191 cases about twenty hours preoperatively and postoperatively. Because the patient seems to respond better to a second stimulus of sodium cyanide than to a first, the response to injection was first determined from one of the cubital veins, and following an interval of five minutes an injection into one of the veins of the ankle was made. In no instance was the patient informed of the response expected. Occasionally the response was associated with symptoms suggestive of motor irritation which lasted less than a minute, in some slight temporary nausea was present.

but no alarming sequela ensued. None of the solution should be injected extravascularly, as local necrosis may follow such an accident. Usually the cubital vein to carotid and ankle vein to carotid time was shortened after major surgery. The average preoperative cubital vein to carotid and ankle vein to carotid body time of the 191 patients was seventeen and thirty-six seconds and the postoperative time was fourteen and thirty-two seconds, respectively. Circulation rates varied widely in patients with apparently normal circulatory systems. Acceleration of the blood flow postoperatively was probably related to the increased metabolic demands of the patient. Gravity retards the flow of blood from the upper and lower extremities, either when the position of the extremity is changed or when the longitudinal axis of the entire body is altered. Fowler's position delayed the return of blood from the lower extremities. The ankle vein to carotid circulation rate was shortened by active motion of the foot or toes and by elevating the extremity.

Therapy of Obstruction of Small Intestine—From June 1938 to April 1942, 130 patients with obstruction between the ligament of Treitz and the cecum were treated at the University of Minnesota Hospitals. The mortality in 110 was 15.5 per cent, the remainder were patients in whom obstruction of the small intestine was a minor incident in their death. At first it appears that less emphasis is being placed on conservative therapy at the clinic than was the case at the time of the last report in 1939. The reason for this, Dennis and Brown point out, is largely the success that has attended anastomosis in the presence of pronounced obstruction and intestinal gangrene, when performed by the closed technic. As the intestinal bacterial count can be reduced by the preoperative oral administration of succinylsulfathiazole in elective operations, the closed anastomosis with the local implantation of sulfathiazole finds its field of greatest usefulness in emergency obstruction cases. Only by the intelligent and combined use of the improved methods of intubation of the small intestine and of the newer surgical methods can further reductions in the 18 to 20 per cent mortality be accomplished. This is one fourth the mortality rate of two decades ago. Treatment consists in proper water and salt administration, decompression of the distended intestine by nasal tube or by catheter enterostomy if the tube is inadequate, parenteral administration of sugar, plasma and the like for a complete metabolic balance, resection of a gangrenous intestine and late operative restoration of intestinal continuity if the obstruction fails to relent spontaneously.

Conservatism in Surgical Management of Acute Regional Enteritis—Smithy believes that radical treatment is not indicated for patients in whom acute regional enteritis is initially encountered at a laparotomy for an acute abdominal condition. Only the phase of regional granulomatous inflammation of the intestine which is acute or subacute when first seen and which demands celiotomy at the time of hospitalization is considered. The 5 cases of acute regional enteritis reported by him were managed by simple exploration and appendectomy, and in none has the disease progressed. A strong tendency toward spontaneous healing is present in certain instances of acute regional enteritis. In 1 of the cases prompt healing followed primary closure of a perforated cecum in the presence of an acute process. Progress from an acute to a chronic condition under observation and thorough preoperative preparation by general supportive measures, transfusions and enteral chemotherapy is far more desirable than radical resection without preparation in an acute case. Appendectomy is incidental in the conservative form of surgical treatment, if the appendix is not removed it is eventually involved by acute granuloma, which may cause appendiceal obstruction from edema with consequent early rupture and peritonitis.

Thymus in Myasthenia Gravis—According to Sloan, the examination of 350 thymus glands, of which 150 were removed from patients dying suddenly, has confirmed the well known facts about the anatomy, histology and involution of the thymus. Fourteen of the 150 thymus glands contained lymphoid follicles with germinal centers in the medulla. The thymus glands of 10 patients with myasthenia gravis were no larger than many apparently normal glands. Examination of their thymus glands none of which contained a tumor removed at operation revealed that there was some age involution, an increase in the number

of lymphocytes, in 7 an abnormal number of lymphoid follicles with germinal centers in the medulla, no epithelial hyperplasia and no constant change in the character and number of the Hassall corpuscles. At postmortem study there was no generalized lymphoid hyperplasia in the thymus glands from 6 patients with myasthenia gravis who had not been operated on. The thymus glands of 3 of 7 individuals with Addison's disease showed changes like those in myasthenia gravis. The glands of 5 acromegalic persons lacked involution, in addition 2 of the glands showed the changes found in myasthenia gravis. Of the 20 thymus glands examined from individuals with hyperthyroidism involution was lacking in 18 and in addition the changes in 5 were like those in myasthenia gravis.

Surgery, Gynecology and Obstetrics, Chicago

76 129-256 (Feb.) 1943

- Correlation of Gastroscopic and Pathologic Findings in Gastritis E. B. Benedict and T. B. Mallory Boston—p. 129
Method of Colectomy for Desperate Cases of Ulcerative Colitis H. Devine Melbourne Australia—p. 136
Postmetastatic Survival of Osteogenic Sarcoma K. Speed Chicago—p. 139
*The Gastric Mucosa as an Endocrine Gland R. H. Abrahamson and J. W. Hinton New York—p. 147
Surgical Treatment of Pilonidal (Dermoid) Cysts Study of 100 Consecutive Cases of Excision and Primary Closure S. C. Woldenberg and W. S. Sharpe New Orleans—p. 164
Surgical Treatment of Infantile Hydrocephalus T. J. Putnam New York—p. 171
Nontuberculous Empyema Thoracis in Children J. K. Berman Indianapolis—p. 183
Injuries of Parietes and Extremities S. L. Koch Chicago—p. 189
Adenomiosis of Uterus O. A. Brines and J. H. Blain Detroit—p. 197
Rapid Preparation of Eyesockets J. Penn and L. Brown Johannesburg South Africa—p. 204
Limits Plastica Type of Carcinoma O. Saphir and M. L. Parker, Chicago—p. 206
Total Abdominal Hysterectomy H. L. Foss and J. R. Babcock Danville Pa.—p. 214
Acute Suppurative Tenosynovitis of Hand J. E. Flynn Boston—p. 227
Modified Mikulicz Resection for Carcinomas of Colon T. E. Jones F. R. Bondi and R. E. Brubaker Cleveland—p. 236
Volvulus of Sigmoid D. Metheny and H. E. Nichols Seattle—p. 239

The Gastric Mucosa as an Endocrine Gland—Abrahamson and Hinton have followed 21 men and 4 women with roentgenographically positive peptic ulceration who were taking orally combinations of $\frac{1}{2}$ to 1 grain (0.032 to 0.065 Gm.) of thyroid three times a day and $\frac{1}{60}$ grain (0.001 Gm.) of thyroxine intravenously once a week. To confirm specifically the action of these drugs on the gastrointestinal mucosa and to eliminate a rise in the basal metabolic rate some of the patients were placed on dimetrophenol. At the end of three months 6 patients were cured, 4 both symptomatically and roentgenographically, and 5 were symptomatically improved but roentgenograms remained positive. During the following year 7 patients had a recurrence of acute symptoms and 1 a perforation. Several of these patients improved but later were unimproved and 2 came to operation. No difference was noticeable in those placed on thyroid and those placed on dimetrophenol. To ascertain the effect of estrogens on the activity of the gastric and the upper intestinal mucosa, 29 men with peptic ulceration of the duodenum were placed on various doses of theelin in oil. Thirteen to thirty-one intramuscular injections into the buttocks of 6000 to 50,000 international units were given daily. The men were followed up for one to five years. The only conclusion to be drawn from this therapy was that it caused a higher percentage of remissions in chronic duodenal ulcer (which lasted five to ten months) than is usual in controls. Of greater importance than the subsidence of symptoms in 82.1 per cent is the healing of the duodenal lesion in 42.8 per cent. This change occurred (as evidenced roentgenographically) in the presence of definitely increased free and total acidity. The conception that the gastric mucosa is a gland is presented and therefore that it is liable to influences similar to those which control the function of other endocrine glands. There are decided differences in blood hormone content between the sexes. These differences help to explain the sex discrepancy and age incidence in gastric carcinoma and benign gastroduodenal lesions. Further clinical and experimental work along these principles may throw further light on the problems of etiology, diagnosis and therapy of gastric carcinoma.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Simple case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

23 277-344 (Dec) 1942

- Hyaluronidase and Polysaccharide from Tumors. A Pirie. p. 277.
Disturbance of Nucleic Acid Metabolism Produced by Therapeutic Doses of X and Gamma Radiations. Part I. Methods of Investigation. I. S. Mitchell. p. 285.
Id. Part II. Accumulation of Pentose Nucleotides in Cytoplasm After Irradiation. I. S. Mitchell. p. 296.
Id. Part III. Inhibition of Synthesis of Thymonucleic Acid by Radiation. I. S. Mitchell. p. 309.
Preliminary Description of Preparations of Some Viruses Causing Tobacco Necrosis. I. C. Bowden and A. W. Pirie, with an Addendum on Examination in Ultracentrifuge. A. G. Ouston. p. 311.
Addendum. Examination in Ultracentrifuge. A. G. Ouston, with technical assistance by W. Weir. p. 328.
Hippuric Acid Synthesis as Test of Hepatic Function. I. B. Remue. p. 329.
Absence of Seasonal Influence on Kous No. 1 Salmon in Young Chick. I. G. Carr. p. 339.

British Journal of Ophthalmology, London

27 49-96 (Feb) 1943

- Fluid Entry of Primary Symmetrical Fatty Corneal Dystrophy. J. A. Conway and A. Loewenstein. p. 49.
Mustard Gas Keratitis Under Constant Observation for Period of Twenty Years. Case. J. J. de Conway. p. 54.
Hemangioma of Orbit Removed by Operation. F. Crawford. I. I. King and H. W. Rodgers. p. 61.
Ocular Complications in Relapsing Fever. J. B. Hamilton. p. 68.
Notes on Forms of Keratitis Presumably Due to Virus of Herpes Simplex. I. B. Hamilton. p. 80.

British Journal of Urology, London

14 153-216 (Dec) 1942

- Posterior Wall of Prostate Gland. D. MacLeod. p. 151.
Further Note on Fetal Drainage. C. Wells. p. 172.

Lancet, London

1 97-128 (Jan 23) 1943

- Idiopathic Hemorrhax. A. I. Edwards. p. 97.
Local Chemotherapy in Experimental Lesions of Eye Produced by *Staphylococcus Aureus*. J. M. Robson and G. I. Scott. p. 100.
*Tropical Eosinophilia. R. J. Weingarten. p. 103.
Hepatosplenomegaly with Other Clinical Reactions to Sultriprydine. H. A. Williams. p. 105.
*Red Cell Suspension Transfusions. J. Watson. p. 107.
Pentothal Sodium Anesthesia for Cystoscopy. I. N. Blusker and J. H. Dixon. p. 111.

Tropical Eosinophilia—A new disease entity apparently peculiar to certain parts of India is described by Weingarten. The disease is characterized mainly by severe spasmodic bronchitis with paroxysms of coughing, leukocytosis, loss of appetite, loss of general strength and a decidedly high eosinophilia. At first (in 1934) an allergic state was thought the most likely explanation, but as more instances occurred the features of the disease argued against allergy. All but 3 patients seen during five years of consultant practice in Bombay lived near the sea. Not a single instance of the disease has been encountered by the author among the stationary inland population of India which has a dry climate with extremes in summer and winter. Though often the disease lasts for years, it is benign. There has been no opportunity to study a case at necropsy. Previously the diagnosis and treatment were either for pulmonary tuberculosis or chronic bronchial asthma. Only a leukocyte and a differential count can confirm or exclude the disease. In 1936 1 of the patients already under observation contracted syphilis and neoarsphenamine was given. His leukocyte count after four injections had fallen from 64,200 to 7,800 and the eosinophils had decreased from 71 per cent to 16 per cent. His subjective symptoms also vanished. But not until 1938 was it realized that this was no coincidence and since then patients have been systematically treated with neoarsphenamine, which proved to be a quickly acting specific. Injections were given every fourth day usually in a course of six, two each of 0.15, 0.3 and 0.45 Gm. The drug was dissolved in a 10 per cent solution of calcium gluconate to which 2 cc of a preparation of ascorbic acid was added. No untoward reactions were noticed. After the first two or three injections there is a tendency for

a further slight increase in the total leukocyte count as well as in the percentage of eosinophils, later they diminish abruptly, in some even before five or six injections have been given and in others only after the end of the course. Clinical symptoms usually completely disappear after the third injection. Patients treated in this way continue in good health.

Erythrocyte Suspension Transfusions—Transfusion of the erythrocyte suspensions prepared from the blood cells that remain after the plasma is removed is stated by Watson to be extremely useful in increasing the oxygen carrying capacity of the blood. Forty-six transfusions of the erythrocyte suspension have been given to 22 adults with anemia after hemorrhage, pernicious anemia, renal calculus, aplastic anemia, acute hemolytic anemia and chronic anemia. Patients usually reported that they felt better, had more energy and took a greater interest in their surroundings. The patients appeared to derive as much benefit (judged clinically) from an erythrocyte suspension transfusion as from a whole blood transfusion. No simple relationship held between the concentration of the erythrocyte suspension and the expected rise of hemoglobin in the recipient but when the aim of the transfusion was to increase the oxygen carrying power of the blood the benefit derived from a transfusion, in any instance, was directly related to the erythrocyte content of the fluid transfused. Group O blood should be used for making the suspensions, especially when such erythrocytes are available as a by-product of blood plasma separation. Suspensions should not be warmed before administration. A Riddell's pump should be utilized when concentrated suspensions are transfused. The maximum transfused to any outpatient should not exceed 1000 cc on any one occasion. When a large volume of group O erythrocyte suspension transfusions are administered to patients with other than group O blood, the risk of a reaction due to the transfusion of large quantities of isoagglutinin is reduced. The utilization of the suspensions for transfusion should reduce the calls made on blood donors.

Medical Journal of Australia, Sydney

1 1-22 (Jan 2) 1943

- Experiences of Salt Deficiency. J. M. Flattery. p. 5.
*Potato Diet in Peptic Ulcer. L. J. J. Nye. p. 7.

Experiences of Salt Deficiency—Flattery's studies of two years of an illness in navy men following exposure to a high atmospheric temperature, attributed to a salt deficiency through excessive and profuse sweating in a hot, humid, windless, enervating climate of the tropics, show that actually, even at rest (and apart from personnel working in the engine and boiler rooms), every person has periods of profuse and continuous sweating. The types of illness encountered were heat exhaustion, gastrointestinal illness and heat cramp. Sodium chloride to be of any use must be taken as an organized prophylactic measure and rigidly adhered to. The practice was instituted that every officer and man on the ship should take $\frac{1}{2}$ teaspoon of salt in water twice a day. On one ship the experiment of putting salt in the drinking water was bitterly resented. The educational method was much better. No ill effects of heat occurred when the routine was faithfully carried out. When salt was administered to affected patients, the response to treatment was almost immediate. The taking of $\frac{1}{2}$ teaspoon of salt in water twice a day should be instituted for all ships serving in the tropics, for ships during their passage through tropical areas (especially troopships) and also for all personnel living and stationed in tropical areas ashore.

Potato Diet in Peptic Ulcer—With the exception of the relatively few persons who are allergic to it, potato is an ideal food for patients with peptic ulcer. According to Nye, potatoes possess excellent food qualities, their caloric value is 25 calories per ounce (old, boiled potatoes), while that of milk is 19 calories per ounce. They are rich in minerals and in vitamins A, B₁ and C. The vitamin C content, which is greater than that of milk, makes potatoes especially valuable in the treatment of ulcer, since vitamin C exerts an important healing influence on wounds. Potatoes have an alkaline reaction and therefore assist in the neutralization of acid. When mashed with milk and butter potatoes form a bland, palatable food, which to most patients is a welcome addition to the usual list of monotonous milk foods. In the first stage the author advises two or more

potato feedings daily depending on the choice of the patient. For the patient's permanent diet potatoes should as much as possible be substituted for bread which has an acid ash (white bread contains 4 cc of tenth normal acid and wholemeal bread 17 cc per ounce). Many patients who were intolerant to milk have been successfully treated with a diet consisting mainly of potatoes. Potatoes are digestible. The popular fallacy that the skin of the potato contains most of the vitamins is erroneous. Recent investigation has shown that these increase in quantity toward the center of the potato. Of importance is the fact that much more food value is retained in the potato when it is baked in the skin.

Presse Medicale, Paris

50 217-240 (Feb 25-28) 1942

- *Sensations Provoked After Amputation and in Hemiplegia by Sympathetic Anesthesia and by Intra-Arterial Injection of Procaine Hydrochloride in Relation to Phantom Limb. R Leriche—p 217
- *Nervous Accidents or Artificial Pneumothorax. Segmental and Distal Paralysis. Sequel of Hemiplegia of Pleural Origin. J Vidal—p 217
- Traumatic Sciatica. Frequency. Treatment and Medical-Legal Consequences. S de Seze—p 219
- Small Epidemic of Bouilland's Disease. C Blancardi and A Simonet—p 222

Sensations Provoked in Phantom Limb and in Hemiplegia.—Leriche reports 3 cases in which anesthesia of the sympathetic or intra-arterial injection of procaine hydrochloride provoked peculiar sensations. The first patient had undergone amputation of a hand in 1917. He experienced hallucinations of pain in 1937 after twenty years of normal life during which time he had never had perceptions of the absent hand and wrist. The stump was cold. The terminal cicatrix slightly below the middle third was soft and not indurated. There was no definite neuroma but palpation of the median and cubital nerve terminations was painful. Infiltration of the stellate ganglion with procaine hydrochloride was followed by a feeling of heat which descended down the arm, the forearm and into the hand. The patient was surprised to feel his hand hot and burning. The sensation subsided after a short while but on the following day and on the day after when infiltration was repeated the same sensations were experienced. The second patient had had his arm amputated in its superior third. He complained of excruciating pain on the inner aspect and the fingers of the absent hand. Intra-arterial injection of procaine hydrochloride produced a feeling of heat in the hand and the patient had the sensation as if movements of the fingers were interfered with by a swelling. The third patient a man with hemiplegia complained of a painful anesthesia and contracture. Following injection of procaine hydrochloride into the subclavian artery he experienced a sensation of heat in the arm, forearm and hand and two hours later was free from pain. Injection of procaine hydrochloride into the femoral artery was followed by a similar sensation of heat in the thigh, leg and foot along the exact course of the arteries. This is a curious phenomenon in a person with hemiplegia although otherwise the sensation would be normal. The author concludes that these cases suggest a new approach to the study of deep sensitiveness.

Nervous Accidents of Artificial Pneumothorax.—Vidal points out that statistics on nervous accidents complicating the induction of artificial pneumothorax are quite contradictory. They vary from 0 to 20 per thousand. Analysis by Vidal of fifteen statistical reports published between 1921 and 1937 and listing 153 accidents in a total of 419,029 pleural insufflations yielded the figure of 0.36 per thousand. Reports regarding their severity likewise vary, some giving a mortality rate of 7.9 per cent and others of 16.6 per cent. The author reports 7 instances of nervous complications in a total of 8,000 insufflations. This is an incidence of 0.87 per thousand. One of the 7 resulted in a fatality giving a mortality rate for this group of 14.2 per cent. The first patient a girl aged 18 had had an effective pneumothorax on the left side which had been maintained for three years. Involvement of the other lung made advisable induction of pneumothorax on the opposite side. Two attempts at insufflation of the right side resulted in a generalized epileptic crisis. There were 2 other cases in which induction of pneumothorax brought on a generalized epilepsy. One patient developed localized epilepsy and 3 hemiplegia. One of the latter patients died.

Helvetica Medica Acta, Basel

9 531-694 (Sept) 1942 Partial Index

- Sulfonamide Therapy in Obstetrics. V C Brunner—p 43
- Clinical Results of Sulfonamide Therapy in Obstetrics and Gynecology. W. Geisendorf—p 566
- *Sulfonamide Therapy in Gynecology. V R Wenner—p 577
- Development of Evolutive Forms of Thrombocytes Within Twelve Hours After Withdrawal of Blood in Dark Field Native Preparation. J A Schwendener—p 609

Sulfonamide Therapy in Gynecology.—Wenner reviews the results obtained with sulfonamide compounds in gynecologic hospitals of Switzerland. The effects in the treatment of uncomplicated gonorrhea were excellent. In the complicated cases the adnexal lesions were only slightly influenced although the gonococci disappeared as rapidly as in the simple cases. In non-gonorrheal adnexal inflammations the therapeutic results were difficult to estimate; they did not seem to be considerable. The sulfonamides produced some favorable results in gynecologic operations. The prophylactic application in the operative field of infected or presumably infected patients has given good results. The effects of the sulfonamides have been favorable in the prevention of postoperative cystitis. The improvement obtained in febrile abortion was not striking. Sulfonamide therapy proved effective in counteracting the fever following radium insertion for carcinoma.

Schweizerische medizinische Wochenschrift, Basel

72 957-996 (Sept 5) 1942 Partial Index

- Significance of Canned Food for Physiology of Nutrition. A Fleisch—p 957
- Feeding of Healthy and Sick Infants During War. G Fanconi—p 958
- *Problem of Protein Supply During War. A Jung—p 964
- Condensed Milk. C Zbinden—p 968
- Condensed Milk in War Diet. M Guggis and A Jaton—p 970
- *Canned Fruits and Vegetables. Laboratory of Canning Factory in Rorschach—p 972
- Norwegian Canned Fish. F Jakobsen—p 973
- Cocoa and Chocolate. C del Boca—p 976
- *Should Soy Beans Be Cultivated in Switzerland? G Moser—p 979

Problem of Protein Supply During Wartime.—According to Jung the daily protein requirement is between 80 and 120 Gm and accounts for from 12 to 16 per cent of the calories. Persons who consume a relatively low number of calories usually take a higher percentage of protein because a person strives instinctively to take in not less than 80 Gm of protein. Most of the animal proteins not only are of relatively high value but also improve the taste and the satiating effect of food. The animal proteins should supply, if possible, 50 per cent of the human protein intake. Animals concentrate the vital amino acids from large quantities of feed; however the production of animal proteins involves great losses of food substances. Hogs return only from 25 to 30 per cent of the calories and chickens even less. Today many products which in normal times were waste must be utilized for human consumption. In this connection the author mentions the blood of slaughtered animals, skimmed milk and its products and grades of potatoes otherwise fed to animals. A dry preparation can be made from animal blood which is suitable for human consumption. Cheese from skimmed milk can now be processed in a more satisfactory manner. If Switzerland is to become entirely self-sustaining on its rather limited acreage proteins for human consumption must be obtained from products hitherto considered suitable only for the feeding of animals. In this connection the author calls attention to an early cut and rapidly dried clover. This clover has a high protein content. Experiments on rats proved that on a diet of bread and clover meal the animals thrived even better than on a diet of bread and skimmed milk. This indicates that it is not entirely a problem of protein but that vitamin A or E may account for the more favorable effect of the clover. Much would be gained if the clover meal could be utilized for human consumption because a hectare (2.47 acre) of land will yield 1,500 kg of protein if planted with this clover only 240 kg of protein if planted with cereal grains and even less if planted with potatoes. On the other hand intensive utilization of soil requires crop rotation and this will protect the population against a too one-sided diet.

Canned Fruits and Vegetables—There is no complete agreement so far on whether canned foods have the same value as fresh foods. The question of the vitamin content is of particular interest. This report presents an investigation of the problem. Cans are made of steel plate covered on both sides with a thin layer of tin. The opinion prevails that comparatively large quantities of tin are dissolved in the conserved food and exert a harmful effect on the human organism. The inside of the can often shows discolored streaks particularly in the case of vegetables with high protein content (peas and beans). The tin is attacked by amino acids and sulfur compounds which are split off from the vegetable proteins. In this process smallest traces of the metal are being dissolved in the vegetable fluid but they have no influence on the human organism. If the quantity of dissolved metal becomes larger it gives the product an unpleasant metallic taste, but even such food is not injurious to health, because tin is a nonpoisonous metal. Animal experiments with canned food containing large quantities of tin demonstrated the harmlessness. No cases of poisoning are known that could be traced to the tin content of cans. Studies on the vitamin A or carotene content revealed that these substances are only slightly impaired by canning and storage. Experiments on the vitamin B₁ content disclosed a maximal loss of 17 per cent in canning. The vitamin B content of vegetables is not at all impaired by the canning process. Vitamin C is water soluble and particularly in alkaline solution it is readily oxidized. Vitamin C is better preserved in those foods in which the juice has an acid than in those in which the juice has an alkaline reaction. Enzymes present in fresh vegetables have a destructive effect on vitamin C after harvesting. For this reason it is important that canning be done immediately after harvesting. In canned fruits vitamin C is preserved to a considerable extent but in vegetables the loss is higher. The vitamin D content of vegetables is slight and therefore can be disregarded in the consideration of the canning process. Vitamin E has a high resistance to oxygen and to heat and presumably is not lost during canning. Canned foods promote health and are capable of protecting the organism against avitaminoses. The protein, fat and sugar contents of fruits and vegetables are influenced by canning in about the same manner as by ordinary cooking, that is, the loss in these substances is negligible.

Advisability of Planting Soy Beans—According to Moser, cultivation of soy beans gives promise of making Switzerland self sustaining during the war. Three years of observation have convinced him that if the right variety of soy bean is chosen and if it is properly treated, the cultivation will be successful, because soy beans will grow wherever grapes, maize and wheat will grow, up to an altitude of 700 meters. Climate is not the only decisive factor, the type of soil must also be considered. Acid and moist soils with a pH of less than 6 are not suitable. Agricultural experimental stations should investigate what varieties are most suitable for Switzerland. Bacteriologists should develop a nitrifying vaccine, like the German preparation "radizin," which stimulates the development of root nodules. The farmer should be given necessary information regarding soy bean cultivation, preparation of the soil, fertilization, inoculation of the seed, time, distance and depth of planting. In view of the shortage of agricultural labor, it should be emphasized that cultivation of soy beans can be done entirely with machines. The fact that soy beans require no nitrogen fertilization but, on the contrary, introduce nitrogen into the soil will be an added inducement. Potassium and phosphorus are the only fertilizers needed. The author concludes that introduction of the soy bean will cause as much change and improvement in human nutrition as did the introduction of potatoes two hundred years earlier.

Pediatrics e Puericultura, Bahia

11 137-176 (June) 1942 Partial Index

- *Familial Placement of Minors A Bahia —p 137
- *Sulfanilamide in Therapy of Glomerulonephritis E Athayde —p 165
- Staphylococcal Empyema J Peroba —p 171

Familial Placement of Infants and Minors—Bahia reviews the history of familial placement of infants and minors and discusses indications and physical, moral and educational advantages of such a placement. The system does not always

represent an ideal solution of the problem of taking care of infants or minors as well as of mothers. The natural and most human solution of the problem will be the one which does not separate the mother from her child. The solution gives rise to several problems, which should in their turn be solved by the government or by the social service. Solution of the new problems is mainly concerned with giving parents medical care or means of earning money and work and moral aid to unwedded mothers.

Sulfanilamide in Glomerulonephritis of Children—Athayde reports encouraging results from the use of sulfanilamide in 20 cases of glomerulonephritis in children. The drug was administered in doses of 1 Gm daily. Fever and edema disappeared within three days, and the urine became normal. The drug was well tolerated.

Revista de la Policlínica Caracas, Caracas

11 229-292 (Sept-Oct) 1942 Partial Index

- Gastrointestinal Ulcers. Clinical and Roentgen Study of Cases Seen in Caracas H A Landreth —p 238
- *Ascorbic Acid (Vitamin C) in Therapy of Pulmonary Tuberculosis I Roldan —p 261

Ascorbic Acid in Pulmonary Tuberculosis—Roldan advises the administration of ascorbic acid in pulmonary tuberculosis, especially in rapid loss of weight, frequent attacks of fever in the course of tuberculin and gold therapy, after operations and in pregnancy. The substance should be administered intravenously in daily doses of from 100 to 300 mg up to normalization of the ascorbic acid content of the blood. After the discontinuation of the ascorbic acid therapy the patient should receive liberal amounts of fruit juices, especially orange, lemon and tomato juices.

Semana Médica, Buenos Aires

49 1201-1260 (Nov 19) 1942 Partial Index

- Biostatistics on Sixth Outbreak of Acute Poliomyelitis in Rosario P P Piñero Garcia —p 1209
- Anesthesia of Stellate Ganglion E Lluesma Uranga —p 1220
- *Hormones in Treatment of Cardiac Neuroses E F Diaz Mindurry —p 1230
- Acanthosis Nigricans and Sympathetic Nervous System F F Gunche, L. Ippolucci and R Troncoso —p 1237
- Pulmonary Abscess Importance of Its Classification A Halperin —p 1242
- Rheumatism and Its Relations to Microclimate of Dwellings B A Moreno —p 1244
- *Cod Liver Oils Possibility of Replacing Them By Argentine Products C A Grau —p 1248

Hormones in Treatment of Cardiac Neuroses—Diaz Mindurry investigated 8 cases of cardiac neurosis. Hormones given to these patients for endocrine disturbances exerted a favorable influence on their neurocardiac symptoms. The author directs attention to the importance of endocrine equilibrium. A woman aged 37, who had undergone a hysterectomy and bilateral oophorectomy, complained of repeated attacks of palpitation and feared serious heart disease, although cardiologic examination disclosed no anomaly. Treatment with estradiol counteracted the cardiac symptoms. Several other cases are reported in which the administration of gonadal or thyroid preparations improved existing cardiac symptoms.

Vitamin Content of Cod Liver Oil and Possible Substitutes—Grau determined the vitamin contents of cod liver oil preparations available in Argentina. He lists the vitamin A contents of thirty samples obtained on the market and shows that only nine of these had the 600 international units per gram which is the minimum requirement according to the pharmacopoeias of the United States and France. The author stresses that, because the war is curtailing the import of cod liver oil from the usual sources, efforts must be made to supply the needs of Argentina from fish oils available at home. He shows that it is possible to obtain liver oils with high vitamin A content from sea bass, sole, rays and sharks, to mention only fish livers sufficiently large to justify industrial utilization. It has been shown that oils obtained from the livers of these fish contain between 900 and 2,800 international units of vitamin A per gram. To make possible the effective utilization of the liver oils of the aforementioned fish, the fisheries of Argentina must be better organized and it must be made obligatory to sell the fish only after evisceration.

Book Notices

Services to the Orthopedically Handicapped A Report of a Study Made Under the Auspices of The Trustees of the Widener Memorial School for Crippled Children and the Board of Public Education School District of Philadelphia Louis P. Hoyer Director of Study and Charles K. Hav Assistant Director of Study Boards Price 50 cents Pp 115 with illustrations Philadelphia 1942

This volume is a report of a study of services to the orthopedically handicapped made under the auspices of the Trustees of the Widener Memorial School for Crippled Children and the Board of Public Education School, District of Philadelphia. The work should be of major interest to persons engaged in vocational training or guidance and will be of minor interest to orthopedic physicians.

The authors discuss certain fundamental principles of vocational training and guidance for the orthopedically handicapped and set forth recommendations for improving programs for the physically handicapped. Although the subject matter may have general application, the authors devote most of their discussion to local problems of rehabilitation in and around Philadelphia. The reader is impressed that the authors are striving to effect improvements in the educational and vocational guidance system for the physically handicapped. These changes have a bearing on state and municipal legislation. The essentiality of having well qualified persons engaged in vocational guidance and rehabilitation and further the necessity of establishing well organized central administrative offices to carry out the operation of the programs is stressed.

In their approach to the problem of rehabilitation of the handicapped, the authors philosophy is sound. It places the emphasis on making the handicapped person self reliant cooperative and capable whenever possible of competing with other persons on an equal basis. Subjective considerations based on sympathy for the handicapped are not emphasized. Instead the emphasis is placed on the duty of society to offer facilities to the handicapped which will enable them to become socially and economically efficient members of a democratic society on their own merits. In other words the overall objective of the authors is to create a condition whereby adjustment is made in the case of the orthopedically handicapped to bring them whenever possible up to the standards of the normal group.

In the summary appearing at the end of the book, certain specific and important recommendations are listed which could well be adopted as criteria or norms for any broad program relating to the rehabilitation of the orthopedically handicapped. Of interest among these recommendations is the one dealing with provision for psychologic services to the handicapped—a type of service which has not always been given its proper important place in organized rehabilitation programs throughout the country.

Another important recommendation is that dealing with the type of instruction given under secondary education and adult education whereby the handicapped are provided instruction not only in the broad fields of education but also in specific skills that are required for jobs available to the orthopedically handicapped. The importance of this latter recommendation is apparent, since it is fundamental in at least affording an approach for the handicapped in achieving economic security or complete adjustment.

Familial Nonreaginic Food Allergy By Arthur F. Coca M.D. Medical Director Lederle Laboratories Pearl River New York. Fabrikoid Price \$3 Pp 160 with 13 illustrations Springfield Illinois and Baltimore Charles C. Thomas 1943

There is a large group of cases of food allergy in which the usual cutaneous tests do not aid in the diagnosis, many of the cases in fact present symptoms and syndromes which heretofore have not been recognized as allergic. These clinical conditions are herein grouped into a new category, which the author calls "familial nonreaginic food allergy, an unsatisfactory term offered only for the purpose of discussion and on the advice of a small group of allergists. Familial nonreaginic food allergy differs from the atopic category in that the hereditary influence is independent of the atopic inheritance the allergic antibodies are not demonstrable as they are in the atopic group (bronchial

asthma, hay fever and atopic dermatitis), many of the symptoms are not represented in the atopic group, and the allergic reaction practically always causes acceleration of the pulse rate. The importance of the new category is obvious in view of the author's estimate that at least 60 per cent of the population at times have clinical manifestations of food allergy. This book describes a new, accurate and comparatively simple diagnostic method by means of which one can determine which symptoms and syndromes are food allergic. The author places the patient on a sharply restricted trial diet for four days in order to establish the nonallergic range of the pulse rate. Other foods then are systematically added to the diet, one after another and their effect on increasing the pulse rate is carefully recorded. No food allergic range of the pulse of less than 22 beats per minute was observed in adults in cases under observation for at least five days. It was possible in most of the 51 cases studied to determine in the individual case all of the foods and other excitants of this category of allergic disease. Without exception in the first 44 cases in which the dietary treatment was completed, when the pulse rate reached the level in range recognized as normal for the individual the chief symptoms complained of completely disappeared and with them disappeared other symptoms which had not previously been considered allergic. When fully confirmed by other investigators, this diagnostic method and the dietary treatment of familial non-reaginic food allergy controlled by the pulse rate will broaden and perhaps tend to clarify the field of food allergy.

Le problème du cancer Par Charles Oberling Collection France Forever sous la direction du Professeur Henri Laugier Paper Pp 298 New York France Forever Montreal Les Editions de L'Arbre 1942

This is a well written account of the research into the fundamental nature and causes of cancer. It does not take up the control diagnosis or treatment of human cancer. The main part of the book is devoted to experimental cancer (one hundred and eighty-six pages). The other parts discuss the reasons for our interest in cancer, the evolution of the ideas about the nature of cancer, the theories of cancer and in conclusion, the question whether there are many cancers. The part on experimental cancer reviews the transplantation of cancer and the induction of cancer by various procedures and means. Unexpectedly, hardly anything is said about the cultivation of cancer cells outside the body or about the permanence of the change that takes place in a cell when it becomes cancerous and the transmissibility of that change to its descendants, generation on generation, apparently without the continued presence of the carcinogenic agent. The last section is a skilful comprehensive and withal reasonable augmentation in favor of the "virus theory of cancer" as opposed to the view that cancer is not an etiologic entity but an irreversible cellular reaction to various agents of diverse origin. The book is a striking example of literary skill and clarity in scientific writing and it will be read with profit by any one interested in fundamental cancer research. A good index would have increased its usefulness.

Mortalidad materna Estudio sobre 61 684 partos ocurridos en la Clínica "Eliseo Cantón" [años 1901 a 1940] Por el Dr. Charles Roust. Tesi del doctorado en medicina Universidad Nacional de Buenos Aires Facultad de Ciencias Médicas Paper Pp 263 Buenos Aires 1942.

Today, when a cultural and sanitary unity of all countries of the American hemisphere is of fundamental interest, this monographic study is most timely, for in it the reader will find detailed statistics on maternal mortality in the largest Latin American metropolis during the last four decades and an accurate analysis of the reasons for its sharp decline—from 22.16 per thousand deliveries in 1901 to 3.37 per thousand in 1940. The greatest drop is due to the controlling of trauma and toxemia and to a lesser extent of hemorrhage and infection. For instance death as a result of obstetric trauma was reduced from 6.65 to 0.81 per thousand that due to infection from 6.17 to 2.82 per thousand. All the other contributing factors such as nationality, evolution of gestation, pelvic deformities and length of labor are carefully analyzed. Tables and graphs add a great deal to the clarity of the thesis. This is a book that both the public health man and the obstetrician should read with considerable interest.

to know himself, his weaknesses and his nervous characteristics and to realize their effect on his ulcer. This understanding of his own reactions is most important, and the intelligent application of frequent feedings permitted thereby merely serves to counteract the effect of a wide variety of factors on his weak spot, his duodenum.

From the start the patient should realize that his ulcer is an individual problem and that he has to help in establishing the basis for the treatment. He should not feel that ulcer is a condition about which he has to feel fatalistic and hopeless. Once he is aware of his function as a detective in finding the various features of his personality, work or environment which are acting unfavorably on his ulcer he usually contributes many essential points of which he has been aware. Cure of the ulcer is dependent on the patient's protection of himself from himself in other words. Diet and antacids used in an intelligent fashion in order to prevent distress for one to two years can probably be considered to have rendered the ulcer quiescent. The evidence of the roentgenoscopic examination is of only moderate value in deciding about healing of the ulcer. If all the evidence after two years indicates satisfactory progress, however, the patient may consider himself in the third stage of treatment which involves prevention of further ulceration.

In the medical treatment of subacute duodenal ulcer it is necessary to insist on more intensive and more persistent care. The diet is liberalized more slowly, more rest is advised and in addition to the faithful use of feedings of milk between meals administration of antacids before and after meals is continued for many months and sedatives, as well as antispasmodics are prescribed for use during the first month or two of treatment after hospitalization.

Prevention of Recurrence—After the duodenal ulcer is considered healed, the patient must understand several aspects of the problem if he is to prevent future recurrences.

In the first place, his previous self analysis has shown him the ease with which his periods of sustained nervous tension, anger, worry, anxiety, excess responsibility or work may lead to acute flare-up of his ulcer. He may have learned the wisdom of avoiding such episodes. However, not every one is able to change one's life enough to avoid such strains all the time. If periods of strain cannot all be avoided, sufficient insight may be developed so that the patient can recognize the strains which are dangerous and prevent harm to himself by intelligent use of frequent feedings, antacids and sedatives during the period of strain.

In the second place, the patient must realize the danger of returning to any of his old habits which are likely to be irritating to his ulcer. He must stay away from alcoholic beverages, tobacco in all forms and the various spices, condiments and relishes which are so notoriously upsetting. Furthermore, he should make the taking of milk or milk and cream at 10 a. m., at 3-30 p. m. and at bedtime a habit which should last the rest of his life.

The fact that treatment has been successful enough so that the patient can liberalize his program and rely on his knowledge and judgment of his own ulcer to prevent further trouble serves to give him a sense of confidence and hope for the future.

SOME NUTRITIONAL PRINCIPLES OF MASS FEEDING

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Discussion in modern dietetics and nutrition occasionally leaves the impression that proper feeding and the attainment of adequate nutrition are dependent on following a set and rigid food pattern. Thus we meet with rather wide acceptance of the idea that almost every day every one should pattern his food intake somewhat along the following lines: one serving of meat, one egg, a pint of milk, a certain quantity of grain products, two vegetables, one of which is a leafy green or yellow and two fruits, one of which is citrus. We see large displays exhorting one in no uncertain terms to "eat these EVERY day," followed by a list of well selected foods known to be rich in nutritive value.

Such a plan for the general public is well conceived, for the nutritional significance of foods or food groups is not common knowledge. By following such a plan the lay person has a fair chance of attaining his daily nutritive requirements. However, for those who are more intimately concerned with nutrition it is basic to recall that nutritional adequacy is attainable by a wide variety of means and that it is not restricted to one or a few food patterns. In times and situations such as the present, when the normal wide variety of foods is decreased because of the ramifications of waging war, it becomes most important to appreciate the nutritional significance of foods and food groups, so that restriction in kinds or quantities of certain types of food may be offset by the use of other foods of similar types.

In the substitution of one type of food for another however, it is important to maintain, as far as is practicable, the nutritional value of the diet as a whole. In other words, such substitution should be made on the basis of nutritional equivalence. The principle of equivalent substitution is most easily followed if foods are grouped together on certain bases which have proved valuable in the application of nutritional principles to mass feeding, namely similar nutritive content, unique contribution to the diet or special function in the diet. In this way all foods fall into seventeen food classes, which will be discussed further in some detail.

It is becoming increasingly important for those concerned with the nutrition of the armed forces and of the civil population to think along basic nutritional lines. As a matter of fact, this is being forced on us by the sequence of events. As far as the soldier in campaign is concerned, it is apparent that, as the problems of transporting food in increasingly large quantities over long distances become more and more acute, many familiar foods will of necessity be dropped from his daily fare. Already the logistic advantages of the dehydrated, desiccated, compressed and concentrated types of food have resulted in their increased use by the soldier. With regard to civilians, as the problems of reaping crops, transportation, supplying the soldier

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and supplying other countries grow in importance so will the availability of many common foods be decreased. In turn there will be a departure from what one might, for convenience term the 'luxurious' choice of foods. With this change there should come a better realization of the ways in which adjustments and changes may be made in the ordinary diet without harmful effect. It should be recognized that certainly no one food item, and frequently no one food class can be called 'indispensable'.

The attainment of adequate nutrition depends on the provision, consumption, physiologic absorption and utilization of certain indispensable nutritional components. Foods and food classes are of importance primarily from the standpoint that they provide these components. Foods should be secondarily important because of their palatability and attractiveness which encourage their consumption in quantity and the consumption of other foods. It is true that on occasion the secondary consideration may assume equal importance with the primary. Fundamentally, however, it is the provision of a certain quantity of energy, protein, minerals and vitamins that is the important problem. It is comparatively unimportant how these nutritive components are provided, whether for example vitamin C is provided exclusively by a daily citrus fruit, by a daily leafy green vegetable or by a combination of the two. Whether one obtains one's calcium from fresh milk, evaporated milk or dried milk is not basically important, except that the general acceptability of the food product affects the amount eaten and therefore the amount of calcium obtained. It is pertinent to point out, although in a light vein, that if the wall plaster could be made palatable and esthetically desirable it might be used for the purpose of furnishing part or all of our needs for calcium. With similar reservations a rusty nail might serve as a source of iron, as might likewise drinking water which had been stored in an iron cistern. In the attainment of adequate nutrition, therefore, it is necessary to appreciate fully why, nutritionally speaking, a food is used.

It is not practical to attempt to remember the nutritional value of each food used daily by the average person. Moreover, individual nutritive values—the concentrations—are of limited importance from the aspect of practical mass nutrition. For example, strawberries are an excellent source of vitamin C in themselves, but when it is considered that the average daily consumption of strawberries over an appreciable length of time is usually very small it becomes apparent why they are in themselves rather unimportant as a significant constant source of this vitamin. In effect, this is to say that there are two equally important aspects to the attainment of nutritional adequacy—the quantitative and the qualitative. It is desirable to remember in this regard that consumption in large quantity of a food (or food class) may frequently impart nutritional importance to the food or food group concerned, even though its concentrations of nutrients may be rather low. For example, potatoes are a rather dilute food, from the standpoint of vitamins—the concentrations of vitamin C and the B vitamins are not strikingly high. Yet when considered in terms of the quantity consumed by the soldier, the potato makes a rather significant contribution to the soldier's daily intake of these vitamins.

The entire problem of interpreting dietaries is simplified by considering not individual foods but instead

food classes. On the basis of similar nutritive value, unique contribution to the diet or special use in the diet all foods can be classified into seventeen food groups as previously mentioned. These are (1) meats, fish and poultry, (2) eggs, (3) milk and milk products, (4) fats with a relatively high vitamin A content (butter and fortified margarine), (5) other fats containing little vitamin A (cooking oils and the like), (6) cereals and grain products, (7) beans and other legumes, dry, (8) sugars and syrups, (9) vegetables, leafy green or yellow, (10) tomatoes, (11) citrus fruits, (12) potatoes (Irish), (13) vegetables other than leafy green or yellow, (14) fruits other than citrus, (15) dried fruits, (16) beverages (coffee, tea, cocoa) and (17) miscellaneous. This classification has been discussed in detail elsewhere. Fifteen of these groups are nutritionally significant, although the last two namely beverages and miscellaneous, are dietetically important in that they may on occasion exert an indirect influence on nutritional considerations. After conversion to unit intake per man or per hundred men it is possible to appraise the diet nutritionally. By the use of such a plan one recognizes that what may appear to be a somewhat low intake of one class of foods may be offset by an increased intake of another class. For example, a low intake of tomato products may be offset with regard to vitamin C by an increased intake in the leafy green or yellow vegetable class or by sufficient citrus fruit or vice versa. In similar manner a decrease in the intake of leafy green or yellow vegetables may be offset with regard to vitamin A by an increased intake of liver in the meats class or by cumulative slight increases in other classes such as eggs, butter and tomatoes. In effect, then, nutritional adequacy is attainable by a wide variety of means and is not limited to any one set food pattern. For families this principle is conveniently applied on a weekly basis. The total amounts of food groups used by a family may be varied interchangeably, depending on the relative availability of foods, provided, however—and this is most important—that nutritional adequacy is maintained or not decreased appreciably. The proper technic is to determine the number of pounds (or fractions thereof) per person of each food group which has proved acceptable to the family on the basis of its food habits, level of activity, income level, environment and other factors. Once this composite picture is established variations can be introduced without adversely affecting the nutritive level of the diet, if substitution is made on the basis of nutritional equivalence. Indeed, certain types of substitution, if judiciously chosen, have the effect of actually improving both the acceptability and the nutritive value of the diet. The principle involved is illustrated in table 1 which has been prepared for use in military circles. The principles are widely applicable however.

It is obvious that the key to proper substitution is a thorough knowledge of the nutritional significance of food groups. For the Army this significance is apparent from table 2. It is unlikely that there would be any major shift in importance in terms of civilian diets since field ration A corresponds roughly to a liberal civilian diet. In table 2 is indicated the approximate contribution of food classes in terms of percentage of the daily nutrients as planned from May 1941 to April 1942 U. S. Field Ration A. The figures in parentheses illustrate the shift in importance when probable conservative deductions for preparation procedures are

applied to the levels of some of the labile vitamins, namely thiamine (in meats and potatoes) and ascorbic acid (in vegetables undergoing cooking and other preparation procedures). (Similarly deductions should be applied to other vitamins, however our present information on cooking losses is not quite as extensive for the other vitamins as it is for the two mentioned.) It is noteworthy that foods consumed in the raw state or those undergoing only slight preparation and cooking, will contribute a higher percentage of the daily intake of nutrients as actually consumed and that this increase in importance varies directly with the extent of nutrient destruction caused by preparation procedures.

Some broad conclusions are apparent from this table. These conclusions are surprisingly different from some which are commonly accepted. For instance: 1 Eggs, while contributing certain amounts of many nutritive components are actually for the soldier a good source of riboflavin only. (It must be remembered in this regard however that they are quite important in cooking and baking and therefore they obviously have a masked importance in influencing the quantitative consumption of some of the other foods.) 2 Milk products (including evaporated milk and cheese) are of importance for their contribution of protein and riboflavin in addition to their commonly accepted importance with regard to calcium and phosphorus. 3 Grain products are of importance for a number of nutritive essentials, including not only calories and the B vitamins but also protein and certain minerals. 4 Legumes, although frequently spoken of in relation to their being a good source of protein are in addition a fair source of iron. 5 Syrups and sugars contribute chiefly calories (although they may have additional importance from the standpoint of "pleasure" and in influencing favorably the acceptance of other food groups). 6 The leafy green or yellow vegetables are of importance not only for their vitamin A potency but also for vitamin C. 7 Tomatoes frequently considered to be a major source of vitamin C, may not really be so at all, they are, however, a good means of providing this vitamin because of their general popularity and the quantities in which they will ordinarily be consumed. 8 Attention should be drawn to the potato. It may be important not only for vitamin C but also for certain of the B vitamins as well as for certain minerals. In the quantities consumed by the soldier, it is a most important food in the diet. In fact, in terms of returns per acre as well as an all-round nutritional contribution, it is one of the most valuable vegetables in common use. 9 Fruits other than citrus, while sometimes of significance individually, as a group contribute mainly to the pleasure of the diet.

In passing, it might be pointed out that the chart indicates that for the soldier meats contribute significantly to nine out of twelve important nutritive components, milk products to five, grain products to eight and potatoes to two. At first glance this appears to give emphasis to the old idea that if we get sufficient meat, potatoes, bread and milk all is well nutritionally. It is at this point, however, that we must turn our attention to the problems of palatability and acceptability. It should be obvious that the day after day acceptability of a diet consisting of only these four types of food would be quite limited. The legumes, the fruits, the eggs, miscellaneous items and the other

TABLE 1—Food Substitution Chart*

Certain factors must be kept in mind in substituting one food for another in a planned menu: (a) that it is acceptable in relation to the other foods and, if possible acceptable to the majority of the command and (b) that it is nutritionally equivalent or, if not, that proper adjustments are made.

Certain foods satisfy the first requirement but not the second. In such cases it is necessary to make adjustments in the quantities or kinds of other foods that possess nutritive values displaced by the food substituted. For example, rice substituted for potatoes reduces the intake of vitamin C and certain of the B vitamins both of which tend to be low in most diets. It is desirable therefore to be sure that other foods carrying these nutrients are not low in the menu. It may be necessary to increase the amounts of foods.

A Group 12 Potatoes

Potatoes Irish

Baked, boiled (with or without skins), French fried, fried, hashed brown, lyonnaise, mashed, O'Brien, parsleyed, roast brown, salad, scalloped.

(Potatoes sweet)

Baked, boiled, candied, scalloped.

B Group 7 Legumes (Beans and Peas) Dried

Beans, kidney

Baked, boiled, soup

Beans, kidney

Baked, boiled, salad, soup

Beans, kidney

Chili con carne

Beans, lima

Baked, boiled, creamed, soup, with bacon or ham

Peas, black eye

Baked, boiled

C Group 6 Grain Products

Hominy, white

Baked, boiled

Hominy, white

Boiled

Macaroni

Baked, boiled, salad, scalloped with cheese or tomatoes

Noodles

Baked, boiled, salad, with cheese or meat

Rice

Baked, boiled, curried, pudding, Spanish, etc.

Spaghetti

Baked, boiled, Italian, with cheese or tomatoes, etc.

D Group 9 Leafy Green or Yellow Vegetables

Asparagus

Baked, buttered, creamed, salad, soup

Beans, string

Boiled, buttered, salad, Spanish

Beet greens

Boiled, buttered

Broccoli

Boiled, buttered, creamed

Brussels sprouts

Boiled, buttered, creamed

Cabbage, green

Boiled, buttered, creamed, fried, salads

Carrots

Baked, boiled, buttered, candied, creamed, fried, salads, etc.

Chard

Boiled, buttered, creamed

Collards

Boiled, buttered, creamed

Kale

Boiled, buttered, creamed

Lettuce

Salads

Okra

Baked, boiled, etc.

Parsley

Garnish, etc.

Peas, green

Boiled, buttered, creamed, salad, soups, etc.

Peppers, green

Baked, salads, sauces, stuffed, etc.

Pumpkin

Baked, custard, mashed, pie, etc.

Spinach

Boiled, buttered, creamed, salad, soups

Squash

Boiled, mashed, pie, etc.

Tomatoes, canned, fresh

Baked, grilled, salads, scalloped, sliced, stewed, stuffed, etc.

Turnip greens

Boiled, buttered, creamed

E Group 13 Other Vegetables

Beets

Boiled, harvard salad

Cauliflower

Boiled, buttered, creamed, fried, salads

Celery

Braised, creamed, salads, soups

Corn

Buttered, cob, creamed, fritters, pudding, scalloped, soups

Cucumbers

Garnish, salads, etc.

Eggplant

Baked, fried, scalloped, etc.

Lima beans

Baked, buttered, creamed, soups, succotash

Onions

Baked, creamed, fried, salads, sliced, soup, stewed

Parsnips

Baked, buttered, fried, etc.

Radishes

Garnish, salads, etc.

Sauerkraut

Baked, boiled, fried, etc.

Turnips, roots

Baked, boiled, creamed, diced, fried, mashed, etc.

1 Foods within each group may be roughly substituted for one another without seriously affecting the nutritional value of the menu. However, a notable exception is the substitution of Irish potatoes for sweet potatoes. In this case sweet potatoes do contain an appreciable amount of carotene (the precursor of vitamin A), whereas Irish potatoes are lacking in this substance.

2 From a nutritional (particularly vitamin) standpoint, foods from groups 12 and 7 (A and B) may be profitably substituted for group 6 foods (C), but not vice versa, and group 9 foods (D) may be substituted for group 13 foods (E) but not vice versa.

3 If it is necessary to substitute a food of less nutritional value for another food (as beets for spinach) then another substitution (as carrots for onions) should be effected as soon as possible to offset the former. In this way there will be the least impairment of nutritional adequacy.

4 When substituting the food groups as under paragraph 2 it is not important to readjust the substitutions as under paragraph 3 unless a more variety is desired, as the substitutions will provide additional nutrients.

* Material developed in connection with course in Food and Nutrition, Army Medical School.

classes which do not appear to be important in terms of major contribution do, nevertheless, make a minor contribution and may actually, by their effect on palatability and acceptability be the controlling factors in the complete consumption of the diet and therefore assume great indirect importance in the attainment of nutritional adequacy. We usually recognize this by stating that the well rounded diet is the one which is most likely to provide optimal nutrition.

With this background, and using the concept of varying and nonrigid quantities of food groups we may review some of the commonly accepted ideas about the nutritional importance of certain foods. As far as evaluation of the soldier's diet is concerned let us theoretically decrease or entirely remove certain of the food classes from the daily fare in order to become more familiar with the net nutritional effect and thence,

to the supply of provitamin A and ascorbic acid, and possibly of iron where the dark green leafy vegetables are concerned. It is interesting to note that at least for the soldier the planned level of vitamin A would still be much higher (owing to small quantities of liver) than that recommended by the National Research Council, and that vitamin C would also remain at acceptable levels, even after deduction for conservative probable losses in cooking. However, the decrease could well be offset, at least with regard to provitamin A, by an increased intake of such food groups as tomatoes and dried fruits. Liver is extremely high in vitamin A, another possibility would lie in increasing its intake. As far as vitamin C is concerned, tomatoes (either canned or fresh) would be valuable as replacement, and potatoes or vegetables other than the leafy green or yellow type could be used for additional quantities of

TABLE 2—Nutritional Contribution (Per Cent) of Various Classes of Foods Based on Food Prescribed for U S Army (May 1941–April 1942 Field Ration A)

Food Group	Calories	Protein	Fat	Carbohydrate	Calcium	Phosphorus	Iron	Vitamin A	Thiamine	Riboflavin	Nicotinic Acid	Ascorbic Acid
Meats—fish and poultry	277	43.3	47.1	0.3	3.5	20.9	35.0	17.1*	48.5 (34.3)	33.4	66.0	2.0 (2.7)
Eggs—fresh	25	6.7	3.9	0.1	3.6	7.0	7.5	4.9	4.2 (6.0)	9.0	0.1	()
Milk products (equivalents)	91	13.2	11.6	5.4	59.9	22.8	4.0	8.0	3.6 (5.1)	29.6	1.4	3.3 (4.4)
Butter	73	0.2	17.6		0.7	0.3	0.3	10.2	()	0.2	0.2	()
Fats—other	76	0.1	18.4	0.1				0.1	()		0.1	()
Grain products	279	21.9	5.1	38.8	11.4	17.0	16.2	0.1	23.0 (32.7)	7.7	10.0	()
Legumes—dry	23	4.6	0.5	3.4	3.5	6.0	10.3		4.4 (6.2)	3.0	2.5	()
Sugar and syrups	12.9	0.3		27.6	1.2	0.3	3.0		()			()
Vegetables—leafy green and yellow	16	2.4	0.2	2.6	6.4	3.3	6.4	46.9	3.8 (3.0)	3.9	3.9	30.3 (24.2)
Tomatoes	0.5	0.6	0.1	0.8	0.9	1.2	1.6	4.2	1.6 (2.3)	1.1	1.1	8.8 (12.1)
Citrus fruits	0.7	0.3	0.1	1.3	1.9	0.7	1.0	0.1	1.4 (2.0)	0.5	1.0	18.2 (25.0)
Potatoes	5.3	4.2		10.1	2.1	6.3	7.9	0.7	7.0 (5.5)	4.9	10.3	19.8 (13.6)
Vegetables—other	1.2	1.3	0.2	2.2	3.0	2.5	2.3	0.4	1.0 (0.8)	2.4	0.9	10.8 (8.7)
Fruits—fresh and canned	2.5	0.6	0.2	5.2	1.3	0.9	2.0	5.2	1.0 (1.4)	2.3	1.7	6.8 (9.3)
Fruits—dried	1.0	0.3		2.1	0.8	0.8	2.5	2.1	0.5 (0.7)	2.0	0.8	()
Average nutrients per man per day as planned for period	4900	128 Gm	192 Gm	400 Gm	980 mg	1920 mg	24 mg	13,500 I U	33 (2.3) mg	26 mg	29.5 mg	179 (95) mg

* Contributed almost entirely by liver † International units

Note: A daily contribution by a food of 10 per cent of the total intake of a nutrient is arbitrarily used as evidence of a major contribution to the dietary.

by deduction, with the purpose that certain foods serve in the diet as well as with the possibilities of replacing them by suitable substitution.

1 "Eat one egg almost every day." Let us remove the eggs entirely. The effect is to lower somewhat the intake of many of the nutritive components, since the egg contains small amounts of most of them. However, from the quantitative standpoint the most serious effect on the day's planned intake of nutrients for the soldier is to lower the riboflavin by about a third of a milligram. Obviously it is possible to supply the riboflavin thus removed by an increased intake of another class of food. One means of doing this would be by the addition to the diet of small extra quantities of liver, which is extremely rich in riboflavin. Other cuts of meat, usually not in great demand, are also quite rich in this vitamin. Whole grain products would be valuable, and should riboflavin be added to enriched flour this would provide another means at our disposal. Milk products, when available, would likewise fill the breach.

2 "Eat two vegetables every day, one of which is leafy green or yellow." Remove all leafy green or yellow vegetables. If it were feasible to delete from the diet this important class of foods entirely, the most serious direct nutritional effect would be with regard

to the supply of provitamin A and ascorbic acid, and possibly of iron where the dark green leafy vegetables are concerned. It is interesting to note that at least for the soldier the planned level of vitamin A would still be much higher (owing to small quantities of liver) than that recommended by the National Research Council, and that vitamin C would also remain at acceptable levels, even after deduction for conservative probable losses in cooking. However, the decrease could well be offset, at least with regard to provitamin A, by an increased intake of such food groups as tomatoes and dried fruits. Liver is extremely high in vitamin A, another possibility would lie in increasing its intake. As far as vitamin C is concerned, tomatoes (either canned or fresh) would be valuable as replacement, and potatoes or vegetables other than the leafy green or yellow type could be used for additional quantities of

this vitamin. An increase of citrus fruit would of course, be the easiest solution.

3 "Eat two fruits daily, one of which is citrus." Let us consider the possibility of an entire lack of citrus fruits. The chief loss would concern vitamin C. Ways of offsetting this are apparent from the discussion in the preceding paragraph. Furthermore, the possibility of sprouting legumes and grains as an accessory source of this vitamin should not be overlooked.

4 "Eat a certain quantity of cereals and grain products every day." Table 1 indicates that grain products are next in importance to meats for the soldier as far as supplying essential nutrients is concerned. A decrease by two thirds of the planned intake however would have its most striking effect on the caloric and thiamine levels. As far as the former is concerned it is obviously possible to supply them otherwise in the guise of fats or of sugars or syrups and the like. The thiamine which would be removed could well be furnished by a somewhat increased intake of meats or by the cumulative effect of increasing the amount of legumes, eggs and certain vegetables. It is unlikely, however that grain products will undergo a drastic decrease in the diet. It is more probable that their consumption will be increased as other foods become less obtainable.

5 "Eat one serving of meat (or fish) every day" Reduce the intake of meat. In view of the present rationing of meat it is appropriate to consider the effect of lowering the consumption of meat. Let us consider a lowering of meat intake from approximately 0.85 pound per man daily to less than one half that level—let us say to 0.4 pound, a decrease which is in the realm of theoretical possibility, although it would admittedly be at variance with the food habits and desires of the soldier. The outstanding effects would be to decrease the caloric intake by about 500, protein by about 30 Gm, phosphorus by 300 mg, iron by 4 mg, thiamine and riboflavin by 0.4 mg each and nicotinic acid by about 10 mg. As far as the calories are concerned, there are many important sources, chief among which may be named the fats, the sugars and syrups and grain products. The decrease of 30 Gm of protein would leave a level of 100 Gm, which is above the recommended daily allowance of the National Research Council. However this loss could be offset by an increase of eggs and milk within the animal sources, and grain products and legumes in the nonanimal class. It is worthy of note that such increases would at the same time provide certain of the B vitamins. Whole grain products or enriched flour products would however be the most logical means of increasing the latter. Potatoes are also a good source of some of the B vitamins particularly when consumed in quantity. It is a definite possibility, therefore, that the most practical way of offsetting a decrease in available meat products will be found to be by increasing the consumption of grains and potatoes.

These few examples have been concerned with common beliefs arising from a policy of limitation to a single or only a few food patterns. Not all of the possibilities have been discussed. For example little has been said about the tenet "one pint of milk per day for every person" (although this is less easily changed than some of the other beliefs, since milk and milk products are most important for calcium and riboflavin). Without arbitrarily attempting to single out any one type of food the possibility of attaining nutritional adequacy by the use of a number of food patterns has been demonstrated. On the other hand, it is recognized that in practice certain complicating factors may arise. Not the least important among these are the difficulty of changing established food habits, the matter of cost and the current availability of foods. These problems cannot be passed over lightly. However the basic concept of providing proper nutrition without being bound to use certain foods every day still stands.

It is appropriate to mention briefly at this point the civilian habit of depending on vitamin pills and concentrates as an open sesame to proper nutrition. The following order is in effect for the military, and it appears to be equally applicable elsewhere.

"Vitamins are essential to the health, welfare and fighting efficiency of every soldier, but it is more desirable to obtain them in their natural form from foods consumed rather than through the use of synthetic products in tablet form. There is no evidence that vitamins in excess of daily requirements are useful. In the event vitamins are required in tablet or capsule form to supplement the ration, they will be furnished in accordance with the following instructions.

"No requisition for vitamin concentrates to supplement the ration should be submitted until a medical

officer or nutritionist has analyzed the diet provided from the menu in use. The conclusions of such a review should be based on the nutritional value of the foods actually available and not merely on the absence of fresh foods. In the event it is determined that available foods are being properly prepared, served and consumed, and still a requirement for vitamins to supplement the ration exists, a requisition should be forwarded with a statement that the diet is inadequate and suitable foods cannot be obtained in quantities sufficient to meet vitamin requirements. Specific evidence of inadequacy should be cited. The requisition will state that the surgeon has approved the quantity required as appropriate for the strength and period involved."

It is true, on the other hand, that there may be certain occasions when vitamin supplementation to civilian diets may be indicated. It is not intended to frown on the use of accessory vitamins under all circumstances. However their use should be predicated on the basis of a probable or possible deficiency in the diet as determined by a rough evaluation of the customary food habits involved. Routine use of such products is rarely necessary (except in disease or pregnancy and lactation), nor is it economical. This is particularly true when it is remembered that an excess of vitamins is discarded by the body and therefore is of no aid whatever to the individual.

SUMMARY

In recapitulation, it is possible to obtain a nutritionally complete diet in a number of ways. A knowledge of food classes and their approximate nutritional significance is a distinct aid in this regard and forms the basis for equivalent substitution of foods. While a single food pattern may be the practical solution in the attainment of adequate nutrition for the individual lay man, yet it is quite unnecessary to gage the adequacy of a diet in regimented terms. Nutritional adequacy is attainable by a variety of means and it is not necessarily restricted to one set food pattern. The intelligent use of foods presupposes a thorough knowledge of what, nutritionally speaking, the food group may be expected to contribute in normal times, as well as its potentialities when logistics or restriction of supply of certain types of food interfere with "the pattern." Our nutritive requirements are for nutrients, not for certain foods as such.

Food Likes and Dislikes—Dressing up may overcome psychic aversion to a given food, but it will never disguise the effect if the patient belongs to that group of individuals who are sensitive or allergic to certain foods. One friend of mine was surprised to note when he ordered Scotch woodcock that it was not a bird. Another individual wanted to try frogs' legs and actually ordered them until some one suggested that frogs ate living things, even cockroaches, and so frogs' legs as a delicacy were debarred from her menu. Many persons discontinue eating a certain food because that particular food was the one they happened to be eating when an acute attack of indigestion occurred. The indigestion may actually have been biliary colic, with the food in question in no way responsible. Time and again one food after another may be cut out, reducing the diet to almost nothing because the ingestion of each food in turn was followed by pain. If the truth be told, the taking of only water will occasionally induce pain if a penetrating ulcer or a stone in the cystic duct is present.—Rehfu Martin E. *Indigestion Its Diagnosis and Management*, Philadelphia, W B Saunders Company, 1943.

A SOLVENT VAPOR, CARBON
DISULFIDEABSORPTION, ELIMINATION, METABOLISM
AND MODE OF ACTION

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Before the toxic symptoms elicited by a solvent vapor can be diagnosed and treated intelligently it is helpful to know certain physiologic reactions of the compound. They are (1) the rate and extent of absorption into the individual's body, (2) the rate of excretion, (3) the rate and the amount of the compound metabolized by the body, (4) the site of action of the vapor and (5) in what manner the toxic action is elicited. In this paper we have attempted to give a partial answer to these questions as they apply to carbon disulfide (CS_2).

The absorption of any solvent vapor into the blood stream takes place primarily by way of the alveoli. The amount of vapor absorbed is regulated mainly by the vapor concentration breathed, the length of exposure and the coefficient of distribution¹ of the solvent between air and blood and between blood and tissues. This last point should be particularly stressed because further absorption of a volatile solvent does not take place after blood and tissue saturation at a particular vapor concentration has been reached except as the compound is metabolized and excreted by channels other than the lungs. Furthermore as Henderson and Haggard² have pointed out the greater the solubility of a solvent vapor in blood and tissues the more rapid is the absorption but the less rapidly is the saturation point reached. Conversely, the lower the solubility of a vapor in blood and tissues the more rapidly is the saturation point reached. In the case of a solvent vapor like ethyl alcohol which has the high coefficient of distribution between air and blood of about 1150,³ it is not possible for the body of a person to become saturated during a working day or even by continuous exposure for several days. This would be true even if there were no oxidation of alcohol within the body. No matter what concentration of alcohol is breathed absorption continues at a fairly constant rate over an extended period because the total amount of alcohol that can be supplied to the blood by way of the lungs is much lower than the amount of this substance that the blood and tissue can dissolve. A different situation exists with a relatively insoluble vapor such as ether which has a distribution coefficient

between air and blood of 14.9.⁴ According to the figures given by Haggard⁵ only sixty to one hundred and twenty minutes are required to saturate the body of a dog with ether when the vapor is present in a concentration of about 3 per cent by volume (30,000 parts per million). This means that less and less ether is absorbed with each succeeding breath and with each additional circuit of the blood through the body, until there is no further retention. The saturation point is then reached.

The elimination of a solvent vapor depends on several factors most important of which are the solubility coefficient between blood and air and the amount of body oxidation and metabolism of the vapor. It has been proved² that the higher the solubility of a vapor the less rapidly is an organism desaturated after termination of the exposure and the lower the solubility of the solvent vapor the more rapidly is the organism desaturated. With alcohol the rate of removal by the lungs is slow, and were it not for a rapid rate of oxidation the desaturation rate following exposure to this substance would be extremely slow. With ether⁴ approximately 90 per cent is excreted in the expired air at a relatively rapid rate and only small amounts are excreted in the urine and sweat. None of the ether is metabolized.

In a recent paper one of us⁶ showed that carbon disulfide is relatively insoluble with a low blood-air coefficient of distribution of 2 to 3. In the same paper the rate of absorption of carbon disulfide in dogs and the rate of elimination of the substance following cessation of exposure were found to be rapid. Experiments reported in the present paper confirm these observations on dogs and show similar rapid rates of absorption and elimination of carbon disulfide in man. Unlike ether carbon disulfide is not excreted mainly by the lungs. Only 8 to 13 per cent is expired, about 0.5 per cent is excreted in the urine and none in the feces. The remaining 85 to 90 per cent is metabolized, largely by oxidation and by combination.

In the experiments to be reported in this paper, some insight has been obtained into the mechanism of the action of carbon disulfide. It is well known from the extensive literature on the subject and from Dr. Alice Hamilton's review⁷ that carbon disulfide absorbed in appreciable concentrations over a long period of time may result in damage to nerve tissue. Recent work by Lewey⁸ indicated that vitamin B₁ may play some role in protecting against the action of carbon disulfide. In the study of a number of isolated enzyme systems essential for carbohydrate metabolism and therefore, concerned with proper nerve function we have found only the succinic-oxidase system to be partially inhibited by carbon disulfide.

RATE OF ABSORPTION AND ELIMINATION OF
CARBON DISULFIDE

The rate of absorption and elimination of carbon disulfide was studied in 12 dogs and 5 men. The dogs were at rest during both saturation and desaturation.

From the Harvard School of Public Health.
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¹ The coefficient of distribution for a vapor is a ratio of the amount of vapor at equilibrium which is distributed between a vapor-air phase and an immiscible phase; for example the vapor distribution between blood and air. This ratio $\frac{\text{amount of vapor per unit volume of blood}}{\text{amount of vapor per unit volume of air}}$ is expressed as some whole number.

² Henderson, Vandell, and Haggard, H. W. *Noxious Gases*, New York: Chemical Catalogue Company.

³ Haggard, H. W. and Greenberg, L. A. The Excretion of Alcohol in Urine and Expired Air and the Distribution of Alcohol Between Air and Water, Blood and Urine. *J. Pharmacol. & Exper. Therap.* 52: 1-9 (Oct.) 1934.

⁴ Haggard, H. W. An Accurate Method of Determining Small Amounts of Ethyl Ether in Air, Blood and Other Fluids Together with a Determination of the Coefficient of Distribution of Ether Between Air and Blood at Various Temperatures. *J. Biol. Chem.* 55: 131 (Feb.) 1923.

⁵ Haggard, H. W. The Amount of Ether Absorbed in Relation to the Concentration Inhaled and Its Fate in the Body. *J. Biol. Chem.* 59: 737 (April) 1924.

⁶ McKee, R. W. Solubility of Carbon Disulfide Vapor in Body Fluid and Tissues. *J. Indus. Hyg. & Toxicol.* 22: 884 (Dec.) 1941.

⁷ Hamilton, Alice. Occupational Poisoning in the Viscose Rayon Industry. Bulletin 4. United States Department of Labor, Bureau of Labor Statistics, 1940.

⁸ Lewey, F. H. with the cooperation of others. Experimental Chronic Carbon Disulfide Poisoning in Dogs. *J. Ind. Hyg. & Toxicol.* 23: 415 (Nov.) 1941.

while the men were at rest during saturation and were carrying on their normal laboratory work during desaturation. Carbon disulfide vapor of known concentrations was inhaled by the experimental subjects until the blood became saturated, as shown by periodic sampling and analysis. Exposure to the vapor was then

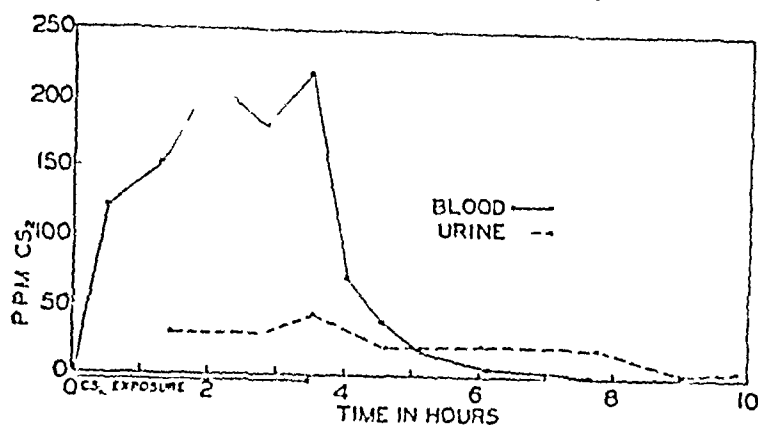


Chart 1—Arterial blood saturation and desaturation and urinary excretion of carbon disulfide. Dog 2 exposed to carbon disulfide vapor (50 parts per million) for three and one-half hours.

terminated and the level of carbon disulfide in the blood followed periodically until analyses showed that little or none was present.

Experiments on Dogs—All dogs employed in these experiments were anesthetized with soluble pentobarbital, and isotonic solution of sodium chloride (20 cc per kilogram of body weight) was given intravenously. Following this, the trachea was cannulated and artificial respiration begun by connecting the trachea cannula with a respiration pump. The left femoral artery and vein were cannulated for recording of blood pressure and blood sampling.

In order to study quantitative elimination of carbon disulfide—a subject which will be discussed later—the urethra was tied off and the bladder was cannulated with a specially designed, glass stoppered cannula so that urine unexposed to air could be withdrawn at any time. This glass cannula had a stem 5 cm long and 3 mm in diameter and a ground-glass stopper. The lower end widened into a bulb 1 cm in diameter with five 1 mm openings to allow rapid filling from the bladder.

In each experiment a thirty minute control period for recording of blood pressure and respiration rate was taken. The bladder was emptied and control blood samples were taken. The carbon disulfide exposure was

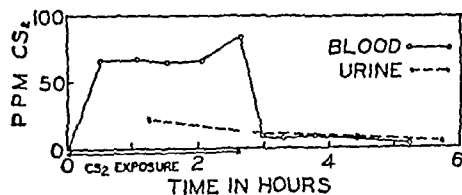


Chart 2—Arterial blood saturation and desaturation and urinary excretion of carbon disulfide. Dog 6 exposed to carbon disulfide vapor (25 parts per million) for two and one-half hours.

then started by connecting the trachea cannula to the respiration pump and thence to the source of vapor. With the last 4 dogs studied, the pump was not used and the animals maintained a normal respiratory rate. The results are similar to those on animals maintained with the pump. Not in any case was there a noticeable change in blood pressure, heart rate, respiratory rate, respiratory volume or body temperature during the entire experiment. The values were all normal.

The carbon disulfide vapor was generated at a constant rate by a vapor generator described in a previous

paper.⁹ The constancy of the vapor concentration, as determined by analysis every thirty minutes, was within ± 1 part per million of an acceptable figure. The vapor was blown into an air-tight metal mixing reservoir with an outlet tube to allow the escape of excess vapor. Neoprene tubing ($\frac{5}{8}$ inch in diameter) was used to connect the vapor reservoir, the respiration pump and the inhalation trachea valve. The exhalation trachea valve used for the last 4 dogs was connected with $\frac{1}{8}$ inch neoprene tubing to two calibrated spirometers connected in parallel. The trachea valves were connected as closely as possible to the trachea cannula, so that the dead space was about the same as in the intact animal. The valves used were a hinged flap type and all-metal construction to prevent absorption of carbon disulfide.

The blood carbon disulfide level was followed by analysis of blood samples collected every thirty to sixty minutes.¹⁰ Arterial blood (10 cc) was taken from the femoral artery cannula and venous blood (10 cc) taken directly from the femoral vein by means of 10 cc calibrated syringes. As indicated previously, when the blood carbon disulfide level became constant, exposure was stopped. Blood sampling was then continued until only a negligible amount of carbon disulfide remained in the blood.

Charts 1, 2 and 3, which are representative of all 12 dogs studied, show that blood saturation was reached

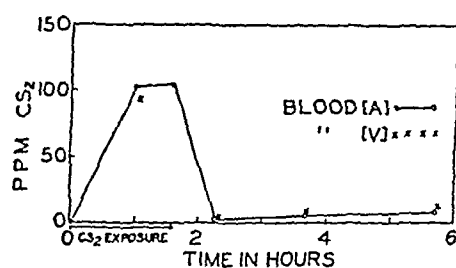


Chart 3—Venous and arterial blood saturation and desaturation. Dog 3 exposed to carbon disulfide vapor (40 parts per million) for one and one-half hours.

within thirty to one hundred and twenty minutes. Occasional venous blood analyses (chart 3) showed, at the cessation of exposure, a condition close to tissue saturation. As would be expected from the limited capacity of the lungs to supply

vapor to the blood, the higher concentrations of vapor required somewhat longer periods to attain saturation.

The major part of desaturation took place within thirty to sixty minutes (charts 1, 2 and 3) and at a slightly faster rate than saturation; however, the removal of final traces of carbon disulfide required an additional two to six hours (table 1). This time, as would be expected from a theoretical consideration, was usually somewhat longer with the higher exposure concentrations. There was, however, apparently no prolongation of the desaturation time with the longer exposures. This is to be expected from the fact that only small amounts of a solvent are absorbed after the saturation point is reached.

Human Experiments—Studies similar to those on dogs were made on 5 normal men. Exposures necessarily were at a lower concentration for men than for dogs. None of the subjects noticed any immediate or belated effects from the vapor exposures. In each case, the blood pressure, heart rate and respiratory rate were all normal throughout the experiment. Generation of vapor was effected in the same way as in the experi-

⁹ Reece, G. M., White, Ben, and Drinker, Philip. "Determination and Recording of Carbon Disulfide and Hydrogen Sulfide in the Vapor." *Rayon Industry, J. Indust. Hyg. & Toxicol.* 22: 416 (Nov.) 1940.
¹⁰ McKee, R. W. "A Quantitative Microchemical Colorimetric Determination of Carbon Disulfide in Air, Water and Biological Fluids." *J. Indust. Hyg. & Toxicol.* 23: 151 (April) 1941.

ments on dogs Neoprene tubing (1 inch in diameter) was connected to the vapor reservoir with the subject's metal inspiratory valve and plastic face mask. The same type of tubing connected the mask and metal outlet valve to a gas meter for measuring the respiratory volume. Samples of expired air were taken at intervals to show the course of carbon disulfide removal in the expired air, and these corresponded well with blood values. Only venous blood was examined.

With the men as with the dogs blood saturation was reached rapidly (sixty to ninety minutes) after which only a small amount of carbon disulfide was absorbed and that only as the carbon disulfide was metabolized and excreted. At the termination of exposure there was rapid desaturation for the first sixty minutes. Desaturation as shown by urine and expired air values,

TABLE 1—Blood Carbon Disulfide Saturation and Desaturation Rates in Dogs

Animal	Sex	Weight Kg	Exposure Concentration P p M	Exposure Time Hours	Saturation Time Hours	Blood Saturation P p M	Desaturation Time Hours*	Total CS ₂ Excreted in Urine Mg
2	Q	8	50	3.5	1.75	200	4.25	0.006
3	Q	11	60	2.5	2.0	250	6.25	0.005
4	Q	14	50	2.5	1.25	150	3.75	0.014
5	Q	25	25	2.5	1.75	50	3.75	0.002
6	Q	10	25	2.7	0.5	65	2.5	0.002
7	Q	9	25	5.2	1.5	150	3.5	0.005
8	Q	15	25	4.0	0.75	100	3.0	0.004
10	Q	10	25	2.4	0.75	150	3.0	
11	Q	25	25	2.4	1.0	105	3.0	
12	Q	15	30	1.25	0.75	160	2.25	
13	Q	11	40	1.6	1.0	105	3.5	
14	Q	8	30	0.8	0.75	55	4.0	

* Time after exposure was terminated

TABLE 2—Blood Carbon Disulfide Saturation and Desaturation Rates in Man

Human Subject	Body Weight Kg	Comment	Exposure Concentration P p M	Exposure Time Hours	Saturation Time Hours	Blood Saturation P p M	Desaturation Time Hours*	Total CS ₂ Excreted in Urine Mg
1	60	Slender	20	2.1	1.0	55	5.25	0.020
2	60	Fle hr	25	1.75	1.3	50	5.5	0.014
3	64	Muscular	25	1.5	1.0	40	6.75	0.010
4	60	Tall	20	1.5	1.0	45	5.0	0.009
5	66	Slender	25	2.0	1.5	65	5.0	0.005

* Time after exposure was stopped

was complete after three to eight hours. Charts 4 and 5 are representative of all 5 subjects while critical data for all 5 are shown in table 2.

In a number of other human experiments not shown in this paper, the rates of saturation and desaturation were somewhat increased by exercise. This of course does not affect the saturation level—only the rate at which it is attained.

TOTAL AMOUNT OF CARBON DISULFIDE ABSORBED AND ELIMINATED

Although the dog and human saturation and desaturation curves show the rates of absorption and elimination they do not show the quantities of carbon disulfide which were handled. In order to arrive at a quantitative estimation of the amounts involved the following four determinations were made:

1. Concentration of vapor breathed
2. Carbon disulfide in the total expired air during saturation
3. Carbon disulfide in the total expired air during desaturation
4. Total carbon disulfide in the urine

By calculation, it was then possible to determine the amount of carbon disulfide retained during the exposure period and the amount eliminated by way of the expired air during desaturation. By the collection and analysis of urine the amount excreted by that pathway was determined.

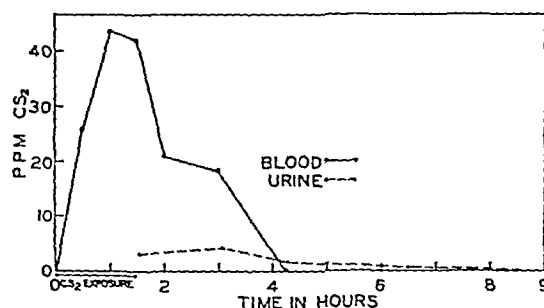


Chart 4—Venous blood saturation and desaturation and urinary excretion of carbon disulfide. Human subject 37 exposed to carbon disulfide vapor (22 parts per million) for one and one half hours.

Experiments on Dogs—In order to collect the total volume of expired air over the extended period of the experiments two spirometers were connected in parallel. This arrangement permitted the analysis and emptying of the contents of one spirometer while the second was being filled. The spirometers were calibrated for dead space and water solubility with known concentrations of carbon disulfide vapor.

In all cases expired air was collected until no more carbon disulfide was found to be present. Samples of the urine were removed from the bladder through the glass stoppered cannula by means of a syringe and long needle.

Table 4 shows the determined and calculated results for the saturation and desaturation periods. The data presented include length of exposure, exposure concentration of vapor, amount of carbon disulfide inspired, amount of carbon disulfide retained, percentage retained, length of time for desaturation, amount of carbon disul-

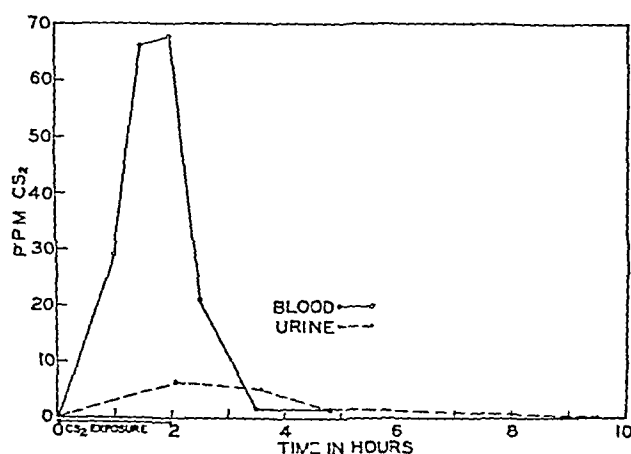


Chart 5—Venous blood saturation and desaturation and urinary excretion of carbon disulfide. Human subject 38 exposed to carbon disulfide vapor (2 parts per million) for two hours.

hide removed in expired air and percentage removed of that retained. It is of interest to note that only 8 to 13 per cent of the retained carbon disulfide is removed in the expired air. It is of interest also that the carbon disulfide excreted in the urine is only about 0.5 per cent of the total amount retained (table 1).

Human Experiments—The large volume of air breathed by a man during the relatively long time required to saturate his blood with carbon disulfide and then desaturate it made long exposure periods impractical. Shorter exposure periods were however, studied by a procedure similar to that used in the experiments on dogs. The results as shown in table 3 indicate that 6 to 10 per cent of the retained carbon disulfide is given off in the expired air—percentages which are similar to those obtained in the experiments on dogs. It will be noted from the figures in table 3 that as the exposure time was increased and the body became more nearly saturated the retention percentage decreased, also, following the termination of exposure the percentage excreted in the expired air was increased.

The total amounts of carbon disulfide present in the urine of the 5 human subjects during the saturation and desaturation periods accounted for only about 0.5 per cent of the retained carbon disulfide (table 2).

METABOLISM OF CARBON DISULFIDE COMBINATION AND OXIDATION

It has been demonstrated that 8 to 13 per cent of the retained carbon disulfide is excreted in the expired air and that less than 1 per cent appears in the urine. The next logical question to be asked concerning carbon disulfide excretion is: What happens to the remaining 85 to 90 per cent of the retained carbon disulfide? Obviously the question of excretion in the feces and sweat must be considered. Human fecal material collected for twenty-four hours during and following vapor exposure, yielded no carbon disulfide on analysis. Although absorption and elimination by the skin were not studied, we believe that little carbon disulfide would be removed by way of the sweat because of the low solubility of carbon disulfide in aqueous fluids. It is therefore clear that the 85 to 90 per cent of retained carbon disulfide which is unaccounted for must be metabolized in some manner.

It should be remembered that in the estimation of carbon disulfide in urine and feces only volatile carbon disulfide is determined. Hence any nonvolatile com-

attempt to ascertain whether there was any increase in sulfur metabolites during and following exposure to carbon disulfide.

Human Studies—In order to maintain the urinary sulfates as constant as possible, the subject went for five days on a diet of constant protein, fat and carbohydrate.

TABLE 4—Quantitative Carbon Disulfide Absorption and Elimination by Male Dogs

Dog	Body Wt. Kg.	Length of Exposure Hours	Saturation Period				Desaturation Period		
			CS ₂ Administered		CS ₂ Retained		CS Removed in Expired Air		Per Cent
			P p M	Mg.	Mg.	Per Cent	Time Hours	Mg.	
10	16	2.1	31	76.60	9.53	23	3.0	1.00	10.2
12	6.8	1.75	20	18.72	11.48	63	2.25	1.10	9.5
13	5.0	1.6	40	21.70	9.03	41	3.5	0.71	7.9
14	6	0.8	30	9.17	3.05	33	4.0	0.39	12.8

intake. Special note was taken of the protein, since it is this dietary constituent principally which influences the urinary sulfates. The total urine output was collected in six to twelve hour samples, and duplicate analyses were made by Fiske's modification of the Rosencrum and Drummond method¹¹ for inorganic sulfate, sulfur, total sulfate, sulfur and total sulfur. Similar analyses were made on aqueous extracts of feces collected for twenty-four hours during and following exposure to carbon disulfide. After two days on the constant diet the subject was exposed for six hours in a vapor chamber to carbon disulfide (25 parts per million).

As shown in table 5 there was some increase both in the inorganic sulfates of urine and in the total sulfur. The fact that the total sulfur increase was about the same as the inorganic sulfate increase indicates that there was an increase only in the urinary inorganic sulfates. Whether or not this increase accounts for the remainder of the retained carbon disulfide cannot be stated with accuracy. Calculated on the basis of body saturation being reached for 25 parts per million in sixty minutes and based on a 40 per cent retention during the period (table 4), the increased sulfur in the urine during exposure and for twenty-four hours following exposure accounts for about 90 per cent of the retained carbon disulfide.

Fecal analyses showed no increase above normal for any of the three sulfur constituents.

Studies on Rabbits—Metabolism experiments, similar to those cited, were conducted on 2 rabbits. One rabbit was injected with 2 cc of carbon disulfide in vegetable oil, while the other was exposed to carbon disulfide (2,000 parts per million) for sixty minutes.

As shown in table 6, in both animals there was a decided increase of urinary inorganic sulfates and total sulfur, and the latter increase was more than the inorganic sulfate increase. This means that some carbon disulfide combination product, an organic compound was also being excreted in the urine. This we believe is probably a combination product of carbon disulfide with an amine or ammonia in the blood stream or in the body tissues.

In these rabbit experiments it was even more difficult than in the ones on human beings to determine whether

¹¹ Fiske, C. H. The Determination of Inorganic Sulfate, Total Sulfate and Total Sulfur in Urine by the Benzidine Method, J. Biol. Chem. 47: 59 (June) 1921.

TABLE 3—Quantitative Carbon Disulfide Absorption and Elimination by Human Subjects

Human Subject	Sex	Body Weight, Kg.	Exposure		No. of Determinations	Retention		Excretion in Expired Air, per Cent
			Concentration P p M	Time, Minutes		Mg.	Per Cent	
1	♂	57	22	10	2	2.60	42.7	6.4
			14	20	1	5.28	42.6	7.8
			22	30	1	6.75	36.3	11.8
6	♀	48	23	10	2	1.94	44.5	4.4
			25	20	1	5.47	39.9	8.7
			22	30	1	4.80	36.8	
7	♂	82	23	10	2	3.15	42.3	9.4
			21	20	1	6.32	42.4	4.9
			16	30	1	8.83	39.5	6.1

bination compound or oxidation product would not be detected. It was this type of metabolite that we next considered in studying the elimination of carbon disulfide, namely possible combination products of carbon disulfide with amines and ammonia and/or carbon disulfide oxidation to sulfuric acid and excretion as inorganic sulfates.

Both urine and fecal materials were analyzed for inorganic sulfates, total sulfates and total sulfur in an

or not all the retained carbon disulfide was accounted for. This was especially true of the injected animal because we do not know how much carbon disulfide was excreted in the expired air.

A calculation similar to the one used in the human experiments indicated that only about 25 per cent of the retained carbon disulfide was metabolized during the twenty-four hours following exposure. This would be expected from the exceedingly high concentration administered and the logical conclusion that there is a limit to the mechanisms of detoxification in the animal body.

The important fact is that there are probably at least two mechanisms for detoxifying carbon disulfide, i.e., oxidation and combination.

It is important to point out here that the actual amount (in milligrams) of carbon disulfide retained during a day's exposure is quite small even with the higher concentration studied in the animals. For this reason it is extremely difficult to follow accurately the metabolites excreted in a fairly large volume of urine over a number of hours. Studies with carbon disulfide containing radioactive sulfur are being considered in an effort to determine quantitatively the carbon disulfide metabolized and the rate of metabolic excretion.

MODE OF ACTION OF CARBON DISULFIDE

The belief in the past has been that the toxic effects of carbon disulfide are due largely to its solvent action on the lipids of the nervous system. The fact that nerve tissues may be damaged at relatively low concentrations of carbon disulfide (a few tenths of a milligram per kilogram of tissue) indicates that something other than a solvent action is responsible. We have

TABLE 5—Sulfur Content of Human Urine Following Inhalation of Carbon Disulfide

Day	Period Hours	Urine Volume Cc	Inorganic Sulfate Sulfur Gm	Total Sulfate Sulfur Gm	Total Sulfur Gm	Inorganic Total Ratio
Sunday	24*					
Monday	12	703	0.340	0.362	0.450	0.439
	12	316	0.225	0.234	0.269	0.967
Total	24	1,019	0.565	0.596	0.719	
Tue day	24	657	0.531	0.550	0.687	0.950
Wednesday	12†	258	0.151	0.169	0.185	0.94
	12	469	0.444	0.467	0.511	0.91
Total	24	727	0.595	0.631	0.699	
Thur day	12	402	0.323	0.343	0.393	0.942
	12	323	0.323	0.334	0.349	0.967
Total	24	725	0.646	0.677	0.747	
Friday	12	335	0.257	0.306	0.350	0.95

* On constant diet but urine not collected

† Exposed to 25 parts per million during first 12 hours

attempted to obtain an insight into the mechanism of action of carbon disulfide by a systematic survey of the effect of carbon disulfide on various known types of enzyme systems in the animal body. Warburg manometric experiments on isolated tissue enzyme systems indicate that at least one system important in carbohydrate oxidation is somewhat impaired. Inhibition of such systems is of paramount importance and may help to explain the nervous syndromes produced by carbon

disulfide, because nerve tissue depends on energy derived from carbohydrate metabolism.

Among the systems studied at the present time the succinic oxidase enzyme system is the one most inhibited, showing a 10 per cent decrease in activity when a carbon disulfide concentration of 0.005 molar has been

TABLE 6—Sulfur Content of Rabbit Urine Following Exposure to Carbon Disulfide

Rabbit	Number of Days of Urine Collection	Inorganic Sulfate Sulfur Mg	Total Sulfate Sulfur Mg	Total Sulfur Mg	Inorganic Total Ratio
Normal	7	23.18	33.42	50.52	0.73
2 cc CS- injected	2	39.30	50.15	71.15	0.78
Normal	7	16.79	23.15	36.96	0.69
2,000 ppm CS for 100 minutes	2	33.90	46.90	68.80	0.72

reached. This inhibition may be a possible explanation for the action of carbon disulfide on nerve tissue. The systems in which vitamin B₁ functions—pyruvic acid oxidase and pyruvic acid decarboxylase, also lactic acid dehydrogenase—were not inhibited by concentrations of carbon disulfide as large as 0.007 molar. These isolated enzymes studied are being extended to *in vivo* experiments (laboratory animals and human beings).

COMMENT

The uses of solvents in present day industry are rapidly increasing and extending to new types of compounds. With this increase in the utilization of solvents there arises the necessity for a broader understanding of control methods and therapeutic measures in order to prevent the occurrence of damage to the worker absorbing toxic vapors in untoward quantities. Such an understanding involves a detailed knowledge of the medical aspects of the physiologic action of solvent vapors. In this paper we have considered some of the more important of these problems for carbon disulfide and have indicated possible approaches for the study of other volatile solvents. As stated previously, these are (1) the rate and extent of absorption into the individual's body, (2) the rate of excretion, (3) the rate and the amount of the compound metabolized by the body, (4) the site of action of the vapor and (5) the manner in which the toxic action is elicited.

A study of the rate of vapor absorption is important because it makes possible a determination of the amount obtained during the exposure time of a working day or the dose with which one has to cope. Admittedly small quantities of certain vapors are absorbed by way of the skin, however the major portion of most vapors enters the blood by way of the alveoli from the inspired air.

The rate of elimination is an aid in determining the length of time that the compound remains in the body and therefore a measure of the time that the compound may act on the organism. In regard to these two aspects the solubility of the vapor in water and lipids is of extreme importance. Thus a water insoluble compound like carbon disulfide rapidly saturates the body, which is about 70 to 75 per cent water and ceases to be absorbed except as excretion and metabolism progress. On the other hand a water soluble compound for instance ethyl alcohol requires manifoldly greater quantities of the vapor and correspondingly longer periods of time to saturate the body.

Metabolism of a solvent vapor is a further important consideration, since it furnishes another pathway for removal of the noxious material from the body, thus facilitating excretion. There is, in addition, the possibility that the metabolic products may be less toxic than the original vapor.

Consideration of the mode of action of the toxic material is of paramount importance, since it will indicate the site of action and mechanism of reaction, which may in turn lead to the discovery of preventive and therapeutic measures.

SUMMARY AND CONCLUSIONS

Laboratory animal human and *in vivo* tissue experiments on the absorption, elimination, metabolism and mode of action of carbon disulfide show the following results:

1 Saturation of the body with the relatively insoluble solvent vapor of carbon disulfide is quite rapid, requiring from thirty to sixty minutes. The necessary time interval depends largely on the exposure concentration and is longer with higher concentrations.

2 The major part of the elimination of retained free carbon disulfide takes place in the first thirty minutes, complete desaturation however requires three to eight hours. The rate of desaturation like the rate of saturation depends to a large degree on the exposure concentration, a longer time being required with a higher concentration.

3 No matter how high the exposure concentration, a saturation point is reached beyond which there is no further absorption of carbon disulfide except as it is metabolized and excreted in the urine.

4 Of the retained vapor, about 8 to 13 per cent is excreted in the expired air, about 0.5 per cent in the urine and none in the feces.

5 The remaining 85 to 90 per cent of carbon disulfide is probably accounted for as metabolites (inorganic sulfates and organic sulfur compounds) excreted in the urine.

6 No free or metabolized carbon disulfide is found in the feces.

7 *In vitro* manometric experiments show that carbon disulfide in relatively large quantities inhibits slightly the succinic oxidase enzyme system, important in intermediate carbohydrate oxidation and normal nerve tissue metabolism. The pyruvic acid oxidase, pyruvic acid decarboxylase and lactic acid dehydrogenase systems which involve vitamin B₁ were not inhibited by carbon disulfide.

Indigestion of Old Age—One of the rules with regard to indigestion in old age is to reduce the diet gradually. If an active sedentary man consumes 2,400 to 3,000 calories a day, a person 55 to 65 should be able to get along on 1,800 to 2,000 calories a day. I have repeatedly attempted to determine the calory intake of certain people, even octogenarians, and I learned that many of them consumed 2,400 calories or more and only do so because they seem to have intact eliminatory organs. We are inclined to look at old age as a progressive disorder resulting in gradual thickening of the vessels and loss of the cardiac reserve. Many of these people show evidence of kidney damage by gradual failure in urinary concentration with nocturia as a result.—Rehfuss, Martin E. *Indigestion Its Diagnosis and Management*, Philadelphia, W. B. Saunders Company, 1943.

DEMEROL—A NEW SYNTHETIC ANALGESIC

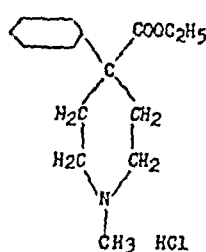
A REVIEW OF ITS PRESENT STATUS AND COMPARISON WITH MORPHINE

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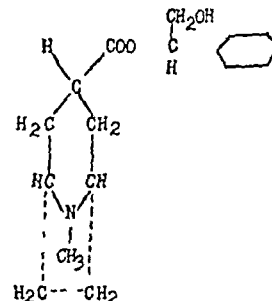
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The increased need for morphine in time of war and the present threat to our opium supply make it important that appropriate consideration be given to the new analgesic Demerol, for this compound can be prepared synthetically from available chemicals. Although it has been used in this country by only a few investigators and only recently was released by the Food and Drug Administration, considerable knowledge has accumulated concerning its pharmacology and clinical usefulness. It is therefore considered advisable to present at this time a review of present knowledge on Demerol with especial reference to its pharmacology, clinical uses and safety in comparison with morphine.

Demerol (1-methyl 4-phenyl-piperidine 4-carboxylic acid ethyl ester hydrochloride) was synthesized in 1939



Demerol



Atropine

by Eisleb and Schaumann.¹ It represents one of a large group of piperidine compounds possessing spasmolytic properties. Its close similarity to atropine can be discerned on inspection of the chemical formulas.

It is therefore not surprising that Demerol possesses mild atropine-like properties. Of greater interest, however, was the unexpected finding that the drug had a morphine-like effect on the central nervous system of animals. Definite analgesia comparable to that of morphine without the occurrence of a striking depression of the central nervous system has been reported.² While close chemical similarity of morphine and Demerol is difficult to visualize in a flat plane, it is possible with molecular models to discern similarities involving particularly the piperidine ring.

THREE ACTIONS OF DEMEROL

Demerol possesses three main actions: analgesia, spasmolysis and sedation. The relative analgesic effect as compared with codeine and morphine can be demonstrated by the method of Hardy, Wolff and Goodell.³

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1 Eisleb, O., and Schaumann, O. Dolantin, ein neuartiges Spasmolytikum und Analgetikum (Chemisches und Pharmakologisches). *Deutsche med. Wochenschr.* 65: 967 (June 16) 1939.

2 Schaumann, O. Ueber eine neue Klasse von Verbindungen mit spasmolytischer und zentral analgetischer Wirksamkeit unter besonderer Berücksichtigung des 1-Methyl-4-phenyl-piperidin-4-carbonsäure-äthylesters (Dolantin). *Arch. f. exper. Path. u. Pharmacol.* 196: 109 1940.

3 Hardy, J. D., Wolff, H. G., and Goodell, H. Studies on Pain: A New Method for Measuring Pain Threshold. *Observations on Spatial Summation of Pain*, *J. Clin. Investigation* 19: 649 (July) 1940.

The administration of 100 mg of Demerol orally results in an elevation of the peripheral pain threshold within fifteen minutes reaches a peak of approximately 50 per cent at the end of one hour and gradually subsides in about six hours.⁴ Intramuscularly the effect appears within ten minutes, reaches its peak in forty-five minutes and persists for several hours. By this method 50 mg of Demerol intramuscularly was found⁴ to be approximately twice as potent as 22 mg of codeine. Similarly, 125 mg of Demerol approaches the effectiveness of 17 mg of morphine but does not persist as long.

The practical use of this effect in man has been applied to the relief of pain due to a large variety of conditions.⁵ The duration of analgesia is about three hours. Visceral pain such as that arising from the peritoneum, pleura or smooth muscle is relieved more effectively than pain arising from skeletal and neurologic structures. Data on the comparative analgesic effectiveness of Demerol and morphine are given in table 1.

Demerol administered parenterally is at least as effective as morphine in producing clinical analgesia. Comparative studies⁶ on the same patient would indicate that 100 mg of Demerol parenterally is equivalent to 10 mg of morphine. This observation is likewise borne out from the data presented in table 1. Oral administration of Demerol is less satisfactory than parenteral administration, perhaps because of variations in absorption. The incidence of side reactions is higher in ambulatory patients who receive the medication by mouth. Nevertheless the oral route is useful and yields satisfactory results.

In postoperative patients, Batterman and Mulholland⁷ have reported that Demerol is a more suitable drug than morphine or its derivatives. The reasons for this will become evident as the pharmacology of the drug is discussed. The value of Demerol in surgical conditions has been reported also by other investigators.⁸ Satisfactory use of Demerol for analgesia in obstetric patients has been found by Benthin,⁹ Gilbert and Dixon,¹⁰ Son-

nek,¹¹ Roby and Schumann¹² and Studdiford and Batterman.¹³

The second important action of Demerol is its general spasmolytic effect in man. Intubation studies¹⁴ have demonstrated this action on the stomach, pylorus and small and large intestine of human subjects. The effect is due to an atropine-like action on the parasympathetic nerve endings and a papaverine-like direct depression of smooth muscle.¹⁴ In direct contrast to the action of opiates the motility of the intestine is so influenced that the segmental contractions and tone are diminished or abolished while propulsive action is unaltered. Clinically this action is manifested by the rapid and often dramatic relief of colicky pain. Prolonged use of the drug in therapeutic doses does not result in constipation. Hence Demerol is of little value in the treatment of diarrhea and cannot replace opiates for this purpose. Thus it would appear that Demerol has definite spasmolytic action in man.

Experiments however, on the gastrointestinal tract of animals have yielded variable results, depending on the segment (whether isolated or in situ) the species of

TABLE 1—Comparative Analgesic Effectiveness of Demerol and Morphine

Medication	Route	Number of Patients	Number of Doses	Average Dose Mg	Adequate Analgesia per Cent	Slight or No Analgesia per Cent
Morphine Lee L E Jr J Pharmacol & Exper Therap 75 161 (June) 1942	Subcutaneous	776	4571	9.6	96.7	3.3
Demerol Batterman ⁶	Subcutaneous	831	10320	100	99.8	4.2
Morphine Lee	Oral	3	1876	11.6	97.4	2.6
Demerol Batterman	Oral	604	10351	50.100	84.3	15.7

animal used and the method of study. These have been summarized in table 2.

In contrast to the effect of morphine an antispasmodic response on the intact ureter by Demerol has been demonstrated in animals and man by Climenko and Berg.¹⁵ The relief to patients with renal and ureteral colic is thus explained by experimental evidence.

Studies on intact and excised uteri revealed relaxation¹⁶ but this was refuted by Gruber and his associates¹⁷ and by Yonkman.¹⁸ The administration of Demerol in doses of 100 to 400 mg over a period of two to four hours to pregnant women neither altered the rhythmic contractions nor delayed labor.¹⁴ On direct studies of the pregnant human uterus with a balloon Woodbury and his associates¹⁹ found no effect on uterine contractions.

11 Sonnek W. Geburtserleichterung durch Dolantin. Deutsche med Wchnchr 67: 368 (Aug 8) 1941.

12 Roby Charles and Schumann W R. Demerol (D 140) and Scopolamine in Labor. A Preliminary Report. Am J Obst & Gynec 45: 318 (Feb) 1944.

13 Studdiford W E and Batterman R C. Work still in progress.

14 Schaumann Barlow⁴ Duguid and Heathcote.

15 Climenko D R and Berg Howard. The Influence of Demerol on the Contractions of the Uterus. J Urol 49: 235 (Feb) 1943.

16 Dreier N. Personal communication to the authors. Schaumann Barlow⁴ Duguid and Heathcote.

17 Gruber C M Hart E K and Gruber C M Jr. The Pharmacology and Toxicology of the Ethyl Ester of 1 Methyl-4 Phenylpiperidine-4 Carboxylic Acid (Demerol). J Pharmacol & Exper Therap 73: 319 (Nov) 1941.

18 Yonkman F F Noth P H and Hecht H H. Some Pharmacologic Features of Demerol. Proc Cen Soc Clin Research 15: 89 (Nov) 1942.

19 Benthin⁹ Gilbert and Dixon¹⁰ Roby and Schumann¹² Studdiford and Batterman¹³.

20 Woodbury R A. Personal communication to the authors.

4 Barlow O W. Studies on the Pharmacology of 1 Methyl-4 Phenylpiperidine-4 Carboxylic Acid Ethyl Ester (D 140 Demerol). I. Analgesic Action. II. Pharmacology, Toxicology and Addiction Liability. Submitted for publication. Personal communication to the authors.

5 These include:
Sostmann H E. Zur Ablosung des Morphins und seiner Abkrommlinge in der Gynäkologie durch Dolantin. Med Welt 14: 325 (March 30) 1940.

Dietrich Harald. Klinische Erfahrungen mit einem neuen synthetischen Spasmolytikum und Analgetikum. Deutsche med Wchnchr 65: 969 (June 16) 1939.

Klein E K. Erfahrungen mit Dolantin, einem myotrop und neurotrop wirkenden Spasmolytikum. München med Wchnchr 86: 1674 (Nov 24) 1939.

Reisinger F. Das neue Analgetikum und Spasmolytikum Dolantin. Wien med Wchnchr 90: 400 1940.

Heydner W. Fahrenung mit dem Spasmoanalgetikum Dolantin bei Nervkranken. Fortschr Therap 16: 33 1940.

Sprockhoff O. Dolantin in der Kinderheilkunde. Deutsche med Wchnchr 67: 383 (April 4) 1941.

Dolle⁸ Rosenthal⁸ Schafer⁸ Schlunbaum⁸ Althoff⁸ Batterman⁸ Batterman and Mulholland⁷ Davis⁸ Hecht⁸ Noth⁸ and Yonkman⁸ Weinstein⁸.

6 Batterman R C. The Clinical Effectiveness and Safety of a New Synthetic Analgesic Drug Demerol. Arch Int Med 71: 345 (March) 1943.

7 Batterman R C and Mulholland J H. Demerol, a Substitute for Morphine in the Treatment of Postoperative Pain. Arch Surg 46: 404 (March) 1943.

8 Dolle W. Dolantin, ein neues Spasmolytikum und Analgetikum in der Gynäkologie. Prakt Arzt 25: 115 1940. Rosenthal H. Beobachtungen zur Bekämpfung des Wundschmerzes mit dem neuen Analgetikum Dolantin. München med Wchnchr 86: 1079 (July 14) 1939.

Schafer Fried. Schmerzbehandlung in der Chirurgie mit Dolantin. Deutsche med Wchnchr 65: 970 (June 16) 1939.

Schlunbaum H. Schmerzbehandlung mit Dolantin, einem synthetisch hergestellten Spasmolytikum und Analgetikum. Med Klin 35: 1259 (Sept 22) 1939.

Hecht H Noth P H and Yonkman F F. Demerol. Clinical Observations. Paper presented at the Central Society for Clinical Research November 1942. Personal communication to the authors. Weinstein M.

9 Benthin W. Demerol Hydrochloride, a New Drug in the Practice of Surgery. Submitted for publication. Personal communication to the authors.

10 Gilbert Gordon and Dixon A B. Observations on Demerol as an Analgesic. Am J Obst & Gynec 45: 320 (Feb) 1945.

An antispasmodic effect on bronchial musculature was noted in animal experiments by Schaumann,² Gruber¹⁷ and Barlow.⁴ Clinically beneficial effects in patients with bronchial asthma have been reported by several investigators.¹¹ It is well known that the use of morphine is contraindicated for such patients. Ambulatory asthmatic patients have fewer and less severe attacks when Demerol is administered every four hours. An acute attack of asthma can be relieved within ten minutes by the subcutaneous injection of 35 mg. a dose far below that required to produce analgesia or sedation. The bronchial relaxation is less than that achieved with epinephrine. Nevertheless Demerol probably has a theoretical advantage as an antiasthmatic agent, since it would tend to reduce the autonomic reactions usually associated with a severe attack. Epinephrine would heighten the fear component even though the asthma was relieved. Good results have been obtained with a

generally free from untoward reactions of this character. Because intravenous administration results in a sharp fall in blood pressure, the drug should never be given by this route. Direct cardiac depression does not occur with therapeutic doses, and the normal electrocardiogram is unaltered. The third action of Demerol to be considered is sedation. This usually occurs with the larger parenteral doses, resulting in sleep from which the subject can be aroused easily. It usually subsides within two hours, but when the drug is given at night or to patients who have been sleepless because of pain the sleep may last longer. Patients note no after-reactions or mental confusion on awakening. Ambulatory patients may complain of drowsiness at first, but tolerance is developed to the sedative effect. Like morphine, Demerol in animals potentiates the hypnotic effect of evipal soluble,²⁵ shortens the induction

TABLE 2—Effect of Demerol on Gastrointestinal Tract of Animals. Summary of Literature

Animal	Segment	Preparation	Previous State	Effect	Observer
Guinea pig	Intestine	Isolated strip	Quiescent	Spasmolytic	Schaumann ²
			Spastic (acetylcholine histamine)	Spasmolytic	Duguid and Heathcote ⁹
Rat (H)	Ileum	Isolated strip	Quiescent	Spasmolytic	Barlow ⁴
				Slightly spasmolytic	Duguid and Heathcote ⁹
				Unpredictable—spasmolytic or spasmotic depending on original tonus level	Gruber et al. ¹⁷ Yonkman ¹⁸
			Spastic (pilocarpine physostigmine histamine barium chloride)	Spasmolytic	Barlow ⁴
			Spastic (acetylcholine)	Slightly spasmolytic	Duguid and Heathcote ⁹
Cat	Ileum	Isolated strip Gut in situ (Babkin technique)	Quiescent	Spasmolytic	Gruber et al. ¹⁷
			1. Splanchnic cut, vagi intact	Spasmolytic	Dreyer ¹⁶
			2. Morphine	Reversal of morphine effect and prevention of subsequent morphine response	
			Relaxed (epinephrine)	Spasmodic	Gruber et al. ¹⁷
				Unpredictable	Gruber et al. ¹⁷
Dog	Stomach Pylorus Ileum	Gastric fistula	Quiescent	Unpredictable	Gruber et al. ¹⁷
		Gastric fistula	Quiescent	Spasmodic	Gruber et al. ¹⁷
		Thiery Vella loops	Quiescent	Spasmodic	Gruber et al., ¹⁷ Yonkman ¹⁸
		Thiery Vella loops	Morphine	No effect	Gruber et al. ¹⁷
		Thiery Vella loops		Spasmolytic, reversal of morphine effect	Yonkman ¹⁸
	Colon	Colostomy opening	Quiescent	No effect	Ivy, A. C. Personal communication

mixture consisting of 35 mg. of Demerol and half the usual amount of epinephrine.²² The vasodilating properties of the drug are transitory. In animals Demerol produces a fall in blood pressure,²³ an increase in volume of the limb and spleen¹⁷ and an increase in blood flow.²⁴ In man, demonstrable alterations of the circulation are not pronounced except in hypersensitive persons in the upright position. Thus approximately 5 per cent of ambulatory patients may experience syncope, a fall in blood pressure, bradycardia and signs and symptoms of shock suggestive of generalized vasodilatation and inability to maintain the circulation ("nitritoid" reaction). These usually subside quickly when the supine position is assumed. The administration of the drug to recumbent subjects is

21 Althoff, H. Klinische Erfahrungen mit Dolantin Bayer, Therap. d. Gegenw. 6: 258, 1939. Davis, J. S. Personal communication to the authors. Hecht, Noth and Yonkman.⁵ Batterman, R. C. Work still in progress.

22 Batterman, R. C. Work still in progress.

23 Schaumann.² Barlow.⁴ Duguid and Heathcote.²⁰ Gruber, Hart and Gruber.¹⁷

24 Fassett, D. W. Personal communication to the authors.

time and prolongs the anesthetic time of a given amount of nitrous oxide-oxygen.⁴ Rovenstine and Batterman²¹ reported on the ability of Demerol to reduce the amount of inhalation agent required to secure a certain degree of anesthesia in dogs and to prolong the effect of pentothal sodium. In a series of 338 surgical patients requiring a general or spinal anesthetic Demerol was found²⁶ to be in every way as satisfactory a pre-anesthetic agent as morphine. With the exception of hypersensitive persons, particularly those with advanced cerebral arteriosclerosis, respiratory depression is not usual with the use of Demerol. In animals, however, transitory respiratory depression has been reported by all investigators,²³ and large intravenous doses may result in death by respiratory paralysis. It is of interest to note that in man Demerol has little if any sedative

25 Barlow, O. W., Chmenko, D. R., and Homburger, E. Comparative Potentiating Effects of Certain Therapeutic Agents on Sodium Evipal Hypnosis, Proc. Soc. Exper. Biol. & Med. 49: 11 (Jan.) 1942.

26 Rovenstine, E. A., and Batterman, R. C. The Utility of Demerol as a Substitute for the Opiates in Preanesthetic Medication, Anesthesiology 4: 126 (March) 1943.

effect on cough although because of its atropine-like action in occasional patient may be benefited by its decreasing the bronchial secretions

Other pharmacologic studies reveal no effect on the size of the pupil or ocular accommodation in man. Corneal anesthesia may occur. The basal metabolic rate is unaltered. Dryness of the mouth, flushing of the face and perspiration are common findings. Dizziness occurs as the most frequent untoward reaction. Nausea and vomiting are noted less frequently than with morphine.

TOLERANCE

The treatment of chronic intractable pain raises three important questions: 1. How often and in what dosage may Demerol be administered without the danger of cumulation of toxic effects? 2. Will tolerance result from prolonged administration? 3. Will prolonged use of the drug result in addiction?

Moderately intense pain can be controlled with 50 to 100 mg orally or parenterally every four hours. With severe pain as much as 150 to 200 mg has been given every three hours without observed harmful effect. It is rarely necessary to exceed this dose to achieve satisfactory relief of pain. Furthermore if this dose is unsatisfactory it is unlikely that greater relief will be obtained by the use of more Demerol or comparable doses of morphine.

Himmelsbach² and Andrews²⁸ reported that former addicts receiving 200 to 300 mg every one and one-half to two hours may have severe muscular tremors and occasional epileptiform seizures. Severe reactions of this caliber have not been noted with the clinical use of the drug. Occasional "jumpy" feelings, muscular twitches or tremors of uncoordinated character occur in 0.4 per cent of hospitalized and 5 per cent of ambulatory patients.⁶ Duguid and Heathcote,²⁹ Barlow⁴ and Schumann² have each reported the weak cerebral depressant action of Demerol in animals with amounts comparable to therapeutic doses but cerebral stimulation and convulsions with larger doses. With therapeutic doses Demerol does not result in progressive depression of the central nervous system such as may be seen with frequent and repeated doses of morphine in nontolerant patients. On the other hand excessive doses may result in cerebral irritability.

Prolonged use of Demerol in animals and man has not resulted in alteration of the hemopoietic system or produced disturbances in liver or kidney function. Urinary retention is rare. To date no disease or other medication has been found incompatible with Demerol.

Demerol is rapidly destroyed by the liver.⁴ The nature of the breakdown products is not clear, but it has been suggested that the first step is hydrolysis of the ester group. Pharmacologic studies on such a compound revealed no typical Demerol effects. The rapidity of destruction of the drug in vivo may account for the relatively short period of analgesia, the small amounts of the drug detectable in the urine³⁰ and the ability to administer the drug for prolonged periods at intervals of three to four hours without cumulation of toxicity.

Any discussion of tolerance must take into account the various effects that can be produced with Demerol. Repeated doses of opiates result in the development of tolerance to the depressant effects on the central nervous system such as sedation, analgesia and respiratory depression. Evidence for the development of tolerance in former addicts to the pain threshold raising effect of opiates and Demerol has been furnished by Andrews.³¹ In the case of Demerol, tolerance to the skin pain threshold raising effect is usually manifest within two weeks and reaches a maximum at the end of eight weeks. In a group of 115 hospitalized patients³² receiving from 42 to 492 doses of Demerol within periods of from four to twenty-eight weeks no appreciable tolerance to its general clinical analgesic effect occurred. Clinical analgesia is probably the result of one or more of the following effects: (1) a central action on the midbrain or the thalamic area blocking or reducing the transmission of pain sensation from the periphery to the cerebral cortex, (2) an altered reactivity of the patient to the pain so that even if perceived the "fear reaction" is not evoked and (3) an increased threshold to painful stimuli at the periphery. The latter factor, although of immense help in evaluating relative potency of analgesics appears to be of minor importance as far as general analgesia is concerned.

In addition to the peripheral pain threshold raising effect, tolerance develops rapidly to the somnolent action and to many of the side actions.

ADDICTION

With any drug possessing morphine-like action on the central nervous system serious consideration must be given to questions concerning the possibility of addiction. In the pain free, normal experimental subject, the effects of Demerol are described variously, depending perhaps on the underlying psychologic makeup of the individual. To some it is pleasant like a cocktail" or the development of a sense of well-being while in others there is an ill defined, disagreeable sense of insecurity or the occurrence of unpleasant dreams. These sensations are neither consistent nor predictable. Some subjects like the effect and want to repeat it, while in others the converse attitude occurs. Since this may involve the 'nitritoid' reaction the position of the patient may influence the effect and subsequent use of the drug. The implications of the experience and the personality makeup of the individual are obvious.

Drug addiction is a condition in which a person has lost the power of self control with reference to a drug. When a regularly pleasant effect leads to a strong desire for its frequent repetition, psychic dependence or habituation is apt to result. An extension of such frequent and regular repetition of a drug as regards both dosage and interval of administration may lead to the development of physical dependence. Physical dependence, a serious consequence of opiate abuse is perhaps related to overcompensation by the autonomic nervous system in order to maintain homeostasis of certain vital functions disturbed by the drug. On discontinuation of the drug an abstinence syndrome consisting of characteristic signs and symptoms occurs.³³ While physical

2. Himmelsbach C K. Studies of the Addiction Liability of Demerol (D 140). *J Pharmacol & Exper Therap* 75: 64 (May) 1942.

28. Andrews H L. Cortical Effects of Demerol. *J Pharmacol & Exper Therap* 76: 89 (Sept.) 1942.

29. Duguid A M E, and Heathcote R St A. Pharmacological Action of Ethyl Methylethylpiperidine Carboxylate. *Quart J Pharm & Pharmacol* 13: 318 (Oct Dec) 1940.

30. Lehman R A, and Aiken Theis. The Determination of Demerol in Urine with Preliminary Observations on Its Excretion in Man. *J Lab & Clin Med* 28: 747 (March) 1944. Ober F W. Personal communication to the authors.

31. Andrews H L. The Effect of Morphine and Prothimine Methyl sulfate on Measurements of Pain Threshold. *J A M A* 120: 2 (Oct 17) 1942. The Development of Tolerance to Demerol. *J Pharmacol & Exper Therap* 75: 338 (Sep.) 1942.

32. Batterman R C. Unpublished data.
33. Kolb Lawrence, and Himmelsbach C K. Clinical Studies of Drug Addiction. III. A Critical Review of the Withdrawal Treatment with Method of Evaluating Abstinence Syndromes. *Pub Health Rep* Supplement 1: 8 1945. *Am J Psychiat* 94: 59 (Jan) 1946.

dependence on Demerol has not yet been encountered in "normal" persons it has been produced in former addicts.³⁴ However, because of the brief duration of the physical dependence action of Demerol and its lesser potency than morphine in this regard the experimental production of physical dependence on Demerol is not easy even for such patients. For example, habituation but no significant physical dependence resulted from the administration of 75 mg. of Demerol four times a day for a period of three months. Nor did clinically significant physical dependence develop when the drug was administered in amounts of 75 to 100 mg. eight times a day for four weeks to former addicts who had never before received Demerol. However, those who had had previous experience with Demerol developed definite physical dependence to the latter dosage after two weeks of readministration. On the other hand when Demerol was clinically readministered to patients who were not former addicts, abstinence phenomena were not encountered on its subsequent discontinuation. While the implication of these results is not yet clear they suggest that a somewhat different mechanism may be involved than that entailed in the development of physical dependence to morphine.

It would seem therefore that questions concerning the development of physical dependence on Demerol must be considered from the following points of view:

1 Can Demerol produce physical dependence? The answer to this is yes.

2 Is physical dependence likely to result from the bona fide use of Demerol in the practice of medicine? This has not been encountered nor do we feel that it is likely to be if the therapeutic requirement is not exceeded. On the other hand it is not uncommon to note the development of physical dependence on opiates by patients requiring their use for a chronic ailment. Such patients are not usually considered addicts in the sense that abuse of the drug is not an outstanding feature. Nevertheless it is often difficult to distinguish between the actual necessity for morphine to alleviate the condition or satisfy the physical dependence. This experience agrees with the theoretical relationship³⁴ to the development of physical dependence of the relative potencies and the durations of action of morphine and of Demerol the latter being weaker and shorter in its physical dependence action.

3 Under what conditions may physical dependence to Demerol be expected? (a) In an unstable person who otherwise would abuse an opiate to the point of addiction but who had had no previous opiate experience? While this is a very important question it cannot be answered at the present time, since the drug has been available to this type of person for an insufficient period of time.

(b) In an unstable person suffering an illness requiring prolonged administration of a potent analgesic who will seek the drug subsequent to discharge not for continued therapeutic effects, but because it satisfies his inebriate impulse? Again, we do not know, for the same reason.

(c) In an otherwise normal person suffering an illness requiring the prolonged administration of a potent

analgesic? To date it has been possible to study this question by withholding the drug from 47 of 115 patients³⁵ who had received it for long periods of time. In none of these patients were signs or symptoms of abstinence encountered.

(d) In a former morphine addict? If Demerol is abused by such a person, physical dependence is apt to result. It is not yet known whether the therapeutic use of Demerol for the relief of chronic painful conditions in former addicts is liable to result in physical dependence. Results of its chronic administration in therapeutic doses to pain-free former addicts suggest that it may be safer than morphine in this regard.

The ability of Demerol to produce physical dependence among former morphine addicts raises the question of whether or not the drug is of any value in the treatment of the morphine abstinence syndrome. Although it is conceded that the best drug for this purpose is morphine itself, Demerol also definitely modifies the syndrome and can be used satisfactorily in place of morphine for this purpose.³⁵ Its ameliorative action is considerably briefer than that of morphine and this must be taken into account in prescribing a rapid reduction treatment with the drug. Large frequent doses are required when patients are being treated who have shown a strong dependence on morphine. For such patients Demerol is not only less satisfactory than morphine but may result in undesirable side actions including toxic psychosis. With patients who have less intense physical dependence, Demerol is a satisfactory drug in the treatment of the morphine abstinence syndrome. It must be emphasized however, that if Demerol is continued in the treatment of such patients, physical dependence may be shifted from morphine to this drug. Hence it is necessary to reduce the dose progressively. Furthermore, "breaking the habit" in an individual case while under observation does not constitute a "cure" since the psychiatric makeup of the patient remains unaltered and unless corrected drugs are resorted to again on discharge.

CONCLUSION

With the exception of the production of cough and diarrhea, Demerol has been found to be a satisfactory therapeutic substitute for morphine. It appears to possess the following clinical advantages over morphine:

1 Its spasmolytic action makes it ideal for the relief of conditions due to smooth muscle spasm in which morphine is pharmacologically contraindicated.

2 Its rapid dissipation tends to offset undesirable cumulative effects such as respiratory depression and urinary retention.

3 Prolonged use of Demerol may lead to the development of habituation but it appears to possess a lesser liability than morphine for the development of physical dependence.

In order to avoid the dangers of habituation, physical dependence and undue cerebral irritability amount greater than 150 mg. every three hours should not be given. We wish to reemphasize the point that if this amount will not meet the clinical need, increasing the dose and shortening the interval not only may not have any additional therapeutic value but is apt to result in serious consequences.

477 First Avenue

³⁴ Himmelsbach, C. K. Studies of Certain Addiction Characteristics of (a) Dihydromorphine ("Paramorphan"), (b) Dihydrodesoxymorphine D ("Desomorphine"), (c) Dihydrodesoxycodine D ("Desocodeine") and (d) Methylhydromorphine ("Metipon"), J. Pharmacol. & Exper. Therap. 67: 239 (Oct.) 1939.

³⁵ Preston, W. A., Wessel, C. and Pfeffer, A. Z. Personal communication to the authors.

2 Hall M C Pub Health Res 33 1-2 (Jul) 1910
Besson P B Proc Roy Soc Med 34 5 (Oct) 1911
Committee appointed by Advisory Council on Live and Meat
Research Trichinosis and Non-meat Infections with Trichinella
spiralis J N A 114 (Jan 6) 1912 Wright W H Am J
Lil Health 29 119 (Feb) 1919 Rutledge H Schwab Arch Trop
Dis 10 10 (Apr) 1914 Scott J J 33 1151 (May) 1910

No swelling existed, but the patient thought there had been slight swelling over the right trapezius muscle. No gastrointestinal symptoms were noted until December 16, when slight nausea occurred. There was no vomiting or diarrhea, and the nausea lasted less than twenty-four hours. Differential blood count on December 12 revealed a 10 per cent eosinophilia.

The attempt to determine the source of *Trichinella spiralis* was productive of almost too many leads. On November 14 the patient ate bear meat at his own home. This was thought to be slightly rare. Bear meat was consumed on several occasions between that date and November 30, and during this period approximately 12 other persons had eaten of the same portions of the animal. On November 16 the patient had eaten rare roast pork at a dinner served to 22 persons. On November 19, on returning from a hunting trip in a neighboring county, he had stopped at a small tavern where he ate four small slices of smoked sausage along with a glass of beer. Two other men who were with him had eaten large quantities of the sausage, estimated to be about a half a pound per man. On November 30 the patient attended another supper at which meat loaf was served. He thought the loaf contained pork but had been well cooked. A total of 55 persons had eaten of the foods indicated but no one else had become ill.

Of these foods only the bear meat was available for analysis. It had been in cold storage at about 10 F° for forty-five days preceding laboratory examination on January 14. The bear had been shot in northern New York State at a location about 30 miles from the nearest village. Examination of a portion of the muscle from the shank revealed *Trichinella spiralis*.

217 Park Street

Special Article

HANDBOOK OF NUTRITION XIII

FOODS OF ANIMAL ORIGIN

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NEW YORK

These special articles on foods and nutrition have been prepared under the auspices of the Council on Foods and Nutrition. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the Council. These articles will be published later as a Handbook of Nutrition.—Ed

NATURAL AND ECONOMIC RELATIONSHIPS

Grouped according to natural relationships and then arranged in descending order of economic prominence, the chief types of food of animal origin are as follows:

1 Meats, including fish and poultry, which together command about one fourth¹ of the average American expenditure for food.

2 Milk in its various forms, including cheese, cream and ice cream, representing usually one tenth to one-eighth of the food budget.

3 Butter and other animal fats, about one tenth.

4 Eggs, about one twentieth.

5 Shellfish, which occupy but a small place in the nation's food budget but lend interest to variations in the dietary.

While this sketch will be systematized largely in terms of this fivefold grouping of its subject matter, it will also be possible to avoid repetition by arranging the discussion according to successive aspects of nutritive value.

Owing to lack of space, this article is abbreviated in THE JOURNAL by omission of table 1. The complete article will appear in the Handbook of Nutrition.

¹ Here and elsewhere such quantitative statements are to be somewhat flexibly construed, because in food statistics the fat meats are sometimes included under meats and sometimes under fats.

PHYSICAL STRUCTURE, PROXIMATE COMPOSITION, PROTEIN AND ENERGY VALUES IN NUTRITION

Meats, Poultry and Fish—In recent years pork has somewhat outranked beef in the American food supply, with lamb and mutton occupying a place far below that of beef and veal. The slaughtering of the meat animals of these three species is a highly centralized industry in the sense that a large proportion of the animals raised for meat are slaughtered in large establishments.

In the case of swine the head is left on the dressed carcass, while with cattle, sheep and lambs the head is removed and the dressed carcass divided longitudinally by splitting the backbone. For this reason and also because of greater fatness the dressed weight of swine is about 80 per cent of the live weight, of beef it is about 60 per cent, of lamb and mutton, about 45 to 50 per cent. Of the butcher's meat about 97 to 98 per cent is muscle, with its accompanying adipose tissue and bone, and only about 2 to 3 per cent is liver. That there is no way of increasing the ratio of liver to muscle meat is of course an obvious fact yet one which often seems to be forgotten when liver is emphasized as a food. Liver can never take a large part in the general food supply, its importance in dietetics lies in getting it consumed by the patients who specifically need it rather than in teaching other people to want it.

The proximate composition and energy value for each sufficiently important food of animal origin is given in table 1, based on the recent government compilation of such data for these and other American food materials.

Market classes and grades of beef and lamb relate to physical properties of the meat which, except as fat affects both, have little if any nutritional significance. Such conventional preferences should be reexamined from time to time in the light of newer knowledge. For example, the fashion has been to prefer that meat fat be firm and white, whereas we now know that a softer, yellower meat-fat is apt to be superior nutritionally.

The muscle tissue, considered separately from all deposited fat, i. e. "clear lean" meat, is of fairly constant composition: about 1 per cent of total mineral matter, 20 to 25 per cent of protein and the rest water. There is somewhat less protein and more water in the muscle tissue of fish than of land animals, and in young than in mature animals of a given species, but among the meats and fish ordinarily entering into the human diet any the latter differences are not of such degree as to have much effect on nutritive values.

The outstanding source of difference in the nutritive character of meats is the widely varying proportion of fat. The fatty layers, or masses or adipose tissues, of meat may be thought of as similar in composition to butter: 80 to 90 per cent of actual fat, with about 15 per cent of water, small amounts of protein and salts.

The approximate average percentages of protein and fat have been determined for many kinds and cuts of meat as illustrated in table 1.

This table also shows the proximate composition and energy values of the other chief foods of animal origin.

In composition and energy value there is no distinct gap between the fat meats and the commercial fat.

² Chatfield, Charlotte, and Adams. Georgian. Proximate Composition of American Food Materials. Circular 549. U. S. Dept. Agriculture. June 1940.

Fat pork is, in fact, sometimes grouped with meats and sometimes with fats. If this is kept in mind it will clear up some apparent discrepancies in food statistics.

Eggs, like lean meats, are about three fourths water, with about 1 per cent of mineral matter, but the organic matter for the egg as a whole consists about equally

TABLE 2—Approximate Average Relationships of Mineral Elements to Protein in the Chief Types of Food of Animal Origin

	Grams of the Mineral Element per Hundred Grams of Protein			
	Meats	Fish	Eggs	Milk
Calcium	0.038	0.109	0.453	3.572
Magnesium	0.118	0.133	0.101	0.343
Potassium	1.624	1.671	1.078	4.056
Sodium	0.471	0.373	1.094	1.457
Phosphorus	1.078	1.148	1.750	2.657
Chlorine	0.378	0.508	0.938	3.028
Sulfur	1.146	1.119	1.539	0.971
Iron	0.015	0.0055	0.074	0.0057

of protein and fat. Egg white is about seven eighths water and one eighth protein, while egg yolk is about one half water, one third fat and one sixth protein.

The actual averages of these constituents for all the foods here mentioned as well as other foods of animal origin, as officially published by the U. S. Department of Agriculture, are given in table 1.

Milk, Cream and Cheese—While none of the staple meats contain any significant amount of carbohydrate, milk contains more of lactose than of either protein or fat. Milk is also much more watery than even the leanest meat, the latter having about one fourth solids while fresh whole milk has only about one eighth, and fat free milk (the analogue of clear lean meat) is more than nine tenths water and less than one tenth solids.

Cream differs from milk simply in containing more of the fat globules with a consequent (relatively small) diminution of the watery part (aqueous phase) of the milk in which its carbohydrate (lactose, milk sugar) is dissolved and in which its proteins and mineral matters are partly dissolved and partly held in aqueous dispersion. The fat globules constitute one part in 25 or 30 of average whole milk. Hence cream containing, say, five or six times as much fat as milk does, will still contain four fifths to five sixths as much as milk does of all the other milk constituents. Enrichment of the dietary in these milk constituents is often nutritionally desirable. It is therefore important to remember that if milk itself is not relished, cream may be used instead.

Cheese is another form of milk which may be more interesting to the consumer than the milk itself. In general, an ounce of cheese is equivalent to a pint of milk, though of course most of the lactose, certain fractions of the protein, mineral and vitamin values have escaped in the whey. The cheese retains, however, nearly all of the fat and fat soluble vitamins of the milk and much the greater part of the protein, the calcium and the riboflavin. (All this, of course, refers to real cheese, not cottage cheese, which retains very much less of the mineral and vitamin values.)

Shellfish share with milk the property of containing a significant percentage of carbohydrate (in their case glycogen), but otherwise their composition resembles that of meats, fish and poultry.

MINERAL ELEMENTS AND THEIR NUTRITIONAL AVAILABILITY

Statements regarding the nutritional characteristics and nutritive values of meats are complicated (and may become confused or misleading) by the wide differences in fatness and resulting chemical composition among meats. This is true not only as between different species used as human food but also as between different individuals of the same species (and even of the same sex and age) and often as between different cuts from the same carcass.

Considered aside from the glandular organs and from bone, meats may be regarded as essentially composed of muscle tissue and adipose tissue, but these in quite variable proportions (quantitative relations).

Relatively few samples of meat have been analyzed for individual mineral elements. These have been chiefly clear lean specimens because it has been considered and is doubtless true that the mineral elements, like the proteins, belong essentially to the protoplasmic part of the meat. From the same point of view it may be expected that, as far as the influence of the varying amounts of fat on the mineral values of the meat are concerned, the amounts of the mineral elements will run essentially parallel with the amounts of protein. Hence in calculating the nutritive values of dietaries or larger food supplies one may, after computing the total meat protein from such data as those in table 1, then estimate the mineral contents by relation to the protein, using conventional average figures such as those given for meats and fish separately in table 2. For comparison table 2³ shows the amounts of the chief mineral elements for milk and for eggs as well as for meats and for fish, each per hundred grams of protein in the respective food.

TABLE 3—Composition of Meat Samples (Forbes and Swift)

Sam- ple No.	Kind of Meat	Iron per Cent	Nitro- gen per Cent	Protein (N x 6.25) per Cent	Ether Ex- tract per Cent	Mois- ture per Cent	Mg Iron per 100 Gm of Pro- tein
105	Bacon, cured	0.0013	1.67	10.44	64.10	22.31	12.5
107	Ham, cured	0.0014	3.37	21.06	13.60	64.61	6.6
114	Pork shoulder	0.0015	2.93	18.31	14.41	67.14	8.2
108	Pork hind quarter	0.0015	3.14	19.63	10.54	69.07	7.6
112	Lamb shoulder	0.0016	3.01	18.81	6.94	72.95	8.5
113	Lamb hind quarter	0.0016	3.25	20.31	5.27	75.59	7.9
109	Beef rib	0.0024	3.24	20.25	6.05	72.70	11.9
100	Beef round	0.0025	3.55	22.19	3.48	74.65	11.2
101	Beef loin	0.0025	3.29	20.56	6.59	72.02	11.3
103	Beef chuck	0.0025	3.17	19.81	7.13	72.84	10.6
109	Veal fore quarter	0.0023	3.47	21.69	1.70	76.08	10.6
110	Veal hind quarter	0.0027	3.54	22.13	1.54	76.68	11.2
116	Veal kidney	0.0040	2.61	16.31	4.17	77.82	24.5
111	Beef heart	0.0044	2.59	16.19	4.94	78.91	21.2
117	Beef brain	0.0053	1.68	10.50	7.89	79.15	50.6
104	Beef liver	0.0082	3.30	20.63	4.66	68.33	29.7
115	Beef spleen	0.0135	3.03	18.94	1.90	77.50	71.9
106	Beef kidney	0.0188	2.58	16.13	1.85	78.67	116.6
118	Beef blood	0.0444	2.87	17.94		89.99	241.5

Especially in the case of the iron contents of meats it was never intended to imply that the approximate average relationship indicated in table 2 should hold good for each different organ and tissue. Forbes and Swift⁴ have published the results of their determina-

³ By permission of the Macmillan Company publishers the data here given are in part taken from pages 563 and 564 of *Sherman's Chemistry of Food and Nutrition*, ed. 6 (May 1941) and in part adapted from the extensive table of which these pages are a part.
⁴ Forbes, E. B. and Swift, R. W. *Iron Content of Meat*. J. Biol. Chem. 67: 517 (Feb.) 1926.

tions of iron in 18 individual samples of meat (and a sample of blood). These results are here reprinted, by permission, as table 3.

When account is taken of the relative quantities in which the different kinds of meat enter into the American food supply, the data for iron in tables 2 and 3 are seen to be quite consistent.

Less consistent are the published findings as to the nutritional availability of the iron of meats. Even the papers of such eminent investigators as Whipple and Elvehjem give such divergent impressions that it seems still an open question whether the different methods commonly accepted as indicative of the relative quantitative utilization of food iron in nutrition should be considered as measuring availability in the same (or in any closely comparable) sense. Numerical expressions of availability or utilization of meat iron in nutrition are therefore omitted here lest they should confuse instead of clarifying the subject.

TABLE 4—Approximate Percent Vitamin Values of Some Typical Foods of Animal Origin

Food	Data to May 1, 1943		
	Vitamin A Value, International Units per 100 Gm.	Thiamine Micrograms per 100 Gm.	Riboflavin, Micrograms per 100 Gm.
Pork, lean	Negligible	900	210
Bacon, medium fat, raw	Negligible	100	100
Beef, clear, lean, raw	Negligible	160	20
Lamb, lean, raw	Negligible	200	20
Chicken, dark meat	Negligible	200	200
Chicken, light meat	Negligible	200	60
Eggs	100	10	30
Egg, white	Trace	Trace	20
Egg, yolk	4000	400	50
Milk	100	50	20
Cream (24% fat)	1500	40	160
Ice cream (12% fat)	800	50	200
Cheese (12% fat)	2000	40	400
Butter	1500	Negligible	Negligible
Oysters	200	200	Undetermined
Milk, dried, skim	Undetermined	500	2000

We know of no reason for doubting the nutritional availability of the other mineral elements of meats and of all the mineral elements of milk and eggs.

VITAMIN VALUES

The vitamin A value of a dietary, and of most of the individual foods of animal origin, is due (1) to vitamin A itself and (2) to its precursors, which are formed in plants and to some extent are stored in the animal body, where, however, the greater part is changed into vitamin A. Corresponding with the nutritional importance of vitamin A we find that evolution has accentuated the property of transfer of this vitamin from one generation to the next through milk and eggs. Most of the vitamin A which the body itself retains is held in the liver, whose content of this and other vitamins thus varies so greatly with the individual nutritional background as to make it seem nearly meaningless and perhaps misleading to attempt numerical averages in table 4. Taking account of available quantities, milk (including cheese, cream and ice cream), butter, margarines enriched with vitamin A from fish liver oils, the fish oils themselves and eggs are the chief sources of animal origin.

Of the B vitamin group our knowledge is as yet very uneven. Approximate average thiamine and riboflavin contents of typical foods of animal origin, based

on a study of all the data available to June 1942 (including unpublished findings consulted through the courtesy of Dr. C. N. Frey, Dr. R. R. Williams and Dr. V. H. Cheldelin, as well as my co-workers at Columbia) are given in table 4. Lean meats, eggs, milk, cheese, cream and ice cream are all noteworthy sources of riboflavin when taken in the quantities which are normal to typical American dietaries. In such dietaries, milk and its products will furnish something like one half of the total riboflavin, and meat and eggs the greater part of the remainder. Of thiamine the foods of animal origin are not such prominent contributors, a relatively larger share of the responsibility for the thiamine intake resting on enriched and whole grain breadstuffs and cereals. Lean pork is richer in thiamine than other common meats.

Niacin (nicotinic acid) is qualitatively well established as an antipellagic factor, but the estimates of quantities of niacin contained in foods or concerned in nutrition are as yet very tentative and uncertain, and it is a mistake (though doubtless one for which we scientists are ourselves responsible) to suppose that niacin bears any such clearcut relation to pellagra as, e. g., ascorbic acid bears to scurvy. On paper, pellagra may have been redefined as nicotinic acid deficiency, but the typical pellagrin actually needs so much more than this one factor that his case is probably not so parallel with that of the blacktongue dog as has often been assumed, and for the same reasons as well as because of the uncertainties of present analytic methods, figures comparing the estimated nicotinic acid contents of foods are apt to give very misleading impressions. Therefore I do not attempt to include them in table 4, or the other B vitamins now recognized but of which our knowledge is as yet little more than qualitative.

From a combined study of the earlier work of Osborne and Mendel and the recent work of Elvehjem and his co-workers at Wisconsin, it appears probable that both milk and meat contain all the B vitamins concerned in mammalian nutrition.

Ascorbic acid has been shown by Bessey and King⁵ to occur normally in amounts demonstrable by modern methods in animal tissues generally, especially the glandular organs. Muscle, however, contains very little, and this is further reduced by the time the meat is served at table. For the purposes of practical dietetics, therefore, the vitamin C value of meats is considered negligible, also that of eggs. Fresh milk and oysters furnish about 2 to 3 mg. of this vitamin per hundred grams. The extent of the loss in present day pasteurization of milk has been repeatedly found to be about one fifth. In practice we look to fruits and vegetables rather than to the foods of animal origin for our dietary vitamin C.

Vitamin D is present in only negligible amounts in meats generally, slightly more in liver, milk and butter, distinctly more in eggs. The amounts contained in these foods have, however, been but little studied, since it has been shown that the fish liver oils contain very much greater concentrations and also that milk can readily be fortified to make the now familiar "vitamin D milk" of commerce.

⁵ Bessey, O. A. and King, C. G. The Distribution of Vitamin C in Plant and Animal Tissues and Its Determination. *J. Biol. Chem.* 103: 687-698 (Dec.) 1933.

For the reasons just given the data on vitamins C and D naturally present in foods of animal origin are omitted from table 4

Losses of Vitamins in Cooking—Losses in cooking are usually larger for vitamin C than for any of the other vitamins. Several independent investigations have consistently shown the diminution of 18 to 20 per cent in the vitamin C value of milk in modern pasteurization and there is no reason to suppose that the loss would be very different in ordinary cooking operations. There has been no occasion for the comparison of different foods of animal origin in this respect, as so few of them have measurable vitamin C value. Cooking losses of thiamine and riboflavin seem to be higher for meat than for milk, with eggs probably occupying an intermediate position but yielding extremely variable results according to the mode and conditions of cooking. The cooking losses of thiamine and riboflavin in meats have also seemed to vary greatly in the investigations thus far reported, and much additional experimental work in this field is now proposed and in some cases in progress. Hence it seems better not to record in numerical form any findings which could now be given since we may hope that more conclusive data will be available soon.

OTHER DIETARY CONSIDERATIONS

There is experimental evidence, the fuller explanation of which is still under active research, that some fats of animal origin have special values in nutrition beyond those due to the hitherto well established factors. To Dr Burr in Minnesota and to Dr Hart in Wisconsin, who with their respective co-workers are outstandingly engaged in two such lines of research, I am indebted for personal communications bringing their findings up to May 1942 as follows. Dr Burr holds that, while the explanation is still a research problem, a few fats including lard are superior to many other food fats as shown by growth experiments with young rats, and Dr Hart writes "Our work with the 21 day old rat supports the conclusion that there are in butter fat saturated fatty acids of high molecular weight which accelerate the rate of growth as compared with such vegetable oils as corn oil, cottonseed oil, soybean oil, coconut oil and olive oil."

While meat, eggs and milk are much alike in the nutritional efficiency of their proteins, yet these are accompanied by other nutrients which in some respects are quite different either in kind or relative amount, with the result that meat and eggs do not assist the body, as does milk, in the maintenance of its alkali reserve and of a favorable intestinal flora, and hygiene of the alimentary tract. Also the larger the proportion in which milk is used as source of animal protein the better insured is the liberality of calcium intake which is now known to be more important at all ages than hitherto understood.

Limitation of space forbids discussion here of the relative economy of the different foods of animal origin from the point of view of the percentage of the food-money which is spent for each and its percentage contribution to each of the nutrient factors of the dietary, but this is something which physicians in the future may well carry in mind now that we know how greatly health depends on the wise investment of the money available for food.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

PROCAINE HYDROCHLORIDE (See New and Non-official Remedies, 1942, p. 56)

The following dosage forms have been accepted

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Ampuls Solution Procaine Hydrochloride 2% W/V 2 cc Each cubic centimeter contains 0.02 Gm of procaine hydrochloride, 0.005 Gm of chlorobutanol and 0.001 Gm of sodium bisulfite in distilled water

Ampuls Solution Procaine Hydrochloride 2% with Epinephrine 1:20,000 3 cc Each cubic centimeter contains 0.02 Gm of procaine hydrochloride, 0.05 of epinephrine, 0.005 Gm of chlorobutanol and 0.001 Gm of sodium bisulfite in distilled water

Solution Procaine Hydrochloride 2% W/V 30 cc and 100 cc vials Each cubic centimeter contains 0.02 Gm procaine hydrochloride, 0.005 Gm of chlorobutanol and 0.001 Gm of sodium bisulfite in distilled water

Solution Procaine Hydrochloride 2% with Epinephrine 1:25,000 30 cc and 100 cc vials Each cubic centimeter contains 0.02 Gm of procaine hydrochloride, 0.04 mg of epinephrine, 0.005 Gm of chlorobutanol and 0.001 Gm of sodium bisulfite in distilled water

THIAMINE HYDROCHLORIDE (See New and Non-official Remedies 1942 p. 555)

The following dosage forms have been accepted

DRUG PRODUCTS CO., INC., LONG ISLAND CITY, N. Y.

Hyposols Solution of Thiamine Hydrochloride Crystals, 100 mg per cc 10 cc and 30 cc vials Preserved with 0.5 per cent of chlorobutanol

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Solution Thiamine Hydrochloride, 100 mg per cc 5 cc, 10 cc and 25 cc vials Preserved with 1 per cent benzyl alcohol

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Solution Thiamine Hydrochloride, 100 mg per cc 10 cc vials Preserved with 0.5 per cent chlorobutanol

JOHN WILEY & BROTHER, INC., PHILADELPHIA

Ampoule Solution Thiamine Hydrochloride, 100 mg per cc 10 cc Preserved with 0.5 per cent chlorobutanol

DIODRAST (See New and Nonofficial Remedies, 1942, p. 309)

The following dosage form has been accepted

WINTHROP CHEMICAL CO., INC., NEW YORK

Ampules Diodrast Sterile Solution (35 Per Cent, Weight/Volume) 30 cc

MENADIONE (See New and Nonofficial Remedies, 1942, p. 584)

The following dosage form has been accepted

E. R. SQUIBB & SONS, NEW YORK

Solution Thyloquinone (in Corn Oil) (Oral), 1 mg per cc 5 cc, 10 cc and 50 cc vials Each cubic centimeter contains 1 mg of thyloquinone

DIPHTHERIA TOXOID, ALUM PRECIPITATED (REFINED) (See New and Nonofficial Remedies 1942 p. 513)

The following dosage form has been accepted

PITMAN-MOORE COMPANY, INDIANAPOLIS

Diphtheria Toxoid (Alum Precipitated, Refined) Two 1 cc vials (2 doses), 5 cc vials (5 doses) and 10 cc vials (10 doses) Preserved with 1:10,000 merthiolate

RABIES VACCINE (SEMPLÉ) (See New and Non-official Remedies 1942 p. 506)

The following dosage form has been accepted

PITMAN-MOORE COMPANY, INDIANAPOLIS

Rabies Vaccine (Killed Virus) Semplé Method 1 cc vials packaged in units of seven vials Preserved with 1 per cent of phenol

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 22 1943

INDUSTRIAL SOLVENTS

Most important in the field of industrial toxicology is the rapid development of new solvents for use in a variety of manufacturing processes. Many of these solvents were chemical curiosities a few years ago, now they are sold in carboy or even tank car lots. Inevitably the medical profession is consulted as to the possible harmful effects of using solvents and especially from breathing them.

Possible dangers from the use of these new chemicals are appreciated by the chemical industry. Manufacturers often establish research fellowships or special contractual arrangements with universities such as Pennsylvania, Harvard and Cincinnati, with specially qualified institutions such as the Saranac Laboratories and the Industrial Hygiene Foundation and with private consultants. Some manufacturers have well equipped laboratories of their own and staffs of specialists whose sole work concerns the industrial toxicology of their own products. The industrial hygiene laboratories of the Public Health Services at Bethesda, Md., are publishing an ever increasing volume of fundamental researches on industrial toxicology which are of the utmost importance to industry.

With this new information it is surprising that there has not been more interest in one of the fundamental problems of industrial toxicology—how much of some particular solvent is absorbed by a man exposed under definite conditions and how rapidly he excretes it when exposure ceases. In a series of papers which have proved of great practical value in anesthesia, Haggard of Yale showed by animal experimentation how two types of solvents, ethyl alcohol and common ether, are absorbed, metabolized and excreted. Of special significance was his proof of the fundamental physicochemical nature of the general processes involved. Necessarily he used doses measured in percentage or parts per hundred. He showed that ether was absorbed and excreted almost wholly by way of the lungs, while alcohol, which is highly soluble in body fluids, is

excreted both in urine and in exhaled air and also is metabolized.

In the paper by McKee and others,¹ analogous studies with carbon disulfide are described. The important difference between McKee's and Haggard's work lies in the difference in the compounds studied, but more particularly on the concentration levels or doses used. McKee could use small amounts (parts per million) and thus approximate industrial conditions. Carbon disulfide happens to be determinable chemically in minute quantities, a fact which made the work possible.

Carbon disulfide is absorbed largely by inhalation, the time required to produce saturation of the blood depends entirely on the concentration in the air breathed and is proportionally longer for higher air concentrations. The major part of the absorption of carbon disulfide at the low concentrations such as one encounters in industry takes place in the first thirty minutes, although complete saturation of all body tissues probably takes somewhat longer. Elimination by exhalation follows the same principles, but a considerable portion of the vapor is metabolized, which probably accounts for its recognized toxicity. The amount of muscular effort being expended by the workman exposed, the temperature of the air breathed and the relative humidity have no really significant effect on the amounts absorbed—their effect is wholly physicochemical.

Whether a new solvent is largely metabolized like alcohol or is excreted by breath like ethyl ether (carbon disulfide falls somewhere between the two) should be determined and the rate of absorption and excretion defined. Such figures enable industry to set safe concentration limits in the air of workrooms, a point of the greatest importance in industrial medicine.

GROWTH ACCELERATING PROTEIN

Isolation of a pancreatic protein that has remarkable growth promoting properties has been reported recently by White and Sayers¹ of Yale University. The protein was originally obtained by Kazel² as an insoluble residue after acid-alcohol extraction of the finely minced frozen beef pancreas. It was rendered lipid free by subsequent continuous extraction with acetone. Partial analysis of the oven dried (105 C) end product showed that it contained an average of 16.2 per cent of nitrogen, 1.56 per cent of phosphorus, 1.56 per cent of tryptophan and 3.85 per cent of tyrosine, with an atomic purine nitrogen-phosphorus ratio similar to that calculated from Loring's data³ for certain nucleic acids. Purine determinations suggested a nucleic acid content of 10 to 14 per cent.

1 McKee, R. W., Kiper, Central Foundation, J. H. Riskin, A. M. and Drinker, Philip. A. Solvent Vapor Carbon Disulfide Absorption Elimination, Metabolism and Mode of Action this issue p. 217.

2 Kazel, L. A., Westfall, R. J., Cieresko, I. S., Risley, E. A. and Arnov, L. E. Proc. Soc. Exper. Biol. & Med. 51: 268 (Nov.) 1942.

3 Loring, H. S. J. Biol. Chem. 130: 251 (Sept.) 1939.

Recently weaned male white rats were placed on a basal diet containing 22 per cent of this protein or the nitrogenous equivalents of other proteins. The control proteins included commercial casein, dried whole beef serum, heat coagulated beef serum protein, pumpkin seed globulin and soy bean protein. Each diet contained 25 per cent of crisco, 35 per cent of starch and 4 per cent of Osborne-Mendel salt mixture with a daily supplement of 400 mg of dried yeast and 200 mg of cod liver oil.

An extraordinary difference was observed in the average daily consumption of these diets, the lowest ad libitum consumption (47 Gm) being with the diet containing 25 per cent of heat coagulated beef serum protein. The daily consumption of the diet containing 22 per cent of pancreas was more than twice that amount (108 Gm), other diets occupying intermediary positions. The Yale physiologists offer no reason to account for this remarkable difference in daily food intake.

Even greater differences were noted in the nutritional value of the different diets. Here the slowest growth rate was recorded with animals fed 21 per cent of soy bean protein each daily ingested gram of this diet leading to a daily increase of only 0.19 Gm in body weight. The diet containing 22 per cent of pancreatic protein was three times more effective, giving a 0.55 Gm daily increase in body weight per gram of food intake. With the exception of casein, other proteins occupied intermediary positions. Commercial casein also gave a daily increase in body weight of 0.55 Gm per gram of ingested basal diet. Here also no theory was suggested to account for the remarkable nutritional differences.

As a result of the increased daily consumption of the diet containing pancreatic protein and its exceptionally high nutritional value, an extremely accelerated growth rate was recorded for the pancreas fed rats. During the first twenty-eight days the control soy bean diet led to only a 28 Gm increase in body weight. The pancreatic protein gave a twenty-eight day weight increase six times as great, i.e. 166 Gm. The second best protein (casein) led to a weight increase of 133 Gm during the same length of time, other control proteins occupying intermediary positions. Comparison between the two superior proteins (pancreatic residue and casein) was continued for a hundred and forty-five days, at the end of which time one of the rats that had been fed on pancreas had reached a body weight of 640 Gm, while its casein control litter mate weighed only 490 Gm.

The physiologists emphasize the fact that the ratio of body length to body weight remained constant throughout all their experiments.

With the present overemphasis on the health producing and growth promoting properties of vitamins,

proof of equally definite acceleration of growth by the use of certain selected proteins is of basic clinical interest. The nutritional inferiority of soy bean protein is particularly suggestive, even though "soy bean dwarfism" has thus far been demonstrated only with white rats.

RESULTS OF HOSPITAL TREATMENT OF NARCOTIC DRUG ADDICTS

A thorough, well organized follow-up study¹ has been made of 4,766 male patients discharged from the United States Public Health Service Hospital at Lexington, Ky., during the period from Jan. 1, 1936 to Dec. 31, 1940. All these patients had received treatment in the hospital for addiction to narcotic drugs. The only narcotics mentioned in the report are opium and its derivatives. The follow-up was carried out between July 1 and Dec. 31, 1941. In other words, at least six months after the discharge of the last patient in 1940.

The results of the follow-up are presented in detailed tabulations, which are analyzed and discussed from various points of view. The patients fall into four general classes: voluntary, probationer patients, paroled prisoners and prisoner patients. A probationer patient is a narcotic drug addict who for violation of a federal law, has been given a probationary sentence on the condition that 'he goes to one of the United States Public Health Service hospitals either at Lexington or Fort Worth for treatment and remains until pronounced cured by the medical staff.'

The state as to addiction of 39.6 per cent of the 4,766 discharged patients could not be determined, 7 per cent had died after leaving the hospital, 39.9 per cent had relapsed to the use of drugs and 13.5 per cent were still abstinent. Excluding the dead and the unknown, 74.7 per cent had relapsed and 25.3 per cent had remained abstinent.

The analysis of the facts about the different classes of patients led to the important conclusion that the most successful program of treatment for narcotic drug addicts includes a comparatively short period of hospitalization, not less than two months but not more than five, with acceptable employment as a prerequisite for release, and then adequate extramural supervision for three years with periodic check-up examinations. This means that for patients placed on probation for three to five years the one innovation necessary to carry this program into effect would be compulsory employment. Periodic check-up services have been initiated at the Lexington hospital. The general belief that a drug addict can never be cured is not supported by this follow-up study.

¹ Professor Michael J. Folio, *Follow Up Study of Treatment of Narcotic Drug Addicts Discharged from the Public Health Service Hospital at Lexington, Ky.*

Current Comment

EPIDEMIOLOGY OF RHEUMATIC FEVER

During the past ten years great activity has taken place in research on rheumatic fever. As pointed out by Paul,¹ appreciable strides have been made in understanding the epidemiology of rheumatic fever, owing in large part to the notable contributions of Hedley on rheumatic heart disease in Philadelphia hospitals. The appreciation of the pathogenesis of this disease has taken a new turn with the recognition of its close relationship to hemolytic streptococcus infections—a development based largely on the work of Cohn. Observations along these lines have wrought a profound change in present conceptions regarding the nature of rheumatic fever. The recent publication of a new edition of a book on the epidemiology of rheumatic fever, the first edition of which was published in 1931, constitutes a welcome summary at this time. It reviews the present status of the associations between rheumatic fever and acute hemolytic streptococcus infections, the geographic prevalence and climatic influences on the disease, the age, sex and racial prevalence, living conditions, the rheumatic family and like items of epidemiologic significance. There are four appendices. The professional work of the author, Dr. Paul, and of the other members of the committee of the American Heart Association interested in the publication of this book assure its authoritative nature.

CITRATE SOLUTION FOR DISSOLVING PHOSPHATIC URINARY CALCULI

The desirability of a method for dissolving urinary calculi in situ by retrograde introduction of a suitably nonirritating solution has long been recognized. Suby and Albright,¹ who have studied this problem for several years, now report their results in 6 selected cases in which phosphatic urinary calculi were treated by the retrograde introduction of a citrate solution rendered less irritable than previously tried solutions by the addition of magnesium. The main object of the treatment was to keep the solution in contact with the stone as much as possible. The actual apparatus employed in each case depended on whether a simple nephrostomy tube, a two way nephrostomy tube, two nephrostomy tubes, a ureteral catheter and a nephrostomy tube, or one or more ureteral catheters were used. Technical aspects also varied, depending on the degree of patency of the ureter and on the amount of irritability of the bladder and urethra. In 2 cases the solution was introduced through ureteral catheters and in the remaining 4 through nephrostomy tubes. In these 6 cases the solution was used successfully for the partial or complete dissolution of stones. One case

is also reported in which the attempted dissolution of a large stone was without success because the solution was prevented from coming in contact with the stone by a thin coating of an unidentified material, possibly an old blood clot. Suby and Albright emphasize that it is necessary to know before attempting to dissolve a stone with this solution, which they call solution G, that one is dealing with a phosphatic stone. Such a stone is composed of calcium phosphate with or without calcium carbonate or magnesium ammonium phosphate or both. Given the necessary indications, this solution appears to provide a practical method for dissolving certain types of urinary calculi.

HEALTH LEAGUE OF CANADA

A report just issued by the Health League of Canada¹ summarizes the work of the league and its several branches. The Health League of Canada has some of the aspects of the American Public Health Association, which, as the professional organization of public health workers, includes Canadian and other North American representatives. The Health League of Canada also has some of the characteristics of the several voluntary health associations in the United States which specialize in the fields of tuberculosis, eyesight conservation, mental hygiene and similar specialties. In its membership the Health League of Canada includes both professional and lay members. There are branches of the league in Quebec Province and Quebec City, Vancouver, Ottawa, Toronto, London and Niagara Falls. It has standing committees of the usual organizational type plus committees on milk, social hygiene, nutrition, industrial problems, diphtheria and publicity. Through this comprehensive official and citizens group the league conducts general educational activities in the health field through the press, the radio and a magazine entitled *Health*. It gives attention to venereal disease control and diphtheria prevention. It advocates universal pasteurization of milk. It has prepared literature and other educational activities in the field of nutrition and industrial health. Public health meetings are organized. The league is financed by endowment, popular grants and donations, tag days and subscription and advertising revenue from its magazine. Its total revenue for twelve months ended April 30, 1942 was approximately \$100,000. The Health League of Canada does through one comprehensive organization approximately the same type of health promotion work for the Dominion as is carried out in the United States by numerous health organizations of mixed professional and lay composition operating in much the same manner. Whereas in Canada coordination is attained through one organization, in the United States it has been attempted through the National Health Council and more recently through the National Conference for Cooperation in Health Education, in which more than forty health agencies are now participating experimentally to determine how efficient cooperation and coordination can be achieved.

¹ Paul, John R. *The Epidemiology of Rheumatic Fever and Some of Its Public Health Aspects*, distributed by the American Heart Association, 50 West Fifty-fifth Street, New York.

¹ Suby, H. I., and Albright, Fuller. *Dissolution of Phosphatic Urinary Calculi by the Retrograde Introduction of a Citrate Solution Containing Magnesium*, New England J. Med. **228**: 81 (Jan 21) 1943.

¹ Report of Twenty Third Annual Meeting Health League of Canada, 111 Avenue Road, Toronto, Ont., 1942.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession

PENICILLIN

Statement Released by the Committee on Medical Research

A N RICHARDS, Chairman

This statement is designed to acquaint the medical profession with the progress of efforts which are being made by the Committee on Medical Research of the Office of Scientific Research and Development, by the Division of Medical Sciences of the National Research Council and by certain commercial companies to promote investigation of the therapeutic usefulness of penicillin and to increase the available supply of this remarkable substance. They were initiated and are continuing as a phase of the war effort, directed primarily toward the benefit of our armed forces.

Penicillin was discovered by Fleming in London in 1929. The first information concerning its unique therapeutic possibilities was revealed in the publications in the *Lancet* (1940 and 1941) of experimental and clinical studies by Florey, Chain and their collaborators of Oxford. The intense interest in it now manifest in this country was initiated not only by those papers but by personal communications with Professor Florey during his visit to this country in the summer of 1941.

Florey's visit was arranged by the Rockefeller Foundation. After conferences with interested members of the National Research Council and the U. S. Department of Agriculture, Florey and his colleague Heatley proceeded to the Northern Regional Laboratory of the Department of Agriculture at Peoria, Ill. where studies were at once initiated by Dr. R. D. Coghill and Dr. A. J. Moyer on cultural characteristics of *Penicillium notatum*, the organism which makes penicillin, and on methods of purification of that substance. These studies are still continuing and have been of great value to those who are undertaking the production of penicillin.

Returning from Peoria, Florey consulted with several commercial companies in the hope that they might undertake production developments. His efforts in this direction were supported by encouragement from the Committee on Medical Research and the National Research Council and in the early autumn of 1941 research looking toward production was begun in the laboratories of Merck and Company, E. R. Squibb and Sons, Charles A. Pfizer and Company, the Lederle Company, and perhaps others of which we were not aware. That research has continued, the interest of other companies has been aroused until today some sixteen companies are engaged in or intend to become engaged in the production of penicillin. In no instance has production advanced beyond the pilot plant stage, in the majority it is still in the laboratory stage.

The difficulties which confront large scale production are very great. They arise chiefly from the fact that in the metabolism of the mold only very minute amounts

of penicillin are formed and those only after days of growth. A yield of as much as 1 gram of the purified product from 20 liters of culture fluid would be regarded as exceptionally high. In impure solutions penicillin is unstable, it is destroyed by bacterial or other contaminations to which the culture fluids are highly susceptible. Difficulties have been encountered in choosing the most productive strains of the mold and the most suitable culture mediums in the development of methods for extraction and purification and in stabilization of the purified product.

The first clinical tests of penicillin in this country were reported by Dawson of Columbia in 1941. Other supplies became available in 1942, and in June of that year the Committee on Chemotherapeutic and Other Agents of the National Research Council, under the chairmanship of Dr. Chester S. Keefer, was invited to organize and supervise clinical investigations in selected hospitals, the records to be coordinated by Dr. Keefer and his committee. The costs of these studies, now proceeding in some twenty civilian institutions, are provided by contract with the Office of Scientific Research and Development recommended by the Committee of Medical Research. The results will be published in due course.

Six weeks ago arrangements were made by the Surgeon General of the Army for clinical tests at the Bushnell General Hospital, Brigham City, Utah. There were to be found among soldiers returned from the Pacific area many cases of unhealed compound fractures, osteomyelitis and wounds with long established infections. The results have been so encouraging that plans are now in process for undertaking similar wound studies in ten general army hospitals and venereal disease studies in six. A similar though less extensive plan will be pursued by the Navy.

The results of these investigations thus far have completely upheld the early promise contained in the reports of Florey, Chain and their collaborators. More than 300 patients have been or are being treated with penicillin. There is good reason for the belief that it is far superior to any of the sulfonamides in the treatment of *Staphylococcus aureus* infections with and without bacteremia including acute and chronic osteomyelitis, cellulitis, carbuncles of the lip and face, pneumonia and empyema, infected wounds and burns. It is also extremely effective in the treatment of hemolytic streptococcus, pneumococcus and gonococcus infections which are resistant to sulfonamides. It has not been found effective in the treatment of subacute bacterial endocarditis. Studies of the results of its local application are still inadequate.

Properly made preparations have given no toxic reactions, even from the largest dosage. Its rapid excretion in the urine necessitates frequent administration when given intravenously or intramuscularly.

The work of the coming three months can be expected to result in clearer definition of the conditions in military medicine in which penicillin will be most useful, of its limitations and of the most advantageous as well as the most economical methods of its administration.

At the same time intense efforts are being made by manufacturers to expand production to a point at which it may be made available in significant quantities not only for casualties returned to this country but also for our forces overseas.

Unless an expansion of production takes place at a greater rate than can now be foreseen, the supply for civilian medical needs in the near future will be exceedingly limited.

ARMY

AMERICAN SOLDIERS ESCAPE TYPHUS

Although more than 100,000 cases of typhus fever occurred in North Africa in 1942, American military forces in that region have come through almost untouched by this disease, according to statisticians of the Metropolitan Life Insurance Company. In Tunisia in 1942 there were more than 16,000 cases in Algerians more than 35,000 cases in French Morocco 26,000 cases and in Egypt about 23,000 cases. It is likely that the favorable situation will continue with regard to our military forces in that region because our military physicians are alert to the dangers from this disease which is still a menace to the health of the civilian population.

A potentially dangerous situation exists in the battle areas and occupied regions of eastern Europe but the facts are carefully concealed by German censorship. Even in Germany itself, which for generations has been free from typhus, numerous cases have been reported the first seven weeks of 1943 showing 800 or nearly twice the number of cases for the first quarter of 1942. There were more cases in Rumania in 1942 than at any time since 1931 for February 1943 the cases were said to have been 30 per cent greater than in the preceding February. Typhus is more prevalent in Bulgaria and in Hungary this spring than in 1942, some outbreaks have occurred even in France. The starved and ragged populations of eastern Europe are fertile soil for the spread of typhus. Until the axis armies are driven out of these countries and order and public health administration restored and the people get enough food and clothing, typhus will not be brought under control as it is among our own troops.

ANTITYPHUS DUSTING POWDER

Millions of 2 ounce cans of body dusting powder for the U. S. Army, already in the packs of North African troops, will protect overseas personnel against typhus-carrying pests, it has been announced by the Grasselli Chemicals Department of the du Pont Company. Though the powder contains some pyrethrum, an increasingly scarce standard ingredient of insecticides, according to a company official, substantial quantities are being saved by use of a du Pont developed synthetic. Laboratory tests have shown that the replacement compound, called IN-930, increases the efficiency of the pyrethrum in the powder.

FIRST WOMAN PHYSICIAN COMMISSIONED UNDER NEW LAW

Major Margaret D. Craighill, former dean of the Woman's Medical College in Philadelphia, who is the first woman physician to be commissioned directly in the Army under recently enacted legislation (THE JOURNAL, May 8, p. 123), will soon report for duty in the preventive medicine section of the Surgeon General's Office, Washington, D. C. According to the New York Times, Dr. Craighill's father and grandfather, Col. William E. Craighill and Gen. William P. Craighill respectively, were West Point graduates. Dr. Craighill was born in Southport, N. C., and grew up in Mobile, Ala., and in Portland, Maine. She received an A. B. degree from Wisconsin University in 1920 and an M. S. in 1921, and an M. D. degree from Johns Hopkins University in 1924. The next year she

interned there in gynecology and surgery. She was assistant in pathology at Yale University Medical School from 1925 to 1926 and assistant resident in gynecology at Johns Hopkins from 1926 to 1928. Dr. Craighill is a specialist certified by the American Board of Obstetrics and Gynecology.

PROCESSING PHYSICIANS, DENTISTS AND VETERINARIANS IN THE FIELD

1 This memorandum from the Officer Procurement Service, Washington, D. C., May 13, supplements the basic instructions on the subject contained in FT-34, Feb. 27, 1943. See also FT-38, FT-40, FT-42, FT-45, FT-47, FT-52, FT-56 and FT-58. See also FT-57.

2 *Change in Processing Procedure for Physicians and Dentists "Selling" Candidates*—a Attention is invited to FT-56, May 1, 1943, paragraph 3. It was there announced that, with the approval of the Surgeon General and the War Manpower Commission, the procurement procedure for physicians and dentists whose "availability clearance" forms were received from state Procurement and Assignment chairmen in California, Connecticut, Massachusetts, New York or Wisconsin had been changed so as to permit this service to try to "sell" such individuals on their patriotic duty to take steps to qualify for a commission.

b The Procurement and Assignment Service, War Manpower Commission, has announced that, effective at once, this "selling" program is authorized to be carried on by Officer Procurement Service with respect to physician and dentist candidates declared "available" in all states in which physicians and dentists, respectively, will be procured in 1943 as indicated in FT-34, paragraph 3a (1), (2) and (3), and paragraph 3b.

3 *Appointment of Interns*—a Attention is invited to FT-34, paragraph 2b. To provide for the establishment of a uniform policy for the appointment of Medical School graduates, the Secretary of War has directed:

"Appointments of individuals as first lieutenants, Medical Corps, Dental Corps or Veterinary Corps, respectively, in the Army of the United States may be made on recommendation of the Surgeon General on completion of their academic training at an approved medical, dental or veterinary school without reference to paragraph 7i, section II, AR605-10, Dec. 30, 1942."

b The purpose of this direction is to enable the appointment of medical school graduates prior to the completion of their period of internship, although they may not be called to active duty until completion of such period of internship. See the first proviso to paragraph 16i, OPS Manual for Procurement of Officers (revised through April 15, 1943).

BRITAIN TURNS OVER HOSPITAL TRAIN TO U. S. ARMY

A hospital train of six ward cars and a car for sitting up patients with a capacity of about 300 wounded has been turned over to the U. S. Army Medical Department in Great Britain, the first such train built there for the United States. This "reverse lend-lease project" was formally handed over on March 25 to Brig. Gen. Paul R. Hawley, U. S. Army Medical Corps.

CAPTAIN BROWNING DECORATED

The War Department has announced the award of the Silver Star to Capt James L. Browning, U. S. Army, formerly of Iron Mountain, Mich. for gallantry in action at Guadalcanal. The award was made by Lieut. Gen. Millard F. Harmon, commander of the U. S. forces in the South Pacific area. The citation reads "James L. Browning, captain, Medical Corps, United States Army for gallantry in action on Jan. 10, 1943 at Guadalcanal. At the point of exhaustion from a hard overland march, Capt. Browning cared for the wounded far into the night and performed surgery which saved many lives. These duties were performed under constant machine gun fire. Due to overexertion from long hours of work, it was later necessary for Capt. Browning to be evacuated to the rear." Captain Browning later on January 13 was wounded in action also. He was then returned to the homeland, where he is now recovering at Nichols General Hospital, Louisville, Ky.

RECIPROCAL MEDICAL ARRANGEMENTS
FOR CANADIAN AND UNITED
STATES SOLDIERS

Reciprocal medical arrangements have been made for Canadian and American soldiers whereby personnel of the U. S. armed forces while on duty, leave or furlough in Canada who cannot obtain medical or dental treatment from the United States facilities in Canada will receive free such treatment as is necessary for immediate requirement from the Canadian medical and dental services. If treatment or hospitalization will exceed thirty days, arrangements will be made for transfer, where possible, to the United States. Canadians in the armed forces in the United States who require medical or dental attention will report to the nearest U. S. naval or army hospital, the nearest veterans hospital or Veterans Administration office or to the nearest medical representative of the Veterans Administration. If none of these facilities are immediately available, the Canadian personnel will be admitted to civilian hospitals in the United States. The Canadian legation in Washington will be notified and bills for treatment will be forwarded to the Surgeon General of the U. S. Army, Washington, D. C. Officers of the U. S. Army admitted to Canadian hospitals will pay \$1 a day subsistence while patients.

ARMY PERSONALS

Brig. Gen. James S. Simmons, M. C., director of the Preventive Medicine Division, Surgeon General's Office, delivered the commencement address on March 21 at the graduation exercises for Washington University Schools of Medicine, Dentistry and Nursing in St. Louis. The title of the address was "New Horizons in Military Medicine."

The President has been authorized in Senate Bill 872 to appoint Frank T. Hines for many years administrator of the U. S. Veterans Bureau to be a brigadier general in the Army of the United States after which he would be placed on the retired list of the Army. General Hines held that rank before resigning to become head of the U. S. Veterans Bureau.

Col. Walter S. Jensen, M. C., executive officer in the Office of the Air Surgeon, delivered the annual Edwin J. Jarecki Memorial Lecture at Philadelphia on April 29.

MINIMUM EQUIPMENT FOR MEDICAL
OFFICERS ORDERED OVERSEAS

The following list of equipment for officers ordered overseas was prepared by Major Albert L. Delaney of the Halloran General Hospital, Staten Island, New York, in collaboration with Major Norman J. Pyle, M. C., and Captain David A. Hornby, M. C.

The first thought of an officer ordered to overseas duty is "What in the nature of personal equipment, shall I take?" This will depend in a large measure as to whether you are to go by air or by water. Having traveled both ways, I have listed a minimum that, under most conditions, may be considered a minimum.

First, set your house in order. Execute a power of attorney to one you trust to handle your affairs in your absence. Blank forms for this can be had from the Adjutant General's representative at your camp.

Secondly, make the necessary allotments. Arrange your insurance, both government and private.

Next your will. Owing to differences in state laws, consult a competent lawyer from your home state and have him write the will.

"Keep your mouth shut." This applies from the time you get your orders until you are discharged. Impress your family that you cannot tell them anything and therefore they are not to ask.

Now we come to equipment.

- 1 Bed roll. Get an air mattress if you can. Do not get kapok. I had one and threw it away.
- 2 Caps. two field caps (one winter and one summer) and one garrison.
- 3 Blouse. one.
- 4 Pants. two olive drab wool and two cotton khaki. pinks optional.
- 5 Socks. six pair cotton or wool. I favor light wool, as this absorbs perspiration.
- 6 Shoes. one pair dress shoes. one pair general issue shoes. (Be sure to carry one box of shoe polish.)
- 7 Shirts. two olive drab wool (not pink or dark green) three cotton khaki.
- 8 Tie. two regulation type.
- 9 Insignia. three full sets.
- 10 Field jacket. one wool lined.
- 11 Raincoat. one good one. not a trench coat.
- 12 Overcoat. one olive drab. not the dress coat.
- 13 Underwear. six shorts. six undershirts. two sets should be wool.
- 14 Handkerchiefs. six.
- 15 Sweater. one wool pull over type. preferably khaki.
- 16 Razor blades. ten packages.
- 17 Soap. four bars.
- 18 Shaving soap. one cake. not tubes or jars. Cakes do not squish.
- 19 Tooth powder. one can. cans do not squish.
- 20 Mirror. one medium size.
- 21 Housewife. Be sure to have about six needles. black. white. khaki. thread.
- 22 Cigaretts. four cartons.
- 23 Towels. one face. two bath.
- 24 Watch. general issue or your own. but it must keep accurate time.
- 25 Knife. pocket. one good one.
- 26 Tool kit. A small leather kit is on the market which weighs about 8 ounces and has a hammer, screwdriver, corkscrew and pair of pliers. each of which fits onto a heavy knife handle. It certainly helps.
- 27 Cigaret lighter. one.
- 28 Cigaret lighter fluid. one can.
- 29 Cards. playing. two packs.
- 30 Money. \$100 average. not more than \$150.
- 31 Writing material. one tablet. one package of envelopes.
- 32 Sunglasses. optional. If you get them get good ones costing \$5 to \$10.
- 33 Radio set. Leave it at home.
- 34 Games. Use your judgment but usually no.
- 35 Ball of stout twine.
- 36 Pan. rubber. This is on the usual list but don't take it. Use your helmet. Helmet can be used to scrub up for an emergency operation incidentally.
- 37 Gloves. regulation only. one pair.
- 38 Camera. banned by regulation. Many army personnel have them. Must take your own films.
- 39 Footlockers. I understand these are on the way out. Use a barracks bag. If you fold your clothes carefully the barracks bag works fine.
- 40 Handbag. Get a volpack type bag. This carries a world of stuff. keeps creases in the trousers and is not heavy. The type issued by the Air Corps has a stiffener in it and this takes up too much room and weight. Get the loose ones. Marry your musette bag. Don't ever let it get away from you. In it carry an extra shirt. change of socks and underwear. one handkerchief and your last orders.
- 41 Keep all your orders in one place and fastened together.
- 42 Keep your pay data card and Adjutant General's Office identification card with you at all times.
- 43 Use the V mail rather than a regular letter.
- 44 Atlas. one small one but good one on maps. Optional. But olives a lot of arguments.
- 45 Nails. one small can of assorted sizes as old as 5 and 10 cent stores.

Just two 'cautions'. First, don't buy a lot of trinkets as soon as you land. Wait until you learn to balance United States costs against those of the country you are in. Second, Doctor, hunt cover during an attack. The Red Cross bracelet on your arm cannot be distinguished from a plane or by an exploding shell nor is it respected by a Jap.

No attempt has been made to discuss organization equipment as a parting word. Travel light and you will rest more comfortably.

NAVY

MALARIA FIGHTERS IN CONSTRUCTION
BATTALIONS

The U. S. Navy started courses in malaria control for the training of medical officers and hospital corpsmen at the Navy Medical School Bethesda Md., as soon as the war in the Pacific began, and malaria control units are now a part of all naval and marine forces in war zones in which malaria is present. These units comprise malinologists, entomologists, sanitary engineers and hospital technicians. Now the Naval Construction Battalions which accompany combat forces have organized malaria control groups within their own battalions, thus providing 110 trained men to fight malaria the moment a construction battalion moves in. A chief petty officer and nine other petty officers all especially trained in malaria control in addition to their regular Seabee training head parties of 10 carefully selected and well trained men each, whose duty it is primarily to eradicate sources of malaria infection. These men, however, are part of the regular construction battalion and when not engaged in malaria control take part in other work.

The training of Seabee men for malaria control which is carried out at Camp Peary, Va. includes among other things instruction in draining, spraying and ditching and in individual precautions against malaria. The prevention of malaria in men landing in an infected tropical area begins with the wearing of head nets and gloves the use of mosquito repellents and the taking of quinine or atabrine. The spraying of huts, and tents, screening of shelters and the segregation of infected natives done when possible.

Rear Adm. Ross T. McIntire, Surgeon General of the Navy, considers, the *Army and Navy Journal* of May 1 says, that

malaria is the most serious medical problem of the war. Admiral McIntire has emphasized the need of the navy for medical officers who are skilled in the treatment and prevention of malaria. Commanding officers in tropical areas consider that tools and equipment for malaria control are almost as important as ammunition and food. The Secretary of the Navy, Frank Knox, has directed all navy unit commanders to give disease control priority in operations in tropical combat zones in keeping with the military situation. The Navy has recommended to all medical schools that emphasis be placed in their instruction on the study of tropical diseases, particularly for those students who plan to enter the navy medical corps.

NAVY PERSONALS

Lieut. Howard P. Rome (MC) USNR, has been assigned to the psychiatric section of the Bureau of Medicine and Surgery and Lieut. (jg) Albert Eskin (MC) USNR, to temporary duty in the correspondence course section of the Bureau of Medicine and Surgery.

Lieut. Vernon L. Anderson, Dental Corps, USN, formerly dental officer on the U. S. S. *Hasp*, addressed the New York State Dental meeting at Syracuse, N. Y., May 18-20, on "Combat Experiences."

Lieut. Comdr. S. A. Isquith (MC) USNR, who recently returned from fleet duty, has been detailed as technical adviser to the section of Audio Visual Education, Division of Preventive Medicine, in the production of an instructional motion picture on personal hygiene.

CIVILIAN DEFENSE

SHOES FOR NURSES' AIDES

Nurses' aides needing nurses' shoes can obtain them even though they have spent stamp 17 if there are no unspent stamps available from members of their families, the Office of Civilian Defense announced on April 28. The Office of Price Administration outlined its policy as follows: "The need for special work shoes for nurses' aides has been recognized, and they have been given the same privileges as graduate nurses and other persons who require special shoes necessary for the performance of their jobs. To acquire nurses' white shoes, a nurses' aid must first use her stamp 17. If she has none and no stamps are available from a member of her family, she may apply to her local board for special shoe stamp (on OPA Form R-1703). The use of her stamp or the stamp of a member of her family for such white shoes will not prevent her from acquiring shoes for general wear if she has none or has only one pair and needs two pairs. She may make further application to her board for the shoes needed for general wear in such a case." Nurses' aides are members of the United States Citizens Defense Corps of Civilian Defense who volunteer for hospital duty and are trained under the auspices of the American Red Cross.

PLAN FOR EMERGENCY MEDICAL
SERVICE IN INDUSTRIAL
PLANTS

In a new bulletin the Medical Division of the Office of Civilian Defense recommends that every plant medical department should prepare a "disaster operations plan" to provide medical service in case of a plant catastrophe involving large numbers of casualties. The new bulletin outlines arrangements which should be made to assure adequate medical care at such times.

The War and Navy Departments urge that plants for which they are responsible plan to use the facilities of the Emergency Medical Service organized by Civilian Defense authorities. The Medical Division has in turn urged that local Chiefs of Emergency Medical Service assist plant medical departments by

placing the community medical facilities at their disposal in the event of a major emergency, regardless of its cause.

The disaster operations plan should provide for necessary first aid care at the site of the incident, for adequate ambulance service, and for hospitalization of the seriously injured. Provision must first be made for casualty stations. Several sites should be selected. An additional site outside the plant should be selected for use in the event of extensive damage to the plant.

The importance of identification and records is especially emphasized. The bulletin points out that in any disaster confusion will be inevitable and that it will be difficult, without adequate records, to identify the seriously injured and the dead and to determine the number and names of the missing. The uninjured as well as the injured should be accounted for. A record should indicate the places to which the injured have been taken.

The bulletin recommends that arrangements be made with the local Chief of Emergency Medical Service to insure that ambulances under his direction be made available to the plant should a disaster involve the entire community. Any ambulance facilities owned by the plant should be made available to the local Chief if they are not required at the plant.

Present plans for the hospitalization of industrial accident victims are likely to be inadequate in the event of a major catastrophe. To provide quick and efficient service to injured persons, casualties should be distributed among various hospitals. Arrangements must be made with the local Chief of Emergency Medical Service for the admission of casualties to community hospitals, all of which will be under his supervision during a major emergency.

The plan of mutual aid between a plant and a community requires a definite understanding that members of the Emergency Medical Service will be admitted promptly to a plant in an emergency. Personnel investigated and approved by the Service Command will receive identification cards from the Office of Civilian Defense. The bulletin also outlines the program of federal compensation for injuries to Civilian Defense workers.

MISCELLANEOUS

MEDICAL MISSION TO VISIT RUSSIA

Lieut Col LOVELL DAVIS, Chicago, professor of neurologic surgery at Northwestern University, according to the Chicago *Sun* has been named to a six man Anglo-American medical mission to visit Russia. Since Colonel Davis's arrival in London September 6 of last year he has been senior consultant on neurosurgery in the European theater. Another American member of the mission to Russia will be Col Elliott C Cutler of Brigham Hospital, Boston and professor of surgery at Harvard Medical School. Colonel Cutler is senior consultant on general surgery to the American expeditionary force.

MILITARY CASUALTIES AND ACCIDENTS
AMONG WORKERS

The National Safety Council Chicago, stated on April 27 that casualties to the U S armed forces since Pearl Harbor had been 12,123 dead, 15,049 wounded and 51,063 missing or prisoners, a total of 78,235. These figures are from the latest report of the Office of War Information, released on April 24. Casualties to American workers through accidents since Pearl Harbor had been 64,500 dead and 6,000,000 injured, on and off the job. The Council offers the comparison as evidence that accidents still are helping the Axis by draining America's manpower. The total American accident toll workers and others, since Pearl Harbor is 128,000 killed and about 13,000,000 injured, the council said. Among the victims were thousands of skilled workers and key men in the nation's war program. "This huge waste of manpower on the home front is more alarming than ever before," said Ned H Dearborn, executive vice president of the council, "in view of the fact that the nation is taking increasingly drastic steps to mobilize every available ounce of manpower to insure victory. It is little enough to ask every American to be extra careful these days. No war worker is so unimportant that he can afford an accident."

REGISTRATION OF NURSES IN CANADA

Mrs Rex Eaton, assistant director of national Selective Service, has announced the result of the registration of graduate nurses carried out by the Canadian Selective Service at the middle of March. A total of 50,455 nurses registered. Registration figures by provinces are as follows: Prince Edward Island and Nova Scotia 3,364, New Brunswick 1,948, Quebec 7,758, Ontario 23,497, Manitoba 2,033, Saskatchewan 2,740, Alberta 3,369, British Columbia 5,744, Yukon 2.

The registration somewhat exceeds the number of graduate nurses thought to be available in Canada. The results will now be made available by Selective Service to the Canadian Nurses Association, at whose request the registration was taken, and also to the Medical Procurement and Assignment Board, which is making a survey of available health services.

THE FOOD RATIONING ORDER

According to Mr Archie M Palmer, associate director Food Rationing Division Office of Price Administration, General Rationing Order No 5 is in the process of revision to give hospitals a more equitable allotment of food for patient requirements. Group III of the general rationing order in which hospitals were placed received a point factor of only 0.6 while institutions of involuntary confinement in group II received 1.2, or twice as much. The hospital Bureau of Standards and Supplies Inc, New York, believe that a point factor of not less than 2.6 is required. While it is believed that the point factor allowed for patients meals will be substantially increased hospitals should endeavor to meet their requirements as best as they can under the present order until such a revised order is issued and should file immediately form R-315 for additional allotments required for patients. In most instances it is believed that the local boards will grant a request for additional amounts of processed food when the hospital is able to show that the types of food requested are essential to patient welfare.

that the amounts asked for are reasonable, and are based on the following considerations: "That only the rationed foods requested will serve the purpose because, while from a dietary standpoint unrationed foods may be substituted, such substitutes are not available, or (2) they are not within the hospital's budget, or (3) they require additional help or special equipment which is not available to prepare them."

PUBLIC HEALTH UNDER HITLER

Lozic List, Sarajevo, of January 28 stated that the Velika Supa of Hum in Mostar has sent a circular to Vrhbosna, stating inter alia: "In order to isolate the epidemic of spotted typhus which recently broke out in Mostar and the neighborhood, the municipal health authorities, conjointly with the military authorities, have prohibited access to all persons coming from Sarajevo who are not supplied with a health certificate issued by a doctor confirming that the person concerned is free from spotted typhus has passed twenty-one days in quarantine and has been vaccinated. This certificate must be confirmed by the chief German army doctor in Sarajevo."

According to DNB (for Europe) of January 15, German official sources drew attention to a disease affecting their armies in Russia. This "plague of Eastern Europe," it is stated, is called "Volhynian fever"—Volhynia being a part of the Western Ukraine—and it was already dreaded by the soldiers in the East during the last war, who styled it "trench fever." It is an epidemic disease the prevention of which is of the greatest importance for the conduct of the war in the East.

The symptoms of this disease vary, but there are always violent attacks of fever, which are accompanied by strong pains in the legs and also in the arms, the head and other parts. From the beginning of the campaign in the East, German medical research has been striving with all means to combat this mysterious disease. These experiments have now met with success and given surprising results, for it has been shown that this "Volhynian fever" is related to malaria. When this plague of Eastern Europe was treated with the well known German malaria cures "atebrin" and "plasmochin," in almost all cases the fever and pains disappeared.

The Swedish newspaper *Nya Dagligt Allehanda* says that Norwegian hospitals are crowded to the bursting point partly because of the ruthless requisitioning of them by the Germans and partly because of increasing illnesses.

According to the dispatch, skin diseases especially are showing an alarming increase. Syphilis, which was previously rare in Norway, is now a common phenomenon and prostitution is widespread. Diphtheria epidemics rage in several places, especially in the Opland districts. Most of the hospitals in Norway have been requisitioned by the Germans and as a result sick Norwegians must be treated in schools, meeting halls and similar buildings under conditions which were abandoned a hundred years ago.

In a recent edition of the Swedish newspaper *Arbetaren* it is reported that German authorities have begun forcibly to draft Norwegian nurses for German hospitals in Norway. According to an Oslo report eighty nurses from Akers hospital who now serve at the temporary Norwegian hospital in Berg's school must go to German hospitals to replace German nurses who have recently been sent back to Germany, where there is a shortage of nurses in the overcrowded hospitals.

Dr Leonardo Conti, Nazi health leader writing in the German newspaper *Volksische Beobachter* on the tasks and successes of the German state controlled health organization made the following claims for his organization:

These are the statistics that he presented. There are at present 1,100 health offices with roughly 12,000 doctors established by the National Socialist state. Another 1,100 doctors are employed by labor authorities and a further 670 doctors by the German Labor Front. Three thousand doctors are attending to the Hitler Youth. There are 1,300 special offices, fighting venereal diseases and tuberculosis. Mother and child organizations have at present in all 63,000 advisory offices at their disposal.

ORGANIZATION SECTION

OFFICIAL NOTES

BEFORE THE DOCTOR COMES

The American Medical Association program on Radio Station WIS (890 kilocycles) entitled "Before the Doctor Comes" is on the air Thursday afternoon at 2:15. Mrs. June Merrill interviews Dr. W. W. Bauer, Director, Bureau of Health Education on common home health problems. The last program which is entitled "Immunization" will be broadcast on May 27.

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at

5 p. m. Eastern War Time (4 p. m. Central War Time, 3 p. m. Mountain War Time, 2 p. m. Pacific War Time). An exception is the Chicago area, where the broadcasts are heard by transcription at 10:30 p. m. Saturdays over Station WMAQ.

The titles and guest speakers for the last four programs are as follows:

May 29 "Sick Call"

Speaker, Brig. Gen. John M. Willis, M. C., U. S. Army, Commanding General, Camp Grant, Illinois

June 5 "Doctors for Tomorrow"

Speaker, Brig. Gen. Fred W. Rankin, M. C., U. S. Army, President of the American Medical Association

June 12 "Medical Discoveries in Wartime"

Speaker, Dr. Morris Fishbein, Editor of THE JOURNAL

June 19 "Doctors at War: Report to America"

Special program being arranged. To be announced later.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status—S. 897 has been reported to the Senate, proposing an amendment to the Insecticide Act so as to provide that any white powder insecticide or fungicide containing arsenic in its elemental form or in any of its combinations or fluorine in any of its combinations, shall unless deemed unnecessary by the Secretary of Agriculture, be considered to be adulterated unless it is distinctly colored in accordance with regulations promulgated by the Secretary of Agriculture. The reported bill exempts from the coloring requirement substances sold for manufacturing or noninsecticidal or nonfungicidal uses. H. R. 2664 has passed the House, a bill to provide for the training of nurses for the armed forces, governmental and civilian hospitals, health agencies and war industries, through grants to institutions providing such training. This legislation will cease to be in effect on the date of the termination of hostilities in the present war as determined by the President or on such earlier date as the Congress by concurrent resolution or the President may designate, except for certain purposes of adjustment with respect to nurses undergoing training at the time of the termination of hostilities.

Bills Introduced—The President has submitted to Congress supplemental estimates of appropriation for the United States Public Health Service in the amount of \$307,700 (H. Doc. 200). Of this, \$219,000 will be used, it is contemplated, for the pay of commissioned officers and \$88,700 for the furnishing by the Public Health Service to and at the request of any federal department or independent establishment of coordinating and consultative services with respect to methods and standards for operating emergency health facilities in such department or establishment, including in-service training of such health facilities personnel, and providing employees of such agencies (1) tuberculosis and psychiatric examinations and (2) health and nutrition instruction through lectures and demonstrations. S. 1096, introduced by Senator Bailey, North Carolina, proposes to establish a Bureau of Vital Records in the United States Public Health Service and to transfer thereto the functions of the Division of Vital Statistics of the Bureau of the Census. The bill also authorizes an appropriation of \$2,000,000 for each fiscal year to assist states and their political subdivisions to establish and maintain adequate vital record services. H. R. 2669, introduced by Representative Maas, Minnesota, proposes that retired enlisted men of the Army, Navy, Marine Corps and Coast Guard, including members of the Fleet Reserve, shall be entitled to dispensary treatment in any Army or Navy hospital. Where hospitalization is indicated, the bill provides, such retired enlisted men shall be entitled to hospitalization

without cost in either Army or Navy hospitals. H. R. 2679, introduced by Representative Chapman, Kentucky, provides that all provisions of existing law and regulations applicable to veterans of World War I be extended to include veterans of the present war and their dependents. H. R. 2703, introduced by Representative Rankin, Mississippi, provides more adequate and uniform administrative provisions in veterans' laws pertaining to compensation, pension and retirement pay, payable by the Veterans' Administration. H. R. 2706, introduced by Representative Kunkel, Pennsylvania, provides for the promotion of officers of the Medical Administrative Corps of the Regular Army to grades up to and including that of colonel.

STATE MEDICAL LEGISLATION

Alabama

Bills Introduced—S. 22 proposes to require the state board of health to formulate a plan for the care and treatment of indigent persons suffering from cancer and to establish and designate standard requirements for the organization, equipment and conduct of cancer clinics or departments in general or private hospitals, or private clinics of the state. The state board of health would also be required to formulate and put into effect an educational plan for the purpose of preventing cancer throughout the state of Alabama, aiding in the early diagnosis of cancer, and informing hospitals and cancer patients of the proper treatment. S. 40 proposes to require any person who the health officer has probable cause to believe has a venereal disease or has been exposed to a venereal disease to be examined for a venereal disease by the health officer or some other reputable physician. In the event that such person refuses to undergo such examination, he would be committed to a county or city jail on order of the county health officer and detained there until, in the judgment of the health officer, he is no longer a source of danger to the public health. S. 47 proposes to make it unlawful for a person to conduct, maintain or operate an ambulance unless such ambulance is under the immediate supervision and direction of a person holding a first aid certificate or a person legally authorized to engage in the practice of medicine in Alabama. It would further be unlawful for any person to conduct, maintain or operate an ambulance which does not contain and carry with it as a part of its regular equipment a first aid kit or box approved by the American Red Cross and traction splints of a character approved by the American Red Cross. A first aid certificate is defined by the proposal as being one issued by the United States Bureau of Mines or

by the American Red Cross wherein it is stated that the person to whom it is issued has successfully completed the required training and met the established standards of one of such organizations. S 64 proposes to require all persons between the ages of 14 and 50 residing or living in the state of Alabama to have a blood examination for syphilis by an approved laboratory test. H 22 proposes to define a general hospital as a hospital or sanatorium that maintains a daily average of 10 or more patients and where general medicine, general surgery, dietetics, obstetrics and the care and nursing of infants and children, and such other subjects as the board may deem advisable, are practiced and taught.

California

Bill Introduced—A 1287, to amend the education law, proposes to authorize boards of education to grant health and development certificates to persons holding a certificate of registration as an audiometrist issued by the state board of public health, proposes that the qualifications of an otologist shall be a physician's and surgeon's certificate and a health and development certificate, proposes that the qualifications for an audiometrist shall be a certificate of registration as an audiometrist issued by the state board of public health and a health and development certificate and proposes that no otologist or audiometrist shall be employed or permitted to supervise the health and physical development of pupils unless he holds a health and development certificate.

Colorado

Bill Enacted—H 196 was approved, April 19. It provides that a person who has actually resided in the state for three or more years, who is suffering from tuberculosis in any form requiring treatment and who is without sufficient means to obtain it, may be furnished such treatment out of the tuberculosis fund of the county of the recipient's residence.

Connecticut

Bill Enacted—S 562 has become chapter 194 of the Laws of 1943. It authorizes a town board of education to appoint one or more legally qualified practitioners of medicine as school medical advisers and to provide such medical advisers with adequate facilities to provide for public health examinations of individual pupils. It further requires each pupil enrolled in the public schools to have a health examination either by a legally qualified practitioner of medicine or by the school medical adviser, at least once every three years to ascertain whether such pupil is suffering from any physical disability tending to prevent him from receiving the full benefit of school work and to ascertain whether such school work should be modified in order to prevent injury to the pupils or to secure for the pupils the best education results. Each physician making such examination shall sign each form containing the record of the examination made by him and shall make his recommendations concerning the pupil in writing.

Florida

Bills Introduced—S 286 proposes that no license to marry shall be issued to any male or female person in the state of Florida unless such person presents a health certificate showing freedom from any communicable disease. S 306 proposes the establishment and creation of an institution of higher learning to be known as the University of South Florida, which shall be a state university and shall have as its primary purpose a school of medicine and a school of dentistry and such other departments as may from time to time be determined on and added thereto by the state board of control and state board of education. The proposal would further provide that the school of medicine and school of dentistry should be first class medical and dental schools and should be maintained and operated in accordance with the standards of education approved by the American Medical Association and the American Dental Association. S 367 proposes the creation of a Florida board of massage to examine persons desiring to practice massage defined as the art of body massage, either by the hand or by mechanical apparatus, oil rubs, gymnastics, colon irrigations, hot and cold packs, cabinet baths (excluding fever therapy), tub shower sitz and similar baths. H 377 provides, among

other things, that in an action at law in which the mental or physical condition of a party is in controversy the court in which the action is pending may order such person to submit to a physical or mental examination by a physician, the order to be made only on motion for good cause shown and on notice to the party to be examined and all other parties, and to specify the time, place, manner, conditions and scope of the examination and the name of the person by whom it is to be made.

Bills Enacted—S 139 was approved, May 1. It requires any physician or other person who makes a diagnosis in, or treats a case of, venereal disease to make a report thereof to the state board of health or to the local health officer and to make a further report in the event that such person ceases reporting to the physician prior to his having become cured or rendered noninfectious. S 141 was approved May 1. It requires all persons rejected or deferred for military service who are infected with venereal disease to report to venereal disease clinics operated by the state board of health and to take treatment either from a private physician or at public expense for such venereal disease.

Illinois

Bill Introduced—H 577 proposes the creation of special educational facilities for educable mentally handicapped children and proposes further that no child shall be eligible for such special education except on the recommendation of or with the approval of a qualified psychologic examiner, defined to mean a person who has graduated with a master's or higher degree in psychology or educational psychology from a higher institution of learning which maintains equipment, course of study and standards of scholarship approved by the Superintendent of Public Instruction, who has had at least one year of full time supervised experience in the individual psychologic examination of children, or a character approved by the Superintendent of Public Instruction and who has such additional qualifications as may be required by the Superintendent of Public Instruction.

Maryland

Bills Enacted—S 360 has become chapter 724 of the Laws of 1943. It provides that no person shall sell, dispense or give away any drug or medicine for the treatment or cure of venereal disease or any sulfonamide drug except on the written prescription of a physician licensed to practice medicine, such prescription not to be refilled except on order of said physician. H 53 has become chapter 311 of the Laws of 1943. It amends the insurance code by exempting from the provisions thereof any policy or contract granting solely and exclusively hospitalization insurance. The prior law exempted any policy or contract issued by a nonprofit association. H 76 has become chapter 963 of the Laws of 1943. It repeals that section of the licensing law providing that no county, city or other political subdivision of the state shall require a license to transact any business or occupation which is required to obtain a state license and creates a new section providing that no county, city or other political subdivision of the state shall require any person, firm or corporation to obtain a permit or license to transact any business or occupation for which it or he is required to obtain a state license, nor shall any county, city or other political subdivision of the state levy any occupational tax or fee on such person, firm or corporation for transacting any such business or engaging in any such occupation for which such state license is required except where such tax is necessary for regulatory purposes in the interest of the public health, safety or morals. H 644 has become chapter 600 of the Laws of 1943. It places certain limitations on advertising by persons practicing medicine and surgery.

Massachusetts

Bills Introduced—S 456 proposes that no female employee shall be dismissed by her employer on account of pregnancy. S 470 proposes to amend the existing law providing that any license, permit or certificate of registration issued by any department, division, board, commission or officer that expires while the holder thereof is serving in the military or naval service of the United States may be renewed within six months after the termination of such service by providing that no fee shall be charged or collected for the period between the expiration of the certificate and the renewal thereof.

Minnesota

Bills Enacted—H 303 has become chapter 633 of the Laws of 1943. It amends the workmen's compensation act by redefining the word "accident" so as to include "occupational disease" defined as a disease peculiar to the occupation in which the employee is engaged and due to causes in excess of the ordinary hazards of employment, a disease arising out of and in the course of the employment. H 1239 has become chapter 649 of the Laws of 1943. It amends the law requiring the licensing of any hospital, sanatorium, rest home, nursing home or other institution for the hospitalization of human beings by bringing within the purview thereof all such institutions as are operated by the state, county or local government or any department, board or agency thereof.

Missouri

Bill Introduced—S 154 to amend the workmen's compensation act proposes that nothing in the act shall prevent an employer from taking the compensation he may be entitled to thereunder and also maintaining a civil action against any physician or surgeon for malpractice.

New Hampshire

Bill Enacted—H 32 has become chapter 166 of the Laws of 1943. It provides enabling legislation for the incorporation of non-profit sharing organizations formed for the purpose of establishing, maintaining and operating a nonprofit medical service plan whereby medical service may be provided at the expense of said corporation by physicians to subscribers to said plan under contract entitling such subscribers to certain medical service. The law sets forth the form of contract, method of having rates and contracts approved, method of financing such plans and certain restrictions among which is the provision that no medical service corporation shall impose any restrictions on physicians who administer to its subscribers as to methods of diagnosis or treatment. The law also provides that no person shall become a participating physician unless he shall be a physician holding a full license to practice medicine in the state of New Hampshire.

New York

Bill Enacted—A 1923 has become chapter 691 of the Laws of 1943. It amends the mental hygiene law by eliminating therefrom the existing requirement that the head of the department be a reputable physician with at least ten years' experience in the actual practice of his profession and at least five years' actual experience in the care and treatment of persons afflicted with mental disease in an institution for their care and treatment. In lieu thereof it provides for the appointment of a medical director who shall be a reputable physician, a graduate of an incorporated medical college, with at least ten years' experience in the actual practice of his profession and at least five years' actual experience in the care and treatment of persons afflicted with mental disease in an institution for their care and treatment. The duties of the medical director are to advise with the commissioner on all matters affecting medical policy within the department, have direct charge and control, under the general departmental direction of the commissioner, of medical administration, care and treatment, and of medical and nursing personnel, and perform such other duties in the place and stead of the commissioner as may be lawfully assigned to him.

Ohio

Bill Introduced—H J R 47 proposes a resolution which would require the submission to the voters of a proposal to amend the state constitution so as to prohibit the levying of an excise tax on the sale or purchase of drugs or medicines prepared or sold by a registered pharmacist in accordance with or under a lawfully issued prescription.

Bills Enacted—H 112 was approved, April 29. It amends the law relating to osteopaths by providing for one osteopathic member of the medical examining board and requiring osteopaths to be examined by such board in the subjects of anatomy, physiology, pathology, chemistry and diagnosis, surgery, obstetrics and such other subjects as the board may require and by

the osteopathic member in the subjects of materia medica and therapeutics and the principles and practice of osteopathic medicine. Successful applicants will be entitled to practice osteopathy and surgery. Persons now licensed to practice osteopathy but who have not passed an examination before the state medical board will be allowed to continue to practice osteopathy and minor and orthopedic surgery but not to practice major surgery. H 142 was approved, April 26. It provides that no person shall operate an institution for the care of persons suffering from a communicable disease or persons adjudged to be mentally ill, feeble-minded, epileptic or insane within 2,000 feet of any public, private or parochial school.

Oklahoma

Bill Enacted—S 98 was approved, April 12. It authorizes a physician legally qualified to practice in the state of Oklahoma to perform a postmortem cesarean section when the physician has reason to believe that the child is viable in the mother. In the performance of such operation, the physician shall not be liable either civilly or criminally, though performed without the consent of those in whom the law has recognized a legal right of the possession of the body of the deceased, provided the operation be performed in good faith and with due skill and without unnecessary injury or mutilation. The law further provides, however, that the operation shall not be performed over the protest of those in whom the law has recognized a legal right to the possession of the body of the said deceased.

Rhode Island

Bills Enacted—S 177 was approved, April 28. It amends the law relating to cash sickness insurance by exempting from the provisions thereof employees who adhere to the teachings of any church, sect or denomination and depend for healing on prayer or spiritual means in the practice of religion. H 533 was approved, April 22. It provides for the creation of a special commission to be known as the Special Rhode Island Public Health Laws Survey Commission, to make a comprehensive reexamination and survey of the public health laws of the state and municipalities thereof and to make recommendations for the complete modernization of those laws in keeping with the most recent innovations and tried practices of other states. Such recommendations must be made in legislative form not later than April 12, 1943. H 591 was approved, April 22. It provides for the creation of a board of examiners of electrolysis, defined as the removal of, or preventing the growth of, the hair on any part of the human body by means of electrical apparatus. H 937 was approved, April 27. It amends the basic science law by providing that any person who on April 27, 1940 was pursuing a course of study in any of the healing arts in a professional school then approved by the division of examiners in the department of health, but who had not previously completed at least one year of preprofessional collegiate education and training in an accredited academic college and who was at the time of entrance into such professional school a legal resident of Rhode Island and who can meet all the other requirements provided by this act, shall be eligible for examination by the basic science board. H 946 was approved, April 22. It requires any physician who discovers that a patient between the ages of 4 and 16 is suffering from deafness or shows indications of being or becoming hard of hearing to report immediately his findings, together with the name and address of such child, to the director of health along with such other information as the director may require.

Wisconsin

Bills Introduced—S 305, to amend the law relating to medical aid to old age assistance recipients, proposes that medical, hospital, surgical and dental aid or Christian science treatment to a beneficiary may in the discretion of the county pension department be authorized and paid for directly to the person or firm furnishing such care. A 611, to amend the law relating to the licensing of nurses, proposes the addition thereto of conditions and requirements for the licensing of "licensed attendants" who would be authorized to perform simple procedures in the physical care of a patient and such other procedures as may be directed by the attending physician.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Dr Tainter Joins Winthrop Company—Dr Maurice L. Tainter, since 1935 professor of pharmacology at Stanford University School of Medicine and since 1934 professor of pharmacology and head of the division of physiologic sciences, College of Physicians and Surgeons, School of Dentistry, San Francisco has been named research director of the Winthrop Chemical Company, Inc. Dr Tainter will make his headquarters at the company's plant and laboratories in Rensselaer, N. Y. In making the announcement, Dr Theodore G. Klumpp, president of Winthrop, stated that Dr Tainter's appointment implements the policy of research expansion by Winthrop. Dr Tainter was born in Carroll, Iowa, in 1899. He graduated at Stanford in 1925. Prior to assuming his professorship at Stanford he served successively as assistant in pharmacology, instructor, assistant professor and associate professor. He has written many scientific papers and is the editor of the *Stanford Medical Bulletin* and a member of the editorial board of *California and Western Medicine*.

Public Health Meeting—A public health conference of the Southern California Public Health Association will be held at the Pasadena Civic Auditorium May 24. Among the speakers will be Dr John L. Rice, New York, on 'War-time Trends in Public Health'; Dr Karl F. Meyer, San Francisco, 'Problems Relating to Communicable Disease Control'; and Nathan Sinai, D.P.H., Ann Arbor, Mich., 'Medical Care During the Emergency and Postwar Periods'. A round table discussion on 'Methods of Solving Present and Future Public Health Problems' will be conducted by Dr Robert Hughes Parry, Bristol, England, Dr Rice, Dr Edith P. Sappington, San Francisco, Dr Don W. Gudakunst, New York, Dorothy Deming, R.N., Dr Sinai, Dr Wilton L. Halverson, San Francisco, Dr Albert S. McCown, Washington, D.C., and Raymond H. Greenman of the American Social Hygiene Association, Washington, D.C. Dr Parry will discuss 'Organization of a City's Health and Medical Services Against Air Raids' at the evening session and Dr McCown 'The American Red Cross in a War-Torn World'.

DISTRICT OF COLUMBIA

Annual Scientific Assembly—"Medical Progress Since Pearl Harbor" will be the theme of the fifteenth annual scientific assembly of the Medical Society of the District of Columbia to be held at the Mayflower Hotel, September 30-October 2. Dr Harry H. McNitt, Washington, is general chairman of the committee on arrangements.

The Davidson Lecture—The Medical Society of the District of Columbia announces that the seventh Davidson Lecture is to be given October 13. Physicians and scientists who wish to compete for the privilege of being the lecturer are asked to submit an essay to the secretary of the society not later than July 1. In case no essay is found worthy, the subcommittee will declare no award and the lecturer will then be selected by the full executive board of the society.

GEORGIA

Member of State Board Honored—Robert Foster Madison, member of the state board of health for twenty-nine years and chairman for twenty years, was honored at a recent meeting of the board when, in recognition of his services, his fellow members presented a portrait of him to the state of Georgia to be hung in the library of the Georgia Department of Public Health. The picture was accepted on behalf of the state by Dr Thomas F. Abercrombie, Atlanta, state director of public health.

Outbreak of Smallpox—The state department of public health announced that an outbreak of 9 cases of smallpox in a single county in northeastern Georgia was recorded recently. The source was traced to a person visiting in the home of a relative. The relative became ill while visiting at a friend's house and for some time was unaware of the nature of his illness. Of the 8 persons who subsequently contracted the disease, 3 were members of the family he was visiting and 5 had either visited him during his early illness or had been in contact with those who had.

ILLINOIS

District Meeting—The annual meeting of the Iowa and Illinois Central District Medical Association will be held at Rock Island on May 27. The speakers will include Major Lindon Seed, M.C., A.U.S., on 'Use of Intravenous Fluids and Blood'; Dr Italo F. Volini, Chicago, 'Clinical Observations on Heart Disease'; and Dr Charles F. McKhann, Ann Arbor, Mich., 'Progress in the Control of Communicable Disease'.

Chicago

Dr Fernel in Trouble Again—A criminal information was filed April 29, by U.S. Attorney J. Albert Woll charging Dr. Jean Paul Fernel, former self-styled plastic surgeon, with violation of the Federal Food, Drug and Cosmetic Act of 1938, the *Chicago Tribune* reported. The information alleges interstate shipments of food and drugs which were misbranded. The newspaper reported that Federal Judge Philip L. Sullivan fixed bond for Dr. Fernel at \$2,500. Dr. Fernel's license to practice medicine was revoked in 1938.

Mayor Requested to Appoint a Noise Commission—The appointment by the mayor of a municipal noise commission was requested on May 7 by the City Club of Chicago in a letter sent to Mayor Kelly by Herman L. Ellsworth, president of the club. The noise abatement committee of the club, headed by Thomas H. Coulter, is applying itself to the problem of noise reduction and, with the cooperation of the city administration, is endeavoring to enlist the help of all citizens in the elimination of unnecessary noise. With the declaration by the mayor of Chicago's participation in National Noise Abatement Week, May 30-June 5, the city will compete for the awards given each year by the National Noise Abatement Council, to that city in each of four population groups which submits on or before July 1 the most convincing evidence of accomplishment in the elimination of unnecessary street noise and in the control of noises in industry, offices and the home during the period of June 7, 1942 to June 5, 1943.

New Alcoholic Service—A special alcoholic service was recently opened at the Chicago State Hospital. The unit consists of 20 beds to be used for patients of a special type in whom the prospect of rehabilitation is especially good, the majority of beds to be available for patients who give prospect of benefiting from the Alcoholics Anonymous technique. A small number of beds will be available for patients who will receive the "conditioned reflex" treatment. Every effort will be made to keep these two separate functions of the alcoholic ward distinct from each other. The program is similar to one which has been carried out at the Manteno State Hospital, Manteno, Ill. Members of the Alcoholics Anonymous will select a special committee to carry on the program. They will select the cases to be treated, but the hospital will reserve a right to veto such nominations should they exceed the number to be handled or should they appear to be the wrong type of patient. The office of Alcoholics Anonymous is at 209 South State Street. Any patient who is not suitable for the special treatment in the special alcoholic service but who is in need of state mental hospital care because of mental illness can be committed through the usual court procedures in any of the nine Illinois state hospitals located at Elgin, Kankakee, Manteno, Peoria, East Moline, Jacksonville, Alton, Anna and Chicago.

INDIANA

Gift Provides New Department of Pediatrics—The late George Wesley Longworth and his wife Emma Dennis Longworth, Fort Wayne, have provided for a gift of \$63,000 to the new Parkview Memorial Hospital, Fort Wayne. The money will be used for the children's department and will include a section embracing a wing of the third floor to be known as the George Wesley and Emma Dennis Longworth Department of Pediatrics. The proposed Parkview Memorial Hospital will cost \$800,000 and will replace the present Methodist Hospital. Fort Wayne newspapers reported.

KENTUCKY

Management of Gonorrhea—Dr Percy S. Pelouze, assistant professor of urology at the University of Pennsylvania School of Medicine, Philadelphia and consultant for the gonorrhea control program for the U.S. Public Health Service, opened a series of lectures in Louisville May 3 on the management and treatment of gonorrhea. Dr Pelouze will spend the month of May in Kentucky, speaking at various places throughout the state.

MASSACHUSETTS

Boston Floating Hospital Admits Paying Patients—

The board of trustees of the Boston Floating Hospital recently ruled that the hospital can now admit patients to the wards who are able to pay part of their hospital costs. As a result, the administrative officers of the hospital are working out a plan whereby all patients admitted will be allowed to pay whatever they are able toward these costs. During the early years of its existence, when the hospital was maintained entirely by private funds, an endowment fund was accumulated. In 1920-1930 when the New England Medical Center was formed, funds from the campaign were used mostly in erecting the present building of the Boston Hospital, in remodeling and refurnishing parts of the old Boston Dispensary and in the erection of an additional building of five stories, three of which are used by the Boston Dispensary for clinics and laboratories and two of which are used by the hospital to house the nurses. The hospital is the outgrowth of the barge *Clifford* which in the summer of 1894 made five excursions into Boston Harbor taking aboard mothers and their sick babies and children. After a day's outing they were returned to shore in the late afternoon. The following year the barge was purchased and daily trips were made. In 1896 the boat became a real hospital, as in addition to the people who were taken for the daily cruises, permanent wards were established, physicians were aboard and a training school for graduate nurses was begun. In 1906 a boat designed as a hospital ship was built. This served as the Boston Floating Hospital until the boat was burned in 1927. During this time in addition to the outing for the babies from the crowded sections of Boston work in the study of infectious diseases of infants was done aboard the boat. Following the burning of the boat in 1927 it was decided not to rebuild the hospital ship. Sometime later the Boston Floating Hospital became associated with the Tufts College Medical School and the Boston Dispensary to form the New England Medical Center. In 1931 the present building of the Boston Floating Hospital, located adjacent to the enlarged and remodeled Boston Dispensary, was opened. During the time the hospital ship was maintained and during the early years of its on-shore activity the Boston Floating Hospital was entirely charitable in that no patients were admitted to the hospital who could afford to pay anything for their care. Four years ago a 4 bed semiprivate ward was opened in the hospital to which private patients and semiprivate ward patients could be admitted.

MICHIGAN

Alumni Clinic Day—The annual Alumni Clinic Day of Wayne University College of Medicine was held at the Horace H. Rackham Educational Memorial Building, Detroit, May 12, with the following speakers:

Dr. Fredrick F. Yonkman, Detroit, Doctors and Drugs on the Civilian Front

Dr. John J. Prendergast Jr., Detroit, Medical Problems of the War Workers and Their Management in Your Practice

Dr. Oliver Cope, Boston, Use of the Latest Methods in the Treatment of Burns with Experience Gained from the Boston Night Club Fire

A panel discussion was held on "Problems and Recommendations Concerning the Hospitalization of Your Patient." In the evening, with Dr. Patrick L. Ledwidge, Detroit, toastmaster, Harold E. Stewart, Ph.D., department of geography at Wayne, spoke on "Geopolitical Aspects of American Security."

NEBRASKA

Symposium on Obstetric Analgesia and Anesthesia—

The department of obstetrics and gynecology of the University of Nebraska College of Medicine, Omaha, will present a symposium on obstetric analgesia and anesthesia at the University of Nebraska Hospital, Omaha, May 28. Among the speakers will be

Dr. Frank W. Hartman, Detroit, Tissue Changes Observed Under Deep Sedation and Anoxemia

Robert A. Hingson Jr., passed assistant surgeon, U. S. Public Health Service, Continuous Caudal Analgesia and Anesthesia in Obstetrics

Dr. Norman R. Kretschmar, Ann Arbor, Mich., The Obstetrician's Point of View of Analgesia and Anesthesia

Dr. Arthur H. Parmelee, Oak Park, Ill., The Pediatrician Looks at Obstetric Analgesia and Anesthesia

A session entitled "Painless Labor, Please" with Dr. Earl C. Sage, Omaha, as the moderator will be handled by the speakers participating in the symposium.

NEW YORK

Actions Taken at State Meeting—Dr. Herbert H. Bauckus, Buffalo, was chosen president-elect of the Medical Society of the State of New York at its annual meeting in Buffalo on May 4 and Dr. Thomas A. McGoldrick, Brooklyn, was installed as president. The society adopted a resolution urging that citizenship be made a requisite for licensing as a doctor in New York State. Another resolution, which pointed out that "the problems of food in this country, as well as the world at large, are the concern of the medical profession," urged the American Medical Association to request representation at the United Nations Food Conference. The house of delegates of the society also urged the board of regents to "limit the number of examinations that may be taken by any candidate for licensure to practice medicine to three in all" and to refuse to admit "to examination for licensure any graduate of a foreign medical school 25 or more per cent of whose graduates, taking the examination during the past ten years, have failed to pass." Other resolutions adopted urged that the director of the bureau of workmen's compensation be appointed by the state society on a full time basis at a salary of \$15,000 a year and "unreservedly condemning and repudiating all unethical activities under the workmen's compensation law." The society also voted unanimously to appoint a committee to formulate a long range program "providing medical care for all, under the leadership of the medical profession." The new committee will be known as the Planning Committee for Medical Policies and will have "wide powers to study all phases of economic matters affecting the profession and the public, including provision for the rehabilitation and the reconstruction of individuals now in the community or returning from war services." The committee will consist of six members appointed by the speaker of the house of delegates, the president, the president-elect, the secretary, the speaker and the chairman of the board of trustees or a member of the board designated by him.

New York City

Academy Given Goldsmith Collection—Mrs. Lesta Ford Clay recently gave the New York Academy of Medicine a collection of more than one hundred editions of the *Vicar of Wakefield* by Oliver Goldsmith in memory of her father, Dr. Linsly R. Williams, a former director of the academy. The collection has been on display in the library of the academy of medicine.

Dr. Urey Awarded Franklin Medal—Harold C. Urey, Ph.D., professor of chemistry at Columbia University, received the Franklin Medal, April 21, for his discovery of an "isotope of hydrogen of mass 2 which has resulted in the opening of new fields of knowledge in three of the physical sciences." The presentation was made at the annual medal day ceremonies of the Franklin Institute, Philadelphia.

Dr. Sheehan Named Acting Dean of New York University—Dr. Donald Sheehan, professor of anatomy at New York University College of Medicine, has been named acting dean during the absence of Dr. Currier McEwen, who has been granted leave as dean to serve as a lieutenant colonel in the medical corps of the Army of the United States and executive officer of the Bellevue Hospital Affiliated Unit, the First General Hospital. Dr. Clarence E. de La Chapelle, professor of clinical medicine at New York University, will act as assistant dean in place of Dr. John Mulholland, who was granted a military leave last October to take charge of the surgical service of the Bellevue Unit.

TEXAS

Special Society Election—Dr. Titus H. Harris, Galveston, was elected president of the Texas Association for Mental Hygiene at a recent meeting with the Texas Social Welfare Association in Dallas. Other officers are Robert L. Sutherland, Ph.D., Austin, and Talma W. Buford, Minter, vice presidents, and Miss Lucile Allen, Dallas, secretary-treasurer.

Field Workers Examined for Tuberculosis—Migrant field workers who seek employment in Michigan and neighboring states are being given x-ray examinations in Dallas and San Antonio in offices which were opened on April 1. The bureau of tuberculosis control of the Michigan Department of Health, Lansing, has been supervising this program for the past five years in an effort to prevent the entry of tuberculous workers into Michigan and neighboring states. Most of the persons who are examined in the Texas office of the bureau are naturalized Mexicans living in Texas.

VIRGINIA

Dr Perrow Dies—Mosby Garland Perrow, Ph D, director of the Lynchburg Department of Public Welfare and the Lynchburg Bureau of Public Health, died suddenly on February 26, aged 66, of cerebral hemorrhage. Dr Perrow received his degree of doctor of philosophy in 1908 from Washington and Lee University, Lexington.

Personal—Anthony J. Borowski, Dr P H until recently chief of the health section of the Federal Works Agency, Works Progress Administration, Washington, D C, has been appointed chief clerk and statistician of the division of records and statistics of the Richmond Department of Public Health.—Dr William Dandridge Haden, who has not been in active practice for a number of years, recently retired from the civic life of Charlottesville where he had served three terms as mayor and twelve consecutive years as a member of the city council.

WEST VIRGINIA

State Venereal Disease Project—Camp Fairchance in Boone County, which has been in operation for several years as a camp for underprivileged children, has been designated as a venereal disease center by the state department of health and will be converted into a hospital just as soon as federal funds are available. Establishment of the center for the treatment of venereal disease among prostitutes was authorized by the 1943 legislature. Under the act, prostitutes from any county in the state may be confined for treatment. Dr Clifton F. McClintic, Charleston state health commissioner, has made application under the Lanham Act for \$200,000 a year for the operation of the new center. The program has the full support of the War Department and the U S Public Health Service.

GENERAL

Meeting Canceled—The annual meeting of the American Gynecological Society which was to be held in Hershey, Pa, May 31-June 2, has been canceled because of the difficulties of wartime travel.

Meeting of Ophthalmologists—The seventy-ninth annual meeting of the American Ophthalmological Society will be held at The Homestead, Hot Springs Va, June 10-12. Among the speakers will be:

Drs Sanford R. Gifford, Irving Punttenney and John G. Bellows. Chicago. Notes on Keratoconjunctivitis Sicca.

Dr Conrad Berens and Edith L. Nilson. New York. Relationship Between the Bacteriology of the Conjunctiva and Nasal Mucosa. Especial Reference to Certain Extraocular Inflammatory Diseases.

Dr Jonas S. Friedenwald, Dr Heinz Herrmann and Robert Moses. Baltimore. The Distribution of Certain Oxidative Enzymes in the Ciliary Process.

Drs John A. Evans and Eli Jefferson Browder. Brooklyn. Problem of Split Macula. A Visual Field Study.

Drs Grady E. Clay and James Mason Baird. Atlanta Ga. Ophthalmoscopic Classification of Hypertensive Diseases.

Drs Lawrence T. Post and Theodore E. Sanders. St. Louis. Temporal Arteritis. Case Report with Eye Findings.

Dr Algernon B. Reese. New York. The Significance of Pigment Freckles on the Iris Associated with Malignant Melanoma of the Uvea.

Dr Placidus J. Leinfelder. Iowa City. Choked Disks and Low Intracranial Pressure Occurring in Brain Tumor.

Society of Clinical Pathologists—The annual session of the American Society of Clinical Pathologists will be held at the Drake Hotel, Chicago, June 3-6 under the presidency of Dr Harry Goldblatt, Cleveland, whose address will be entitled "The Clinical Pathologist as an Experimenter." Among the speakers will be:

Drs George R. Dochat and James W. Kernohan. Rochester. Minn. Prognosis in Carcinoma of the Stomach Based on Dukes-Broders Combination of Grading.

Dr George H. Hansmann and Marion Tully. MT. Milwaukee. Cat Bite and Scratch Wounds with Consequent Pasteurella Infection in Man.

Drs Horace M. Banks and Harold F. Dunlap. Indianapolis. Case of Sarcoidosis.

Dr Harry J. Corper and Maurice L. Cohn. Ph D. Denver. The Virulence of Tubercle Bacilli and the Fallacy of Assuming the Grade of Virulence from Arbitrary Designations.

Drs Frank W. Hartman and Harvard L. Romence. Detroit. Liver Necrosis in Burns.

Dr Morris Fishbein. Editor THE JOURNAL. Trends of Medical Practice in the Postwar Period.

Special features will include a symposium on cirrhosis of the liver on Saturday and a tumor seminar on Sunday. Dr Max M. Strumler. Bryn Mawr Pa. will discuss "The Role of Plasma Transfusion in Medical Problems Not Related to the State of Shock." The paper was chosen by the general research committee of the society as the Ward Burdick Award Contribution for 1943.

Central Source of Information on Infantile Paralysis—The National Foundation for Infantile Paralysis is, with the cooperation of other agencies developing the only complete central authentic source of information on infantile paralysis in the world. A complete bibliography of all scientific literature that ever has been published pertaining to infantile paralysis is being compiled by the foundation and is expected to be ready for publication in book form in the early part of 1944. The first volume will contain a record of all scientific material on poliomyelitis published in the world up to the end of 1943. Subsequently the data will be kept up to date by publication of annual supplements. Brief abstracts of the more important articles will be included in the bibliography to be published by the foundation. The collection will serve to acquaint research workers with investigative work that has already been carried out and will make available complete information pertaining to the disease, including articles published in any language. Data which were assembled by the International Committee for the Study of Infantile Paralysis organized by Jeremiah Milbank in 1928 and assembled in the library of the New York Academy of Medicine, has been turned over by the academy to the National Foundation for inclusion in the new publication. The committee, which is now extinct, collected data pertaining to all literature on poliomyelitis that had been published up to 1932. The compilation of the information is being carried out for the foundation with the aid of the library of the American Medical Association and the John Crerar Library, both in Chicago, under the direction of Dr Morris Fishbein, Editor of THE JOURNAL, and Dr Ludwig Hektoen, Chicago, editor of the Archives of Pathology. Assisting in carrying out the work in Chicago is Miss Ella Salmonsens, medical librarian of the John Crerar Library.

CANADA

The Jackson Memorial Lecture—Philip Bard, Ph D, professor of physiology, Johns Hopkins University School of Medicine, Baltimore, delivered the annual Hughlings Jackson Memorial Lecture at the Montreal Neurological Institute April 28. His subject was "Rerepresentation as a Principle of Central Nervous Organization."

LATIN AMERICA

Personal—Dr Victor Fernandez Manero, chief of the Federal Department of Health in Mexico, Mexico City, was recently presented with the diploma and the gold medal of a fellow honoris causa of the International College of Surgeons as a token of national appreciation for his work on public health in Mexico.

Educational Exhibit for Museum of Hygiene—The Cleveland Health Museum of which Dr Bruno Gebhard is director, has completed a nineteen piece educational exhibit for the National Museum of Hygiene, Mexico City. The display includes all models of the Cleveland Museum's original traveling exhibit "Food for Health" and in addition new displays on digestion, dentistry, circulation and tuberculosis control. It was prepared at the instigation of Dr Gustavo Uruchurtu A., director of general health education of the department of public health of Mexico City on the recommendation of Dr Manuel Urrutia, director of the National Museum of Hygiene of Mexico, during his internship at the Cleveland Health Museum. The Mexican exhibit is entirely in Spanish.

Deaths in Other Countries

Albert Grant Fleming, Montreal, Que., Canada, University of Toronto Faculty of Medicine, 1907, Strathcona professor and chairman of the department of public health and preventive medicine and formerly dean of the faculty, McGill University Faculty of Medicine. Fellow of the American Public Health Association and in 1938 vice president served as president of the Canadian Public Health Association in 1935 appointed secretary of the health insurance committee of the British Columbia College of Physicians and Surgeons in 1905 joined the city health department of Toronto as bacteriologist and later director of medical services including the medical and dental inspection of school children served as medical officer in the armed forces of Canada during World War I, in 1921 became deputy medical health officer of Toronto member of the board of health of the city of Montreal medical director of the Bell Telephone Company of Canada received the doctor of public health degree from the University of Toronto in 1914 aged 55 died April 9 in the Montreal Neurological Institute of brain tumor.—**Dr Antonio Cardoso Fontes** formerly director of the Instituto Oswaldo Cruz Rio de Janeiro died March 27 aged 63.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 10, 1943

Warning on Use of Warmth for Treatment of Shock

In the *Army Medical Bulletin* the warning is given that the enthusiastic application of heat for shock has inherent risks. The blood volume nearly always diminishes after severe injuries, because fluid has left the vessels either by hemorrhage or by oozing into damaged tissues or both. The consequent fall in blood pressure brings into play a vasoconstrictor mechanism which raises pressure by reducing the capacity of the vascular bed. It is not yet certain which parts of the vascular system are affected by this vasoconstriction, but undoubtedly the cutaneous circulation is much diminished and its capacity is considerable. Even in a normal person warming may increase the blood content of the skin by as much as a pint. When the superficial vessels are already constricted far more than a pint may be brought to the surface and diverted from vital functions. Hence excessive warming may interfere with the body's endeavor to restrict its total vascular capacity and make a little go a long way. It may also accelerate loss of fluid from the surface by evaporation and sweating, it may accelerate metabolism of skin and muscle and thus jeopardize structures whose blood supply is impaired by local injury, and it may promote autolysis of damaged tissues and absorption of toxic products. Experimentally it has been shown that general and vigorous heating of injured animals decreases their chance of recovery and hastens their end. The application of cold, on the other hand though it lengthens their period of survival, does not increase their chance of recovery. Thus theory and experiment agree that casualties should be warmed in a conservative manner with blankets and hot water bottles applied after removal of wet clothes. More potent means of heating, such as a heat cradle, may be used when blood volume is being, or has been, restored by transfusion. But the heat should never be so great as to cause sweating, and limbs with injured blood vessels or gangrene should not be warmed at all. As far as the "cold" of shocked patients is compensatory, it is a symptom that should not be treated energetically unless its cause—reduction of blood volume—can be treated at the same time. Whereas warming plus transfusion gives excellent and prompt results, warming alone may be carried too far and lead to vasodilatation, circulatory collapse and death.

The Water Problem in Shipwreck

The Medical Research Council has issued "A Guide to the Preservation of Life at Sea After Shipwreck," which naval officers and physicians cooperated in producing. Advice is given with regard to everything which can arise, including routine preparations and precautions in the ship, abandoning ship, procedure in the lifeboat, lifeboat ailments, treatment of the sick and wounded, steps toward rescue and treatment after rescue. It is pointed out that water is more important than food. Masters who have appreciated its importance have improvised as much as 120 gallons per boat. The ration of water depends on the likelihood of being picked up. If this is not likely to happen for a week, no water need be given in the first twenty-four hours unless the men have been sweating from hot weather or exhaustion. The ration recommended is 18 ounces per man daily, which should be continued until there is 1 pint per man in hand. The ration must then be reduced to 2 ounces daily. The experience of survivors suggests that moistening the lips and washing the mouth with sea water are helpful and also that small quantities of sea water can be used for soaking

biscuits. But large drafts of sea water cause death, and even small amounts may prejudice the chances of survival. Permission to drink sea water, therefore, should never be given. Rectal administration does not relieve thirst and is harmful. Every drop of rain water should be collected, and no vessel which can hold water should be thrown away. Pools of water formed on melted ice or on ice floes, provided they are not brackish from salt water spray, may be drunk. The drinking of urine is harmful and should be forbidden. When water rations are low, the food rations should consist mainly of fats, starches and sugars and should contain little protein.

Rehabilitation and Resettlement of the Disabled

The Emergency Medical Service was established by the government for the treatment of casualties from air raids among the civilian population, which were expected on a scale much greater than occurred. This led to a great interest in rehabilitation. In January 1942 the minister of labor and national service announced that the government had decided to prepare as soon as possible comprehensive measures for the rehabilitation, training and resettlement of disabled persons generally. An exhaustive report by a committee of government officials appointed to consider the subject has just been published. It states that rehabilitation of a person disabled by injury or sickness is not solely a medical problem. When restoration in the medical sense is achieved, the services of the social and industrial expert are required, first, to determine in consultation with medical experts whether the patient can return to his previous occupation and, if not, what other occupation would be most suitable (for which there should be training facilities) and, second, to insure that the restored capacity is used to the best advantage. Thus there is a transfer of responsibility from the medical to the industrial services, but the latter should begin to operate before the former ends. A notable step to this end is the linking for the first time of the hospitals and the employment exchanges. This will be assisted by the continuation into the postwar period of the specialized centers for particular types of disability adopted by the Emergency Medical Service.

Under the emergency service twenty-one orthopedic centers have been established, about half of which are permanent orthopedic hospitals carrying on their peacetime functions in addition to emergency work. There is a full range of facilities, including occupational therapy and workshops. There are sixty hospitals under the emergency scheme for fractures at which these facilities are available but not in such a complete form.

Sir St Clair Thomson

Sir St Clair Thomson, who has been described as the Nestor of the British school of laryngology, has died at the age of 83 years as the result of an accident. He was trained in laryngology at the famous school of Vienna by Schotter, Stoerk and Hajek, as well as by the otologist Pollitzer. In his old age Hajek fell a victim to Nazi persecution. Like many others, neither his age nor his eminence saved him. He became an exile in England and it was a pleasure to Thomson to repay his debt to his teacher by welcoming and acclaiming him in laryngologic circles. In 1893 Thomson settled in London and was appointed physician to the Throat Hospital, Golden Square. In 1905 he became physician in charge of the department of laryngology and in 1908 professor at King's College. But in 1903 he was attacked with tuberculosis of the larynx and was probably the first patient in this country to carry out the treatment of complete silence. This was one of the two diseases, the other being cancer of the larynx, to which he devoted the greatest attention. For the latter he did much to establish the operation of laryngofissure. His technique was followed all over the world. In 1927 he showed at the Royal Society of Medicine four physicians on whom he had performed this operation. They were all active in their profession. He taught that

properly carried out the operation should be free from danger. In 1910 he reported the first case in this country of removal of a straw pin, with the aid of endoscopy, from a secondary bronchus. An excellent teacher and writer his textbook *Diseases of the Nose and Throat*, first published in 1911, became famous. In 1937 a fourth edition appeared in which he was assisted by Mr A. E. Negus. He published many papers on various subjects of his specialty and was the European editor of the *Laryngoscope*. A cultured man of great personal charm and an accomplished linguist, he was in demand at international congresses, where he often served as an interpreter. At the International Medical Congress held in London in 1913 he was president of the section of laryngology and was able to welcome the members of each national group in their own language. He was corresponding honorary member of most of the laryngologic societies of the world. He was president of the Laryngological Section of the British Medical Association three times. In 1926 he was presented with a loving cup by 175 of his fellow laryngologists, which perhaps pleased him most of all his distinctions. He then said that he had two ambitions—to till to the best of his ability the small corner of the field of medicine in which he worked and to have the esteem and possibly the affection of his fellow workers. He attained both ambitions in the fullest degree.

SWITZERLAND

(From Our Regular Correspondent)

April 3, 1943

Surgery of the Aged

Surgery of the Aged was discussed in the Medical Society of Basel by Prof. Dr. F. Merke who said that the progressive overaging of the population makes it necessary for physicians to concern themselves more with the diseases of old age. Even though the forecasts made by mathematicians and statisticians for coming decades might be doubted, they nevertheless are to a certain extent correct with regard to the present trends in age distributions of populations. In the last three decades, populations have shown a tendency to become overaged. Internists have for some time given more attention to geriatrics. Surgeons too have given it more attention recently. To obtain a picture of the risk of surgical interventions in old patients a survey was made on all persons over 60 who were operated on at the St. Clara Hospital in Basel. The total number was in excess of 800. It was hoped that the survey would reveal whether the risk is really as much greater as is often assumed, even among physicians. The following factors were ascertained. In a group of the most severely threatened patients with gastric carcinoma resection actually has a relatively high mortality risk. Ten fatalities occurred in 29 resections (34.5 per cent). In these cases tumor cachexia is added to the physiologic weakness of old age which further reduces the resistance. The risk involved in the resection of gastric ulcer is slightly less in these old patients. Whereas the mortality was only 4.7 per cent in 105 ulcer resections in patients less than 60 years old it reached 20 per cent in 15 who were over 60 years old. Of course these were especially severe cases, that is ones in which simple gastroenterostomy would have been altogether insufficient. Acute appendicitis, contrary to the opinion of some authors is not as rare in the aged as is often assumed. Extensive statistics from England and America reveal that from 1 to 2 per cent of all attacks of acute appendicitis occur in persons over 60 years of age. The mortality is given as between 20 and 50 per cent. The Mayo clinic reports a mortality of 16 per cent in 82 cases. The author's own observations involve 44 cases with a mortality of 18 per cent. In mammary carcinoma (50 cases over the age of 60) the mortality was only 8 per cent. In 53 struma resections in patients over 60 in whom the operation was as a rule not performed for cosmetic reasons but on account of severe tracheal com-

pression or substernal strumas or because of relapses in exhausted or hypertensive persons, the mortality was 57 per cent. Prognosis was favorable in femoral and umbilical hernias as long as these were not incarcerated. There was not a single fatality in 29 nonincarcerated hernias in persons between 60 and 85 years of age, only 3 incarcerated hernias terminated in death. The prognosis is exceptionally good for nonincarcerated inguinal hernias: not a single fatality occurred in 60 patients between 60 and 89 years of age, in 12 incarcerated inguinal hernias in patients of the same age there was 1 death of gastric hemorrhage.

It is important to know that in the presence of tumor cachexia and in urgent operations on the aged the risk of operation is actually greater but that in nonurgent operations and in the absence of other severe defects there is no increased risk for aged persons, and such patients can be subjected to surgical intervention with a calm conscience. Careful preliminary treatment, anesthetization and after-treatment are prerequisites for good results.

Epidemic Poliomyelitis

According to investigations of the Swiss health authorities, the collecting depots had all together 16 liters of convalescent serum. The Children's Clinic of the University of Basel no longer is one of these collecting depots because it prefers to call convalescents whenever the need arises and to obtain fresh serum. The clinic has on file the addresses of a large number of persons, many of them in the immediate vicinity.

The Swiss Health Office recently published statistics on the morbidity and fatality of epidemic poliomyelitis in Switzerland for the years 1931 to 1941. The detailed statistical statements showed the following results:

Year	Number of Cases	Fatalities	Percentage of Lethality
1931	351	58	16.5
1932	123	27	22.0
1933	198	28	14.1
1934	80	17	21.2
1935	25	46	18.8
1936	1,269	121	9.5
1937	1,494	177	11.8
1938	283	39	13.8
1939	521	53	10.2
1940	237	34	14.3
1941	1,479	149	10.0

Marriages

KENNETH GRAHAM LAWRENCE, Florence, S. C. to Miss Jewell Oneida Simmons in Nashville, Tenn., March 27.

THOMAS KIMBALL SLAUGHTER JR., Greenville, S. C., to Miss Mildred Marian Grout of Memphis, Tenn., April 13.

THOMAS GORSUCH REED, Lake Odessa, Mich., to Miss Geraldine Meyer of St. Petersburg, Fla., April 5.

NATHANIEL CLAYTON EWING to Miss Mary Virginia Kennedy, both of Charlottesville, Va., April 8.

JULES VICTOR JR., Savannah, Ga., to Miss Leonora Carolyn Huguenin at Beaufort, S. C., April 11.

BERNARD KYLE MUNDY, Baltimore, to Miss Marjorie Jane McKee of Chanute, Kan., March 25.

THOMAS WILLIAM TALBERT to Miss Dorothy Bramlette both of Columbia, S. C., March 26.

ROBERT ALBERT GREER RICKETSON to Miss Alma Allen Huth both of Durham, N. C., April 14.

LANCEAU DURANT LIDE JR. to Miss Ruth Easterling Bethea both of Marion, S. C., March 27.

VIOLET M. CRABBE to Mr. Gerald Forbes both of Wolcott, Ind., at Wabash, January 28.

PAUL HARDIN HARMON, Squire, Pa., to Miss Dorothy Ann Ross in Chicago, March 20.

JOHN FLETCHER COMER to Miss Beatie Thomson both of Birmingham, Ala., recently.

WARREN S. TUCKER to DR. MARY ALICE CRAIG both of Indianapolis, February 21.

Deaths

James Ewing * New York, famed in the field of cancer research and in 1941 recipient of the Distinguished Service Medal of the American Medical Association, died at the Memorial Hospital for the Treatment of Cancer and Allied Diseases May 16, aged 76.

Dr. Ewing was born in Pittsburgh on Christmas Day, 1866. He received his bachelor's degree from Amherst College in 1888 and his master of arts degree in 1891, the same year in which he was awarded his degree of doctor of medicine at the College of Physicians and Surgeons of New York now known as Columbia University College of Physicians and Surgeons. Later many honorary degrees were conferred on him.

Dr. Ewing served at Columbia from 1893 to 1897 as a tutor in histology, held the Clark Fellowship from 1896 to 1899, and taught as instructor in clinical pathology from 1897 to 1898. From the following year until 1932 when he became professor of oncology, he was professor of pathology at Cornell University Medical College.

In 1931 when the January issue of *Annals of Surgery* was published to commemorate his sixty-fourth birthday, James Ewing was said to be "likewise the foremost American investigator of the entire group of neoplastic diseases." This volume was subsequently republished as a book by Lippincott under the title "Cancer." In recognition of his productive activities in the field of cancer, notable honors have been paid to Dr. Ewing, the Mickle Fellowship in 1935, the John Scott Medal in 1936, the Clement Cleveland Medal in 1940. He had been a member of numerous scientific groups, including the Philadelphia Pathological Society, the Academy of Medicine of Brazil, Swedish Roentgen Society, Academy of Medicine of Budapest, National Academy of Sciences, Association of American Physicians, American Roentgen Ray Society, American Medical Museums Society, American Association of Pathologists and Bacteriologists (president, 1906), Society of Experimental Biology and Medicine (president 1912), New York Academy of Medicine, New York Pathological Society, and the American Association for Cancer Research (president 1907, vice president 1936), advisory council to the American Society for the Control of Cancer (vice president, 1922) created in 1937 to act as a clearing house for information and to integrate and coordinate the activities of the major cancer organizations in the United States, Harvey Society (president, 1908), American Radiological Society, National Advisory Cancer Council and advisory committee to the New York state division of cancer control. He was delegate to the International Congress of Cancer in Madrid in 1933. In 1932 Dr. Ewing became medical director of Memorial Hospital for the Treatment of Cancer and Allied Diseases, in full charge of all departments and activities, where, for a number of years, he has also been director of cancer research. At various times he had delivered such notable lectures as the Frank Billings Lecture, the Beaumont Lectures, the R. W. Stewart Memorial Lecture, the Janeway Lecture and the Citizens Aid Society Memorial Address.

Dr. Ewing was chairman of the Section on Pathology and Physiology of the American Medical Association, 1916-1917, and, since 1926, had been a member of the editorial board of the *Archives of Pathology*. The citation accompanying the Distinguished Service Medal of the Association stated that the honor was "in recognition of his long and distinguished service as an investigator and teacher, his significant contributions to medical literature, and his successful inspiration of young inves-

tigators in the field of medical science." Dr. Ewing was a prolific contributor to the literature, his best known book being "Neoplastic Diseases." The volume is considered a landmark in the literature on cancer. Other notable writings include "Clinical Pathology of the Blood," published in 1900, and his "Textbook on Legal Medicine," published in 1910.

Mont Rogers Reid * Cincinnati, professor of surgery in the University of Cincinnati College of Medicine, member of the Committee for the Protection of Medical Research of the American Medical Association, died at his home, May 11, aged 54, of coronary thrombosis.

Born in Oriskany, Va., April 7, 1889, Dr. Reid received his bachelor of arts degree from Roanoke College, Salem, Va., in 1908. He graduated at Johns Hopkins University School of Medicine, Baltimore, in 1912. After completing his internship, Dr. Reid filled various staff positions at Johns Hopkins Hospital and at the medical school. In 1922 he went to the University of Cincinnati Medical School as associate professor of surgery, becoming Christian R. Holmes professor in 1931. Later he was named director of the surgical service at Cincinnati General Hospital and Children's Hospital and consultant at the Hamilton County Tuberculosis Hospital.

Dr. Reid was a first lieutenant in the medical corps of the U. S. Army during World War I.

In 1934 Dr. Reid was given the first presentation of the Rudolph Matas Medal for vascular surgery for his experimental work in systemic effects of arteriovenous fistulas and his other studies on the peripheral circulation. He was a fellow of the American College of Surgeons and a member of the American Surgical Association (vice president, 1934-1935), Southern Surgical Society, International Surgical Association, Society of Clinical Surgery, American Association for the Advancement of Science, Society of University Surgeons, Central Surgical Association, National Advisory Cancer Council, director of the American Society for the Control of Cancer and a member and honorary member of numerous other societies and national fraternities.

In 1926, after a year as visiting professor of surgery at the Peiping Union Medical College, Peking, China, Dr. Reid participated in an Asiatic expedition

in Mongolia conducted by Roy Chapman Andrews. He had written numerous articles in current publications and in 1929 prepared a chapter on surgery of the sympathetic nervous system in the Dean Lewis System of Surgery.

Dr. Reid was recognized as a brilliant surgeon, his achievements as a student and teacher gave him a renown for leadership in his chosen field.

Frederick Theodore Van Beuren Jr. * New York, Columbia University College of Physicians and Surgeons, New York, 1902, associate clinical professor of surgery at his alma mater and formerly associate dean and secretary, specialist certified by the American Board of Surgery, member of the American Surgical Association, fellow of the American College of Surgeons, served during World War I, member of Squadron A, New York National Guard, from 1899 to 1910, when he resigned as captain, first lieutenant in the medical reserve corps of the U. S. Army from 1910 to 1918 and later a major, in 1935 elected a member of the board of directors of the Morristown (N. J.) Library, assistant attending surgeon to the Lincoln Hospital from 1910 to 1913 and the Roosevelt Hospital from 1913 to 1921, attending surgeon to the Volunteers' Hospital from 1915 to 1917 and the Sloane Hospital for Women for many years, associate visiting surgeon, Presbyterian Hospital, consulting surgeon to the Elizabeth A. Horton Memorial Hospital, Middletown, for many years, president of the Morristown (N. J.) Memorial Hospital, where he died March 13, of pneumonia, aged 67.



JAMES EWING, M.D., 1866-1943

David Chester Brown * leader in the development of the Committee on Scientific Exhibit and for many years a member of the House of Delegates and the Board of Trustees of the American Medical Association died at his home in Danbury Conn, May 12, aged 79, of coronary thrombosis cerebral hemorrhage and general arteriosclerosis

Dr Brown was born in Norfolk Va Nov 16 1863 After graduating at Yale University School of Medicine New Haven Conn in 1884 Dr Brown pursued postgraduate work at Hartford Hospital and the Universities of Berlin and Prague engaging in the private practice of medicine at Danbury in 1886 In 1907 he became a member of the House of Delegates of the American Medical Association serving until 1914 and again from 1916 to 1918 He was a member of the Board of Trustees from 1918 until 1934 In 1922 after the Board of Trustees of the Association took over the Scientific Exhibit Dr Brown was appointed a member and chairman a position he held until 1934 He was a fellow of the American College of Surgeons had once been president of the Connecticut State Medical Society and the Danbury Medical Society and had also been chairman of the board of trustees and president of the Fairfield County Medical Society He once served as coroner physician to the town of New Fairfield and surgeon to the New York New Haven and Hartford Railroad Associated with the Danbury Hospital since 1885, Dr Brown had been surgeon since 1902 At one time he had been medical aide to the governor of Connecticut and chairman of the medical section of the state committee of the National Council of Defense In 1917 he was commissioned a captain in the medical corps of the U S Army becoming in 1918 a major in the medical section of the Provost Marshal General's Office At the time of his death Dr Brown was chairman of the local committee on medical aid of the committee on disaster preparedness and relief of the American Red Cross

Long after his official connection ended with the Committee on Scientific Exhibit of the American Medical Association Dr Brown continued an active interest in the affairs of the committee appearing regularly at its meetings It was during his term as chairman that the committee showed unprecedented development and to him goes credit for the bureau's participation in the expansion of medical education His enthusiastic attention to the affairs of local and state medical matters evidenced his keen interest in the progress of organized medicine Dr Brown was a kindly and companionable man and his genial manner his energy and his tact endeared him to many

Norval Albert Hamilton * Franklin Ohio Miami Medical College Cincinnati 1890 chairman of the county Selective Service Board vice president of the Miami Valley Building and Loan Association a director of the Franklin National Bank past president and charter member of the Franklin Rotary Club formerly secretary of the Warren County Medical Society, for many years a member of the Warren County Board of Elections on the staff of the Middletown (Ohio) Hospital past president of the U S Board of Pension Examining Surgeons aged 73 died March 28 in the Christ Hospital Cincinnati of chronic myocarditis

Walter Henry Adams, Northampton Mass University of the City of New York Medical Department 1889 for many years on the staff of the Cooley Dickinson Hospital aged 78 died March 18 in Fresno Calif of arterio sclerotic heart disease

Joel Young Alexander * Middleton Tenn University of Nashville Medical Department 1907 aged 62 died March 18 of heart disease

Reuben Harry Alpert * New Haven Conn, Yale University School of Medicine, New Haven 1913 member of the American Society of Anesthetists, Inc, anesthetist to the Griffin Hospital, Derby, and the Grace Hospital, aged 53, died, February 5, of staphylococcal meningitis

Henry Pendleton Ball, La Jolla Calif, Kansas City (Mo) Medical College, 1883, University of the City of New York Medical Department 1884, member of the Missouri State Medical Association, formerly medical examiner for the Kansas City (Mo) Life Insurance Company aged 83, died March 11 in the Scripps Memorial Hospital of cerebral hemorrhage

William Pawson Chunn, Baltimore University of Maryland School of Medicine, Baltimore 1880 member of the Medical and Surgical Faculty of Maryland aged 84 died February 19

Hale Ellicott Cullom, Nashville Tenn, Vanderbilt University School of Medicine Nashville, 1930 served as a captain in the medical corps of the U S Army, director of sight conservation and prevention of blindness for the state of Tennessee son of Dr Marvin M Cullom aged 39 died April 30 in St Thomas Hospital of pneumococcal meningitis

Edward Dodd, Cairo Neb Keokuk (Iowa) Medical College College of Physicians and Surgeons 1903, member of the board of health of Cairo aged 64 died March 6 of intestinal obstruction

Francis Louis Donlon, New York Bellevue Hospital Medical College New York 1892 member of the Medical Society of the State of New York formerly chairman of the local school board, for many years consultant to St Joseph's Hospital visiting physician on the staff of St Francis Hospital where he died March 24 of heart disease aged 75

Arthur I Eccleston, Watertown N Y University of Buffalo School of Medicine 1898, member of the Medical Society of the State of New York served as county coroner and health officer of the town of Carlton aged 69 died March 22 of acute nephritis

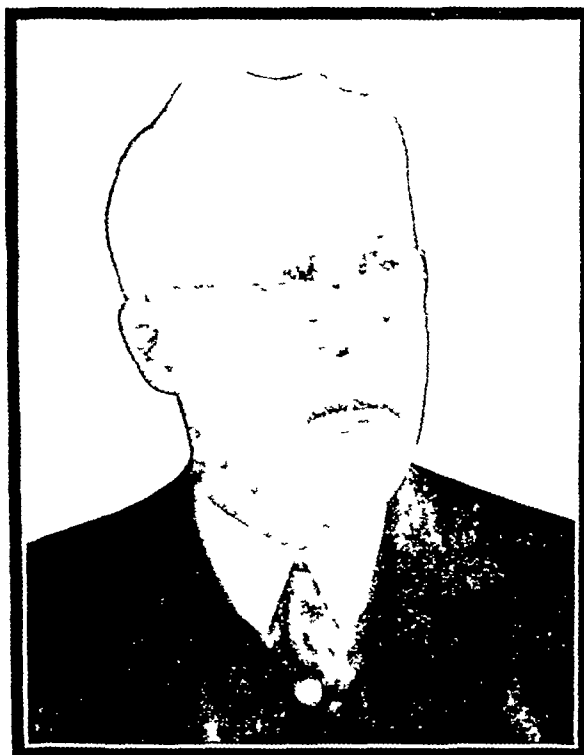
Harry Eckstein, Staten Island N Y University of Maryland School of Medicine and College of Physicians and Surgeons Baltimore 1931 aged 37 died March 21 in the Medical Center New York of carcinoma of the lung with right cerebral metastases

John Harry Einhouse * Moscow Idaho University of Louisville (Ky) Medical Department 1921 member of the American Academy of Dermatology and Syphilology for many years one of the university physicians at the University of Idaho served during World War I formerly chief examining physician for the draft board registrar of vital statistics for Latah County aged 49 died March 15 of cerebral hemorrhage

John Headley Evans * Highland Calif Kansas City (Mo) Medical College 1900 also a dentist for thirty four years physician and surgeon for the San Manuel Indian reservation for many years deputy county health officer aged 77 died March 14 of carcinoma of the prostate

Ernest William Fleming * Los Angeles University of Michigan Department of Medicine and Surgery Ann Arbor 1885 an Affiliate Fellow of the American Medical Association specialist certified by the American Board of Otolaryngology member of the American Laryngological Rhinological and Otolological Society fellow of the American College of Surgeons a founder member of the Los Angeles Ear Nose and Throat Society aged 81 died March 7 of carcinoma of the lungs

Fred Heywood Freeman, Gardiner Maine University of Vermont College of Medicine Burlington 1909 member of the



DAVID CHESTER BROWN, M.D. 1863-1943

Maime Medical Association served overseas during World War I, aged 64, died March 10, in the Gardner General Hospital of coronary thrombosis.

Hiram Brewster Gilmer, Hickory, Miss., University of Tennessee College of Medicine, Memphis, 1924, served in the medical corps of the U. S. Army during World War I, associated with the U. S. Public Health Service for six years, aged 50, was killed March 28, when his automobile plumed off a twelve foot embankment near Meridian.

Arthur Lee Goatcher, Plummerville, Ark., University of Nashville (Tenn.) Medical Department, 1902, member of the Arkansas Medical Society, local surgeon for the Missouri Pacific Railroad, aged 71, died February 25, in St. Anthony's Hospital, Morriston, of carcinoma of the pincers.

Robert Evans Pearis Gober, Los Gatos, Calif., Bellevue Hospital Medical College, New York, 1881, aged 81, died March 21, of uremia.

Thomas Henry Hack & Proctor, Vt., University of Vermont College of Medicine, Burlington, 1900, health officer of Proctor, on the staff of the Proctor Hospital, aged 72, died March 27, of coronary thrombosis.

Marcus Philip Hambleton, Fontana, Calif., Medical School of Miami, Portland, 1903, member of the California Medical Association, served as a captain in the medical corps of the U. S. Army during World War I, aged 63, died March 16, in a hospital at San Bernardino of injuries received when the automobile in which he was driving was struck by a truck.

Arthur William Harold Olm, Iowa State University of Iowa College of Medicine, Iowa City, 1901, aged 65, died, March 27, in Iowa City of cerebral embolism.

James C. Jenkins, Hartwell, Ga., University of Georgia Medical Department, Augusta, 1897, member of the Medical Association of Georgia, mayor of Hartwell for two terms, aged 68, died February 1, in the Emory University (Ga.) Hospital of diabetes mellitus.

Henry Porter Johnson & Linn, Rush Medical College, Chicago, 1879, an Affiliate Fellow of the American Medical Association, aged 88, died March 31, of arteriosclerosis and bronchopneumonia.

William Sidney Johnson & Carbondale, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1900, for many years deputy coroner of Lackawanna County, on the staff of St. Joseph's Hospital, aged 67, died March 5, of heart disease.

Thomas Frank Kennedy, Woonsocket, R. I., College of Physicians and Surgeons, Baltimore, 1900, member of the Rhode Island Medical Society, aged 68, served on the staffs of St. Joseph's Hospital, Providence, Park Place Hospital, Pawtucket, and the Woonsocket Hospital, where he died, March 10, of pneumococcal meningitis following otitis media.

Fred William Linn & Cleveland, University of Wooster Medical Department, Cleveland, 1900, on the senior staff of the Lutheran Hospital, aged 65, died March 31, of myocardial infarction.

Homer M. Little, East St. Louis, Ill., Marion-Sims College of Medicine, St. Louis, 1900, member of the Illinois State Medical Society, aged 72, served on the staffs of the Christman Welfare Hospital and St. Mary's Hospital, where he died, March 14, of coronary occlusion.

Carleton Mathewson, Fresno, Calif., Cooper Medical College, San Francisco, 1900, member of the California Medical Association, served with the U. S. Public Health Service during World War I, for twenty-five years health officer of Fresno, on the staff of the Burnett Sanitarium, aged 67, died, March 1, in St. Agnes Hospital of heart disease.

Albert Bascom Price, Gordo, Ala., Medical College of Alabama, Mobile, 1898, member of the Medical Association of the State of Alabama, past president of the Pickens County Medical Society, aged 74, died, March 3, of coronary thrombosis.

George Merwin Redman, Chicago, Chicago Medical School, 1921, member of the Illinois State Medical Society, served on the staffs of the Evangelical Hospital, St. George Hospital and the Southtown Hospital, where he died, March 27, of perforated duodenal ulcer.

Paul De Witt Robason & McKinney, Texas, Fort Worth School of Medicine, Medical Department of Texas Christian University, 1917, served overseas during World War I, past president and secretary of the Collin County Medical Society, aged 49, president of the staff of the McKinney City Hospital, where he died, March 13, of acute arthritis, bacteremia, pericarditis, myocarditis and acute nephritis.

Leo Frank Secrist, Alpena, Mich., University of Michigan Homoeopathic Medical School, Ann Arbor, 1911, member of the Michigan State Medical Society, past president of the Alpena County Medical Society, a member and formerly chief of the staff of the Alpena General Hospital, aged 56, was found dead, March 9, of coronary occlusion and bronchopneumonia.

Lawrence Crosby Snow & Salt Lake City, Jefferson Medical College of Philadelphia, 1914, member of the American Academy of Orthopaedic Surgeons, specialist certified by the American Board of Orthopaedic Surgery, Inc., while a resident of Park City served as city and county physician and as director of the State Bank, aged 56, on the staffs of the Holy Cross Hospital, Primary Children's Hospital and the Dr. W. H. Groves Latter-Day Saints Hospital, where he died, March 25, of hypertension and cardiac asthma.

Charles Henry Upton, Los Angeles, Bennett College of Eclectic Medicine and Surgery, Chicago, 1902, aged 67, died, March 6, of coronary thrombosis.

Frank Forrest Urey & New Castle, Pa., Western Pennsylvania Medical College, Pittsburgh, 1900, also a pharmacist, served during World War I, chief surgeon of the ear, nose and throat department, Jameson Memorial Hospital, aged 70, died, March 8, of carcinoma of the pancreas.

Harry A. Vedder, Marshfield, Wis., Northwestern University Medical School, Chicago, 1905, on the staff of St. Joseph's Hospital, joined the Marshfield Clinic in 1920, surgeon for the Chicago, Northwestern and Omaha Railway Company for many years, aged 63, died, March 12, of myocarditis, chronic endocarditis and cirrhosis of the liver.

Carl von Neupert & Stevens Point, Wis., Louisville (Ky.) Medical College, 1892, past president of the Portage County Medical Society, fellow of the American College of Surgeons, examining physician and surgeon for the Soo Line Railroad for more than forty years, for many years served as county physician, member of the staff and formerly president of St. Michael's Hospital, aged 72, died, March 15, of heart disease.

Solomon Le Roy Walthall, St. Louis, University of West Tennessee College of Medicine and Surgery, Memphis, 1914, aged 56, on the visiting staffs of the Peoples Hospital, Homer, G. Phillips Hospital and St. Mary's Infirmary, where he died, March 14, of cerebral hemorrhage.

Fonso Butler Watkins & Morganton, N. C., Jefferson Medical College of Philadelphia, 1907, fellow of the American College of Physicians, president of the North Carolina Neuro-psychiatric Association, in 1938 became superintendent of the State Hospital after having served for twenty-six years as first assistant physician, aged 64, died, March 8, in the Rutherford Hospital, Rutherfordton, of toxic cirrhosis of the liver.

Annie Roberts Young, Waltham, Mass., Tufts College Medical School, Boston, 1911, at one time a member of the school committee of Waltham, aged 79, died, March 16, in Wellesley of myocarditis and arteriosclerosis.

DIED WHILE IN MILITARY SERVICE

Louis Archie Milne & Colonel, M. C., U. S. Army, Brooklyn, Kansas City (Mo.) Medical College, 1904, U. S. Army Medical School, Washington, D. C., 1935, practiced at Lawton, Okla., where he had been a contract surgeon for the Indian Reservation, in 1916 served as a medical officer on the Mexican border, served during World War I, became a captain in the medical corps of the U. S. Army in 1920 and rose through the various ranks to that of colonel, port surgeon of the New York Port of Embarkation, aged 63, died, March 6, in the Fort Hamilton Station Hospital of cerebral embolism.

Howard Hopley Barlow, Salem, Ore., State University of Iowa College of Medicine, Iowa City, 1920, a member of the staffs of the Salem General and Salem Deaconess hospitals, captain medical corps, Army of the United States, aged 47, died, April 8, in the Barnes General Hospital, Vancouver, Wash., of coronary thrombosis.

William Thau, Boston, Deutsche Universität Medizinische Fakultät, Prague, Czechoslovakia, 1924, captain in the medical corps of the Army of the United States, assigned to the Station Hospital at the Indiantown Gap Military Reservation in Pennsylvania, where he died, February 14, of a skull fracture received in an automobile accident, aged 45.

Correspondence

"BLACK DERMOGRAPHISM"

To the Editor—With reference to the article "The Phenomenon of 'Black Dermographism'" by Urbach and Pillsbury in THE JOURNAL February 13, any one sufficiently interested in the subject to attempt to analyze the data presented may find them rather confusing. Data of this sort should be accurate and properly presented contribute to an ultimate solution of the phenomenon on theoretical grounds. I should like to suggest in passing, however, that the explanation is to be found in an analytic study of the reactions and deposit on the skin rather than through a study of the materials which may or may not "prepare" the skin for the test.

As to my criticism of the clarity of the article, particular reference is made to the second paragraph on page 487 which is quoted here for reference: "Table 6 shows how differently the various salts of the same metal used in preparation of the skin react, even such closely related compounds as sodium sulfate and sodium sulfite, for example. We would stress that with the exception of sodium sulfite all sulfur compounds react negatively and that therefore the suggestion that black dermographism might be due to a sulfur compound (e. g. silver sulfide) may be promptly dismissed." The reference is obviously to table 7 rather than to table 6 whereas an earlier reference (p. 486) to table 7 is obviously meant for table 6. To repeat, "We would stress that, with the exception of sodium sulfite all sulfur compounds react negatively." This 'exception' namely sodium sulfite, is, however, listed in table 5 as one actually giving a negative result. In table 7 on the other hand, this compound, as well as seven other sulfur-containing compounds, is credited with producing positive reaction while only two (aluminum sulfate and sodium sulfate) are given as negative. The positive reactions of the seven compounds just mentioned are confirmed in table 4 while table 5 fails to add any to the list of two negatively reacting substances (with the exception of sodium sulfite).

These data hardly seem to support the authors' ready dismissal of the suggestion that black dermographism might be due to a sulfur compound.

L. F. NEV, Edgewood Arsenal, Md.

[A copy of Mr. Nev's comment, sent to the author of the article, brought this reply.]

To the Editor—Dr. Pillsbury and I fully agree that the ultimate solution of the phenomenon of black dermographism is to be found in the analytic study of the deposits. To this end photospectrometric examinations were presented showing that the black lines consisted of silver or copper depending on the composition of the metal used for the experiment (see figs. 4 and 5). This closely corresponds with the chemical analysis by Hauck and Dietel, cited in the paper.

As regards the role of sulfur in the elicitation of this phenomenon two points are significant. 1. Many substances entirely free of sulfur such as titanium dioxide and calcium carbonate, call forth positive reactions. 2. While certain sulfur compounds react positively, others including aluminum sulfate and sodium sulfite as well as precipitated, sublimed and washed sulfur react negatively. It seems proper to conclude therefore, that black dermographism is definitely not based on a chemical reaction between sulfur or sulfur compounds and the metals used for stroking.

It is a regrettable error that sodium sulfite was included as a negative reacting substance in table 5.

ERICH URBACH, M.D., Philadelphia

NUTRITION PLANNING

To the Editor—The coming International Food Conference at Hot Springs is expected among other things to see that sufficient and proper food will be available during the present war and the postwar period. The conference will also make far reaching recommendations and will probably advise the various countries as to the quantity and type of foodstuff they are expected to produce. The predominantly grain producing countries will have to produce according to some plan in order to avoid overproduction of certain foodstuffs. Cattle and sheep raising countries will likewise produce according to the protein requirements of the populations concerned. In making these recommendations the conference will undoubtedly be guided by fundamental human nutritional needs as determined by medical science.

In general, the mineral requirements of the human being are well established as also the requirements of the known vitamins. The protein, fat and carbohydrate requirements should be definitely established. This will be a difficult problem and will lead to controversy because there will be disagreement as to the requirements of protein, fat and carbohydrate.

In recent years several common diseases and disorders have been successfully treated with diets high in protein and low in carbohydrate rich foods. I refer to such diseases and disorders as arthritis, peptic ulcer, colitis, angina pectoris, tuberculosis, dyspepsia, flatulence, abdominal pain, certain neurotic states and ordinary headaches. The results have been so striking as to force the conclusion that the fundamental cause of these pathologic states is due, in the main, to the consumption of carbohydrate rich foods. Having had a considerable experience in treating patients with these diseases and disorders during the past five years I have been forced to conclude that the American diet is harmful because it allows a great amount of carbohydrate rich foods. It has also become apparent that, even though the diet may contain a sufficient amount of protein, fat, minerals and vitamins, the presence of carbohydrate rich foods will exert their harmful effects just the same. This was clearly demonstrated in the treatment of advanced pulmonary tuberculosis. Patients who were going downhill on a scientifically prepared hospital diet containing carbohydrate rich foods and required amounts of protein, fat, minerals and vitamins responded immediately to a diet which eliminated all carbohydrate rich foods. From such observations on patients with tuberculosis one may justifiably conclude that the consumption of carbohydrate rich foods is perhaps, the most important factor in susceptibility to tuberculosis. Faber of Denmark in a study of tuberculosis mortality in Europe during World War I, found that the increase in tuberculosis mortality in all countries investigated coincided with an increased consumption of flour and potatoes and a decreased consumption of meat, fish and dairy products. The increase in mortality occurred in spite of an adequate caloric intake. When conditions permitted an increased consumption of protein and fat and a decreased consumption of carbohydrate rich foods the tuberculosis mortality fell.

That good nutrition is essential to the maintenance of health is recognized by all. Good nutrition is a vague term; it means not only sufficient calories and food of adequate quality and quantity but also a greater amount of protein and fat and far less carbohydrate rich foods than present day standards permit. I would recommend that the consumption of carbohydrate rich foods by human beings be ultimately discontinued. Carbohydrate should be ingested only in the form of 5 and 10 per cent vegetables and fruits.

BENJAMIN P. SANDLER

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Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *The Journal*, May 15, page 195.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. *Parts I and II* August 24. *Part III* June and also at different times at various centers having 5 or more eligible applicants. See Dr. I. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY. *Written* Philadelphia Sept. 27. *Oral* Philadelphia Nov. 5-6. Final date for filing application is August 16. See Dr. C. Guy Lane, 116 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE. *Oral* Philadelphia May 20-29 and Chicago June 9-11. *Written* Oct. 18. Final date for filing application is Sept. 1. Asst. Sec. Dr. William A. Werrell, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OPHTHALMOLOGY. *Parts I and II* New York City June 4-5. Chicago October 8-9. Sec. Dr. John Green, 6530 Waterman Ave., St. Louis.

AMERICAN BOARD OF OTOLARYNGOLOGY. *Oral* Chicago October. Final date for filing application is July 1. Sec. Dr. Dean M. Lurie, 1500 Medical Arts Bldg., Omaha, Neb.

AMERICAN BOARD OF PEDIATRICS. *Written* Locally Oct. 5. *Oral* New York Nov. 20-21. Final date for filing applications is Aug. 1. Starting July 1, 1943, Group I will be abolished. Sec. Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF UROLOGY. *Oral* Chicago February. *Written* Various centers, December. Final date for filing application is Nov. 1. Sec. Dr. Gilbert I. Thomas, 1309 Willow St., Minneapolis, Minn.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Performance of Unnecessary Operation by Osteopath—The plaintiff, a man aged 22, consulted the defendant, an osteopath, relative to dark circles under his eyes and was advised that an operation, which the osteopath agreed to perform for \$100 cash in advance, would correct the condition. The patient returned the next day, paid the osteopath \$100 cash and signed a paper presented to him by the osteopath, reading as follows:

To Whom It Concerns:

This will certify that I have requested [naming the osteopath] to perform plastic surgery upon my person & assume full responsibility for any untoward happening, infection, scarring, occurrence or recurrence of a deformity that may develop.

The patient objected to signing such a paper, stating that if there was any danger at all in the operation he (the patient) did not want to go through with it, but the osteopath assured him that the osteopath's insurance carrier required the signing of such a paper and that, in the words of the patient, "he could do me a neat and satisfactory job, the kind I really would like to have and he could do it." The following day the osteopath operated on the patient, removing "the pigmented skin under the eyes in an effort to eliminate the dark circles." The operation, according to the Supreme Court of Missouri, division No. 1, admittedly "was unnecessary and not successful." Twenty-eight days later the osteopath for another \$50 cash in hand paid, performed a second operation "by removing skin at the side of the eye in an attempt to remedy a drooping of the lower lid from the eyes." The patient subsequently sued the osteopath for malpractice and recovered a judgment for \$12,000. The osteopath appealed to the Supreme Court of Missouri, division No. 1.

The trial court had instructed the jury that if it found that the dark areas or circles under the patient's eyes were not caused by any ailment or disease and that an operation for the removal thereof would be likely to result in injury to the patient, and that the osteopath knew or by the exercise of ordinary care and skill could and should have known that the removal of such dark areas by an operation was so obviously

unnecessary that an ordinary careful and prudent surgeon would not have performed it, and that such operation was likely to result in injury to the patient and notwithstanding such knowledge, if any, advised such operation and performed it, and that as a direct result of the operation by the defendant the plaintiff was injured, then the verdict of the jury should be for the patient and against the osteopath. The osteopath contended that the instruction was erroneous because there was no evidence tending to show that the operation was likely in all probability to result in injury. The fact, said the Supreme Court, that the osteopath asked his patient to sign the release tended to show that the osteopath had doubts about the result of the operation and thought it likely to result in injury. Furthermore there was evidence tending to show that the skin under the eyes of "youngsters" from 20 to 25 years of age fits tightly to other tissues, that the "natural and probable consequences" of the operation would be a contracted lid and that the skin under the patient's eyes had been normal. All of this, concluded the court, was substantial evidence tending to show that the operation would likely result in injury.

The osteopath further objected to the instruction, arguing that the jury might have understood the word "injury" used in the instruction to mean the mere cutting of the skin. We do not think that there is any merit to this argument, answered the court. As the word "injury" was used in the instruction the jury would understand the word to mean the ultimate result of the operation. The osteopath also contended that the use of the word "likely" in the instruction broadened the issues. The instruction, said the court, requires a finding that the operation would likely result in injury, whereas the petition filed by the patient alleged that the osteopath knew or, by the exercise of ordinary care, should have known that the operation would result in injury. If the osteopath knew that the operation would result in injury, continued the court, it necessarily follows that he knew it would likely result in injury. In other words, an allegation that the osteopath knew that the operation would result in injury includes an allegation that he knew it would likely result in injury. If so, the instruction does not broaden the issues made by the pleadings. On the contrary, it narrows such issues. Furthermore, the evidence shows that the case was tried on the theory that the operation would likely in all probability result in injury and not on the theory that the defendant had actual knowledge that injury would result from the operation. Thus it appears that the osteopath is not in a position to complain of the word "likely" in the instruction.

The osteopath next contended that the patient tried the case on the theory that the pigmentation of the skin was due to disease and for that reason it was error to require the jury to find that that condition was not due to disease. The osteopath relied on the testimony of a physician called by the patient to sustain his contention. That physician testified that the dark circles under the eyes of the patient were not the result of disease, that the operation should not have been performed, that the proper treatment was medical in that the boy's life should have been regulated and attention given to nutrition. It thus appears, answered the Supreme Court, that this physician's testimony does not sustain the osteopath's contention. Furthermore, the record shows that the pigmentation of the skin under the eyes was a mere discoloration which was not the result of disease. The only evidence even remotely bearing on this contention was the testimony of the osteopath to the effect that the condition was a local disorder.

The osteopath also contended that the instruction erroneously directed a verdict for the patient without a finding that it was negligence on the part of the osteopath to perform the operation. But, answered the court, as was said in *Jones v. Central States Oil Co.*, 164 S. W. (2d) 914, 919:

If an instruction requires the jury to find facts which, if true, could only mean that the defendant was guilty of negligence per se or as a matter of law, then the instruction is good even if it does not require the jury to find that such facts constitute negligence, because "the law draws the conclusion in such cases."

If the osteopath knew that the operation was unnecessary and likely to result in injury, he would be guilty of negligence as a matter of law if he advised the operation and performed it. On this, reasonable minds cannot differ. Furthermore, if the osteopath was without actual knowledge as to the result of

This later behaves as a "unit" 3 Resolution or absorption begins by (a) generalized and uniform progressive (three to five days) loss of density throughout the "unit," (b) the appearance of "wire grass" infiltration or "pseudofibrosis" and (c) eventual progressive complete clearing of single units in five to fourteen days 4 There was occasional development of multiple "units" with (a) subsequent definite dates of onset and individual chronology, (b) rare involvement of all visible parts of a lung and (c) usually no one unit disturbed the approximate prearranged chronology of any restarted unit 5 Its occurrence in children is typical

Duodenal Ulcer Syndrome Caused by Ancylostomiasis—In localities in which ancylostomiasis is common dyspepsia associated with severe anemia suggests the diagnosis of hookworm disease, but in countries in which this disease is infrequent ancylostomiasis as a cause of painful dyspepsia is often ignored and not considered in the differential diagnosis. When hookworm disease causes symptoms suggestive of duodenal ulcer a definite diagnosis can be made only by finding the ova of *Ancylostoma* in the stools and by roentgen study of the gastrointestinal tract. Yenikomshian and Shehadi have had patients whose clinical history was suggestive of chronic duodenal ulcer but whose stools contained the ova of *Ancylostoma* duodenale and who were relieved completely of their digestive symptoms soon after the infection was cleared up. The fact that some of these patients gave no history of recent hematemesis or malaria and had severe microcytic anemia prompted the authors to investigate the gastric acidity and to make roentgen studies of the gastrointestinal tract of patients with ancylostomiasis. The estimation of free gastric acidity showed a rise to a higher level than that obtained in duodenal ulcer. In spite of the varying degrees of anemia, this high gastric acidity was maintained. Roentgen studies of these cases show evidence of swelling of the duodenal mucosa, constant deformity of the duodenal bulb (duodenitis without an ulcer niche), hyperperistalsis of the stomach and the duodenum and commonly reverse peristalsis of the duodenum without obstruction. The administration of a vermifuge resulted in the elimination of epigastric pain within twenty-four hours and the restoration of the duodenal wall to normal within eleven to twenty-four days.

American Journal of Surgery, New York

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G M Curtis Columbus Ohio—p 292
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Method of Repair and Case Report I B Gurd Montreal Canada
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Subtrochanteric Fractures of Femur Operative Approach for Open
Fixation J A Caldwell Cincinnati—p 370
Treatment of Injuries of Hand Requiring Skin Grafting T L
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Roentgenologic Manifestations of Bone Repair Healing of Fractures
Without External Callus R G Vance and G M Wyatt Boston
—p 404
Plea for Careful Examination and Early Evaluation of Traumatic
Cases L P Palmer Phoenix, Ariz—p 430

Radiation Therapy of Postoperative Parotitis—Postoperative parotitis is a serious complication. In contrast to simple parotitis or mumps it has a short incubation period; it tends to suppurate and its mortality rate is high. Many forms of therapy have been advocated. Between May 1940 and August

1941 Patterson encountered 5 instances of postoperative parotitis in his service; he treated them by radiation therapy with recovery in all. Aside from irradiation, which was begun early, only local treatment was employed; this probably explains why suppuration was imminent only in some glands. As a prophylactic measure no elective surgery should be done when focus of infection are present in the nose, mouth or throat. Debilitated and dehydrated patients should receive proper preoperative treatment.

Frostbite in Shipwrecked Mariners—The 71 cases of frostbite incurred in the battle of the Atlantic were treated by Brownrigg according to whether the frostbite was principally characterized by erythema, 55 cases, a dusky red to black color of the affected part with restricted movement, 7 cases, or the foregoing changes with toxicity and fever, 9 cases. In first degree frostbite rest, elevation and strict attention to asepsis resulted in a rapid complete or nearly complete amelioration of the condition. In a few considerable disability persisted because of persisting thickening and stiffness of the toes, feet and, in 1 case, of the hands. This was due to the formation of fibrous tissue. Anything (refrigeration, vasoconstrictor drugs) that will minimize this may be of considerable value. In the treatment of second degree frostbite the ideal treatment is to allow spontaneous separation of the areas of dry gangrene, to trim necrotic bone and to permit healing by granulation. This preserves maximal function. In third degree frostbite amputation must be performed sufficiently high to remove all areas of gangrene. The prevention of frostbite in shipwrecked mariners is difficult but clothing which would prevent heat loss and be waterproof for at least the lower extremities would be a great advancement. Soft sealskin boots might be of considerable value.

Annals of Internal Medicine, Lancaster, Pa

18 145-270 (Feb) 1943

- Newer Knowledge of Epilepsy W G Lennox Boston—p 145
Fraudulent Use of Digitalis to Simulate Heart Disease O F Hedley
Bethesda Md—p 154
*Recognition of Incipient Thromboangitis Obliterans in Young Draftees
W E Jahsman and R H Durham technical assistance of N P
Dallas Detroit—p 164
Approximate Insulin Content of Extemporaneous Mixtures of Insulin
and Protamine Zinc Insulin F B Peck Indianapolis—p 177
Effectiveness of Replacement Therapy in Achlorhydria A E Koehler
and E Windsor Santa Barbara Calif—p 182
Method for Continuous Recording of Gastric pH in Situ IV Further
Evaluation of Efficacy of Antacids in Vitro and in Human
Being N E Rossett and J Fleener New York—p 193
*Sulfonamide Therapy of Bacterial Endocarditis Results in 42 Cases
W R Galbreath and E Hull New Orleans—p 201
Clinical Evaluation of Cedilamid M Sokolow and F L Chamberlain
San Francisco—p 204
Pancreatic Tissue Extract (Insulin Free) in Treatment of Peripheral
Vascular Disease C Klein G Saland and H Zarrow Bronx
N Y—p 214

Incipient Thromboangitis Obliterans in Young Draftees—Physicians examining young men of the draft age who describe symptoms of peripheral vascular disease, Jahsman and Durham caution should remember that thromboangitis obliterans can and does occur in young men and make every effort to rule this disease in or out as it may constitute a definite compensation risk. When draft boards refer men for special investigation because of a suspicion of peripheral vascular disease the routine examination should include capillaroscopy and the response of the cutaneous temperature to heat and cold. During the last seven months the authors have encountered 7 such cases. 3 were in draftees referred for study and 1 in a youth of 19 in the Michigan National Guard. One foot and leg were invariably more involved than the other. There may be symptoms in a single digit. At least some involvement of the larger arteries was demonstrated in the slight to moderate organic occlusion revealed by the dermatherm study in each of the 4 young men; none showed complete occlusion. Once the disease is diagnosed in young men they should be kept reasonably free from symptoms and subsequent complications prevented by teaching them more moderate habits of living and meticulous care of the feet.

Sulfonamide Therapy of Bacterial Endocarditis—During 1935 to 1941 inclusive 67 patients with bacterial endocarditis were admitted to the Charity Hospital. 42 of them were treated with one or more of the sulfonamides. *Streptococcus viridans*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1942 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents at one and 15 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn Journal, Montgomery

12 221-252 (Feb) 1943

- Peptic Ulcer. M. S. Davis. Dothan—p 221.
Gallbladder Disease in Children. Short Review of Literature with Case Report. J. I. Carmichael. Birmingham—p 225.
Delivering Babies at Home. J. F. Garrison. Birmingham—p 225.
Cardiac Neurosis. R. O. Russell. Birmingham—p 231.

American Journal of Pathology, Ann Arbor, Mich

19 1-194 (Jan) 1943

- Changes in Accessory Sex Organs of Male Rat After Administration of Estradiol in Combination with Progesterone or Desoxycorticosterone Acetate. G. Misson and H. Selver. Montreal, Canada—p 1.
Production of Cirrhosis in Liver of Normal Dog by Prolonged Feeding of High Fat Diet. I. I. Chukoff. Berkeley, Calif. K. B. Fichorn, San Francisco, C. I. Connor and C. Intenman—p 9.
Pathology of Staphylococcal Pneumonia Complicating Clinical Influenza. O. I. Wollenman Jr. and M. Finland. Boston—p 25.
*Chronic Gastritis. Its Relation to Gastric and Duodenal Ulcer and to Gastric Carcinoma. R. Hebbel. Minneapolis—p 43.
Lymph Nodes in Disseminated Lupus Erythematosus. R. A. Fox. New Haven, Conn. and P. D. Rosahn. New Britain, Conn.—p 73.
Mediastinal Sympathogangloma. S. Suler. Cincinnati—p 101.
Medial Hypertrophy of Renal Arterioles in Pregnancy. I. Gract. New York—p 121.
Pathologic Changes Produced in Rabbits by Toxic Somitic Antigen Derived from *Leishmania typhosa*. H. R. Morgan. Boston—p 135.
Experimental Necrotizing Arteritis in Dogs. III. Bilateral Nephrectomy is Effective as Heavy Metal Injury in Its Production. R. L. Holman. Chapel Hill, N. C.—p 147.
Id. IV. Alteration of Blood Plasma Proteins Not Essential. R. L. Holman. Chapel Hill, N. C.—p 159.
Studies on Experimental Rickets in Rats. IV. Relation of Rickets to Growth, with Special Reference to Bones. G. S. Dodds and Hazel C. Cameron. Morgantown, W. Va.—p 169.
Fetal Disease of Middle Aged Mice Characterized by Myocarditis Associated with Hemorrhage in Pleural Cavity. D. M. Angewine and J. Furth. New York—p 187.

Chronic Gastritis—In a relatively large number of stomachs resected because of ulcer or carcinoma but also presenting features of chronic gastritis, Hebbel tried to verify the character and distribution of the reported mucosal changes in relation to ulcer and carcinoma. The stomachs from patients who died without manifest gastric disease were also examined. The changes exhibited by this group were chiefly those of a pyrogastritis leading to atrophy. The process bore no demonstrable relationship to any factor other than age. Atrophic gastritis was exhibited by 30 per cent of the stomachs of 108 patients more than 50. This form of gastritis is unimportant in patients less than 50 whose stomachs are resected. Among the 106 stomachs resected for ulcer there was an antral gastritis in the 98 in which the antrum was examined. Changes in the body mucosa were rare in the stomachs with duodenal ulcer and common in those with gastric ulcer. The evidence substantiates the contention that an antral gastritis (and duodenitis) precedes, and is the anatomic basis for, the development of chronic ulcer. The gastric changes in 52 stomachs resected for carcinoma were variable. Although in many a diffuse atrophic gastritis undoubtedly antedated the tumors, the condition did not obtain in all. In a few the mucosa of the body was normal or nearly normal. In others, although there were severe changes near the tumor, the more distant portions of the excised segments were less, or not at all, affected. This suggested that the mucosal changes were secondary to the tumor, although the possibility of a coincidental association could not be excluded. The series did not indicate that carcinomas frequently arise in stomachs in which diffuse atrophic gastritis is already present.

American Journal of Psychiatry, New York

99 159-316 (Sept) 1942

- Morile. I. A. Strecker and K. E. Appel, Philadelphia—p 159.
Analysis of Certain Factors in Histories of 200 Soldiers Discharged from the Army for Neuropsychiatric Disabilities. S. J. Rosenberg and R. H. Lambert. Camp Lee, Va.—p 164.
Self-Inflicted Injury. Case Report. D. J. Flicker, Camp Blanding, Ill.—p 168.
Brain Injury, Drugs and Environment as Causes of Mental Decay in Epilepsy. W. G. Lennox, Boston—p 174.
Some Administrative Aspects of Suicide in Mental Hospital. L. S. Lipschutz. Hialeah, Mich.—p 181.
Mimic Depressive Psychoses Among College Students. L. E. Himler and I. Raphael. Ann Arbor, Mich.—p 188.
History of First Psychopathic Institution on the American Continent. S. R. Moreno, Mexico. D. I. Mexico—p 194.
The Other Side of a Lit. F. Gray, Philadelphia—p 196.
Further Follow Up Results in Insulin Shock Therapy. E. D. Bond and F. D. Rivers. Philadelphia—p 201.
Unusual Case of Prolonged Coma in Hypoglycemic Shock Treatment. I. D. Proctor and N. L. Laston, Toronto, Canada—p 203.
Comparative Study of Electroencephalograms of Schizophrenic and Mimic Depressive Patients. Pauline A. Davis. Cambridge, Mass.—p 210.
Unidirectional Electrostimulated Convulsive Therapy. I. Effect of Wave Form and Stimulus Characteristics on Convulsive Dose. E. Friedman. Norwich, Conn.—p 218.
Int Reaction States in Oculogyric Crises. A. A. Rosner, New York—p 224.
Tuberculosis in Drug Addicts. M. A. Diamond, Fort Worth, Texas—p 229.
Evaluation of Continued Therapy with Phenytoin Sodium. L. J. Robinson. Palmer, Mass.—p 231.
Debatable Administrative Features. J. L. Van de Mark, Rochester, N. Y.—p 238.
Hospital Treatment of Patients with Psychoneurotic Disorders. D. M. Hamilton. H. I. Varney and J. H. Wall, White Plains, N. Y.—p 243.
Psychiatric Aspects of Marijuana Intoxication. S. Allentuck and K. M. Bowman. New York—p 248.
Some Dynamic Aspects of Alcoholic Psychoses. W. J. Turner, Northport, N. Y.—p 252.

Am J Roentgenol & Rad Therapy, Springfield, Ill

49 1-144 (Jan) 1943

- Role of the Gynecologist in the Field of Cancer. Janeway Lecture, 1942. W. P. Healy, New York—p 1.
Dust Hazard in Tremolite Talc Mining, Including Roentgenologic Findings in Talc Workers. W. Siegal, Adelaide Ross Smith and L. Greenburg. New York—p 11.
*Virus Pneumonia. Roentgenographic Characterization of Recent Virus Pneumonitis with Bronchopneumonia. A. E. Seeds and M. L. Mazer. Dallas, Texas—p 30.
*Duodenal Ulcer Syndrome Caused by Ancylostomiasis. Report of 25 Cases with Gastric Acidity and Roentgenologic Studies. H. A. Yemkomshian and W. H. Shehadi, Beirut, Lebanon, Syria—p 39.
Development, Clinical Manifestations and Treatment of Rheumatoid Arthritis of Apophysal Intervertebral Joints. A. Oppenheimer, Beirut, Lebanon, Syria—p 49.
Chondrodystrophia Calcificans Congenita. G. Raap, Miami, Fla.—p 77.
Prevention of Irradiation Sickness. Use of Vitamin B₁ in Roentgen Therapy. W. H. Whitmore, Norfolk, Va.—p 83.
Classification of Epithelial Cancer Based on Site of Origin. E. A. Merritt and R. M. Caulk, Washington, D. C.—p 99.
Effect of Roentgen Irradiation on Epiphyseal Growth. I. Experimental Studies on Albino Rat. J. S. Barr, J. R. Lingley and E. A. Gail, Boston—p 104.

Virus Pneumonia—In a group of 221 cases of nonlobar (non-pneumococcal) pneumonia, the clinical and laboratory observations of which correlate well with previously described groups of febrile episodes apparently due at least in part to infection with a filtrable virus, Seeds and Mazer were able to demonstrate certain pulmonary roentgen characteristics over and above "distribution unusual to lobar pneumonia" and inconstancy within its own group. They have found the following roentgen characteristics: 1. There was an infiltrative process which at the onset was (a) first progressively peribronchial from the hilus and then irregularly interbronchial and (b) customarily clearly definable as to limits in spite of its disregard for segmental or lobar structural limits, usually involving more than one segment and frequently parts of more than one lobe. 2. This was quickly accompanied by a "cottonwool" appearance of multiple areas of partial or semi consolidation, which was scattered through the area of infiltration and usually also distributed in a radial progression, frequently coalesced subsequently (six to twenty-four hours) and occasionally filled eventually (twenty-four to forty-eight hours) approximately a whole lobe to simulate lobar pneumonia but with a striated infiltrative type of background rather than a pure homogeneity, and a fixed distribution for any one area was established in two to three days.

This later behaves as a 'unit' 3 Resolution or absorption begins by (a) generalized and uniform progressive (three to five days) loss of density throughout the 'unit,' (b) the appearance of "wire grass" infiltration or 'pseudofibrosis' and (c) eventual progressive complete clearing of single units in five to fourteen days 4 There was occasional development of multiple 'units' with (a) subsequent definite dates of onset and individual chronology, (b) rare involvement of all visible parts of a lung and (c) usually no one unit disturbed the approximate prearranged chronology of any restarted unit 5 Its occurrence in children is typical

Duodenal Ulcer Syndrome Caused by Ancylostomiasis—In localities in which ancylostomiasis is common, dyspepsia associated with severe anemia suggests the diagnosis of hookworm disease, but in countries in which this disease is infrequent ancylostomiasis as a cause of painful dyspepsia is often ignored and not considered in the differential diagnosis. When hookworm disease causes symptoms suggestive of duodenal ulcer a definite diagnosis can be made only by finding the ova of *Ancylostoma* in the stools and by roentgen study of the gastrointestinal tract. Yemikomshian and Shehadi have had patients whose clinical history was suggestive of chronic duodenal ulcer but whose stools contained the ova of *Ancylostoma duodenale* and who were relieved completely of their digestive symptoms soon after the infection was cleared up. The fact that some of these patients gave no history of recent hematemesis or malaria and had severe microcytic anemia prompted the authors to investigate the gastric acidity and to make roentgen studies of the gastrointestinal tract of patients with ancylostomiasis. The estimation of free gastric acidity showed a rise to a higher level than that obtained in duodenal ulcer. In spite of the varying degrees of anemia, this high gastric acidity was maintained. Roentgen studies of these cases show evidence of swelling of the duodenal mucosa, inconstant deformity of the duodenal bulb (duodenitis without an ulcer niche), hyperperistalsis of the stomach and the duodenum and commonly reverse peristalsis of the duodenum without obstruction. The administration of a vermifuge resulted in the elimination of epigastric pain within twenty-four hours and the restoration of the duodenal wall to normal within eleven to twenty-four days.

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- Subtrochanteric Fractures of Femur Operative Approach for Open Fixation J A Caldwell Cincinnati—p 370
- Treatment of Injuries of Hand Requiring Skin Grafting T L Hawkins Farrigut Idaho—p 383
- Roentgenologic Manifestations of Bone Repair Healing of Fractures Without External Callus. R G Vance and G M Watt Boston—p 404
- Plea for Careful Examination and Early Evaluation of Traumatic Cases. E P Palmer Phoenix, Ariz—p 450

Radiation Therapy of Postoperative Parotitis—Postoperative parotitis is a serious complication. In contrast to simple parotitis or mumps it has a short incubation period, it tends to suppurate and its mortality rate is high. Many forms of therapy have been advocated. Between May 1940 and August

1941 Patterson encountered 5 instances of postoperative parotitis in his service, he treated them by radiation therapy with recovery in all. Aside from irradiation, which was begun early, only local treatment was employed, this probably explains why suppuration was imminent only in some glands. As a prophylactic measure no elective surgery should be done when local infection is present in the nose, mouth or throat. Debilitated and dehydrated patients should receive proper preoperative treatment.

Frostbite in Shipwrecked Mariners—The 71 cases of frostbite incurred in the battle of the Atlantic were treated by Brownrigg according to whether the frostbite was principally characterized by erythema, 55 cases, a dusky red to black color of the affected part with restricted movement, 7 cases, or the foregoing changes with toxicity and fever, 9 cases. In first degree frostbite rest, elevation and strict attention to asepsis resulted in a rapid complete or nearly complete amelioration of the condition. In a few considerable disability persisted because of persisting thickening and stiffness of the toes feet and, in 1 case, of the hands. This was due to the formation of fibrous tissue. Anything (refrigeration vasoconstrictor drugs) that will minimize this may be of considerable value. In the treatment of second degree frostbite the ideal treatment is to allow spontaneous separation of the areas of dry gangrene, to trim necrotic bone and to permit healing by granulation. This preserves maximal function. In third degree frostbite amputation must be performed sufficiently high to remove all areas of gangrene. The prevention of frostbite in shipwrecked mariners is difficult, but clothing which would prevent heat loss and be waterproof or at least the lower extremities would be a great advancement. Sott sealskin boots might be of considerable value.

Annals of Internal Medicine, Lancaster, Pa

18 145-270 (Feb) 1943

- Newer Knowledge of Epilepsy W G Lennox Boston—p 145
- Fraudulent Use of Digitalis to Simulate Heart Disease. O F Hedley Bethesda Md—p 154
- *Recognition of Incipient Thromboangitis Obliterans in Young Draftees W E Jahsman and R H Durham technical assistance of N P Dallas Detroit—p 164
- Approximate Insulin Content of Extemporaneous Mixtures of Insulin and Protamine Zinc Insulin F B Peck Indianapolis—p 177
- Effectiveness of Replacement Therapy in Achlorhydria. A E Koehler and E Windsor Santa Barbara Calif—p 182
- Method for Continuous Recording of Gastric pH in Situ. IV Further Evaluation of Efficacy of Antacids in Vitro and in Human Being N E Rossett and J Flexner New York—p 193
- *Sulfonamide Therapy of Bacterial Endocarditis Results in 42 Cases W R Galbreath and E Hull New Orleans—p 201
- Clinical Evaluation of Cedilamid M Sokolow and F L Chamberlain San Francisco—p 204
- Pancreatic Tissue Extract (Insulin Free) in Treatment of Peripheral Vascular Disease C Klein G Saland and H Zurrow Bronx N Y—p 214

Incipient Thromboangitis Obliterans in Young Draftees—Physicians examining young men of the draft age who describe symptoms of peripheral vascular disease, Jahsman and Durham caution, should remember that thromboangitis obliterans can and does occur in young men and make every effort to rule this disease in or out, as it may constitute a definite compensation risk. When draft boards refer men for special investigation because of a suspicion of peripheral vascular disease, the routine examination should include capillaroscopy and the response of the cutaneous temperature to heat and cold. During the last seven months the authors have encountered 7 such cases, 3 were in draftees referred for study and 4 in a youth of 19 in the Michigan National Guard. One foot and leg were invariably more involved than the other. There may be symptoms in a single digit. At least some involvement of the larger arteries was demonstrated in the slight to moderate organic occlusion revealed by the dermaterm study in each of the 4 young men, none showed complete occlusion. Once the disease is diagnosed in young men they should be kept reasonably free from symptoms and subsequent complications prevented by teaching them more moderate habits of living and meticulous care of the feet.

Sulfonamide Therapy of Bacterial Endocarditis—During 1938 to 1941 inclusive 67 patients with bacterial endocarditis were admitted to the Charity Hospital, 42 of them were treated with one or more of the sulfonamides. *Streptococcus viridans*

was present in the blood cultures of 21 of the 42 patients. All of the 67 patients died. In some there were temporary remissions in the curve of the temperature, but the course of the disease was apparently unaffected by the treatment. Galbreath and Hull observed characteristic lesions of acute or subacute vegetative endocarditis in the 30 patients on whom necropsy was performed. There was no evidence of healing of the lesions. Evidence of embolism was present in 28. The kidneys and spleen were the most frequent sites of infarction, but infarcts of the brain, lungs, heart, liver and thyroid also were encountered.

Archives of Dermatology and Syphilology, Chicago 17 159-300 (Feb.) 1943

- Treatment of Psoriasis with Lipotropic Substances Derived from Food stuffs. P. Gross and Beatrice Kesten. New York—p. 159.
Doubtful Value of Sodium Thiosulfate in Therapy of Arsenical Dermatitis. I. W. Abramowitz, Marjorie R. Matthei. New York and I. Botwinick. Bethesda, Md.—p. 175.
Epithelial Cysts. W. R. Love and H. Montgomery. Rochester, Minn.—p. 185.
Symmetric Nests of Lice. Tuberosus Sclerosis. Epilepsy and Fibromatous Growth on Scalp. Abnormal Electroencephalograms of Members of the Family. Report of Case. C. K. Good and J. Garb. New York—p. 197.
Studies on Ointments. III. Ointments Containing Sulfur. F. A. Strakosch. Minneapolis—p. 216.
*Treatment of Syphilis with Phenarsine Hydrochloride. Preliminary Report. W. I. Long. Boston—p. 226.
*Phenarsine Hydrochloride in Treatment of Syphilis. Preliminary Report. W. H. Gux, R. A. Goldmann and G. P. Gannon. Pittsburgh—p. 235.
Fungous Infections of Feet Treated with Camphor Phenol Mixture. W. R. Glenn and H. F. Huley—p. 239.
Contact Dermatitis Due to Rem-finished Trunks in Cotton Underwear. Report of Case with Consideration of Cause, Pathogenesis and Related Phenomena. H. Keil. New York—p. 242.

Treatment of Syphilis with Phenarsine Hydrochloride—During the last two months Long has given 2,033 injections of phenarsine hydrochloride to 96 syphilitic patients. This new trivalent arsenical preparation is 3-amino-4-hydroxyphenyldichloroarsine hydrochloride. *Treponema pallidum* rapidly disappeared from infectious lesions, all lesions of early and late syphilis healed rapidly and completely, clinical or infectious relapse did not occur, the serologic reversal was satisfactory and the incidence of abnormal spinal fluids among patients with early syphilis was low. Patients with late syphilis tolerated the drug, their symptomatic improvement was good and the results were entirely satisfactory. Toxic reactions were few, chiefly mild gastrointestinal disturbances. The results suggest that phenarsine hydrochloride is a potent antisyphilitic drug of low toxicity, and the treatment of larger groups of patients appears justified.

Phenarsine Hydrochloride for Syphilis—Guy, Goldmann and Gannon have been studying the effect of phenarsine hydrochloride on established syphilis. From their preliminary study they feel that the information so far derived suggests that phenarsine hydrochloride may prove more stable than and that it compares favorably with (as to administration and toxicity reports so far) other drugs which are now available and which depend for their efficacy on arsenoxide.

Archives of Otolaryngology, Chicago

37 149-302 (Feb.) 1943

- Malignant Tumors of Middle Ear and Mastoid Process. F. A. Figi and B. E. Hempstead. Rochester, Minn.—p. 149.
*Introduction to pH of Throat. N. D. Fabricant, Chicago—p. 169.
Fenestration Operation for Otosclerosis. Report of 32 Cases. J. M. Smith, New York—p. 174.
Malformation Involving External, Middle and Internal Ear, with Otosclerotic Focus. G. Kelemen, Boston—p. 183.
Styphlococcic Meningitis from Hippocrites to LeGendre and Beausenat. A Mortal Disease. W. J. MacNeal, Frances C. Frisbee and Anne Blevins, New York—p. 199.
*Effect of Newer Sulfanilamide Derivatives on Nasal Mucosa of Rabbits. Preliminary Report. L. K. Gundrum, Los Angeles—p. 209.
Semicircular Canals as Device for Vectorial Resolution. R. D. Summers, Westminster, Md., R. Morgan, College Park, Md., and S. P. Reimann, Philadelphia—p. 219.
Functional Examination of Hearing (concluded). A. Lewy and N. Leshin, Chicago—p. 242.

Introduction to pH of Throat—Fabricant determined the normal, physiologic range in the pH of the clinically normal throats of 51 men and women. By taking minute to minute readings and utilizing a glass electrode and a Coleman elec-

trometer, he found the normal physiologic pH values to range from 4.9 to 8. For 54.8 per cent of the subjects the values were within the acid range, for 7.8 per cent within the alkaline range and for 37.4 per cent they fluctuated within a slightly acid, slightly alkaline range. Therefore the throat normally can be either acid or slightly alkaline. The claims advanced by the manufacturers of some local throat medicaments that their particular variety "neutralizes excess acidity in the mouth and throat" and that therefore their product is superior can be challenged when it becomes clear that normally the pH of the throat is usually within an acid range. Before final suggestions can be made for an appropriate physiologic pH for a local throat medication, the range of pH values for the diseased throats of persons and the effect of the local medication on the pH of the throat in health and in disease must be determined.

Sulfonamides and Nasal Mucosa—Gundrum instilled three times a day ten drops of one of the following solutions into each nostril of rabbits: a 4.7 per cent solution of sodium sulfathiazole, sulfadiazine or butanoylsulfanilamide or a solution containing neosynephrin hydrochloride for various periods of time. Immediately after the last instillation the animals were killed by intravenous injection of air and their noses were embedded in petrolatum and then examined. There seemed to be considerable discomfort (evidenced by restlessness and audible sounds of distress) after prolonged intranasal application of the sulfonamide compounds. After six days of treatment the mucocutaneous junction of the external nares in all animals treated with butanoylsulfanilamide showed redness, some excoriation and other evidence of severe irritation. At necropsy all animals treated with sulfonamide compounds showed inflammation throughout the nose. This appeared more pronounced in animals treated with sodium sulfathiazole and butanoylsulfanilamide. The posterior portion of the nose was filled with a grayish exudate. The mucous membranes were decidedly thickened. No evidence of injury to bone or cartilage was observed, although there were some areas at which the perichondrium was swollen and desquamated. The sinuses were filled with abundant exudate, consisting of degenerated epithelial cells, round cells, a few giant cells and masses of debris. The destruction seemed as great in the animals treated for ten days as in those treated for thirty days. No apparent discomfort was caused by the instillation of neosynephrin hydrochloride and at necropsy the nasal mucosa remained unchanged. Sections of the lungs revealed no significant changes in the mucosa of the bronchial tree of animals treated with sulfonamide compounds or with neosynephrin hydrochloride.

Archives of Pathology, Chicago

35 207-356 (Feb.) 1943

- Morphologic Changes in Human Kidney Following Prolonged Administration of Alkali. J. B. Kirsner, W. L. Palmer and Eleanor Humphreys. Chicago—p. 207.
Amyloid. III. Properties of Amyloid Deposits Occurring in Several Species Under Diverse Conditions. G. M. Hass, R. Huntington and N. Krumdieck. New York—p. 226.
Venous Valves in Thromboangitis Obliterans. E. A. Edwards, Boston and J. E. Edwards. Washington, D. C.—p. 242.
*Chemotherapy of Experimental Streptococcic Pericarditis. Comparison of Sulfanilamide and an Acetylated Derivative of 4,4'-Diaminodiphenylsulfone Hydrochloride in Treatment of Experimental Beta Hemolytic Streptococcus Pericarditis in Rabbit. R. J. Lebowich. Gloversville, N. Y.—p. 253.
Studies of Cartilage. IV. Morphologic and Chemical Analysis of Aging Human Costal Cartilage. G. M. Hass, New York—p. 275.
Effects of Radiation on Normal Tissues (concluded). S. Warren, Boston—p. 304.

Chemotherapy of Experimental Streptococcic Pericarditis—Lebowich compared the therapeutic efficacy of sulfanilamide and an acetylated derivative of 4,4'-diaminodiphenylsulfone hydrochloride in experimental beta hemolytic streptococcus pericarditis in rabbits. With the object of reducing the acute toxicity of the latter ascorbic acid, nicotinic acid, dextrose, cysteine, ammoniacetic acid and acetic acid and its *in vivo* precursors (lactic and pyruvic acids) was tried. After many trials 1 molar acetic acid was selected as the most satisfactory agent. The administration of acetic acid with the sulfone compound definitely lessened the severe acute and chronic toxic effects of the sulfone compound in rabbits. At the same time it did not

materially affect the curative value of the drug. It appeared that acetylation of the sulfone hydrochloride served as a detoxicating mechanism. There was considerable variation in the acetylation of the drug even in the presence of added 1 molar acetic acid in different infected animals. The acetylated derivative of 4,4'-diaminodiphenylsulfone hydrochloride had a distinctly beneficial effect on the natural course of experimental beta hemolytic streptococcus pericarditis in rabbits. It considerably increased the number of cured survivors in comparison with their complete absence in the sulfanilamide treated group and definitely prolonged the average duration of life beyond that of control and sulfanilamide treated animals. The most effective results were among 50 rabbits in which treatment was initiated twelve hours after pericarditis was produced, 49 of these animals were cured. The acetylated derivative of 4,4'-diaminodiphenylsulfone hydrochloride was far superior to sulfanilamide in the rabbits in its effect on the infection.

Endocrinology, Springfield, Ill

32 1-118 (Jan) 1943 Partial Index

- Stimulating Effect of Adrenalectomy on Hair Growth and Melanin Deposition in Black Rats Fed Diets Adequate and Deficient in Filtrate Factors of Vitamin B. Note on Effect of Diet on Post operative Survival. Elaine P. Ralli and I. Graef. New York.—p. 1.
- Qualitative Changes Induced in Gonadotropic Complex of Pituitary by Testosterone Propionate. A. A. Hellbaum. Oklahoma City and R. O. Greep. New Brunswick, N. J.—p. 33.
- *Sugar Content of Blood Lymph and Artificial Peritoneal Fluid Following Injection of Insulin. K. E. Paschkis and A. Cantarow. Philadelphia.—p. 41.
- Study of the Excretion of Pituitary Hormones in Human Urine. G. E. S. Jones and N. L. R. Bucher. Baltimore.—p. 46.
- Methods of Administering Desoxycorticosterone and Problem of Its Inactivation by Liver. W. J. Eversole and R. Gaunt. New York.—p. 51.
- Metabolism of Estrogens. Effect of Pregnancy on Metabolism in Vitro of Estrone, Estradiol and Estril. C. G. Heller. Detroit and Emily J. Heller. Madison, Wis.—p. 64.
- Effects of Sex Hormones on Body Growth, Skin, Hair and Sebaceous Glands in Rat. C. W. Hooker and C. A. Pfeiffer. New Haven, Conn.—p. 69.
- Evidence Against Progesterone-like Action of Ascorbic Acid. P. C. Pratt. Baltimore.—p. 92.
- Inactivation of Testosterone Propionate in Liver During Vitamin B Complex Deficiency. Alteration of Estrogen Androgen Equilibrium. M. S. Biskind. New York and G. R. Biskind. San Francisco.—p. 97.

32 119-228 (Feb) 1943 Partial Index

- Environmental Modification of Certain Endocrine Phenomena. E. W. Dempsey and H. I. Searles. Boston.—p. 119.
- Effect of Histamine on Capillary Permeability in Skin and Muscle of Normal and Adrenalectomized Rats. O. Hechter. Los Angeles.—p. 135.
- Influence of Sex and Sex Hormones on Breaking Strength of Bones of Mice. W. U. Gardner. New Haven, Conn.—p. 149.
- Effect of Combining Estrogen with Lethal Doses of Roentgen Rays in Swiss Mice. Anne deG. Treadwell, W. U. Gardner and J. H. Lawrence with technical assistance of F. van Nieuhuys. New Haven, Conn.—p. 161.
- Activity of Desoxycorticosterone Acetate in Propylene Glycol by Oral and Intravenous Routes in Adrenalectomized Dogs and Its Effect on Cardiac Arrhythmia of Adrenal Insufficiency. R. A. Clegg, horn, A. P. W. Clarke and W. F. Greenwood. Toronto, Canada.—p. 170.
- New Color Reaction for Certain Urinary 17 Keto steroids. G. Pincus. Worcester, Mass.—p. 176.
- Effect of Sulfonamides and Thioureas on Thyroid Gland and Basal Metabolism. C. G. MacKenzie and Julia B. MacKenzie. Baltimore.—p. 185.

Sugar Content Following Insulin Injection—The effect of insulin on the concentration of dextrose in tissue fluids of dogs was studied by Paschkis and Cantarow. Hypoglycemic convulsions and coma occurred four to six hours after a subcutaneous or intravenous injection of insulin. The blood sugar reached hypoglycemic levels usually within two hours. The dextrose content of an originally isoglycemic artificial peritoneal fluid decreased more slowly. Convulsions and coma did not develop in some dogs in spite of low sugar concentrations in the peritoneal fluid and blood. In rats convulsions and coma occurred one and a half to two hours following the administration of insulin. The dextrose content of the artificial peritoneal fluid reached low levels at this time. If the changes in the artificial peritoneal fluid reflect accurately the changes in the extracellular tissue fluids, the convulsions and coma in the dog several hours after the blood sugar has reached its minimal concentration are adequately explained but there is no explanation

for the absence of convulsions or coma in some dogs. In dogs anesthetized with pentobarbital sodium the blood sugar level dropped more rapidly after the administration of insulin than in the unanesthetized animal. The decrease in lymph sugar lagged considerably behind that in blood sugar during the first hour following insulin in the anesthetized dog, but the lymph sugar reached equilibrium with the blood in this respect more rapidly than did the peritoneal fluid. The relation of coma and convulsions to the dextrose content of the peritoneal fluid suggests that the latter may be representative of the normal concentration of dextrose in interstitial fluid.

Experimental Medicine and Surgery, Brooklyn

1 1-104 (Feb) 1943

- Recent Studies on Irreversibility Characteristic of Shock. C. J. Wiggers. Cleveland.—p. 2.
- Questions of Significance of Phosphoglyceric Acids Under Pathologic Conditions. C. Neuberg and H. Lustig. New York.—p. 14.
- Treatment of Paroxysmal Pulmonary Edema. Special Reference to Forms Occurring Under Wartime Conditions. A. A. Luisada. Waltham, Mass.—p. 22.
- Increase of Rate in Paroxysmal Tachycardias After Exercise or Inhalation of Amyl Nitrite. D. Scherf and J. Weissberg. New York.—p. 31.
- Therapeutic and Prophylactic Detoxication. Chemotherapeutic Metallic Compounds. G. J. Martin and M. R. Thompson. New York.—p. 38.
- Procaine Esterase. B. Kisch, H. Koster and E. Strauss. Brooklyn.—p. 51.
- Micro Method for Determination of Procaine and of *p*-Aminobenzoic Acid in Same Biological Fluid. B. Kisch and E. Strauss. Brooklyn.—p. 66.
- Procaine Esterase Activity in Human Blood Serum. New Test for Toxic Gout. H. Koster and B. Kisch. Brooklyn.—p. 71.
- Influence of Prostigmine and Related Compounds on Procaine Esterase Activity. B. Kisch. Brooklyn.—p. 84.
- Observations on Circulatory System of Combatants During World War I. F. M. Groedel. New York.—p. 94.

Hawaii Medical Journal, Honolulu

2 53-124 (Nov-Dec) 1942

- *Typhus Fever in Honolulu. Certain Epidemiologic Aspects. J. E. Alicata and Virginia Breaks. Honolulu.—p. 59.
- Psychiatric Problems in Wartime Hawaii. E. E. McNeil. Honolulu.—p. 63.
- Veneral Disease Control. A Bedtime Story. E. A. Fennel. Honolulu.—p. 67.
- Bilateral Dermoid Cyst of Ovary Complicating Pregnancy. Supplementary Report on Previously Reported Case. H. H. Seiler. Pail Maui.—p. 72.
- Treatment of Tetanus. I. S. F. Stewart. Honolulu.—p. 73.
- Id. II. F. J. Hiltord. Honolulu.—p. 74.
- Preventive Aspects of Tetanus. D. C. Marshall. Honolulu.—p. 78.

Typhus Fever in Honolulu—Alicata and Breaks state that a strain of local human typhus has been found to be clinically and immunologically identical with that of the local rat and Wilmington strains of endemic typhus. Typhus developed in 73 of 249 guinea pigs inoculated with the brain emulsion of 600 rats trapped in various districts of Honolulu. Assuming that 1 infected guinea pig represented at least 1 infected rat, 73 (12.1 per cent) of the rats harbored typhus virus in the brain. Of the rats trapped in seven districts of Honolulu the highest incidence of typhus infection was in rats from Kaimuki, downtown and Kalihi districts. The same districts also showed the highest incidence of human infection. 202 cases in five years. The surroundings of 43 of 50 of the patients were infested with rats. Typhus virus was found in the brain of 8 rats trapped in seventeen residences in which human typhus had occurred recently. As a result of guinea pig inoculation no typhus virus was found in the brain and fleas of 6 cats and the fleas of 1 dog from four residences with cases of human typhus. Similarly there was no virus in the brain of 109 cats and 20 dogs obtained at random from various parts of Honolulu.

Indiana State Medical Assn. Journal, Indianapolis

36 55-122 (Feb) 1943

- Treatment of Wound in Compound Fractures. R. A. Griswold. Louisville, Ky.—p. 55.
- Diagnosis of Chronic Brucellosis. D. L. Urchel. Mentore.—p. 59.
- Electrocardiographic Diagnosis and Treatment in Recent Coronary Occlusion. H. N. Middleton. Indianapolis.—p. 64.
- Toxic Reactions to Sulfonamides. J. L. Ferry. Whiting.—p. 69.
- Adaptability of Various Anesthetic Agents to Certain Types of Operation. C. W. Sekerman. Indiana.—p. 72.
- Chang, C. C. C. of Tuberculosis. F. W. C. C. S. Smith. Bend.—p. 75.

Journal of Allergy, St. Louis

11 105-191 (Jan) 1943

- Is Hypersensitiveness to Chemical and Physical Agents Allergic in Nature? I Bronfenbrenner St. Louis—p. 105
- Basic Relationship of Allergy and Immunity M B Cohen Cleveland—p. 110
- Studies of Tryptic and Peptic Digestion of Extracts of Giant Ragweed Pollen G I Hirsch San Diego Calif. and H I Huber Chicago—p. 121
- Use of Dried Extracts in Practice of Allergy I H Crisp Pitts burgh—p. 133
- Idiosyncrasy and Constitutional Reactions Following Use of Pontocaine J W Thomas Cleveland and M M Tendon Detroit—p. 145
- Kocher-Schöppner is Factor in Inhibitory Allergy O C Durham North Chicago Ill—p. 160
- Quantitative Determination of Proteins in Allergic Extracts by Biuret Reaction Preliminary Report Mary C Johnson St. Louis—p. 171
- Pharmacologic Study of Epinephrine Suspensions in Oil R K Richards North Chicago Ill—p. 177
- Use of Vitamin B Complex in Treatment of Infantile Eczema A Harris and I A Gray Baltimore—p. 182

Journal of Clin. Endocrinology, Springfield, Ill

3 71-130 (Feb) 1943

- *Anginalike Pain Manifestation of Male Climacterium F H McGavack New York—p. 71
- Influence of Menstrual Cycle on Titer of Circulating Allergins O C Hansen Prus and Ruth Raymond Durham N C—p. 81
- Treatment of Obesity W C Cutting San Francisco—p. 85
- *Oral Effectiveness of Estrone Sulfate (Conjugated Estrogens Equine) in Women S C Freed W M Eisin and J P Greenhill Chicago—p. 89
- Clinical Study of New Type of Estrogenic Preparation for Oral Use I A Gray Louisville Ky—p. 92
- Therapy of Menopausal Superiority of Conjugated Estrogens Equine over Diethylstilbestrol S J Glass and G Rosenblum Los Angeles—p. 95
- Oral Use of Conjugated Estrogens Equine L I Scoville and Ruth St. John Madison Wis.—p. 98
- Significance of Kelosis I M Mackay La Jolla Calif.—p. 101

Angina-like Pain in Male Climacterium—Without making any attempt to draw conclusions McGavack records his observations on 8 men in the climacterium with angina-like cardiac symptoms that were relieved with testosterone therapy after other measures had failed. This response may be used as a simple therapeutic test to differentiate complaints of this nature from those of other causation. The clinical features by which the cardiac syndrome of the male climacterium may be recognized are dull, constant oppression over and to the left of the sternum, a sense of uneasiness and insecurity throughout the chest, attacks of angina-like pain and breathlessness not necessarily related to effort and not relieved by glyceryl trinitrate, long sighing respirations, paresthesias of various parts of the body, palpitation without any change in heart rate, depression of the ST segment in all three limb leads, associated climacterium symptoms and the relief of these symptoms within twenty-four to forty-eight hours following the parenteral administration of a testosterone preparation. In using testosterone in this specific type of cardiac complaint which it is capable of relieving, distinction must be made between cardiac neurosis of the climacterium and an organic lesion.

Oral Effectiveness of Estrone Sulfate in Women—Estrone (theelin) sulfate was used by Freed, Eisin and Greenhill in the treatment of women with moderate to severe menopausal symptoms. The doses that were tried were 125, 0.8 and 0.4 mg. three times a day in tablet form. The patients usually received the highest dose at the beginning of treatment, then after two weeks of such therapy the relief of symptoms was evaluated and the next lower dose level was given, and again after two or three weeks the symptoms were evaluated and the lowest dose was given. Most women obtained satisfactory relief from their symptoms with the smallest dose, the larger doses did not appear to increase significantly the relative number of patients who obtained definite relief, but more patients obtained complete relief. However, the smallest dose may be considered adequate for therapeutic purposes for the average patient. Only 1 of the 45 patients on 0.4 Gm. of estrone sulfate three times a day complained of nausea, with the middle dose given to 47 nausea developed in 2 and 2 complained of dizziness, and 5 of the 60 patients on the large dose had nausea and 4 complained of dizziness.

Journal of Clinical Investigation, Boston

22 1-130 (Jan) 1943

- Urea Clearance and Diuresis in Man R Dominguez and Elizabeth Pomerehne Cleveland—p. 1
- Studies on Renin Duration of Pressor Effect of Large Doses in Conscious Normal and Renally Abnormal Dogs Observations on Anesthetized and Uremic Dogs and Anaphylactic and Pathologic Effects of Pig Renin L Ecker and Lillian Eichelberger with technical assistance of M Roma, Chicago—p. 11
- Relation of Postural Hemodilation to Paroxysmal Dyspnea G A Perera and R W Berliner New York—p. 25
- Distribution of Sulfonamide Compounds Between Cells and Serum of Human Blood M Heimann New Haven, Conn.—p. 29
- Observations on Certain Manifestations of Circulatory Congestion Produced in Dogs by Rapid Infusion A Yeomans, R R Porter and R I Swank Boston—p. 33
- Effect of Calcium Carbonate Aluminum Phosphate and Aluminum Hydroxide on Mineral Excretion in Man J B Kirsner, Chicago—p. 47
- Ineffective Stimulus for Increased Pulmonary Ventilation During Muscular Exercise J M Barman, M F Moreira and I Consolazio, Boston—p. 53
- *Atypical Pneumonia and Psittacosis J E Smadel New York—p. 57
- Bence Jones Proteinemia in Multiple Myeloma D H Moore, E A Kibler and A B Gutman New York—p. 67
- *Prevention of Streptococcal Upper Respiratory Infections and Rheumatic Recurrences in Rheumatic Children by Prophylactic Use of Sulfanilamide Ann G Kuttner and Gertrude Meyersbach—p. 77
- Phenylpyruvic Oligophrenia Report of Case in Infant with Quantitative Chemical Studies of Urine Margaret Dann, Eleanor Marples and S Z Levine New York—p. 87
- Studies on Experimental and Clinical Hypochloremia in Man J B Kirsner W I Palmer and Kathryn Knowlton Chicago—p. 95
- Gastric Secretion II Absorption of Radioactive Sodium from Pouches of Body and Antrum of Stomach of Dog O Cope, W E Cohn and A G Brenizer Jr., Boston—p. 103
- Id III Absorption of Heavy Water from Pouches of Body and Antrum of Stomach of Dog O Cope Hester Blatt and Margaret R Ball Boston—p. 111
- *Community Study of Carriers in Epidemic Poliomyelitis H A Wenner New Haven Conn., and A E Casey, New Orleans—p. 117
- Coagulation Defect in Hemophilia Comparison of Proteolytic Activity of Chloroform Preparations of Hemophilic and Normal Human Plasma H J Tignon, C S Davidson and F H L Taylor Boston—p. 127

Atypical Pneumonia and Psittacosis—According to Smadel, 10 of the 45 sporadic cases of atypical pneumonia encountered among large eastern urban populations were caused by infection with strains of the virus of psittacosis. Five additional cases in the series may have been psittacosis but the diagnosis was indefinite because a significant rise in antibody titer was not demonstrated in the convalescent serum. In no instance was the virus of lymphocytic choriomeningitis associated with the illness, and in only 2 instances was influenza virus even suspected as a possible etiologic agent. It is important to establish an etiologic diagnosis in cases of atypical pneumonia, and laboratory data are necessary for such a diagnosis. Strains of virus of the psittacosis group which were isolated from 2 patients and from 1 of the patient's pigeons are being studied. Strains isolated from these sources have many properties in common with the strains of psittacosis virus isolated from psittacine birds and from pigeons and with the virus of meningopneumonitis. The authors have been impressed by the high incidence of psittacosis in the 45 patients selected at random and by the frequency with which some sort of association can be demonstrated between the patients and nonpsittacine birds infected with one of the psittacosis group of viruses.

Prophylactic Use of Sulfanilamide in Rheumatic Children—During the winters of 1940-1941 and 1941-1942 Kuttner and Meyersbach divided the 108 rheumatic children at Irvington House into two closely matched groups. Beginning in October 1940 and continuing until the following June, half of the children were given small daily doses of sulfanilamide. The other 54 children served as controls. During the second winter 34 children were given sulfanilamide and 50 served as controls. Only children who showed neither clinical nor laboratory signs of rheumatic activity received this drug. During the first winter 78 per cent of the 108 patients possibly could have had heart disease and 22 per cent had definite cardiac lesions, and during the second winter the percentage with organic heart disease increased to 49 per cent. Streptococcal infections of the upper part of the respiratory tract and rheumatic relapses were prevented by the sulfanilamide. Sufficiently severe toxic manifestations, necessitating the withdrawal of the drug, occurred in

15 per cent of the patients. The other children tolerated the drug well. The effectiveness of sulfamylamide in preventing rheumatic recurrences indicates that infection with group A hemolytic streptococci is an important factor in the causation of rheumatic fever.

Community Study of Carriers in Epidemic Poliomyelitis—Wanner and Carey tested postepidemically the stools of 176 or 181 persons living in a section of a small town of 1,670 population to determine the carrier rate for the virus of poliomyelitis in the adult and juvenile population. Most of the town's cases of the disease had occurred in the section where the 181 persons lived. The virus of poliomyelitis was detected in the stools of 3 children between 2 and 6 years of age and in none of the stools from adults. Though evidence of poliomyelitis was widespread in the population, only individuals who were ill at the end of the epidemic had positive stools, indicating that the ease of detection of the virus in the population at risk diminishes with the decline of the epidemic.

Journal of Industrial Hygiene & Toxicology, Baltimore

24 295-370 (Dec) 1942

- Response of Laboratory Animals to Monomeric Styrene H C Spencer D D Irish E M Adams and V K Rowe Midland Mich.—p 295
Oxygen Under Pressure in Carbon Monoxide Poisoning I Effect on Dogs and Guinea Pigs L End and C W Long Milwaukee—p 302
Investigation into Effects of Continued Exposure to Vapor of Volatile Solvents Esther M Killick and R S F Schilling London England—p 307
Measurements of Concentrations of Air Borne Dusts T Bedford and C G Warner London England—p 315
Health Hazards in Fur Industry H Heimann New York—p 322
Supplementary Feeding in Industry H W Haggard New Haven Conn.—p 352

Journal of Infectious Diseases, Chicago

71 193-278 (Nov-Dec) 1942

- Physiologic Studies of Brucella I Quantitative Accessory Growth Factor Requirement of Certain Strains of Brucella N B McCullough and L A Dick Austin Texas—p 193
Id II Accessory Growth Factor Requirement of Recently Isolated Strains of Brucella Abortus N B McCullough and L A Dick Austin Texas—p 198
Accessory Growth Factor Requirements of Members of Genus Pasteurella S Berkman Chicago—p 201
Titration of Tetanal Toxins Toxoids and Antitoxins with the Flocculative Test H Goldie C H Parsons and Myrtle Scott Bowers Pearl River N Y—p 212
Death of Tubercle Bacilli Subjected to Oxygen Deprivation in Presence of Moisture and of Moisture and of Warmth T S Potter Chicago—p 220
Significance of Incubation Temperature of Recovery Cultures in Determining Spore Resistance to Heat O B Williams and J M Reed Washington D C—p 225
Study of Bacteriostatic Activity of Fluoro and Bromo Derivatives of Some Organic Acids G P Hager and T C Grubb Baltimore—p 228
Asphyxiated Bacteria as Vaccine in Tuberculosis T S Potter Chicago—p 232
Beta Hemolytic Streptococci Isolated from Public Room Floors W G Walter and G J Hucker Geneva N Y—p 237
Mechanism of Action of Certain Sulfonamide Compounds A Dorfman and S A Koser Chicago—p 241
Factors in Preservation of Distemper Virus H A Siedentopf and R G Green Minneapolis—p 253
Absorption of Botulinum Toxin from the Colon of Macaca Mulatta G M Dack and Dorothy Hoskins Chicago—p 260
Pertussis Toxin M E Roberts and Anne G Ospeck Pearl River N Y—p 264
Experimental Eosinophilia with Keratin from Ascaris Suum and Other Sources D H Campbell Chicago—p 270

Asphyxiated Bacteria as Tuberculosis Vaccine—Potter states that avian tubercle bacilli when completely deprived of virulence by asphyxiation, without the use of coagulating heat retain constituents which are able to confer decided though as yet incomplete protection in the rabbit against infection with virulent avian tubercle bacilli.

Beta Hemolytic Streptococci on Floors of Public Rooms—Walter and Hucker studied the one hundred and thirteen sweepings collected in thirty seven different rooms from six schools a boys dormitory a theater and a hotel. They found beta hemolytic streptococci in the sweepings from twenty-two of the rooms investigated. From February until May hemolytic streptococci could be readily obtained from certain

floors, but with warm weather this was impossible. Physiologic and serologic tests performed on seventeen representative cultures caused the organisms to seven to be classified in Lancefield's group A, two in group B, one in group C and seven possibly in group G.

Journal of Lab and Clinical Medicine, St. Louis

28 531-670 (Feb) 1943

- War and Medicine H E Sigerist Baltimore—p 531
Bacterial Warfare Use of Biologic Agents in Warfare L A Fox—p 539
Caring for the Navy's Health L W Johnson—p 554
Definition and Scope of Nautical Medicine L H Roddis—p 564
Adaptation of Technician Instruction to the Military Emergency J W Love I Rothstein and J Cebel—p 566
The General Mission of Military Aviation Medicine D A W Grant—p 577
Physiology of Flying Hazards and Remedies D B Dill Dayton Ohio—p 585
Some Problems in Aviation Medicine A Graybiel Boston—p 590
Physiology of Fatigue Factors and Criteria of Endurance D B Dill Dayton Ohio—p 596
Influence of Amphetamine (Benzedrine) Sulfate and Caffeine on Performance of Rapidly Exhausting Work by Untrained Subjects E E Foltz M J Schiffman and A C Ivy Chicago—p 601
Influence of Amphetamine (Benzedrine) Sulfate and Desoxyephedrine Hydrochloride (Pervitin) and Caffeine on Work Output and Recovery When Rapidly Exhausting Work Is Done by Trained Subjects E E Foltz A C Ivy and C J Barborka Chicago—p 603
Plantar Reflex as Criterion of Endurance P I Yakovlev Waltham Mass.—p 606
Military Aspects of Allergy P Blank—p 609
Heart Disease in Middle Age C C Shaw—p 619
Responsibilities of the Army Roentgenologist A A de Lorimer—p 628
Effects of Modern Warfare on Civil Population Experience of Great Britain D Dennis Brown Boston—p 641
*Chemotherapy of Bacillary Dysentery Further Observations on Sulfaguanidine G M Lyon—p 645
Medical Illustration in the United States Army Historical and Present Considerations R P Creer—p 651
War and Disease R H Major Kansas City Kan.—p 661

Chemotherapy of Bacillary Dysentery—Lyon used sulfaguanidine in the treatment of alternate patients with acute bacillary dysentery in an area with what was probably the highest incidence of the disease since 1926. With few exceptions the initial dose was 0.1 Gm per kilogram of body weight, while the maintenance dose was 0.05 Gm per kilogram of body weight administered orally every four hours until the stools were less than five in twenty-four hours and then 0.05 Gm every eight hours for forty-eight to seventy-two hours. An adequate urinary output should be maintained and any untoward effects detected and treated. Sulfaguanidine proved to be an effective therapeutic agent when used in the manner described and if treatment was begun during the first five days of illness recovery usually occurred in two to five days. Usually five days of chemotherapy was all that was required. There were no toxic effects. When chemotherapy was not begun within five days of the onset of fever or diarrhea, results were frequently amazingly good but failures were more frequent.

Journal of Nervous and Mental Disease, New York

97 133-260 (Feb) 1943

- Syndrome of Amyotrophic Lateral Sclerosis of Bulbar Type Associated with Polybasia R H Young Omaha—p 133
Intravenous Injection of Insulin in the Treatment of Schizophrenia M C Petersen and E H Lutz Willmar Minn—p 141
New Pyramidal Sign of Great Frequency L Allen and H Cleckley Augusta Ga—p 146
*Studies on Use of Refrigeration Therapy in Mental Disease Report of Sixteen Cases D Goldman and M Murray Cincinnati—p 152
A Septic Lymphocytic Meningitis in Case of Infantile Cerebral Palsy Adult Form L B Shapiro Fort Bliss Texa—p 166
Role of Hostility in Affective Psychoses Jane E Olman and S Friedman Newton Conn—p 170
Innervation and Tonus of Striated Muscle in Man F Jacobson Chicago—p 197

Refrigeration Therapy in Mental Disease—Observations on 16 patients with mental disease that Goldman and Murray subjected to refrigeration treatment are recorded. At the necropsy of the 2 patients who died it was found that death was caused by pneumonia. Nonfatal respiratory complications were observed frequently. Mental improvement did not ensue and treatment was discontinued.

Journal Pharmacology & Exper Therap, Baltimore

77 1-106 (Jan) 1943

- Mode of Action of Sulfonamides. III. Purine Amino Acids, Peptides and Pterins as Antagonists and Potentiators of Sulfonamide in *Escherichia Coli*. H. I. Kohn, Durham, N. C. and J. S. Harris, Fort Bragg, N. C.—p. 1
- Studies on Modification of Morphine Abstinence Syndrome by Drugs. C. K. Himmelsbach and H. I. Andrews, Lexington, Ky.—p. 17
- Nutritional Degeneration of Optic Nerve in Rats. Its Relation to Trypanamide Amblyopia. W. McDermott, B. Webster, R. Baker, J. Lockhart and R. Tompsett, New York.—p. 21
- Studies on Shock Induced by Hemorrhage. III. Correlation of Plasma Thrombin Content with Resistance to Shock in Dog. W. M. Govey, Nashville, Tenn.—p. 40
- Effect of Chloroform and Ether on Activity of Choline Esterase. Chira Lorde, New York.—p. 50
- Comparative Physologic Actions of Some β (Imidazole) Alkylamines. G. A. Alles, B. B. Wiskerwer and Mildred A. Shull, San Francisco.—p. 54
- Toxicity of Tannic Acid. H. J. Robinson and O. I. Grice, R. Highway, N. J.—p. 63
- *Toxicity and Efficacy of Penicillin. H. J. Robinson, Highway, N. J.—p. 70
- Effect of Drugs on Pulmonary and Systemic Arterial Pressures in Trained Unanesthetized Dog. Kennin Angiotonin, Adrenalin, Pitressin, Pilocarpine, Digitalis, Acetylcholine, Papaverine, Histamine, Amyl Nitrate and Aminophyllin. I. Friedberg, I. N. Kat and I. S. Steinitz, Chicago.—p. 80

Toxicity of Tannic Acid—In investigating the toxicity of tannic acid in animals under conditions similar to its clinical use, Robinson and Grice found that it is definitely toxic for mice and rats when given intravenously or subcutaneously. When applied to deep subcutaneous tissues following surgical removal of the skin, tannic acid was lethal for mice but not for rats or rabbits. Tannic acid or possibly its degradation products could be detected in the urine of all these animals. Hepatic damage was produced in rabbits when tannic acid was administered subcutaneously but not when it was applied to denuded surfaces. Therefore hepatic damage appears to depend on the quantity of tannic acid absorbed. When injected intraperitoneally, tannic acid decidedly depressed the water diuresis of rats. This depression was not produced by large doses of the drug subcutaneously or locally to denuded surfaces.

Toxicity and Efficacy of Penicillin—Robinson tested the toxicity and efficacy of penicillin in certain bacterial virus and protozoan infections in mice. Crude penicillin was toxic for mice when given intravenously in single doses of 0.5, 1, 1.5 and 2 Gm per kilogram of weight. More highly purified preparations appeared to be less toxic. Penicillin given subcutaneously was well tolerated for five daily doses of 1.6 Gm per kilogram of weight. Under the same conditions 3.2 Gm was lethal for some mice. The toxic dose of crude penicillin appears to be about sixty-four times the effective therapeutic dose. On the basis of weight, penicillin appeared more effective than sulfanilamide and its derivatives in streptococci, pneumococci and staphylococci infection in mice. Penicillin had no apparent effect in experimental infection caused by *Mycobacterium tuberculosis*, *Trypanosoma equiperdum* or the influenza virus PR8.

Missouri State Medical Assn Journal, St. Louis

40 29-60 (Feb) 1943

- The Eyes in School Years. W. L. Post, Joplin.—p. 29
- Problems of the Eyes in the Age. C. S. Smith, Springfield.—p. 30
- Glaucoma and Cataract. G. A. Hornback, Hannibal.—p. 32
- Industrial Accidents to the Eyes. C. P. Dyer, St. Louis.—p. 32
- Should the Cancer Victim Be Told the Truth? M. G. Seelig, St. Louis.—p. 33
- *Neurologic Accidents Following Serum Administration. F. A. Carmichael, St. Joseph.—p. 36
- Hyperinsulinism. R. E. Myers, Joplin.—p. 38
- Infectious Mononucleosis. Report of Seronegative Case. R. O. Perriman, San Luis, Calif., and H. J. Brumm, St. Joseph.—p. 41
- Acute Appendicitis Complicating Labor. Report of Case. H. Czupryk and N. A. Schneider, St. Louis.—p. 43

Neurologic Accidents Following Serum Administration—While neurologic accidents following vaccine and serum administered for prophylactic and therapeutic purposes are comparatively rare, the constantly widening field of their use has emphasized their possible role in neurologic disorders of obscure etiology. Carmichael points out that the urticarial rash, articular pains, headache and vomiting with a rise in temperature following administration of serum to the sensitized patient may

be followed immediately or remotely by evidences of neurologic involvement which may be prolonged and seriously disabling. Between 1922 and 1928 the frequent occurrence of these neurologic sequelae, particularly in England and the Netherlands, prompted the appointment of a commission to study the problem. Up to that time 159 cases were studied in England and some 80 odd in the Netherlands. Since this study a large number of cases have been reported in European literature and not a few in this country. The report submitted by the English commission was not conclusive, although it generally was conceded that the specific nature of the antigen was not the factor responsible for the accident but rather a protein sensitivity on the part of the patient. The commission's conclusions are difficult to disprove and are supported by the newer theories relating to the virus infections. The greatest incidence of accidents involving the nervous system followed the prophylactic use of vaccines and serums. Recent discussion as to the exact nature of these sequelae has brought forward various hypotheses. The two that have the most proponents are (1) anaphylactic reaction and (2) the theory that the injection of the protein activates a latent virus always present in the body but which under normal conditions is dormant and innocuous but is pathologic or noxious only in response to some excitant which causes a biochemical change in certain tissue cells vulnerable to attack.

New England Journal of Medicine, Boston

228 81-112 (Jan 21) 1943

- Dissolution of Phosphatic Urinary Calculi by Retrograde Introduction of Citrate Solution Containing Magnesium. H. I. Suby and F. Albright, Boston.—p. 81
- Epidemiologic Aspects of Anthrax in Massachusetts. I. R. Tabershaw and G. E. Morris, Boston.—p. 92
- Montesquieu. Biologist of the Eighteenth Century. Camille Dreyfus, New York.—p. 94
- Obstetrics. Medical Aspects. D. E. Reid, Boston.—p. 97

Dissolution of Urinary Calculi—Suby and Albright found that citrate solutions, rendered less irritable by the addition of magnesium, are practical for the dissolution of urinary calculi composed of calcium phosphate, calcium carbonate or magnesium ammonium phosphate. They report 6 cases in which the use of such a solution dissolved the stones partially or completely. In 2 cases the solution was introduced through ureteral catheters and in 4 through nephrostomy tubes. The attempted dissolution of a large stone in 1 patient was not successful because a thin coating of unidentified material, possibly old blood clot, prevented the solution from coming in contact with the stone. Ideally the hydrodynamics should be such that the pressure in the kidney is great enough to get the solution around the stone, but sufficiently intermittent so that constant back pressure does not cause a pyelonephritis. An air pyelogram will indicate whether a stone is in contact with the kidney pelvis and the course of the stone's dissolution. Before attempting to dissolve a stone it is necessary to determine by a roentgenogram whether one is dealing with a phosphatic stone.

New Orleans Medical and Surgical Journal

95 357-400 (Feb) 1943

- Tumors of Central Nervous System. Pathology of Tumors of Nervous System. H. P. Newbill, New Orleans.—p. 357
- Id. Psychiatric Aspects of Cerebral Tumors. H. R. Unsworth, New Orleans.—p. 363
- Id. Diagnostic Factors in Cranial Tumor. L. A. Golden, New Orleans.—p. 366
- Id. Brain Tumors. G. C. Anderson, New Orleans.—p. 369
- Id. Laminectomy for Spinal Cord Tumor and Other Diseases. Analysis of 151 Consecutive Cases. D. H. Echols, New Orleans.—p. 373
- *Pelvic Thrombophlebitis. Study of Etiologic Factors from Statistical Standpoint. E. W. Nelson, J. R. Jones and C. G. Collins, New Orleans.—p. 375
- *Autoagglutination, Cold Agglutination. Pseudoagglutination and Rh Factor. Factors of Practical Importance in Transfusion of Blood. D. Lindsey, New Orleans.—p. 382
- Emblems of Medicine. J. A. Durand, Baton Rouge, La.—p. 387

Pelvic Thrombophlebitis—The records of the Charity Hospital for the last five years reveal 41 cases of pelvic thrombophlebitis which was confirmed at operation or proved at necropsy. All but 7 of these patients died. The 41 patients in no way represent the true incidence of the disease, as Nelson

Jones and Collins have no way of determining how many patients recover spontaneously or in how many under conservative management the diagnosis is never established. Still more important, they have no way of determining how many patients die of the condition unless a necropsy is performed in every instance. Delivery, abortion, operation and irradiation were the most frequent precursors. No age group was exempt except, perhaps, childhood. Repeated aerobic and anaerobic blood cultures are necessary to establish the etiology. *Staphylococcus aureus* and nonhemolytic streptococci are frequent offenders. The uterine veins, iliac veins and inferior vena cava were frequently involved. Pulmonary infarction was extremely common, for the diagnosis of which roentgen study should be employed. Ligation of the inferior vena cava appears to lower the mortality rate, as compared to other operative procedures. Delay in operation and overconservative therapy result in an unnecessarily high mortality rate.

Agglutination and Rh Factor—Lindsey states that cells washed in warm saline solution to remove possible autoagglutinins should be used in typing and matching blood. Before transfusion a patient's serum should be tested against his own cells at ice box temperature to detect autoagglutinins which may cause a post-transfusion reaction. If autoagglutinins are demonstrated the patient should receive only small amounts of blood. If a transfusion is to be given or when a transfusion is to be given in pregnancy or the puerperium, compatibility tests should be made at ice box temperature to exclude Rh agglutinins. In testing the serum of a patient containing autoagglutinins active at room temperature the serum might be erroneously classified as belonging to group O, since it would agglutinate the test cells of groups A and B. Likewise if unwashed cells or cells washed at room temperature are used the serum might be erroneously classified as group AB since the cells would agglutinate in both A and B test serums because of the absorbed autoagglutinin. Similarly no donor would be found compatible if serum collected at room temperature or unwashed cells should be used in cross matching. A true reaction could be obtained only by some process designed to free the cells or the serum of the autoagglutinin: (1) by using serum separated at 0 C, (2) using cells washed several times in warm (40 C) saline solution and (3) carrying out typing and matching reactions in an incubator at 37 C.

New York State Journal of Medicine, New York

43 193-288 (Feb 1) 1943

- Therapy of Wartime Injuries. Blood, Blood Plasma and Blood Substitutes. J. W. Howland. Rochester—p 221.
Id. Treatment of Burns. J. S. Houck. Rochester—p 226.
Id. Shock. M. A. Barnard. Rochester—p 228.
Id. Treatment of War Fractures Among Civilian Population. J. P. Henry. Rochester—p 230.
Factors in Obstetric Care. Report of Rural Study. H. R. O'Brien. Hartford, Conn.—p 236.
Present Status of Gold Salt Therapy in Europe and America in Treatment of Chronic Arthritis. R. G. Snyder and C. Traeger. New York—p 245.

43 289-384 (Feb 15) 1943

- Some Differential Points in Diagnosis of Atypical Pneumonia of Probable Virus Origin. Anne M. Bahlke. Albany—p 315.
Functional Study of Liver and Its Clinical Evaluation. C. H. Greene and M. Bruger. New York—p 318.
New Approach to Cross Cylinder Tests. J. I. Pascal. New York—p 323.
The Psychiatrist and the Behavior Problem. A. B. Siewers. Syracuse—p 328.
Osteoid Osteoma. Report of 5 Cases. S. Kleinberg. New York—p 332.
Histamine Intracutaneously in Hay Fever. D. E. Frank. New York—p 339.

Pennsylvania Medical Journal, Harrisburg

46 305-400 (Jan) 1943

- Traumatic Shock. A. H. Ver Bruggen. Chicago—p 319.
Treatment of Head Injuries in War. F. C. Grant. Philadelphia—p 335.
All That Is Called Pneumonia Is Not Pneumonia. Critical Analysis of 377 Deaths Ascribed to Pneumonia Occurring in Hospitals in Central Pennsylvania. C. P. Faller, K. E. Quickel and C. W. Smith. Harrisburg—p 359.
Standardization of Adrenal Cortex Extract. J. M. Kogof. Pittsburgh—p 346.
Iulmicne Contusion in Intact Thorax. Report of Case. J. D. Brown. Philadelphia and I. S. Friedman. Melrose Park—p 352.

Public Health Reports, Washington, D. C.

58 121-156 (Jan 22) 1943

- Nationwide Study of Bacterial Etiology of Pneumonias. A. S. Rumreich, H. J. Shaughnessy, J. V. Mulcahy, J. C. Willett, W. H. Kellogg and W. C. Mitchell—p 121.
Strain of Endemic Typhus Fever Virus Isolated from House Mice (*Mus Musculus Musculus*). G. D. Brigham and E. G. Pickens—p 135.
Growth Measurements of *Anopheles Quadrimaculatus* Larvae. F. L. Knowles—p 136.
Mouse Protective Values of Antimeningococcus Serum in Comparison with Precipitation in Immune Serum Agar Plates. Margaret Pittman—p 139.

58 209-248 (Feb 5) 1943

- Identification and Localization of Lead in Bone Tissue. L. T. Fairhall—p 209.
Microclimate of Diurnal Resting Places of *Anopheles Quadrimaculatus* Say in Vicinity of Reelfoot Lake. D. E. Eyles and L. K. Bishop—p 217.
Rocky Mountain Spotted Fever. Duration of Potency of Tick Tissue Vaccine. R. R. Parker and E. A. Steinhaus—p 230.
Disabling Morbidity Among Industrial Workers Third Quarter of 1942 with Note on Occurrence of Respiratory Diseases 1933-1942. W. M. Cafarer—p 232.

58 249-296 (Feb 12) 1943

- Distribution of Health Services in Structure of State Government. Chapter V. Central State Services Affecting All Branches of Public Health Work. J. W. Mountain and Evelyn Flook—p 249.

Radiology, Syracuse, N. Y.

40 115-220 (Feb) 1943

- The Betatron. D. W. Kerst. Urbana Ill.—p 115.
Experimental Depth Dose for 5, 10, 15 and 20 Million Volt X Rays. H. W. Koch, D. W. Kerst and P. Morrison. Urbana Ill.—p 120.
Factors Concerned in Abnormal Distribution of Barium in Small Bowel. M. L. Sussman and E. Wachtel. New York—p 128.
X-Ray Therapy in Fluoroscopy. A. L. L. Bell. Brooklyn—p 159.
Osteogenesis Imperfecta. W. H. Bickel, R. K. Ghormley and J. D. Camp. Rochester. Minn.—p 145.
Osteopetrosis (Albers-Schönberg Disease). Case Report. C. A. W. Zimmermann. 3d Cape Girardeau Mo.—p 155.
Roentgen Features of Scleroderma and Acrosclerosis. J. Jackman. Cleveland—p 163.
Congenital Atresia of Esophagus. Report of 4 Cases. L. K. Chont and L. J. Starry. Oklahoma City—p 169.
Roentgenologic Manifestations and Clinical Symptoms of Rib Abnormalities. H. A. Steiner. Denver—p 175.
Experimental Modification of Radiosensitivity of Embryonic Cells. J. P. Goodrich. Iowa City—p 179.
Employer Is Liable in Common Law for Physician's Fees for Services Rendered Injured Employee. I. S. Trostler. Chicago—p 191.

Roentgen Features of Scleroderma and Acrosclerosis

—Jackman discusses the important roentgen features of scleroderma and acrosclerosis by presenting cases that show most of the important roentgen changes which are calcinosis changes in the osseous system, pulmonary fibrosis (questionable) and esophageal stenosis (occasional). The essential pathologic change in scleroderma is thickening and sclerosis of the collagenous bundles. The disease is not limited to the skin and underlying connective tissue, muscle, bone and fascia are said to participate in the pathologic change. This may explain the occurrence of pulmonary fibrosis and esophageal stenosis. The necrosis of the terminal phalanges of the fingers is secondary to the associated vasospastic phenomena which accompany acrosclerosis. The calcinosis may be explained on the solubility of lime salts in acid and alkaline mediums. These salts are more soluble in acid mediums and remain in solution in normal tissues with a high carbon dioxide tension because of active metabolism. In necrotic tissue there is lowering of the carbon dioxide tension as a result of lowered metabolism. The reaction becomes alkaline and lime salts are precipitated from blood and lymph which diffuse into the area.

South Carolina Medical Assn. Journal, Florence

39 29-52 (Feb) 1943

- Your Federal Income Tax. H. W. Jallotte. Florence—p 29.
Typhoid Vaccine Immunization (Historical Study). L. Lantz. Charleston—p 33.
Report of 5 Cases of Acute Bichloride of Mercury Poisoning Treated with Sodium Thiosulfate and Sodium Formaldehyde Sulfate. H. W. Lemrick. Charleston—p 35.

Surgery, St. Louis

13 177-332 (Feb) 1943

- *Surgery of Spleen in Blood Dyscrasias I. I. Henson and I. W. Stevens Philadelphia—p 177
- Shock: Physiologic and Clinical Aspects I. B. Mahoney and J. W. Howland Rochester, N. Y.—p 198
- Studies of Arterial Oxygen Saturation in Postoperative Period After Pulmonary Resection H. C. Miner and A. Cournaud New York—p 199
- Effect of Atropine on Gastric Secretion During Night I. B. Mears Minneapolis—p 211
- Endometriosis: Clinical and Therapeutic Considerations Report of 140 Private Cases R. I. Sanders Memphis Tenn—p 224
- Elevation of First Metatarsal Bone with Hallux Equinus G. Hummond Ann Arbor Mich—p 240
- *Livedo Reticularis and Vasospasm Treated by Sympathectomy with Some Notes on Sympathetic Anesthesia in Labor Case H. B. Shumacker Jr. Baltimore—p 257
- Embolectomy for Riding Embolus of Abdominal Aorta H. I. Winkle and N. C. Ebert Brooklyn—p 264
- Centennial of Crawford Long's First Use of Ether in Surgery I. K. Boland Atlanta Ga—p 270
- Acute Diverticulitis of Cecum I. Schmutz Cincinnati—p 292
- Synovial Sarcoma: Report of 2 Cases J. A. Lazarus and M. S. Marks New York—p 299
- Metastatic Brain Abscess Complicating Inconspicuous Pulmonary Suppuration in Presence of Chronic Nontuberculous Empyema R. W. Buxton and M. J. White Jr. Ann Arbor Mich—p 307
- Bleeding Time in Mice Following Oral Administration of 3,3' Methylene Bis (4-Hydroxycoumarin) J. J. Eich, Margaret H. Eich and A. I. Copley Kansas City Kan—p 316
- New Method of Skin Protection for Ileostomy and Colostomy D. Preman Chicago—p 322

Surgery of Spleen in Blood Dyscrasias—Henson and Stevens review the literature of the last ten years and give a statistical report showing the mortality and life expectancy following splenectomy in splenic anemia, thrombocytopenic purpura and icterohematuria. To this they add a report of 63 personal cases. Splenectomy gives the patient with splenic anemia the best chance for recovery and the earlier in the disease it is performed the lower the surgical mortality and the greater the life expectancy. It is Henson's opinion that this is the only choice with cirrhosis. The operative mortality should not be more than 10 per cent; some patients have lived twenty years postoperatively. Patients with chronic hemorrhagic purpura who do not respond to conservative therapy should be subjected to splenectomy. Also in acute or fulminating hemorrhagic purpura which does not respond promptly to conservative measures it should be performed before the patient's condition becomes critical. It is important to eliminate infection in the prevention of recurrent purpura. Splenectomy is the treatment of choice in hemolytic jaundice, particularly in children. It is preferable to perform the operation during a remission. In adults splenectomy is not always necessary.

Livedo Reticularis and Vasospasm—Shumacker cites an unusual case of vasospasm of the lower extremities associated with livedo reticularis. Lumbar sympathectomy gave an excellent result and appears to be indicated in cases of this kind. Because of the absence of pain with the uterine contractions of labor in this patient, the possibility of inhibiting painful stimuli from the uterus by interruption of the lumbar sympathetic impulses is being investigated. The patient reacted normally to other painful stimuli. It is not certain whether there was a causal relationship between the excision of the lumbar sympathetic chains and the absence of pain with uterine contractions. From the data available the best explanation of the mechanism of livedo is that there are areas of maximal blood supply in the skin, perhaps from capillary arborizations from central arterioles which enter the skin from below. In these central areas the tone of the capillaries is greater and the blood flow faster than in the surrounding periphery. Either through organic changes in the blood vessels or through vasospasm of the arteries and arterioles supplying the skin, the capillary atony and stagnation of blood flow in the peripheral areas is further increased. This increase causes the livid discoloration in annular rings surrounding central pale areas. The discoloration is intensified by exposure to cold, which further increases the vasoconstriction of the arteries and arterioles supplying the skin. The livid areas disappear or change to pink when vascular spasm is released by warming the body or by sympathetic interruption. Dependence of the affected part similarly brings about some intensification. The persistence of some mottling after warming the body or

sympathectomy is due to the fact that atony and dilatation of the capillaries may be permanent. The disappearance of the livedo on elevation of the affected limb may be explained by the fact that the venules draining the capillary bed in the peripheral annular zones are somewhat dilated.

Texas State Journal of Medicine, Fort Worth

38 581-632 (Feb) 1943

- The Feeding of Children C. A. Stewart, New Orleans—p 586
- Acute Rheumatic Fever in Its Various Manifestations A. W. Harris, Dallas—p 590
- Classification of Pelvis in 300 Mexican Women J. L. Stowe, El Paso—p 596
- End Results in Carcinoma of Cervix and Uterus Treated with Radium H. Dudgeon Jr. Waco—p 599
- Carcinoma of Cervix Treated by Intravaginal and Rotation Therapy J. J. Faust Tyler—p 602
- Bronchogenic Carcinoma: Resume and Some Newer Concepts W. S. Wallace Galveston and H. G. Jackson New Haven, Conn—p 605
- Cover Test as Aid to Diagnosis in Extraocular Muscular Anomalies C. H. Dolph Brytown—p 612
- Doctor in Court I. Cox, Houston—p 614

War Medicine, Chicago

3 113-222 (Feb) 1943

- Psychiatry in the Navy I. M. Harrison—p 113
- Psychoneuroses in Military Psychiatry J. A. Brussel and H. R. Wolpert—p 139
- Two Clinical Tests Valuable in War Medicine and in Medicolegal Practice J. L. Fetterman Cleveland—p 155
- Peptic Ulcer at Fort George G. Meade Md. C. A. Flood—p 160
- Problem of Night Vision K. Kekcheyev, N. Derzhavin and S. Pilpeluk Moscow, Soviet Union—p 171
- Effective Military Venereal Disease Control Program B. A. Lieberman Jr.—p 174
- *Absorption and Excretion of Sulfonamide Compounds Suspended in Oil: Observations on Animals and on Patients with Chronic Osteomyelitis D. M. Angevine Wilmington, Del—p 186

Sulfonamides in Oil—Suspensions of sulfonamide compounds in soybean, corn, sesame, peanut, cottonseed and olive oil, hydrous wool fat and yellow petrolatum were used by Angevine to observe their local reaction, absorption and excretion following single subcutaneous injections into rabbits, rats, 1 dog and in patients with chronic osteomyelitis. All the oils were commercial preparations not further purified, and of them the largest volumes of drug could be added to and the smoothest suspensions obtained with soybean oil, corn oil and sesame oil. There is a slight separation of oil and drug on standing for a few days, however, the suspensions of sulfanilamide, sulfapyridine and sulfadiazine can be readily remixed with a glass rod, and the suspension of sulfathiazole can be remixed, but with more difficulty. Suspensions kept at room temperature for three months are apparently satisfactory. Sulfanilamide, sulfathiazole, sulfadiazine and sulfapyridine can be suspended in oil in high concentrations. Suspensions of sulfanilamide and of sulfathiazole in soybean oil produced only a slight local reaction in animals when they were injected subcutaneously. In animals a single subcutaneous injection of sulfanilamide, sulfathiazole or sulfadiazine suspended in oil was absorbed at a uniform rate and, depending on the dose, produced a concentration of the drug in the blood for as long as eight days. The excretion of the drug in the urine continued for several days after it had disappeared from the blood. Suspensions of sulfanilamide or sulfathiazole in soybean oil were instilled into the infected sinusal tracts of 5 patients with osteomyelitis. The drug was present in the blood for six days and was excreted for as long as one hundred and thirty-seven days. The sinuses of 2 of the patients healed completely and those of the others improved. This method of therapy appears to deserve a further trial in chronic osteomyelitis and in other types of infected wounds.

Wisconsin Medical Journal, Madison

42 189-272 (Feb) 1943

- Chest Injuries J. W. Gale, Madison—p 205
- Eye and Ear Complications of Craniocerebral Injuries W. E. Grove, Milwaukee—p 210
- Handicaps of Hernia in Industry R. W. McNealy Chicago—p 214
- Common Fractures and Their Treatment H. C. Schumm, Milwaukee—p 217
- Reduction of Disability in Fracture Management C. C. Schneider, Milwaukee—p 220
- Traumatic Shock C. W. Eberbach, Milwaukee—p 225

FOREIGN

In a terisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1 121-150 (Jan 30) 1943

- Nature of the Rheumatic Child D Hubble—p 121
Weil's Disease in an Army Camp Case S Varadi—p 126
Inactivation of Phosphorus on Skin M W Goldblatt and S H Oakeshott—p 128
Modification for Carbon Dioxide Absorption with Field Pattern Boyle's Apparatus J Montgomerie—p 129
New Circle Type Carbon Dioxide Absorber W W Mushin—p 130

Weil's Disease in an Army Camp—Varadi reports the case of a young soldier who contracted Weil's disease while handling a rat trap. Most of the classic features of the disease were present. The disease could have remained undetected, as the localized rash, which appeared on the seventh day of illness, disappeared quickly. There was a rather extensive involvement of the nervous system. For the first day or two there were signs of slight meningeal participation (nuchal rigidity), which subsided rapidly. The knee and ankle jerk were practically absent from the day of admission (fourth day). The ankle jerk reappeared within twelve days and the knee jerk in about a fortnight. Paresthesia of the skin to heat and vibration subsided at about the time the tendon jerks were returning. These sensory changes were most probably due to a polyneuritis. *Leptospiras* were found in the patient's urine and in the kidneys, liver and adrenals of the guinea pig inoculated with the patient's urine. The case is a further proof that whenever an acute febrile illness appears associated with nephritis, severe muscular pain and great tenderness in the muscles of the limbs Weil's disease should be considered. And in the patient's history reveals the possibility of infection by rats, serum treatment should be introduced at once without waiting for the laboratory confirmation of the diagnosis. This treatment it started in the preicteric stage, is decidedly beneficial.

Lancet, London

1 129-162 (Jan. 30) 1943

- Charles Darwin and Psychotherapy D Hubble—p 129
Propamidine in Chronic Wound Sepsis: Experimental and Clinical Study W R Thrower and F C O Valentine—p 133
Propamidine in Chronic Streptococcal Infection of Raw Surfaces A H McIndoe and A R Tilley—p 136
Propamidine in Burns G H Morley and J P Bentley—p 138
Propamidine at an Emergency Medical Service Hospital F Kohn M H Hall and Clara D Cross—p 140
Exposure of Arched Segment of Anterior Tibial Vessels A K Henry—p 141
Bone Changes in Varicose Ulcer A P Bertwistle—p 142
Murine Typhus in British Soldiers in West Africa F Smith and R W Evans—p 142

Propamidine in Chronic Wound Sepsis—Bacteriostatic action of amidines unlike the sulfonamides, is not inhibited by the peptones and other constituents of pus and tissue fluids in wounds. Thrower and Valentine determined the local value of these compounds in wound sepsis particularly the action of 4,4-diaminodiphenoxypropane dihydrochloride (propamidine). A watery gel of between 4.5 and 5 per cent of methyl cellulose was selected as a vehicle for the propamidine. The wound was cleaned with isotonic solution of sodium chloride and explored to ensure that the jelly would come in contact with the entire surface. A sterile spatula was used to fill up the cavity to skin level with 0.1 per cent propamidine jelly. The jelly must not come in contact with the edges of the skin. The wound and surrounding area were then covered with two or three layers of impermeable petrolatum gauze and a thin layer of gauze or wool over the petrolatum gauze. On redressing exudate and stale jelly were swabbed or washed out with saline solution and fresh jelly was applied as before. A 0.4 per cent concentration of the drug caused necrosis of granulation tissue and concentrations in excess of 0.1 per cent tended to injure granulation. Full benefit was obtained in ten days. A second course of treatment can be given for reinfection. A satisfactory result may sometimes be obtained when an interval of a week is left between dressings. When redressing was painless and easily

done the dressing was changed on alternate days or, when there was much discharge, even daily. Cultures showed that the streptococcus was the first to disappear and then the staphylococcus. *Proteus vulgaris* and *Pseudomonas pyocyanea* often persisted without appearing to retard progress. Correctly used, propamidine can clear the field of dangerous organisms within ten days and then other necessary measures may be proceeded with.

Propamidine in Chronic Streptococcal Infection—McIndoe and Tilley assessed the value of propamidine in 11 open persistent old wounds secondarily infected by a beta hemolytic streptococcus of open wounds and old burns which had failed to heal with diluted solution of sodium hypochlorite or sulfanilamide, tulle gras and saline solution. One uninfected fresh burn also was treated. The technique employed was that developed by Thrower. In some instances improvement was evident within forty-eight hours of treatment, especially in the more recent infections. Older or more indolent surfaces responded less rapidly but steady improvement occurred in all cases coincidentally with the disappearance of beta hemolytic streptococci. Streptococcus control took place in two to ten days though reinfection requiring a second course occurred several times. The authors did not see irritation or the surrounding skin and necrosis of the granulating surface after more than ten days of treatment in only 1 such patient was there a mild irritation of the skin. While the beta hemolytic streptococcus was effectively controlled this was not the case with other organisms. In 3 patients subsequent grafts failed partially because of staphylococcal infection. Although healing may take place at a normal rate in the presence of saprophytic and mild pathogenic organisms, a graft may be mechanically lifted from its bed. A 0.1 per cent propamidine in a lanette wax and petrolatum base was superior to a water soluble jelly mixture. The result in the fresh burn was impressive.

Propamidine in Burns—Morley and Bentley treated 7 burns within five hours of the accident, 5 that were treated elsewhere for three or more days and 2 infected areas as preparation for skin grafting with propamidine. Speedy healing of the burned areas without relapse or indolence suggests that streptococcal and staphylococcal infection was effectively controlled. The progress of the burns has been remarkable for the rapidity of separation of slough and the speed of epithelization. The latter and the mobility of the part throughout treatment combined to produce a minimum of scar tissue and an extremely good cosmetic and functional result. When propamidine was tried as an alternative dressing for areas that had become indolent or infected with sulfonamide resistant organisms infection yielded quickly to propamidine and healing was accelerated. Propamidine appears of value in the early separation of tight sloughs in deep burns by virtue of its apparent property of controlling streptococcal and staphylococcal infection while allowing saprophytic and proteolytic organisms to flourish. These organisms must be controlled by other measures before skin grafting is done.

Murine Typhus in British Soldiers in West Africa—Smith and Evans report the occurrence of 4 cases of murine typhus in Europeans in a West African colony in which the disease has not occurred heretofore. The cases show that the diagnosis not only can be missed because of the mildness of the clinical course but also may be confused by alterations in the Widal reactions due to TAB inoculation and by failure to read agglutination tests as late as the twenty-first day after onset. The typhus occurred in soldiers living under good conditions in a good climate. Their food was liberal. Only 1 was shown to have subtertian malaria parasites in the blood but he gave no history of clinical malaria. The longest time spent on the West Coast of Africa by any of the 4 men was ten months. The first patient could not well have been more severely ill and survived the picture he presented conformed closely to the classic descriptions of epidemic typhus. The disease in the other 3 was less severe. These 3 men were not only from the same billet but actually from the same bed each patient moving into the infected bed as the previous occupant was admitted to the hospital. Common to all 4 were a dusky cyanotic flush of the face mental clarity during the day, delirium

at night and bronchitis. There were the severe frontal headache, insomnia, the characteristic rash on the fifth or sixth day and continuous fever for ten to sixteen days. The contrast of the Weil-Felix reactions in these 4 patients of murine typhus and 11 instances of pyrexia due to other causes shows that a rise in titer above 1 in 50 with OX19 suspension suggests typhus and a rising subsequent titer confirms the diagnosis.

Confinia Neurologica, Basel

5 1-112 (Nov 1-2) 1942

- Partial Paralysis of Upward Gaze. R. J. Alper—p. 1
- *Neuritis in Course of Syphilitic Mesenteritis. A. Berner—p. 13
- Metric of Convulsion Therapy in Certain Form of Hysteria. J. Litter—p. 37
- Present Status of Anatomic Research on Schizophrenia. S. Schneider—p. 65
- Modification of Mastix Test in Cerebrospinal Fluid. D. Aebi—p. 71

Neuritis in Course of Syphilitic Mesenteritis.—Berner investigated the nerves in a syphilitic torticollis with inflammatory alterations and their importance in the neurologic features of the disease. He found that nerves were involved in the inflammatory processes of the torticollis in 35 out of 42 cases of syphilitic meningitis. The sympathetic ganglions likewise show inflammatory changes. The author's observations include studies on 15 recurrent nerves and on 3 vagus nerves. In 8 cases the recurrent and in 3 cases the vagus was involved in the inflammatory process of the neighboring torticollis. In 1 case of paralysis of the recurrent nerve it was the site of an extensive inflammation. The author considers these alterations as the basis for the nervous disturbances caused by syphilitic meningitis. The nervous compression phenomenon the result of a dilated torticollis are of less importance than the fact that the aortic nerves themselves participate in the inflammatory process.

Schweizerische medizinische Wochenschrift, Basel

72 997-1024 (Sept 12) 1942

- Diagnostic Significance of Cutaneous Manifestations in Internal Diseases. P. Robert—p. 997
- *New Points of View in Estimation of Hematogenic Renal Tuberculosis. H. U. Gloor—p. 1001
- Problem of Thrombosis. I. Koller—p. 1008
- Muscle Contractures in Epidemic Poliomyelitis. R. Scherb—p. 1009
- Question of Possibility of Traumatic Genesis of Pflüger's Glandular Fever. H. Pmosch—p. 1012
- Maturity of Newborn and Development of Centers of Ossification. J. H. Müller and J. Bilbi—p. 1013
- Sulfathiazole and Acute Septic Endocarditis. L. Michalek—p. 1015

Renal Tuberculosis.—Gloor considers the problem of renal tuberculosis from the standpoint of military insurance. The problem of recurrence presents many difficulties. Thus after a long interval it is difficult to decide whether a local exacerbation or a distant metastasis had its origin in a lesion that had developed during the time covered by military insurance. This problem is encountered in many cases of renal tuberculosis. Until recently it was assumed that renal tuberculosis would become manifest soon after a focus had formed and that in cases in which a long interval existed between an attack of tuberculosis during military service and the subsequent development of a urogenital complication the kidneys had been attacked by a fresh bacillosis. It was conceded however, that lack of exact knowledge and the necessity of evaluating a case on the basis of experience and probability justified the acceptance of a causal relationship when the interval was not too long and when evidence to the contrary did not exist. Gloor and Uehlinger reported previously 9 cases of renal tuberculosis in which at least eight years had elapsed between the hematogenic dissemination and signs of tuberculosis of the urinary passages. Gloor now reports 32 cases in which unilateral nephrectomy was done for renal tuberculosis. The majority of cases gave Gloor the impression that the specific process had existed for many years. It is necessary to differentiate between a descending and an ascending form of renal tuberculosis. In both instances the process originates in papillary foci, but in the case of a descending process the perforation into the renal pelvis takes place relatively early, whereas in the ascending type the process is shut off by a connective tissue wall, and in these cases the silent interval is much longer than in the descending type. Open renal tuberculosis may exist for years without

becoming extensive. Many patients with severe renal destruction are not aware of the condition. Military insurance should take into consideration the demonstrated frequency of the long, silent interval which may last eight years or more.

Medicina Española, Valencia

8 429-538 (Nov) 1942 Partial Index

- *Alimentary Factors in Carcinogenesis. I. Cornil and M. Schachter—p. 429
- Deiciency Syndromes in Ophthalmology. A. Moreu—p. 448
- Dementia Paralytica. F. Marco Merenciano—p. 468
- Influence of State of Weather on Rheumatic Processes. Possible Explanation of This Influence and Its Therapeutic Significance. J. Carrera Toranzo—p. 482
- Hypophysectomy in Metabolic Carcinopathias. A. Altava—p. 493
- Sulfathiazole in Ophthalmology. E. Selva—p. 498
- Varieties of Psoric Structures. S. Martinez Gomez—p. 503

Alimentary Factors and Carcinogenesis.—Cornil and Schachter point out that the advances in the study of experimental carcinogenesis have raised the question of the possible influence of certain foods on the origin of malignant tumors. They review possible carcinogenic effects of various alimentary factors and present a general dietetic scheme for a cancer patient. Overfeeding should be avoided. The patient should receive from 1,600 to 2,000 calories daily. Excess of alkaline foods should be avoided. Food rich in calcium or ammonium salts should be added. Proteins are permitted even to excess, particularly in the form of meats. Sugars are to be given in only small quantities because large amounts of carbohydrates favor the growth of cancers. Fats can be given in generous amounts in the form of butter or vegetable oils. Although in experiments it has been proved that diets deficient in vitamins have an inhibiting effect on cancer growth and metastasization they also noticeably shorten the life of the patient and for this reason are inadvisable. Favorable clinical results have been obtained by reducing the intake of foods that are sources of vitamin B (cauliflower, turnips and spinach) and by a moderate intake of vitamin A in the form of butter and cod liver oil. Onions, leeks, garlic and mustard have a somewhat inhibiting effect on tumoral growth. Alcohol in small doses is not contra indicated.

Sulfathiazole in Ophthalmology.—Selva gave from 0.03 to 0.04 Gm of sulfathiazole per kilogram of body weight for from six to nine days. When necessary, he repeats this medication after an interval of five days. Four patients with sties were cured by sulfathiazole in from two to four days. Two cases of acute staphylococcal conjunctivitis responded to sulfathiazole and mild protein silver in from seven to eight days. Sulfathiazole together with local remedies was effective also in 4 cases of chronic conjunctivitis. The action of sulfathiazole in 3 cases of acute dacryocystitis was not quite as prompt as that of azosulfamide. Sulfathiazole proved ineffective in 2 cases of fistulous dacryocystitis. In 16 cases of trachoma sulfathiazole medication was combined with local applications. There was no appreciable effect on the follicles, but the corneal lesions, the subjective symptoms and the superimposed infection yielded rapidly. This diversity of action on the palpebral and corneal localizations of trachoma is an apparent contradiction. If the corneal ulcers are to be regarded as the result of the trachomatous follicles, it is difficult to explain why the sulfonamides act so energetically on the corneal localization. This dissociation of effect suggests two stages or types in the development of the causal organism of granular conjunctivitis. The age of the trachoma may also be a decisive factor. In ocular disorders sulfathiazole produces effects similar to those of sulfanilamide, but in the case of a sty its action is more rapid and energetic than that of other sulfonamides.

Revista Argentina de Neurol y Psiquiat, Rosario

7 117-188 (Sept) 1942 Partial Index

- *Lichtheim Syndrome. Neurologic Study. F. L. Marelli—p. 117
- Neurosyphilis. T. Fracassi—p. 143
- Medicosocial Problem of Insanity. T. Fracassi—p. 153

Lichtheim Syndrome.—Marelli reports 8 cases of subacute combined degeneration of the spinal cord (Lichtheim syndrome) in patients between 22 and 50 years of age. The neurologic symptoms appeared in the course of anemia caused by gastro

intestinal disorders and diarrhea in 1 case, after prolonged exposure to cold in another, and in the course of a chronic infection or following acute infection in 3 cases. The symptoms appeared suddenly in some and slowly in others. Anemia motor and sensory disorders, especially slight paralysis of the arms, more or less acute paralysis of the legs, signs of pyramidal lesions, dysesthesia and muscular pain occurred in all cases. Anemia appeared either before or after the appearance of the neurologic symptoms. It was of the hyperchromic type in patients with the acute onset of the neurologic signs and of either the hypochromic or normochromic type in patients with a mild type of the disease. Early or recurrent mental disorders with hallucinations or of the type of dementia paralytica occurred in cases in which the disease had a sudden onset. The blood Wassermann reactions and the cerebrospinal fluid Wassermann tests were negative in all. The colloidal gold test showed a deviation of the curve to the left, similar to that observed in syphilis and in multiple sclerosis. Early liver and vitamin B₁ therapy controls anemia, mental symptoms and the degenerative process of the nervous tissue. The author found at a necropsy that the posterior and lateral columns of the cord were the localizations of acute degeneration while the cerebellum and the cerebrum exhibited a moderate involvement. The author believes the disease to be caused by an exogenic toxin which causes selective degeneration of the nervous tissue in the resistance of the latter is diminished because of avitaminosis A and B₁.

Revista Clinica Española, Madrid

6 361-448 (Sept. 30) 1942 Partial Index

- Cushing's Disease E Romero Velasco —p 361
Effect of Male Sex Hormone on Experimental Myodystrophy F Vivanco and C Jimenez Diaz —p 368
Experimental Studies on Malnutrition C Jimenez Diaz J Sanchez Rodriguez J G Villasante F Vivanco and H Castro Mendoza —p 371
*Immediate Mobilization of Those Operated on for Disease Conditions of Digestive Tract Results in 74 Cases C Gonzalez Bueno —p 405
Studies on Nature of Antigens of Pollen Action of Ferments on Their Activity E Arjona and J M Ales —p 422
Gastric Ulcer Carcinoma Implanted in Surgical Scar of Gastroentero-anastomosis R Martinez Dominguez and M Rodriguez Iglesias —p 427
*Atypical Localization of Rheumatic Nodules L Lorente and C Marina —p 430

Immediate Mobilization After Operations on the Digestive Tract—After more than two thousand operations on the digestive tract Gonzalez Bueno concluded that postoperative care could be simplified. The absence of postoperative complications made him decide that the patients should leave the operating table on their own feet. He reviews reports on a series of seventy-four consecutive laparotomies in which the postoperative treatment was ambulatory. The operations were on the stomach, the biliary tract, the liver or the intestine. To make possible immediate postoperative mobilization the patient must be carefully prepared for the operation. He should be kept in bed for twenty-four hours before and should be subjected to careful clinical examination, including laboratory tests. The type of anesthesia is an important factor. The author uses a local circumscribed anesthesia that involves only the abdominal wall. The surgical technic must be exact and delicate but rapid. After the operation the patients put on their own clothes and left the operating room on foot. For two days they were kept in special rooms where they sat in easy chairs. They were urged to move their extremities frequently and take deep inspirations. Some even went for a walk. After two days they returned to their wards where they were comparatively active. Pulse rate, blood pressure, urination and intestinal function were carefully watched. No great changes were observed. A blood examination was made daily. The patients were all discharged in the course of ten days. There were no pulmonary, circulatory or renal complications. The intestinal motility and the renal function were quickly normalized. There were no gastrorrhagias, hematomas or dehiscences. The ambulatory postoperative treatment has also a beneficial psychologic effect. It is not possible in all cases nor can it be carried out by an inexperienced surgeon.

Atypical Localization of Rheumatic Nodules—Lorente and Marina point out that rheumatic nodules, particularly in children, are localized most frequently in the periarterial tissues of the extremities. They recently observed a girl aged 11 who had active rheumatic endocarditis with mitral stenosis and on whose abdomen were two curious little lumps. A history of rheumatic pains and the localization of the nodules in the subcutaneous tissue suggested their rheumatic nature. A biopsy confirmed it.

Semana Medica, Buenos Aires

49 1261-1320 (Nov. 26) 1942 Partial Index

- Heterotopias Their Clinical Importance J R Goyena R S Abad and A Dagnino —p 1261
*Study of Blood During Pregnancy F R Merchante —p 1273
Sexual Psychology Jealousies L Sirlin —p 1280
Hyperphospheremia in Clinical and Experimental Lesions of Liver A P Cinelli —p 1292
Carbuncle and Diphtheria I Vatin Cornelia Da Rin and S Dussaut —p 1297
Bismuth in Treatment of Poliomyelitis A Calabrese —p 1303
Osteomyelitis of Frontal Bone E P Giordano and A L Spataro —p 1304

Blood During Pregnancy—Merchante determined in 46 women the hemoglobin by the ferrometric method of Wong, the volume of erythrocytes by the method of Wintrobe and the number of erythrocytes per cubic millimeter. The results show that the hemoglobin content, the volume and the number of erythrocytes diminish from the beginning to the end of pregnancy. The hemoglobin value shows a slight increase in the second month; there is an abrupt decrease in the third and a slower one thereafter with an increase in velocity in the eighth and a slight ascent in the ninth. The values fluctuate between 12.55 Gm per hundred cubic centimeters in the first month and 11.45 Gm per hundred cubic centimeters in the ninth, temporarily reaching about 13 per hundred cubic centimeters in the second month. The erythrocyte count per cubic millimeter decreases progressively from the beginning to the end of pregnancy. At times there is a slight relative increase in the fourth month. The figures fluctuate between 4,358,000 during the first month and 3,572,000 in the ninth. The total volume of erythrocytes decreases progressively from 42.42 per cent during the first month to 38.96 per cent in the ninth; occasionally there is a slight increase during the second month.

49 1321-1884 (Dec. 3) 1942 Partial Index

- Anterosuperior Costal Mobilization of Gray Schmidt R Finocchio H Aguilar and L L Fernandez —p 1321
Association of Pulmonary Tuberculosis and Primary Bronchial Cancer J Gonzalez Warcalde —p 1328
Sedimentation Speed of Erythrocytes in Clinical Practice M del Sel and J Gersovich —p 1339
Ulcer of Os Uteri D J J Martinez —p 1346
Adiposogenital Dystrophy of Frohlich's Type E Cantilo and C Fernandez Speroni —p 1349
*Roentgen Therapy of Glaucoma M F Terrizzano and A J M Terrizzano —p 1354
Shigella and Salmonella as Causes of Infantile Diarrheas in Rosario E Grichener F Montaut and S J Romer —p 1356
Intermittent Irrigation in Prophylaxis of Malaria in Rice Fields M M Lobo —p 1361
Meningitis Due to Pfeiffer's Bacillus Cured by Sulfapyridine F Bazan and M H Bortagaray —p 1367

Roentgen Therapy of Glaucoma—The Terrizzanos employed roentgen irradiation in 10 cases of glaucoma. One was of traumatic origin, 6 were painful and chronic, 2 were hemorrhagic and in 1 the glaucoma was accompanied by hypertensive iritis. All were improved. Pains and lacrimation either disappeared or improved. Keratoconjunctival inflammation disappeared rapidly and the authors observed no disagreeable reaction. Only 1 of the 10 patients had a relapse after seven months, which could be counteracted by two new irradiations. The authors suggest that the effect of roentgen therapy is due to complex action on intraocular osmotic phenomena, modifications in the capillary circulation, tissue ionization variations in the acid base and colloidal equilibrium and a direct action on the neural terminations. Tension of 1-0 kilovolts with 10 milliamperes at a distance of 50 cm and filtration through 0.25 mm of copper and 1 mm of aluminum gives the best result.

Book Notices

The Hemorrhagic Diseases and the Physiology of Hemostasis By Armand J. Quick, Ph.D., M.D., Associate Professor of Pharmacology, Marquette University School of Medicine, Milwaukee. Cloth Price, \$5. Pp. 410 with 24 illustrations. Springfield, Ill. and Baltimore, Charles C. Thomas, 1942.

The past five years have witnessed great clarification in the mysteries surrounding the various problems relating to blood clotting. In this period a number of seemingly unrelated investigations have converged, newer knowledge regarding prothrombin and methods for its detection, discovery of the antihemorrhagic vitamin K, purification and therapeutic use of heparin, and discovery in sweet clover disease of cattle of the hemorrhagic factor dicumarol. In these investigations the name of Quick has constantly loomed large and it is therefore fitting that the first authoritative monograph on the physiology and clinical manifestations of normal and abnormal hemostasis should have been written by this Marquette University investigator.

The book is distinguished by its thoroughness and clarity, and above all by its wisdom. Well and simply written, it fulfills a long felt need in grouping together in separate chapters the many accumulated bits of knowledge regarding thrombin, prothrombin, thromboplastin, fibrinogen, platelets and anticoagulants. The references, which are unusually complete, are alphabetically grouped at the end of each chapter.

Discussions of physiologic principles are followed by chapters dealing with such clinical conditions as thrombopenic purpura, hemophilia and hypoprothrombinemia, and the uses of heparin and dicumarol. Although a thoroughgoing discussion and painstaking review of the literature distinguish these chapters as well, they suffer somewhat from the author's primary concern with the laboratory rather than with the clinic. Particularly with thrombopenic purpura and hemophilia there is too much reliance on the literature (this is often a bad tendency since "the literature" is made up of good stuff and bad). Also some of the author's pet theories, e.g. a histamine disturbance in purpura and a simple thromboplastin defect in hemophilia, are perhaps unduly emphasized. There is increasing evidence that idiopathic thrombopenic purpura is primarily a splenic dysfunction with remote possibly hormonal inhibition of platelet formation from megakaryocytes in the bone marrow. As regards hemophilia, the clearex experiments of F. H. L. Taylor and his associates at the Thorndike Memorial Laboratories in Boston are dismissed with scant notice. Whether hemophilia is primarily a thromboplastin deficiency or an abnormality in the euglobulin fraction of the plasma is still not entirely settled, perhaps both groups of investigators are right.

These criticisms might be classed as captious, for the book is not only authoritative and thorough but respectful of the large literature and not unmindful of the historical roots of a particular subject. The format, typography and printing are quite in keeping with the general excellence of the work, which is completed by an appendix containing methods for determination of the coagulation time, bleeding time, clot retraction, platelet count, prothrombin and fibrinogen together with methods for assay of thromboplastin, thrombin and heparin. The book is highly recommended for use in general hospitals and clinical laboratories. Collaboration with a clinical investigator might be desirable in a second edition.

Dark Legend: A Study in Murder By Frederic Wertham, Senior Psychiatrist, Department of Hospitals, New York City. Cloth Price, \$2.75. Pp. 270. New York: Duell, Sloan & Pearce, 1941.

This is a popular yet authentic account of a 17 year old matricide. His own story of the events leading to the murder, of the crime itself and the author's analysis of the crime are given. The case is that of an Italian boy who murdered his mother, consciously motivated by his feeling that by her sexual promiscuity she had dishonored the family and the boy's deceased father. The author proceeds to show that more important unconscious motives determined the criminal act. The book is an excellent contribution to forensic psychiatry. The author

shows the dilemma of the psychiatrist faced with the rigid legalistic conceptions of insanity on the one hand and his convictions that as a physician he must regard the boy as ill, must understand the nature of this illness and if possible initiate steps leading to a possible cure. His careful diagnostic discussion of the case will be of interest to all physicians. Having ruled out the major psychoses, he suggests that clinical patterns like that presented in his case could be called "catathymic crises," a circumscribed mental disorder in which the central manifestation is the development of the idea that "a violent act—against another person or oneself—is the only solution to a profound conflict whose real nature remains below the threshold of the consciousness of the patient." The book is written in popular style and the author offers as background for his observations numerous references to the tragedies of Hamlet and Orestes, in which he shows that the reactions of his young patient to his conflictual situation are in many precise respects those of Hamlet or of Orestes. In other words he makes it clear that matricide is based on unconscious motivations, better recognized thus far by the poets than by the professional students of human behavior, at least until recent years. This book should be in every medical library.

Orthopedic Nursing: Content and Method of the Teaching Program in Schools of Nursing By Carmelita Calderwood, R.N., Consultant in Orthopedic Nursing, National League of Nursing Education, New York. Paper, Pp. 64. New York: Joint Orthopedic Nursing Advisory Service of the National Organization for Public Health Nursing and the National League of Nursing Education, 1942.

Too little consideration has been devoted to orthopedic instruction during the training of student nurses. Satisfactory care of the orthopedic patient requires special knowledge of technique and procedures not possessed by the average graduate nurse. This small pamphlet, published and distributed by the Joint Orthopedic Nursing Advisory Services of the National Organization for Public Health Nursing and the National League of Nursing Education, is a much needed outline of methods and materials which should be available to those who are responsible for the teaching program in every school of nursing.

Aids to the Investigation of Peripheral Nerve Injuries Medical Research Council Nerve Injuries Committee. M. R. C. War Memorandum No. 1. Paper. Price 60 cents, 2s. Pp. 48 with 74 illustrations. New York: British Information Services, London: His Majesty's Stationery Office, 1942.

As an aid to the diagnosis of lesions of the peripheral nerves, this pamphlet illustrates in a series of excellent pictures the actions of the various muscles of the body. With the accompanying diagrams giving the general course of the principal nerves of the body and the muscles which they supply, a complete examination of the peripheral nervous system can be easily carried out. The pictures are exceptionally clear and the diagrams excellent. The material here presented in a compact form could be found only in numerous textbooks. It was prepared by the staff of the department of surgery of the University of Edinburgh.

Fundamental Principles of Bacteriology By A. J. Salle, B.S., M.S., Ph.D., Associate Professor of Bacteriology, University of California, Los Angeles. Second edition. Cloth. Price \$4. Pp. 643 with 213 illustrations. New York & London: McGraw-Hill Book Company, Inc., 1943.

This edition contains more textbook material than the previous edition. The laboratory procedures have been taken out of the second edition and included in a separate manual prepared by the author. Numerous chemical formulas are given especially in the chapters on biologic stains, disinfection and disinfectants, enzymes of bacteria, the respiration of bacteria, protein decomposition, industrial fermentations, the bacteriology of water and the bacteriology of soil. These excellent chemical illustrations make it unnecessary to consult textbooks of chemistry for a complete understanding of the subjects. The book is not a treatise on medical bacteriology since only three of the twenty-seven chapters are devoted to this field. The fundamentals of bacteriology are well covered and the book can be heartily recommended to students in basic courses in bacteriology and to physicians who wish to bring their knowledge of bacteriology up to date.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

RAPID TREATMENT OF EARLY SYPHILIS

To the Editor—In *Collier's* April 10, 1943 it is stated that mapharsen used three times a week with bismuth for eight weeks produces cures of syphilis. Is this true or is it like when arsenamine came in use and it was considered that one dose produced a cure? How often should mapharsen be used, three times a week or one time a week? Has any change of time been accepted for cures or is the eighteen month treatment still considered necessary?

D. D. DeNeen, M.D., Las Cruces, N. M.

To the Editor—In the April 10 issue of *Collier's* there is an article by J. D. Ratcliff in regard to treatment of syphilis in Louisiana. He states that syphilis is cured in two months by three doses of mapharsen weekly plus one injection of bismuth weekly. Has this outline been tried long enough to know that it will give complete cure in this short time? And are these two given at the same time?

W. L. Boswell, M.D., Clarendon, Ark.

ANSWER—Eagle and Hogan have attempted to approach the treatment of syphilis in man by experimental study of rabbit syphilis. While a review of all the work they have done would be impossible in this reply, it may be stated that even though rabbit syphilis is not necessarily human syphilis a great number of the truths applicable to the one will apply to the human being and vice versa. Among other things they have found that until the time limits within which infectious relapse may occur in the syphilized rabbit have been more thoroughly defined the absolute curative dose of arsenicals in rabbit syphilis cannot be determined by lymph node transfer. Even data as to the relative efficacy of various treatment procedures must be interpreted in the light of the time allowed to elapse between treatment and the following lymph node transfer. Their studies showed that, six months after treatment in a large series of rabbits apparently cured at three months as judged by lymph node transfer, 37 per cent of them were still infectious. Apparently the disease was actually quiescent at three months after treatment but not cured. And may there not be a lesson in this in considering the treatment of human syphilis?

As the result of their studies on rabbit syphilis and of the conclusions that they felt justified in drawing it has been suggested by them that an intravenous injection of an arsenical be given three times a week to human beings and that an intramuscular injection of a bismuth preparation be given once a week. This work has been carried on for an insufficient length of time to allow any one to draw definite conclusions.

In 1937 Thomas and Wexler increased the number of injections of mapharsen from one to two a week at their clinic in Bellevue Hospital, and by 1938 they had raised the number to three a week for a period of four weeks, for all patients with early infectious syphilis. In the light of the publicity that has recently been given to the intravenous drip treatment they determined to attempt rapid massive treatment of syphilis without the continuous drip, as their facilities at Bellevue did not easily allow the latter. They now combine their intravenous injections of an arsenical preparation once a day for ten days with fever treatment achieved by an intravenous injection of typhoid-paratyphoid vaccine given on the second, fourth, sixth and eighth days. They feel that their results with this form of therapy for early syphilis are quite satisfactory. Naturally all the patients are hospitalized. They are studied carefully and everything is done for them by experts in the field.

Both these techniques indicate experimental forms of treatment of acute syphilis that are being employed at present. Moreover the intravenous drip treatment is still being employed in certain treatment centers. Naturally none of these forms of therapy are yet ready to be carried out by the inexperienced. They include far more than simply the giving of an injection. The physician attending such cases must be well acquainted not only with the diagnosis of the disease but also with the handling of any emergencies that may arise where such heavy therapy is being employed. Also he must be competent to follow the patient afterward and to interpret any unusual reactions or manifestations that appear. Unfortunately, the treatment of acute syphilis is not yet simple.

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HAND MADE AND MACHINE MADE CIGARS

To the Editor—What, if any deleterious effects have been noted in smoking cigars made by the dirty paste hand method as compared to the precision like and sanitary machine produced cigars? Ph G New York

ANSWER—For centuries the manufacture of cigars represented a highly skilled and artistic craft, whose products were highly prized. When machine made cigars were first introduced they were sold at lower prices because of the general prejudice in favor of the hand made variety. The individual selection, orientation, packing and sealing of the filler and wrapper in hand made cigars were especially emphasized.

Within the past generation energetic attempts have been made by advertising agencies to reverse this popular attitude. The advertising has particularly stressed the esthetically repulsive as well as hygienically unsound practice of licking the edge of the wrapper leaf or the tip reportedly practiced by many of the skilled hand workers. The survival of tubercle bacilli on tobacco leaf was demonstrated by Kerez nearly half a century ago and the occurrence of tubercle bacilli in cigars so made has been reported repeatedly since. The high incidence of tuberculosis among cigar makers which was noted by a number of workers a generation ago, emphasized the danger from that source.

The use of a paste or gum applied with a brush which is the common method of sealing hand made cigars today may involve the possibility of contamination with organisms from the paste or from the hand of the workers but tubercle bacilli are not so apt to be transmitted in this way. Other organisms may be demonstrated in cigars prepared in this way but their viability and virulence are more apt to be eliminated by drying and standing before the cigars are actually used. Accordingly, disease due to pyogenic cocci, *Treponema pallidum* and other possible vectors has yet to be traced to contamination during the manufacture of cigars.

The hazard from infection through hand made cigars need not be exaggerated. The danger of immediate transfer of infection from the passing of a cigar from mouth to mouth is apparently much less than with the more frequently observed practice with cigarettes and pipes. But it is questionable whether the esthetic appreciation of the traditional art of the cigar maker outweighs the esthetic objections to the uncleanness traditionally associated with his product.

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MULTIPLE DOSES OF MAPHARSEN FOR EARLY SYPHILIS

To the Editor—In view of the recent so called five day treatment for early syphilis by the continuous administration of mapharsen, would it be good practice to give mapharsen in the usual dose twice or three times a week in early syphilis instead of once a week? If so has there been any work done using this plan of treatment and where could I find any literature pertaining to this particular question?

U. S. Hargrove, M.D., Baton Rouge, La.

ANSWER—Yes, there have been many attempts to use mapharsen more frequently than once a week in the treatment of early syphilis. For example, the attempt has been made to give an injection of mapharsen daily for a period of twenty or thirty days. Naturally the reactions were numerous enough so that this practice has since been discontinued. Thomas and his co-workers (Cere-

bral Reactions Associated with Massive Mapharsen Treatment of Early Syphilis. *Int J Syph, Gonorr & Ven Dis* 26:529 [Sept.] 1942) have done a great deal of work along this line, trying various methods of employing arsenicals in early syphilis, as have also Eagle and Hogan (Intravenous Drip and Other Intensive Methods for Treatment of Early Syphilis, *Science* 95:360 [April 3] 1942). It may be concluded that it has been found good practice to give as much arsenical therapy as is safe in the early stages of the syphilis. Aguin Cole (Syphilotherapy: Recent Advances, *Int J Syph, Gonorr & Ven Dis* 10:91 [1931]) has suggested the use of more frequent injections than once a week in the early stages of syphilis. In fact, in many of the syphilis clinics it has been the practice for several years to use multiple doses of mapharsen for the first few weeks of treatment. It should be understood that nearly all this work has been done in university clinics or in syphilis clinics under the best of conditions where every facility is at hand to study the patient and to observe reactions.

As yet it is too early for such therapy to be employed on an extensive scale in private practice. Naturally it is to be hoped that as a result of all these observations much good will be achieved in the way of better arsenical therapy for early syphilis.

CONTRAINDICATIONS FOR DIETHYLSTILBESTROL

To the Editor—Kindly give me the contraindications for the use of diethylstilbestrol and any possible harmful effects of its use.

J. Howard Gould, M.D., Ridgewood, N. Y.

ANSWER—Diethylstilbestrol is the potent estrogenic substance made synthetically. The contraindications for its use are the same as for the natural estrogens. These include excessive menstrual flow, prolonged menstrual flow, the presence of any neoplastic disorder in the genitalia or in the breast, and some authors think the presence of neoplasia in any part of the body. The latter is debatable. In addition, diethylstilbestrol and its derivatives have an apparent tendency to cause nausea and emesis in a considerably larger number of patients than suffer the discomfort from the use of even very large doses of the natural estrogen. This is a temporary phenomenon and is apparently produced not in the gastrointestinal tract but centrally. Occasional cases of a skin reaction have been reported. Used within the limits of dosage which are conventionally necessary for the control of climacteric symptoms for the relief of breast discomfort post partum or for the treatment of vaginitis in the preadolescent or the postmenopausal patient, there is no obvious harm if nausea and emesis do not occur.

BLOOD FOR TRANSFUSION FROM EPILEPTICS

To the Editor—The question has been raised as to whether or not there is any contraindication to using the blood of patients with epilepsy for transfusion into nonepileptic persons. What would be the proper answer to a group of epileptic patients who have volunteered to donate blood to the Red Cross and other similar organizations?

Willard W. Dickerson, M.D., Caro, Mich.

ANSWER—Epilepsy is not an infectious disease and, except immediately after a convulsion, the blood of physically normal patients is normal. Therefore, provided adult epileptic patients are in proper physical condition, the use of their blood for transfusion purposes is not contraindicated. If part of a blood pool, the amount of contained phenobarbital or phenytoin sodium would be infinitesimal. Probably the loss of a pint of blood would not increase seizures, but if the institutional diet is relatively poor in protein the patient's diet and hemoglobin should receive special attention. Because epileptic persons are denied service in the armed forces and to a large extent in industry, the opportunity to participate in supplying blood for the common good should be beneficial to their morale. Inmates of hospitals and prisons would seem to be a logical source of blood which is to be used in the war effort.

HONEY FOR INFANT FEEDING

To the Editor—Will you kindly advise me regarding the use of honey for infant feeding?

M.D., Vermont

ANSWER—Honey consists of a mixture of sugars, chiefly levulose and dextrose with some cane sugar. It was formerly used as the carbohydrate addition to any artificial mixture in amounts of 1 ounce in a twenty-four hour feeding, although its ease in digestion makes it possible to use more of it than of other carbohydrates. It was not believed that it possessed any special advantages over other forms of sugars and was thought to have allergic tendencies for some infants. Recently it has come into use again. Lahdensuo (*Acta Soc med fenn duodecim*

15:1 [series B, No. 3] 1931) reported that it decreased diarrhea and vomiting, and Knott, Shukers and Schlutz (*J Pediatr* 19:485 [Oct.] 1941) that it seemed to have a beneficial effect on calcium retention.

EFFECT OF MALARIA ON EPILEPSY

To the Editor—Does malaria exert a healing effect on epilepsy? Hippocrates wrote (*Epid I*, sect III) "The least dangerous, mildest and most prolonged of all is quartan fever, for it is not only such in itself but it also removes other types of dangerous diseases," and (*Epid VI*, sect VI 5) "Patients suffering from the great disease (epilepsy) not affected by quartan fever, if they become affected by it, then they are freed from epilepsy." Also Aphor. V, 70, "Persons attacked with quartans are not readily attacked with convulsions, or if previously attacked with convulsions, they cease if a quartan supervenes." Rhuphos also testifies to this truth. Reference: Max Neuberg, *The Doctrine of the Healing Power of Nature Throughout the Course of Time*, translated by L. J. Boyd, New York.

Fred Stenn, Lieut., M.C., A.U.S.

ANSWER—These references to ancient authors are of great interest historically, but the observations presumably were based on uncontrolled observations. The inadequate modern observations on the subject have been reviewed by Gladys C. Terry (*Fever and Psychoses*, New York, Paul B. Hoeber, Inc., 1939). She gives three references to articles dealing with the effect of natural malaria infection and six references to the effect of artificially induced malaria. Presumably any favorable results which may be observed are due to the fever and not to the plasmodia. The author also summarizes the influence on seizures or infections other than malaria, and of hyperpyrexia induced by typhoid or sulfur or by diathermy. Results which were at least temporarily favorable were reported by the majority of authors, but the smallness of groups observed, the lack of control material and the tendency of workers to withhold publication of "negative" results do not warrant the drawing of conclusions. The subject deserves further study. In children fever oftentimes induces convulsions.

REMOVAL OF FISH HOOKS

To the Editor—Some time ago in a fishing magazine I saw the following advice as to the method of removing a fish hook from one's anatomy. I should like to say that I don't agree with the method at all, owing to the fact that the barb in reverse would be most likely to do severe damage to nearby nerves and vessels. I agree with just the thing they do not agree with, that is the "push through" method, which I understand to mean to push the point of the hook through at the nearest point to the surface and then cut the barb off and slip the hook out. I should like to have your opinion on this matter. This is a quotation: "If you run a hook into your finger, beyond the barb, while going fishing or going over your gear this winter, forget that old gag about cutting it off short and pushing it through. Instead, take a pair of small nosed pliers, take a good hold on the hook yourself or have some one officiate for you, and yank. We have had plenty of hooks taken out of our own anatomy this way and we can vouch for its efficiency. Even big hooks come out without doing any real damage. Personally we do not go for that 'push through' technique at all at all."

R. H. McPherron, M.D., Chicago

ANSWER—By all odds the "push through" method is the best one for the removal of a fish hook in which the barb has gone in beneath the skin. Circumstances can conceivably arise in which it would require pushing the fish hook through a considerable distance by a curved route before the barb emerges from the skin. When this occurs, it would seem better to make a small incision down to the barb before pulling it out backward.

AMPHETAMINE FOR OBESITY

To the Editor—In reply to a query regarding the use of amphetamine and its dextroisomer in obesity published in *The Journal*, March 6, 1943, page 796, it is stated ambiguously that the d form "is said to be two to four times more active than the levo form or the dl mixture." Alles (*Univ California Pub, Pharmacol* 1:129, 1939) showed that the optical isomers are equipotent in their various peripheral actions, including that on the rabbit ileum; this equivalence of action has been confirmed (Emerson, *G. A. J. Pharmacol & Exper Therap* 76:11 [Sept.] 1942) for blood pressure in dogs. Alles's finding of a greater central stimulant action of the d form, two to four times that of the l amine or one and a half to two times that of the racemic, has been noted also in man (Prinzmetal, Myron, and Alles, *G. A. J. Proc Soc Exper Biol & Med* 12:206 [Oct.] 1939), but the equivalent sympathomimetic of the isomers does not appear to be as widely recognized. If the action in obesity depends entirely on central effects, through influencing appetite, the d form is likely to be more potent though not necessarily preferable to the racemic in the absence of cardiac disease or hypertension. Dennis Jackson's book *Experimental Pharmacology and Materia Medica* (St. Louis, C. V. Mosby Company, 1939) includes directions for studying effects of amphetamine on hunger contractions in decerebrate pigeons, but to my knowledge there are no published results of this technique.

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THE GENESIS AND RESOLUTION OF PULMONARY TRANSUDATES AND EXUDATES

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AND

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BOSTON

The existence of pulmonary edema is one of the first conditions that medical students are sure they have found. Listening to the chest in cases of cardiac decompensation, one hears rales of varying magnitude and as one progresses toward the bases of the lungs the characteristic signs of edema may be lost. The student being preternaturally alert, says at once to himself and to nearby nurses "Ah, a pleural effusion!"

Forthwith a new issue arises. To tap or not to tap—that is the question! Having been a medical house officer and a medical resident with a surgical complex kept under with difficulty, I usually found a reason for trying to drain this abnormal collection of fluid and when I scored heavily in my collection I was correspondingly gratified. That the fluid in question reaccumulated in a few hours did not bother me. I had done something positive, something which could be shown as action in the attempt to cure a sick patient.

ANATOMY AND PHYSIOLOGY OF THE LUNGS

What, then, can one say as to the reasons why this patient's lungs and pleural sacs filled with fluid and his access to oxygen became less and less?

Let me call attention first to a few bits of anatomy and physiology. The lungs of man are so organized as to provide astonishing ability in the meeting of sudden strains. A healthy young adult can readily increase his pulmonary ventilation from a resting minute volume of 8 liters to 125 liters during exercise and with this change his cardiac output may rise from 5 liters a minute to perhaps 20 liters a minute.

In spite of this astonishing adaptability the lungs of man and of mammals are a critically vulnerable link in efficiency in the sense that with each cardiac systole the lungs receive from the right ventricle as much blood as the left ventricle pumps out to the body as a whole. Ordinarily the lungs are not a reservoir of blood though, if the heart is failing they may become so. Let us trace the physiology of the development of pulmonary edema, one of the most frequent of clinical experiences.

The lungs possess a blood capacity in terms of instant cardiac output equal to that of the entire body. Furthermore, many measurements of the pressure in the pulmonary artery of dogs and cats have been singularly uniform for the species. Also the effects of measures designed to increase the pressure in the pulmonary artery such as the injection of ephedrine or very considerable augmentation of the blood flow into the heart cause comparatively little change in pulmonary arterial pressure. These facts mean that in the ordinary course of human experience when you run up a long flight of stairs in order not to be unduly late for a class or when you find yourself in one of those interminable deuce sets in tennis—when you do not want to go on and cannot stop—your peripheral or general arterial blood pressure rises but the pressure in the pulmonary vessels is little changed.

No one has measured the pressure in the capillaries of the lungs. It is an intriguing problem. Landis¹ summarized his direct measurements of capillary pressure and all of us know that under continuous intratracheal insufflation with the lungs quiescent but oxygen supply adequate one might measure pulmonary capillary pressure. Yet the figure obtained would not be satisfactory since the lungs would not be in motion and the negative pressure in the chest which is a fluctuant factor would be absent.

I have said that under the usual experiences of exercise in which systemic blood pressure is increased and blood is shunted to the active muscles pulmonary blood pressure rises insignificantly. During the past seventy-five years many investigators have striven to show that the pulmonary circulation is under some sort of vasomotor control. They have not succeeded and the reason for this failure rests in the very nature of the pulmonary oxygenating mechanism. As far as is possible the lungs must receive and oxygenate all the blood brought to them. This is accomplished by adjusting the breathing and by letting the increased blood flow spread passively through a capillary bed great enough to carry all the blood that can be sent to it even under the most extreme conditions of cardiac output. This simple fact is one of the fundamental conceptions of clinical physiology and we may now attempt to explore its implications.

The problems of the formation of pulmonary exudates and transudates are complicated by our dependence for knowledge on sections of dead lungs. We are almost or necessarily preoccupied by what is seen in the alveoli and forget that the fluid which escapes from the blood capillaries must first of all be interstitial must to a degree at least thicken the alveolar partitions.

which normally are just great enough in cross section to contain the pulmonary capillaries and nothing else. Even the lymphatics do not extend into the alveolar wall past the very beginning of the respiratory portion, the atrium. It is clear that any foreign material in the alveolar wall must interpose a barrier to exchange of

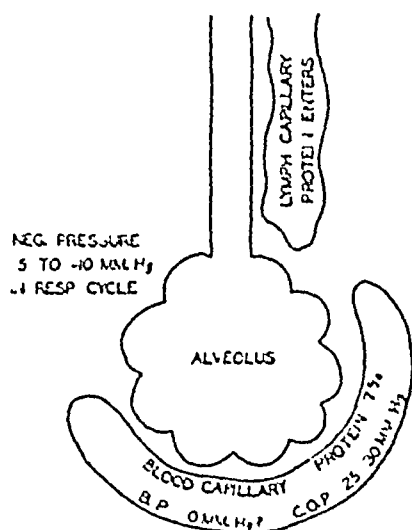


FIG. 1—Diagram of alveolus, blood capillary and lymphatic in the mammalian thorax

gas. I believe this fact was first thoroughly or better generally appreciated at the time of the initial gas attack in the last war, when the Germans used chlorine at Ypres. Obviously, an increase in the interstitial fluid of the lungs cannot long remain out of the alveoli, and with alveolar and bronchiolar filling by transudate or exudate the individual is progressively separated from his air supply.

Let us return now to normal matters. On account of the vast extent of the pulmonary capillary bed and the great elasticity of the lung tissue, it is probable that the pressure in the pulmonary capillaries is low—let us guess around 5 to 10 mm. of mercury instead of 20 mm. of mercury for typical systemic capillaries. The colloid osmotic pressure of the blood going through the lungs is, however, normal and much higher than the capillary blood pressure. The situation to be discussed is shown diagrammatically in figure 1.

Clearly the arrangement found in the lungs makes for dryness. The hydrostatic pressure tending to force fluid and solutes out of the blood capillaries, is probably well below the osmotic pressure of the blood proteins, which causes absorption of water. It would seem that if the capillaries of the lungs resembled those in other parts of the body there would be little leakage of proteinized fluid from the capillaries and consequently no normal use for the lymphatics of the lungs. But hardly any essential part of the mammalian body has a more profuse supply of lymphatic vessels, and, especially in man, lymphoid tissues—both unorganized collections of lymphocytes and more significantly definite lymph nodes—are extraordinarily numerous.

In 1940 we² isolated the lymph drainage from the heart of the dog, collected cardiac lymph and showed that the flow and composition of this lymph could readily be correlated with such straightforward factors as increased cardiac output and anoxia. As is so often the case, during active experimentation other possibilities were evident—lymphatics near the cardiac vessel—and it seemed that these must have come from the lungs. It was a welcome sight, since long before a whole year had been spent in trying to collect lymph from the lungs. A few times a bloody fluid was secured, which was certainly lymph but which had been rendered highly abnormal by the clumsiness of our operative approach.

Today it is easy to collect lymph from the lungs alone, but to do it with absolute certainty the anterior

mediastinum must be opened under artificial respiration. There is an alternative to this formidable operation. If the right lymphatic duct is cannulated under natural breathing one obtains pulmonary and cardiac lymph. In an experiment in which anoxia is avoided and cardiac output is shown to remain constant or to fall it is reasonable to assume that increase in lymph flow from the right duct comes from the lung or is the result of experimental manipulations aimed at the lungs alone. The anatomy essential to support this conclusion is shown in figures 2 and 3. In figure 2³ the heart and great vessels are shown from the front. The right lymphatic duct enters the right subclavian vein above a lymph node, which is quite constant in position. Two other nodes are found between the superior vena cava and the aorta. The lymphatics in this chain drain the heart and lungs and enter the right lymphatic duct. For simplicity the vessels involved are shown singly, but a number of afferent lymphatics enter each node. With experience one learns to distinguish the smaller cardiac lymphatic passing to the upper node from the numerous lung vessels. Figure 3 shows the lymphatics of the lungs from the rear, it is clear that drainage from both lungs goes to the right lymphatic duct. Only the upper part of the left lung supplies lymph to the thoracic duct.

A final point relative to the right duct in the dog is the fact that in at least half the animals in which the right duct has been cannulated chyle has flowed freely from it. This fact has not been realized by the biochemists who have attempted to measure fat absorption by means of thoracic duct lymph, since in many cases an almost equal amount of chyle enters the blood on the right side and has been interpreted as direct blood absorption of fat.

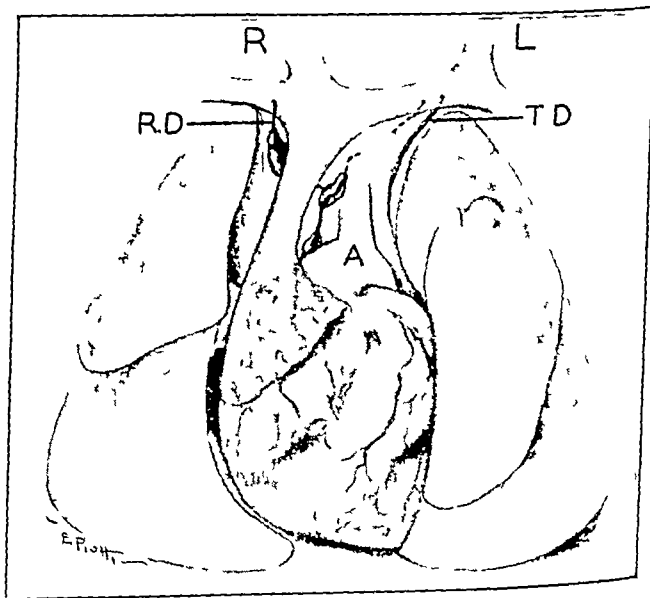


Fig. 2—The lymphatic drainage of the lungs of the dog, showing the heart, lungs and great vessels viewed anteriorly. The superior vena cava is the prominent landmark. On the right there is a single node not far below the subclavian vein. To the left of this vessel two other nodes are usually found, and from the upper one an inconstant vessel may occasionally cross to the thoracic duct.

THE FORMATION OF TRANSUDATES

From what has been said it is easy to see that in studying the formation of pulmonary transudates and exudates two methods of attack may be employed. In

2 Drinker, C. K., Warren, Madeline F., Maurer, F. W., and McCarrall, Jane D. The Flow, Pressure and Composition of Cardiac Lymph, *Am J Physiol* 130: 43 (July) 1940.

3 Warren, Madeline F., Peterson, Delores K., and Drinker, C. K. The Effects of Heightened Negative Pressure in the Chest Together with Further Experiments on Anoxia in Increasing the Flow of Lymph, *Am J Physiol* 137: 641 (Nov.) 1942.

many dogs the right lymphatic duct may be cannulated without opening the chest and the output of the heart and the oxygenation of the blood followed constantly. If these things are done and the lymph from the right duct does not contain chyle, what one collects comes,

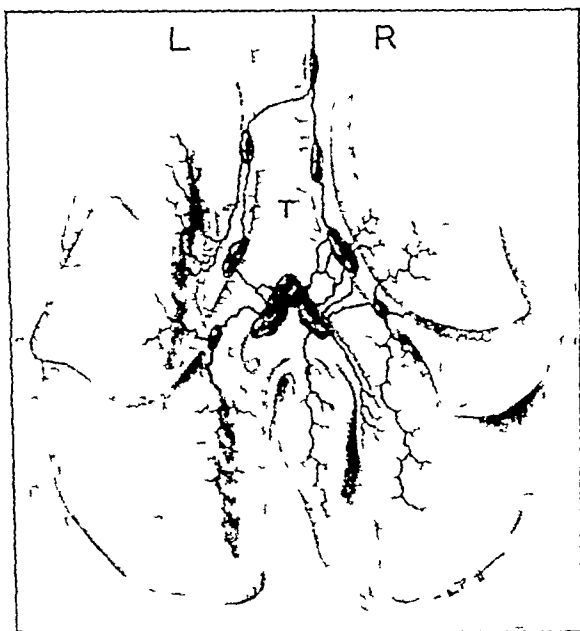


Fig 3—Illustrating a fact found in almost all cases—that lymph from the lungs drains ultimately to the right side. It is a rear view of the lymphatic system and lungs of the dog.

in the main, from the lungs and represents practically the total lung delivery at the moment.

In order to follow the production of pulmonary transudates I shall start with a simple experiment. In figure 4 such an attempt is shown. In this case the right lymphatic duct was cannulated and the lymph found chyle free. Through a tracheal cannula the dog, anesthetized with soluble barbitol, breathed pure oxygen against no resistance. At the end of an hour and a half lymph flow from the right duct was 11 mg a minute and, as is usual, contained a few red blood cells. The breathing was then shifted, by turning a three way valve, so that inspiration was made difficult by cotton wool resistance. At the height of inspiration intrathoracic negative pressure reached 56 mm of mercury. The flow of lymph increased at once and the lymph became bloody.

This seems like an obvious finding, but it happens to be particularly important today, when many of us are working on different sorts of masks without much knowledge of what abnormal resistance to breathing may accomplish. In 1933 Yamada⁴ made pleural punctures on several hundred normal Japanese soldiers. He obtained fluid from 29 per cent of his subjects, if they had been at rest, and from 70 per cent following severe work. The lesson of this observation and of our experiments rests in the fact that severe respiratory movements, which increase negative pressure in the chest will tend to produce pleural and pulmonary exudates even if oxygen lack is avoided, and anoxia as you shall see, is another potent cause of pulmonary

edema. Yamada's observations are, I think, common to us all. Who of you have failed to notice that, if you push yourselves too hard physically, you begin to cough and what you bring up is a watery salty fluid which is not disagreeable, but you know it is not normal and you have extended yourself too far.

In a person with cardiac decompensation there often develops a collection of fluid in the pleural sacs and with this collection there are abundant signs that his lungs are soggy from extravascular fluid. These situations are thought of as being due to increased pressure in the pulmonary vessels. I doubt this explanation. I have often increased pressure in the pulmonary capillaries by gradual compression of the pulmonary veins but this has been done in normal animals with entirely healthy hearts. One can readily force excessive leakage of fluid in the course of such experiments, but the right ventricle is capable of sustaining high pressures for some time and so forces fluid out of the capillaries rather slowly. In the usual case of cardiac decompensation, with valvular heart disease, matters progress gradually. Consider whether dyspnea constantly tending to draw fluid from the pulmonary capillaries by increased negative pressure in the chest, together with progressive anoxia, is not an important feature of the situation and an element in the clinical problem which should be combated by every means in one's power. Cardiac dyspnea is an exhausting and distressing experience but one which the physician rarely thinks much of treating until it is pronounced. It is as I have indicated, capable of adding to the fluid in the lungs and pleural sacs.

At the same time there is usually anoxia, which is so important for altering the permeability of the pulmonary capillaries toward increased leakage. This matter of anoxia as an element in the production of

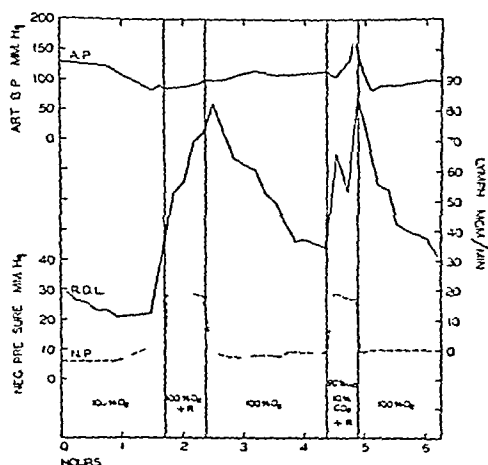


Fig 4—Lymph flow as a result of breathing against inspiratory resistance. Upper curve (A. P.) indicates arterial pressure, middle curve (R. D. L.) lymph from the right lymphatic duct in milligrams per minute, lower curve (V. P.) negative pressure in the chest. Lymph flow became 11 mg a minute after an hour and a half of unresisted breathing. When inspiration was impeded by cotton wool resistance lymph flow rose to 82.5 mg a minute. On removal of resistance flow fell but again increased when resistance was reimposed and 10 per cent carbon dioxide was added to the oxygen in order to force maximal inspiratory effort. (From Warren, Peterson and Drinker².)

pulmonary edema has been easy to explore experimentally. The chest of a dog is opened by removing the upper part of the sternum down to the third ribs which are cut. This exposure brings the base of the

⁴ Yamada, So Sabro and assistants. *Leber die seröse Flüssigkeit in der Pleurahöhle der gesunden Menschen*. *Ztschr. f. d. exper. Med.* 30: 342, 1933.

heart into view and the top of the upper lobes of the lungs. It is not a radical opening of the chest and leaves the lungs well covered and the heart undisturbed. Under these circumstances, which require artificial respiration, one may collect lymph during ventilation with pure oxygen and then shift suddenly to ventilation

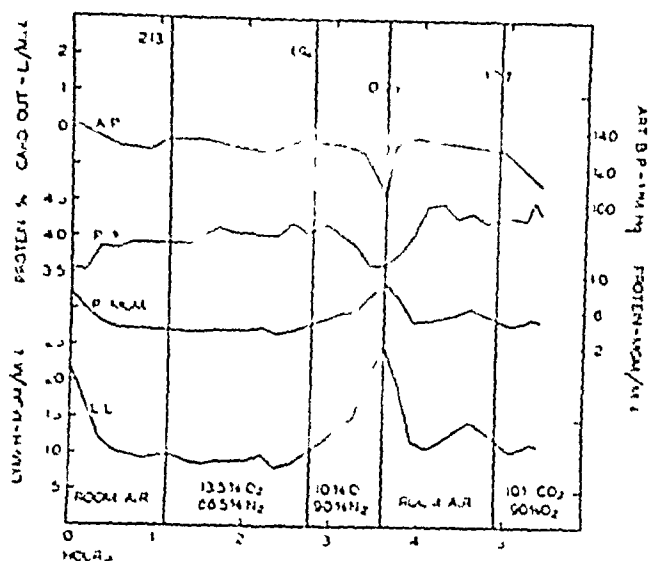


Fig. 5—The flow of lymph from the lungs when alveolar oxygen is lowered. Dots with figures, cardiac output in liters per minute; upper curve shows arterial blood pressure; second curve, protein in lymph; third curve, protein in lung lymph; fourth curve, milligrams of lymph from the lungs per minute. Between the vertical lines the animal received gas mixtures as shown; the rate and stroke of the respiration pump being always uniform. (From Warren, Peterson and Drinker²³)

with oxygen poor mixtures. In order to prevent any tendency to respiratory movements during periods of oxygen lack the animals may be curarized in addition to the complete soluble barbital anesthesia. The results are shown typically in figure 5. In this instance ventilation of the animal with air was first instituted. In this experiment lymph flow from the lungs became steady at 97 mg a minute. Under these circumstances the oxygen content of the blood was 16.08 volumes per cent and the cardiac output 2.13 liters a minute. With the same rate and stroke of the respiration pump the ventilation was then changed to 13.5 per cent oxygen and 86.5 per cent nitrogen. Cardiac output fell to 1.92 liters a minute and the oxygen content of the blood to 9.48 volumes per cent. This change did not increase lymph flow or alter lymph protein concentration. When however, ventilation was made 10 per cent oxygen and 90 per cent nitrogen, lymph flow rose at once. Cardiac output fell to 0.95 liter a minute and the oxygen saturation of the arterial blood became 4.23 volumes per cent. This very low figure could not be endured long. The interesting point is not that the capillaries of the lungs leaked considerably under these conditions but that, just as soon as ventilation was shifted back to room air, lymph flow fell at once to the figure which existed before the reduction in oxygen began.

This is an important and sensitive indication of the way in which very acute oxygen lack causes increased free fluid in the lungs. It should be noticed too how quickly adequate oxygen in the ventilating air stopped a pernicious process. When oxygen lack causes the pulmonary capillaries to begin to leak, the very fact of increased fluid in the lung tissues, and even more in the alveoli, cuts down the ease of passage of oxygen into the blood capillaries.

The clinical implications of these findings are sufficiently obvious. The capillaries of the lungs are in a unique position. They gain then oxygen from the air not secondarily from the blood. From what I have had an opportunity to see experimentally, I believe that clinically we fail to appreciate the patient's need for oxygen until too much time has passed. If you decide that a man needs oxygen, it is my belief that you are usually about twelve hours late. The time to use oxygen in treatment is before you think it is necessary. Such a course of action is expensive and formidable but if you wait until leakage from the pulmonary vessels is pronounced it will be difficult to check the cycle that has begun. It is better, then, to waste oxygen than to risk the circumstances which may attend delay.

EXUDATES

So much for an inadequate view of the formation of transudates. It irritation by chemicals, viruses or bacteria causes exudation from the pulmonary capillaries; the results for the patient are usually worse than when transudation occurs. The entrance of air into the alveoli is blocked by coagulated exudate and cells in the finer bronchi and alveoli. The pulmonary lymphatics in their turn may readily be plugged by thrombi, and the situation makes for maximal difficulty in lung function. Not only is the lung flooded by exudate but fibrin formation interferes with removal of the exudate. When clotting occurs in and about an area of inflammation healing takes place either wholly or partially by scar formation. This may do relatively little harm in many parts of the body, but in the lungs there is inevitable loss of function.

Solution of the exudate and removal of small molecules through vascular absorption is the most efficient and rapid means of clearing the lungs of exudates. If the irritant does not destroy cells extensively coagulation of the exudate may be slight, and in this case it

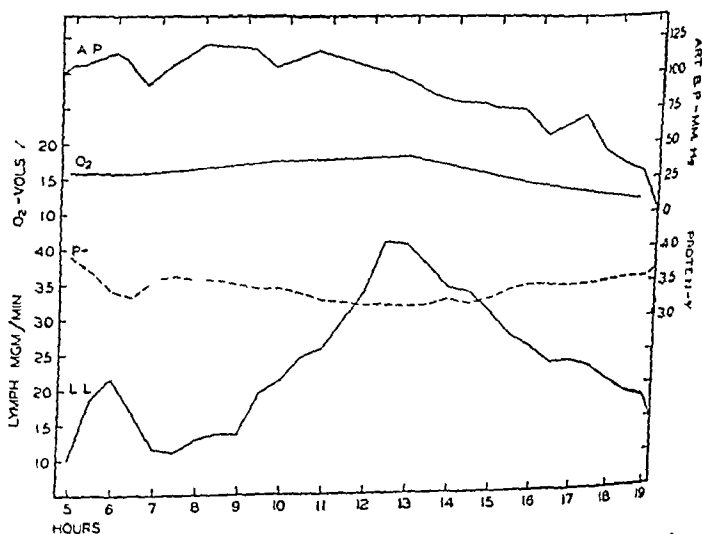


Fig. 6—The flow and composition of lymph from the lungs in a dog given 45 parts per million of chlorine for thirty minutes three hours prior to the beginning of the record. The initial increase in lymph flow is due to obstruction and manipulation during the operation. The real change due to chlorine began eight hours after administration of the gas. Upper curve (A P), indicates arterial blood pressure; second curve (O₂) oxygen in arterial blood; third curve (P), lymph protein in percentage; fourth curve (L L), lymph flow in milligrams per minute.

will drain steadily through the lymphatics. In all parts of the body the lymphatics carry away substances from the tissues which as such are not absorbable by the blood capillaries. Most notable of these are the blood

proteins, which leak in slight amounts from the capillaries practically all over the body, exceptions being found in the renal glomeruli, the choroid plexuses and the capillaries of the ciliary body. From the lungs as has been shown in figures 2, 3, 4 and 5, lymph flows continuously. It contains 2 to 3.75 per cent of blood proteins and clots, but clotting does not occur in the lung tissue or lymphatics unless irritation has been severe enough to kill cells and release thromboplastic material.

As in the case of lymph movement all over the body, motion of the lungs is extremely important for causing lymph flow. A quiescent lung produces almost no lymph from large collecting trunks and what little can be garnered is due to the pulsation of the pulmonary vessels.

The lungs are peculiarly adapted to absorb water by virtue of their vast capillary bed. Colin⁵ in 1873 gave 21 liters of water to a horse intratracheally in three and one-half hours without the slightest detriment to the animal. When one considers the low hydrostatic pressure in the pulmonary capillaries and the comparatively high colloid osmotic pressure of the blood proteins, it is not surprising that this is the case. The lungs are thus beautifully organized to rid themselves of excess water unless, as is particularly apt to occur in young patients with mitral stenosis and with an abnormal resistance to flow of blood through the lungs, transudates are formed and, as a result of the increased pressure in the alveolar capillaries, water cannot be absorbed.

If the lungs of a healthy anesthetized dog are irritated with chlorine in an amount which would be fatal if the animal was permitted to recover from the anesthetic, a curious series of events ensues. Using 45 parts per million of chlorine for half an hour, one notices no change in lymph flow or composition for about eight hours (fig. 6). In this experiment the chest of the animal is opened and ventilation by air is provided by a pump which operates uniformly. The result is a very vivid expression of the way in which certain lung irritants act. Examinations of patients and trials on animals have shown that after a number of sorts of gassing there is a period of varying length in which the victim is quite normal. This does not take place if the gas is too concentrated, but in the case of common offenders—nitrogen dioxide, chlorine and phosgene—the individual may have breathed a fatal dose of the gas but his dangerous symptoms do not appear for some time.

The dog in this experiment drowned in a pulmonary exudate which did not begin to accumulate significantly until eight hours after the gassing. This exudate eventually clotted owing to cell damage as one can readily see in sections of the lung. Coagulation not only fixed fluid in the alveoli and bronchi but clogged the lymphatics so that from every angle the animal was totally assailed.

How can such conditions be treated? It is an interesting fact that blood continues to pass through the lungs even under the worst situations. That is even though the lung capillaries are caused to leak freely they do not fail to conduct blood. What fails is oxygenation of the blood. You can assist this by giving pure oxygen to breathe instead of air and even more so by placing

such patients in pure oxygen under one or two atmospheres of pressure. Perhaps other therapy may help, but essentially these patients need oxygen, for the changes which have been caused by the irritant gas produce oxygen lack in a steadily mounting form. This is the essential physiologic problem and the only way to combat it is by the early use of pure oxygen and even by the use of oxygen under pressure. There is no efficient way of getting oxygen into the body except through the lungs, and if the barrier between alveoli and blood has become abnormal the pressure of the oxygen in the lung air must be increased so as to force it in.

CONCLUSION

I should like to point out that, though I have spoken quite positively, my remarks have dealt mainly with experiments. Consider them as yeast which may rise as ideas in your minds and lead to facts.

Dr Folin, the greatly distinguished and intrepid biochemist at Harvard, believed that scientific advance arose through the devising of new methods. In many respects he was right but method as Pasteur expressed it, save that he used the word "chance" awaits "the prepared mind." The difficulty with experimental advance resides in finding the combination of the "prepared mind" and the technical skill necessary for the experiment. In the issues I have pictured, it is certain that direct experiments may be done. There can be no doubt that the pulmonary lymph reflects rapidly in the living animal changes which will be fatal if they are not resisted. It is a continuous expression of change in the lungs as against the deductions which may be drawn from the sacrificed or dead animal. Equally true is the fact that different measures for combating pulmonary edema and pulmonary exudates may be examined in progressive physiologic experiments such as I have described and do not require the depressing finalities of the autopsy table to give one a poor idea of the way to combat a familiar clinical entity.

This is the message I wish to leave with you. Well conceived and adroitly accomplished mammalian experiments may mean much to human therapeutics. But make no mistake, experiments on mammals are supremely difficult. Very often the experimenter sees surprising and arresting things but ever and always he should ask himself whether what he has observed is the way in which the animal has reacted against the technical mistreatment of the experiment or whether it is a significant truth the results of which may be applied to the diagnosis and treatment of disease.

55 Shattuck Street

Treatment of Gas Gangrene—Once gas gangrene is established the most drastic treatment must be employed. The general principles are the same as those on which prophylaxis is based: radical excision of all damaged muscular cellular integumentary and other tissues. Owing to the spread of the infection in a longitudinal upward direction and its rapid passage from the initial focus through the whole muscle and then to the adjoining muscles, gangrene sometimes spreads from the thigh to the trunk in less than twenty-four hours. It is therefore vital that treatment should be carried out before the infection has passed beyond its localized stage. Four weapons are available against an established infection: surgical operation, antiserum, chemotherapy and deep x-ray therapy.—*Tracta to Ceph*. The Principles and Practice of War Surgery. St. Louis: C. V. Mosby Company, 1943.

⁵ Colin, C. *Traite de physiologie comparee de animaux et de l'homme*. B. Bailliere et Fils, 1873, vol. 2, pp. 109 and 110.

TRICHIINOSIS AND PERIARTERITIS
NODOSA

DIFFERENTIAL DIAGNOSIS, POSSIBLE RELATIONSHIP

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Although differential diagnostic difficulties seldom arise in cases of "typical" acute trichinosis, the problem is not so simple in mild, subacute, chronic or otherwise unusual ones, which comprise the majority of cases.¹ Hall² lists about fifty diseases or conditions which have been mistaken for trichinosis, yet neither he nor most authors include periarteritis nodosa as one of them in spite of its clinical resemblance to trichinosis. On the other hand, trichinosis is often mentioned in discussions of the differential diagnosis of periarteritis nodosa. In fact, numbers of cases of periarteritis nodosa have been recognized by the typical histologic lesion at biopsy in cases of suspected trichinosis. In diseases as similar to each other and as variable in their manifestations as trichinosis and periarteritis nodosa, it is surprising that no mention is made in any of the reports we have read of serious problems in differentiating them. Differentiation seems to resolve when clearcut evidence eventually develops in one direction or the other. However, since about 16 per cent of the general population has asymptomatic trichinosis,³ the possibility or likelihood of the two diseases occurring in the same patient must be considered. It is even possible that one may cause the other. Early diagnosis is important because of the difference in the two diseases of prognosis and of epidemiologic management.

Problems in diagnosis which may arise in trichinosis or periarteritis nodosa and evidence of the possible relationship of the two diseases are illustrated in the following reports.

REPORT OF CASES

CASE 1—History—C. P., a laborer aged 35, had had asthmatic attacks since November 1939, which gradually became worse but never interfered with his work. In December 1940 he "caught a cold," which obliged him to go to a hospital for several days for severe asthma. A brief attack of watery, bloody diarrhea occurred. He recovered, but early in February 1941 severe coughing, dyspnea, occasional hemoptysis and anorexia developed. On February 14 "intestinal grip" with watery, bloody diarrhea recurred and lasted several days. Pain developed in his calves, ankles and feet, with tingling and numbness. During this time there were chilliness, night sweats, vomiting, diarrhea, paroxysms of coughing and lacrimation with pain and burning. He was admitted to the hospital six days later complaining of chilliness, night sweats, anorexia and weakness. He had lost 11.3 Kg (25 pounds) in two months.

On admission to the hospital the patient was seriously sick, was pallid and had a temperature of about 38.9 C (102 F). There were conjunctivitis, edema of the lids and periorbital

tissues, and a flame shaped hemorrhagic area in the left retina. The heart and the lungs, except for sibilant "asthmatic" rales in an emphysematous chest, were apparently normal. The liver and spleen were palpable. Lymph nodes in the epitrochlear region were slightly enlarged and one was excised for study. The calves and ankles were painful on movement and tender to pressure but otherwise appeared to be normal. The patellar reflexes were hyperactive. The blood pressure was 130 systolic and 70 diastolic.

The hemoglobin and erythrocytes were normal in amount. The leukocytes numbered 11,000, of which 30 per cent were eosinophils. The sedimentation rate of erythrocytes was increased, with almost complete settling in twenty minutes. A small amount of blood flecked sputum was raised during asthmatic attacks in which eosinophils comprised 28 per cent of the leukocytes present. Jaundice was not revealed by the van den Bergh test, and the spinal fluid was normal. Urinalysis showed 2 plus albumin and granular casts, the blood urea nitrogen measured 9.5 mg per hundred cubic centimeters and the urea clearance was 166 per cent of normal. Serologic tests for syphilis gave negative results. The stool contained occult blood but no parasites. Evidence of emphysema, acute tracheobronchitis and possibly pneumonia was seen in a roentgenogram, but the heart was normal in size. An electrocar-

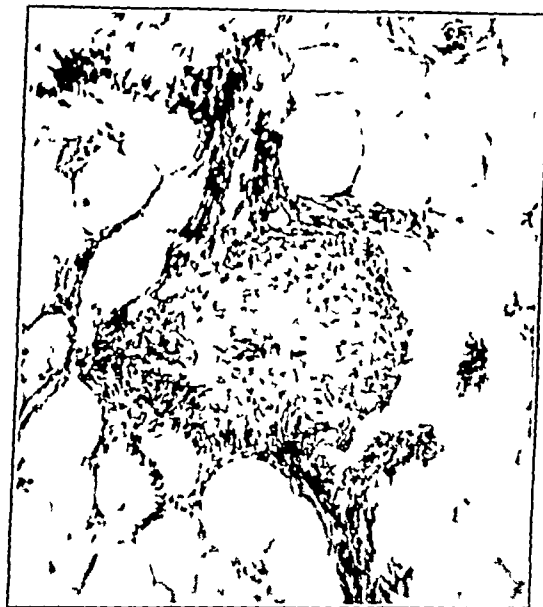


Fig. 1—Fibrinoid necrosis of the media and intima causing partial occlusion of a vessel in fat tissue surrounding a lymph node. Diffuse inflammation of vascular and perivascular tissue. Hematoxylin and eosin, $\times 200$.

diogram showed no abnormality. In tests for hypersensitivity the patient's skin reacted positively to wheat, ragweed pollen and plantain pollen and was weakly positive to feathers and house dust.

Because of the onset with diarrhea, periorbital edema, conjunctivitis, a retinal hemorrhage, pain and tenderness in the calves and eosinophilia, a tentative diagnosis of acute trichinosis was made. The patient on questioning said that for months he had regularly eaten hurriedly cooked hamburger or pork sausage sandwiches and other meats in quick lunch places. Splenomegaly could not then be accounted for, asthma and nephritis were thought to be unrelated conditions.

Course of the Disease—An irregular temperature, reaching 38.3 C (101 F) on occasion, persisted for over five months, after which it was lower but still touched 37.8 C (100 F) in July. Bloody diarrhea recurred for several days in February, transient lymphadenopathy occurred in the left axilla and at intervals severe asthmatic attacks. The general condition became worse until April, when gradual improvement began despite evidence of progressive renal failure. The urea clearance diminished from normal to 58 per cent in five months. There were persistent 2 plus to 3 plus albuminuria, granular casts and occasional erythrocytes in the urine. The leukocytes were always increased in number, often as high as 20,000. Eosinophilia ranged from 12 to 46 per cent. The pains and

From the Departments of Medicine and Pathology, Jefferson Medical College and Hospital.

¹ Wright, W. H. A Consideration of the Clinical and Public Health Aspects of Trichinosis, *Journal of the American Medical Association* 62: 389-393 (Nov.) 1942.

² Hall, M. C. Studies in Trichinosis. III. The Complex Clinical Picture of Trichinosis and the Diagnosis of the Disease, *Public Health Reports* 52: 539-551 (April 3) 1937.

³ Kerr, K. B., Jacobs, Leon, and Cuvillier, Eugenia. Studies on Trichinosis. XIII. The Incidence of Human Infection with Trichinae as Indicated by Postmortem Examination of 3,000 Diaphragms from Washington, D. C., and Five Eastern Seaboard Cities, *Public Health Reports* 56: 836-855 (April 18) 1941.

numbness in his legs decreased but the patellar and achilles reflexes disappeared. Bilateral foot drop and slight atrophy of the quadriceps muscles resulted from what probably was peripheral neuritis. Anemia with 60 per cent hemoglobin and 3,000,000 erythrocytes was present. He returned to his home in July 1941.



Fig 2—Occlusion of a vessel in striated muscle by extensive intimal proliferation. There is panarteritis and periarteritis. The intima contains a giant cell. Hematoxylin and eosin X 200.

He was fairly well until January 1942, when sudden severe dyspnea forced him to return to the hospital. The temperature rose to 38.9 C. (102 F) and returned to normal in a week. The leukocytes numbered 27,000, 11 per cent were eosinophils. During this time the asthmatic attacks and cyanosis were most severe, requiring epinephrine and oxygen for control. He improved and was discharged.

Reexaminations were made in February and October 1942. During the spring and summer he improved and returned to work. He was weak, tired easily and had dyspnea on exertion and occasional pains in the wrists or ankles. The blood pressure



Fig 3—Hyalinization of some muscle fibers ballooning and cystlike formation in others. The infiltrating cells are plasma cells, lymphocytes and polymorphonuclear leukocytes. Hematoxylin and eosin X 200.

gradually rose to 170 systolic and 115 diastolic. He had no asthma until August but had to stop working in October because of the severity of the attacks. The attacks were relieved with ephedrine or epinephrine. By this time the evidence of renal and cardiac failure had become pronounced. There were pretibial edema, pulmonary congestion, hepatomegaly, spleno-

megaly, leukocytosis, eosinophilia, albuminuria and persistent hypertension. The urea clearance was 30 per cent of normal. An electrocardiogram showed a normal tracing. Biopsy of the pectoralis major and gastrocnemius muscles was made.

The patient's condition in April 1943 remained about the same.

Biopsy Reports—In the lymph node removed at biopsy in March 1941 there were areas of inflammation about most of the blood vessels, particularly at their bifurcation. The intima and media of many of the arteries showed fibrinoid necrosis so severe in places as to occlude them with debris (fig 1). The vessel walls were diffusely invaded by polymorphonuclear leukocytes, plasma cells, eosinophils, lymphocytes and erythrocytes. The periarteritis, polyarteritis and panarteritis strongly suggested periarteritis nodosa. In the parenchyma of the lymph node the follicles were almost entirely displaced with cells of the same kind.

In a section of muscle excised from the gastrocnemius at the same time the blood vessels were involved by a similar but more severe process. The entire arterial wall was invaded and the lumen was almost occluded by proliferation of the intima (fig 2). Occasional nuclei in the intima were heaped together to form giant cells. The perivascular inflammation extended for varying distances into the surrounding connective tissue. In addition there were areas of focal myositis in no apparent relation to vessels which showed extensive hyaline degeneration.



Fig 4—Vessel in striated muscle showing remnants of the media at the upper and lower poles. The entire wall particularly the intima is fibrotic. Capillaries have canalized the occluded lumen. The vessel wall and perivascular tissue are infiltrated with lymphocytes and plasma cells. Hematoxylin and eosin X 200.

of the fibers. In places, many of the fibers resembled thin pink shells or tissue or cysts distended with large plasma-like cells (fig 3). Similar cells together with polymorphonuclear leukocytes and erythrocytes infiltrated the adjoining fibers and connective tissue. The balloon-like areas resembled those which ordinarily enclose trichinella larvae, but no larvae were found and no eosinophils were present.

In a section of muscle removed several weeks later a number of vessels were extensively fibrotic, especially in the intima as it healing was in progress (fig 4). Occluded lumens were canalized. Traces of inflammation remained as a few plasma cells, lymphocytes and pigmentary remains of previous extravasations of erythrocytes. Ten months later arteritis had disappeared, leaving fibrous thickening of many vessels. There were extensive fibrosis, scattered leukocytes and free and phagocytosed pigment in the perivascular tissue. In sections from the pectoralis major and gastrocnemius muscle made twenty months later in November 1942 all abnormalities vascular or otherwise had vanished except for a few lymphocytes and plasma cells about an occasional vessel.

Specific Tests—A specimen of blood serum examined in February 1941 by Dr. Sandground of the Lilly Research Laboratories gave a positive precipitin test with trichinella antigen in a titer of 1:500. A second specimen tested by Dr.

Wright of the National Institute of Health was positive in a titer of 1:640. Intracutaneous tests made on several occasions with different antigens supplied by Dr. Sandground and Dr. Wright were negative, as was a complement fixation test. A precipitin test performed by Dr. Wright eleven months later, in January 1942, was positive in a dilution of 1:1,280, but a test in our laboratory in February 1942 was negative. In October 1942 both precipitin and complement fixation tests (Dr. Wright) were negative. A cutaneous test gave rise to an erythematous area 5 mm in diameter at twenty-four hours.

As stated previously, trichinosis was strongly suspected because the patient ate poorly cooked pork for months. The illness apparently began acutely with bloody diarrhea and fever, followed by pains in his calf muscles, periorbital edema, leukocytosis and eosinophilia. The microscopic evidence was suggestive and precipitin tests with trichinella antigen were positive in high dilution. Only the absence of trichinellae in the muscles, the negative cutaneous tests and complement fixation reaction weakened the diagnosis. Such discrepancies, however, are common in trichinosis. Restudy of muscle tissue on the other hand, strongly suggested periarthritis nodosa. Nevertheless trichinosis, being the more common disease, was still favored, since even though trichinellae were not seen in the muscle

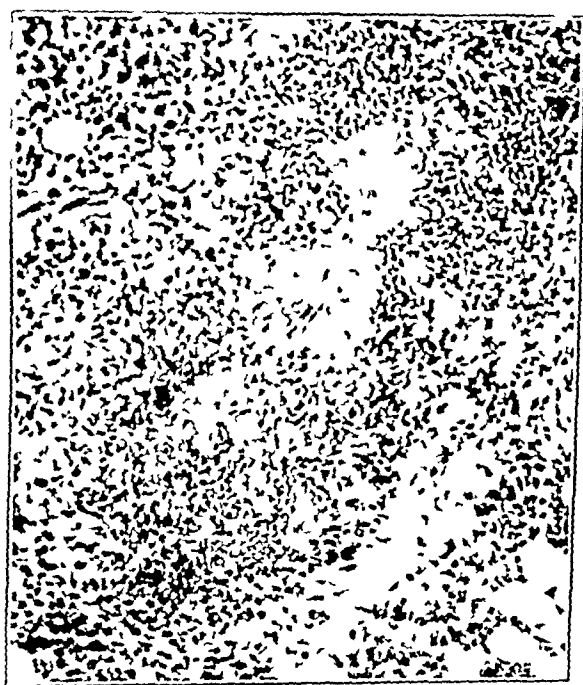


Fig. 5—A vessel in striated muscle seen in figure 6. The intima and inner media show massive fibrinoid necrosis with almost complete occlusion of the lumen. The diffuse inflammatory reaction consists chiefly of eosinophils and polymorphonuclear leukocytes. Hematoxylin and eosin $\times 200$.

inflammatory changes such as were present may occur in adjoining muscle fibers and connective tissue⁴ and thrombophlebitis⁵ has been recorded.

As the disease progressed over many months the points in favor of a diagnosis of periarthritis nodosa seemed to gain weight, particularly the history of asthma commencing at the age of 33 and persisting, the prolonged, irregular, relapsing fever, lymphadenopathy, splenomegaly, eosinophilia, nephritis, neuritis and the periarthritis, polyarteritis and panarteritis. Yet prolonged fever, pseudoparalysis, splenomegaly, asthma, albuminuria and cylindruria may occur in the course of

trichinosis.⁶ Asthma, however, antedated the disease described by many months. The pain in the legs, tingling, numbness and foot drop seemed more likely to be the result of neuritis, not myositis. The periorbital edema may have been related to nephritis.

Study of the patient in October 1942, nearly two years after the onset of illness, revealed no clinical, microscopic or serologic evidence of either disease but only a progression of the nephritis and cardiac failure, which are common terminal events of periarthritis nodosa.

Several possibilities may be suggested to account for the patient's illness: (1) periarthritis nodosa, of which the acute stage had passed, leaving lesions which healed or disappeared with the exception of the renal ones, which are progressive, (2) repeated infections with *Trichinella* or chronic trichinosis with unusual manifestations, since the precipitin test is supposedly reliable as a confirmatory test⁷ and negative cutaneous tests usually thought to be more reliable, do not necessarily exclude the diagnosis, (3) both trichinosis and periarthritis nodosa in the same patient, either one preceding the other, or (4) an underlying allergic condition, which may be regarded as definite, since many members of the patient's family had "allergic" diseases and the patient had asthma. It is possible that trichinosis, which is also characterized by allergic manifestations, may have aggravated the existing condition or even caused it and brought about the microscopic reaction and subsequent disease regarded as periarthritis nodosa.

CASE 2—History—P. C., a man aged 38, a Korean born in the Orient, was admitted to the hospital in November 1941 complaining of pain in the calves and shoulders, weakness and loss of weight. In August pain in the neck, shoulders and lumbar and sacral regions lasted for several days in each area and disappeared in about four weeks. Pain then developed in one and then in the other knee, which became red, hot and swollen. This subsided in two weeks, to be followed by arthritis of both ankles, enforcing rest in bed. Soon the muscles of both calves became tender and painful, which made walking impossible for a time and overshadowed other pains and aches. There was also pain in both masseter muscles. These pains lasted about six weeks and gradually subsided. There was residual stiffness of the shoulders and legs, particularly in the morning. There had been occasional night sweats for five weeks and loss of 7.2 Kg (16 pounds). Obstinate constipation developed.

During the early part of the summer the patient did not feel well and was said to have had anemia, for which he ate large amounts of raw beef and raw pork. The patient, like many Koreans, had eaten poorly cooked meats most of his life. He had had sinusitis for twenty years.

On physical examination the patient was thin but in no apparent distress. The scleras and conjunctivas were inflamed and the lids were edematous. The ocular fundi were normal. There was severe chondritis of the auricle of the right ear and both drums were reddened. Thick pus containing *Staphylococcus albus* was present under the turbinate bones, and there was roentgenographic clouding of the frontal, ethmoid and maxillary sinuses. The heart and lungs were apparently normal. The spleen and liver were palpable.

The extremities, including the reflex reactions, were normal except for thinness and tenderness of both calves. There was tenderness and pain on motion of the shoulders and elbows.

The hemoglobin was 68 per cent, the red cells numbered 3,400,000 and the leukocytes 8,000, of which 68 per cent were polymorphonuclear cells, 26 per cent lymphocytes and 6 per cent

4 Hemmert-Halswick, A., and Bugge, G. *Trichinen und Trichinose, Trichinella* d. allg. Path. u. path. Anat. 28: 313-392, 1934. Tyzzer, E. E. *Trichinosis*, in Cecil, R. L. *Textbook of Medicine*, ed. 5, Philadelphia, W. B. Saunders Company, 1940, p. 480.
5 Faust, E. C. *Trichinosis*, in Musser, J. H. *Internal Medicine*, ed. 3, Philadelphia, Lea & Febiger, 1938, p. 309.

6 McCrie, Thomas, in Osler. *Modern Medicine* Philadelphia Lea & Febiger, 1925, vol. 2, p. 590. Blumer, George. *Trichinosis with Special Reference to Changed Conceptions of the Pathology and Their Bearing on the Symptomatology*, New England J. Med. 214: 1229-1233 (June 14) 1936. Wyrens, T. J., and Magath, T. B. *Trichinosis*.
7 Wyrens, R. G., Tillisch, J. H., and Magath, T. B. *Trichinosis. Report of Nineteen Cases of Clinical Infection and Twenty One Asymptomatic Infection* J. A. M. A. 117: 428-432 (Aug. 9) 1941.

eosinophils. The sedimentation rate in December and in February was rapid with complete settling in thirty minutes. The Wassermann and Kahn reactions of the serum gave negative results. Urinalysis showed 2 plus albumin, no erythrocytes and a few granular casts. A blood culture was sterile.

Because of a history of having eaten raw pork, painful calf, masseter and other muscles, palpebral edema and eosinophilia,



Fig 6—A group of vessels diffusely infiltrated with inflammatory cells near their bifurcation in striated muscle. There is extensive fibrillation of the internal elastic membrane. Elastic tissue stain X 40.

trichinosis seemed most likely as a diagnosis, but splenomegaly and evidence of nephritis, as in case 1, again raised the question of periarteritis nodosa. Chronic purulent sinusitis was obvious.

Course in the Hospital.—The patient was observed for five months. The temperature was irregular, reaching 38.3 C (101 F) occasionally for a month after which it subsided coincident with improvement of the sinusitis resulting from drainage and irrigation. It frequently reached 37.5 C (99.5 F) but became normal two weeks before he left the hospital. The conjunctivitis disappeared. Inflammation of the auricle of one ear gradually healed but later involved the other. The blood pressure was labile, ranging irregularly from 110 systolic and 60 diastolic to 170 systolic and 130 diastolic but was usually 130 systolic and 70 diastolic. The arthralgia and myalgia lessened considerably after a week or two, but the left wrist on one occasion became painful, tender, swollen and hot for several days.

In December a group of papules 3 to 5 mm in diameter appeared in a small area on the scrotum to which attention was attracted by itching. A portion was excised for biopsy. The blood count remained rather constant the proportion of eosinophil cells ranging from 1 to 18 per cent.

The urine throughout gave evidence of nephritis with persistent 2 plus to 3 plus albuminuria. A few leukocytes and granular casts were constantly present. The urea clearance at this time was 74 per cent of normal but progressively decreased to 14 per cent and 9 per cent in three months. The general condition, the myalgia, arthralgia and sinusitis improved so that the patient returned to his home in February although he was weak and anemic in spite of hematonic treatment. He had regained 9 pounds (4.1 Kg).

He returned to the hospital after four weeks complaining chiefly of dyspnea, restlessness, insomnia and vomiting. There was general anasarca and purulent nasal discharge. Uremia was evident. The anemia had increased but no eosinophil cells were seen. The urea clearance test was 8 per cent of normal. The blood pressure was 190 systolic and 140 diastolic. He lapsed into coma and died after a convulsion on May 5. The clinical diagnosis was trichinosis, chronic glomerulonephritis, chronic sinusitis and uremia. The histologic diagnosis from biopsy was periarteritis nodosa.

Biopsy Reports.—In December tissue from the gastrocnemius muscle showed diffuse infiltration of the blood vessel walls and perivascular areas with eosinophils, polymorphonuclear leuko-

cytes and occasional plasma cells and lymphocytes. Most of the vessels were occluded by proliferation and fibrinoid necrosis of the intima and inner layers of the media (fig 5). Diffuse hemorrhagic extravasations but no aneurysmal dilatations were seen. As in case 1, the reaction was especially severe at the bifurcation of vessels. There was abundant fibroblastic proliferation in the perivascular connective tissue. Elastic tissue stain revealed extreme fibrillation of the internal elastic membrane (fig 6) and slight patchy hyalinization of the muscle fibers. There were no focal areas of myositis dissociated from the vessels and no trichinella larvae were found. The lesions were typical of those of periarteritis nodosa.

Tissue from the scrotal papule showed superficial ulceration of the epithelium. The underlying dermis was rich in engorged, thin walled capillaries, fibroblasts, eosinophils and occasional polymorphonuclear and plasma cells. Vessels not near the ulcers were unchanged. The nature of the lesion was essentially like that in the muscles.

Necropsy Report.—Six months later at necropsy careful search revealed no evidence whatever of either active lesions or healed scars of periarteritis nodosa in the heart, aorta, lungs, spleen, adrenal glands, liver, gallbladder, pancreas, gastrointestinal or urinary tract or vertebral bone marrow. Encysted trichinella larvae, however, were present in the pectoralis major muscle (fig 7). There was no inflammation or calcification about them and the arteries in the muscle appeared normal. The brain was normal except for evidence of toxic effects on the ganglions, and an occasional artery or vein was surrounded by a loose collection of small monocytes. The nasal sinuses contained no pus, but the lining membranes were thickened. The sphenoid sinus had ruptured into the pituitary fossa but the latter was not inflamed. Death was evidently caused by chronic glomerulonephritis with acute exacerbation. Glomerular lesions, tubules containing cellular casts and patchy infiltration of the interstitial tissue were present. The arteries, however, were remarkably free from inflammation and even from such sclerosis and fibrosis as are ordinarily present in chronic glomerulonephritis.

Specific Tests.—Because of the clinical impression of trichinosis, blood serum was sent to Dr. Wright for precipitin tests in December 1941. The test was positive in a dilution of 1:1,280. Blood taken in February 1942 was again sent to



Fig 7—Encysted *Trichinella spiralis* larva in pectoralis major muscle. Note the absence of inflammation and calcification. Hematoxylin and eosin X 200.

Washington where the test was reported as negative but a sample of the same serum tested by Dr. Sandground was reported positive in a titer of 1:800. Cutaneous tests made on three occasions with intradermal injections of different antigens supplied by Dr. Sandground and by Dr. W. H. Wright in December, January and February 1942 all gave negative results. A complement fixation test performed with trichinella antigen also supplied by Dr. Sandground gave a negative result.

The diagnostic problem was similar to that in case 1. Although the so-called acute "primary" stage of trichinosis was not seen or recorded, the history of a lifelong custom of eating undercooked pork makes the infection with *Trichinella spiralis* very likely. The additional large amounts of deliberately eaten raw pork just before the onset of illness may have induced a reaction to which the patient reacted in a manner different from the so-called classic case. The painful shoulder and masseter muscles, the recurrent arthritis characteristic of a late stage of trichinosis called "trichinal rheumatism," prolonged fever, periorbital edema, conjunctivitis and eosinophilia all pointed to that diagnosis. As in case 1, the enlarged spleen and evidence of nephritis added a degree of diagnostic confusion which was heightened by the histologic changes of periarthritis nodosa in the muscle. Additional diagnostic factors in favor of periarthritis nodosa were the prolonged febrile period, arthritis and eventual death in uremia. Asthma never occurred. At the time it was thought that the spleen may have been enlarged from preceding forgotten or unrecognized disease during residence in Korea, and the chronic nephritis may have followed the chronic purulent sinusitis or may have been related to trichinosis. Again as in case 1 several precipitin tests for *Trichinella* were strongly positive, but all specific cutaneous tests and a complement fixation test were negative. The precipitin test on one occasion was reported as positive from one laboratory and negative from another.

Trichinellae were indeed found at necropsy, but no evidence, present or past, of periarthritis nodosa was found even in the kidneys, in which only the changes of commonplace chronic glomerulonephritis were present. The spleen, palpable during life, was normal in size and structure. The presence of *Trichinella* larvae in the muscles, of course, proved the diagnosis of trichinosis. But the typical microscopic lesions of periarthritis nodosa seen during life, with nephritis terminating in death, are unaccounted for except as (1) a possible result of chronic purulent sinusitis, (2) an unusual, hitherto undescribed reaction in trichinosis, (3) manifestations of periarthritis nodosa occurring as a separate disease during trichinosis, the evidence of which disappeared before death, or (4) trichinosis inciting the microscopic reaction and syndrome known as periarthritis nodosa.

COMMENT

It is obvious that during certain periods of either trichinosis and periarthritis nodosa the similarities between them may be so great as to make clinical diagnosis impossible without the demonstration of *Trichinella* in the 1 case or of widespread microscopic evidence of active, subsiding or healed lesions of periarthritis nodosa in the other. In certain cases, as in those described, when evidence of both conditions is present, the matter is indeed complex. In both cases described, the clinical diagnosis was trichinosis yet the microscopic diagnosis during life was periarthritis nodosa.

Albuminuria or renal failure in either patient could not be regarded as secondary to trichinosis of the myocardium and heart failure with no evidence therefor. Chronic nephritis more likely caused heart failure. Albuminuria and casts have been recorded in cases of trichinosis. Asthma, as case 1, is an especially common symptom in periarthritis nodosa, but it may also occur in trichinosis.

In both cases described the contradictory results of various specific tests for trichinosis are confusing. It

is generally believed that the cutaneous test is more reliable than the precipitin test, but even it may be misleading. Particularly confusing are the results in case 2, in which *Trichinella* was present in the muscles, yet the cutaneous test, the complement fixation test and on one occasion the precipitin test gave negative results.

Recovery from trichinosis is the rule, but periarthritis nodosa is supposedly a fatal disease. There is, however, reason to believe that healing and recovery may occur at times if the damage done is not too great. Recovery probably happens more often than is realized, but the disease may be unrecognized unless a biopsy is made. According to studies at necropsy, patients have recovered from the acute stage of periarthritis nodosa but died from nephritis or heart failure, and remnants or scars of extensive vascular disease or healed infarcts in various organs have been described.⁸ In case 1 nephritis exists but arteritis, present early in the disease, vanished except for a few traces after twenty months. In case 2 death was caused by nephritis, but arteritis was not found at necropsy.

POSSIBLE RELATIONSHIP OF TRICHINOSIS AND PERIARTERITIS NODOSA

With asymptomatic trichinosis present in an estimated 16 per cent of the population³ there is reason to expect periarthritis nodosa as a separate, unrelated disease in an occasional infected person.^{8a} A patient with periarthritis nodosa may likewise contract trichinosis. Yet in both cases described here evidence of a causal relation of trichinosis to periarthritis nodosa is persuasive. In case 1, regarded clinically as one of trichinosis, microscopic changes suggested a progression of lesions, first of trichinosis, later of periarthritis nodosa and then of healing and final disappearance. In case 2, unquestionably one of trichinosis, lesions of periarthritis nodosa were present during life but no remains of them were found at necropsy. Progressive renal failure occurred in both. It is probable that in both trichinosis was the primary factor which initiated the vascular lesions and the clinical syndrome known as periarthritis nodosa, probably through the obscure mechanism of allergy, and that the progressive renal impairment was the result of the vascular injury. Certain cases of chronic nephritis of obscure origin may also be explained on this basis. According to experimental studies trichina antigen is excreted in the urine for weeks after infection of monkeys.^{8b} Chronic trichinosis or repeated reinfections give a prolonged opportunity for the development of antibody and its interaction with the antigen.

The possibility that *Trichinella spiralis* or other nematodes may serve as one of the causes of, or may initiate the onset of, periarthritis nodosa was suggested twenty-five years ago,⁹ but in no other report of the latter have we found mention of evidence of trichinosis.

⁸ Spiro, P. Zur Kenntnis des Wesens der Periarthritis nodosa. Virchows Arch f Path Anat 227 1, 1919. von Haun, F. Patho-histologische und experimentelle Untersuchungen über Periarthritis nodosa. ibid 227 90 1919. Arkin, A. A Clinical and Pathological Study of Periarthritis Nodosa, Am J Path 6 401-426 (July) 1930. Schott staedt, W. E. R. Periarthritis Nodosa with Remission of Symptoms. California & West Med 36 136-138 (March) 1932. Weir, D. R. Polyarteritis Nodosa. Report of a Case. Am J Path 15 79-88 (Jan) 1939. Blaisdell, E. R., and Porter, J. E. Healed Stage of Periarthritis Nodosa, New England J Med 224 1087-1090 (June 26) 1941. ^{8a} Banowitz, M. M., Polayes, S. H., and Charet, Richard. Periarthritis Nodosa. Report of Five Cases, Ann Int. Med 16 1149-1171 (June) 1942. ^{8b} Welt, L. G. Urinary Excretion of Trichina Antigen in Experimental Trichinosis, Proc Soc Exper Biol & Med 48 387-389 (Dec) 1941. ⁹ Haythorn, S. R. and Ryan, A. H. Aortic Aneurysm in Dogs with the Report of Six Cases. J M Research 35 411-423 (Jan.) 1917. Cameron, H. C., and Laidlaw, P. P. A Case of Periarthritis Nodosa. Guy's Hosp Rep 69 159-171, 1918.

in studies of tissue. Nevertheless, various allergic manifestations such as asthma, urticaria edema and eosinophilia common to the two diseases lends credence to the theory.

Periarteritis nodosa is apparently a syndrome of diverse origin. The possibility that it may be a result of hypersensitivity was suggested by Gruber¹⁰ in 1925 and discussed in a recent review by Rich.¹¹ Rich refers to previous observers who described periarteritis nodosa in patients with serum sickness and adds 5 cases of his own. In further studies he¹² induced the typical lesions of periarteritis nodosa in rabbits by injecting them with horse serum.

CONCLUSION

The 2 cases presented were regarded clinically as trichinosis, yet the typical lesions of periarteritis nodosa were present in tissue examined during life. Both patients had chronic nephritis. One died, and at necropsy no evidence of periarteritis nodosa remained, but trichinellae were found in the muscles. There is a possibility that trichinosis as a disease with strong allergic manifestations may in certain instances serve as one cause of the syndrome called periarteritis nodosa.

LIVER FUNCTION TESTS IN CLINICAL MEDICINE

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Knowledge of the functional status of the liver, gained by the use of tests, is growing in importance in medicine and surgery. Such tests are particularly helpful (1) in patients with jaundice and (2) in some without jaundice as in (a) cirrhosis of the liver, (b) gallbladder disease, (c) controlling the therapy with hepatotoxic drugs and (d) hyperthyroidism.

Our object is to give the indications and uses of liver function tests based on our experience gained from examination and study of 563 jaundiced and 112 non-jaundiced patients. In 111 of these cases which came to operation our studies were supplemented by histologic and fluorescence microscopic examination of liver biopsy specimens.

WHICH LIVER FUNCTION TESTS ARE USEFUL?

The answer to the question Which liver function tests are useful? depends first on whether or not the patient is jaundiced.

1. In jaundice, the usual problem is to decide whether it is obstructive or parenchymatous and whether surgical intervention is indicated. Some liver damage occurs in almost every case of jaundice. In paren-

chymatous jaundice it is usually acknowledged, however, even in obstructive jaundice regurgitated bile may cause liver damage. In the differentiation between obstructive and parenchymatous jaundice, less sensitive liver function tests are indicated—tests which give positive results only if more severe damage to the liver parenchyma is present. In cases of mild hepatitis in which such liver function tests may be negative, the question of surgical intervention usually does not arise.

2. In patients without jaundice, on the other hand, one is often interested in discovering slight deviations of liver function. For such patients the more sensitive liver function tests are needed.

WHAT MAY BE LEARNED FROM LIVER FUNCTION TESTS IN JAUNDICE?

A Differentiation Between Medical and Surgical Jaundice Within the First Six Weeks—After this period, secondary liver damage due to prolonged obstruction becomes severe enough to produce the same functional changes as in cases of severe primary hepatitis. If, however, after six weeks of jaundice the less sensitive liver function tests still yield negative results, they may be of diagnostic value.

B Indications for Immediate Surgical Intervention in Patients with Obstructive Jaundice—If during the observation or preparation period of a patient with established biliary obstruction liver function suddenly fails, immediate surgical relief of the obstruction is indicated.

C Estimation of the Degree of Liver Damage (or Liver Reserve), Especially in Chronic Liver Disease (as in Cirrhosis)—The knowledge of the degree of liver damage is important in the evaluation of the therapy.

D Prognosis in Acute Hepatitis—The course of the disease can be recognized by impairment (danger of acute yellow atrophy) or by improvement of the liver function. The results of liver function tests often indicate improvement before the jaundice has subsided.

WHICH PROCEDURES DIFFERENTIATE BETWEEN MEDICAL AND SURGICAL JAUNDICE?

Because of the inherent difficulties in liver function tests (presence of secondary hepatitis), attention should be given to examination of bile pigment metabolism before function tests of the type of the tolerance tests are used.

Bile Pigment Metabolism—The endothelial and especially the reticuloendothelial cells of the body form hemobilirubin from hemoglobin. This pigment is probably connected with plasma protein and circulates in the blood but does not pass into the urine. It gives the characteristic diazo reaction (van den Bergh) only after the serum protein has been precipitated with alcohol. Hemobilirubin is taken up by the liver cells and excreted into the bile capillaries as chobilirubin which supposedly is freed of the protein connection. In the intestine, chobilirubin is reduced by bacterial action to urobilinogen (stercobilirubin). Most of the stercobilirubin is excreted with the feces to which it imparts color, and part of it is reabsorbed into the blood stream and reaches the liver. The liver reoxidizes most of it to bilirubin which is again excreted in the bile (entero-hepatic circulation). Traces of it remain in the blood and appear in the urine (fig. 11). Normally, traces of urobilinogen and no bilirubin are excreted in the urine.

10 Gruber G. B. Zur Frage der Periarteritis nodosa mit besonderer Berücksichtigung der Gallenblasen und Nieren Beteiligung. *Virchows Arch f. path. Anat.* 35: 441, 1925.

11 Rich A. R. The Role of Hypersensitivity in Periarteritis Nodosa as Indicated by Seven Cases Developing During Serum Sickness and Sulfonamide Therapy. *Bull. Johns Hopkins Hosp.* 71: 123-136 (Sept.) 1942.

12 Rich A. R. and Gregory J. E. The Experimental Demonstration that Periarteritis Nodosa is a Manifestation of Hypersensitivity. *Bull. Johns Hopkins Hosp.* 72: 63-88 (Feb.) 1943.

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cholesterol-cephalin emulsion in various degrees, (b) the colloidal gold test in which pathologic globulins precipitate and change characteristically the color of gold chloride, (c) Takata-Ara test in which pathologic globulins flocculate an alkaline sublimate solution in serial dilutions.

The early globulin changes in acute hepatitis can be elicited by the cephalin-cholesterol flocculation test and by the colloidal gold test. The Takata-Ara test becomes positive only in chronic liver disease.

The technic of the cephalin flocculation test is described by Hanger.⁴ At present the cephalin-cholesterol mixture is available commercially. The test is simple and seems to have particular merits in the presence of jaundice. Because of the danger of false positives only dense flocculations are significant.

Blood Phosphatase Test—Physiology. Alkaline phosphatase is an enzyme which splits organic phosphorus compounds in an alkaline medium to inorganic phosphates. It is produced by osteoblasts and consequently it is increased in bone diseases. It is probably excreted through the bile and hence increases in the blood in disturbances of biliary excretion, as seen in extrahepatic obstruction or intrahepatic block or parenchymatous jaundice.

The technic is described by Bodansky.⁵ This test is often used in association with the cephalin-cholesterol flocculation test as they complement each other. A

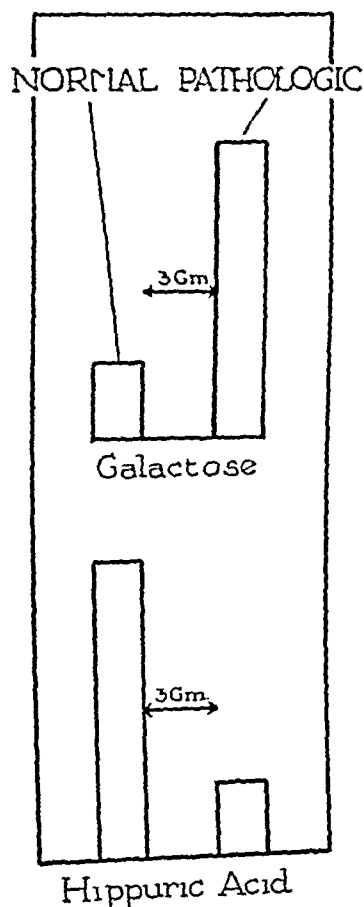


Fig. 5—Schematic drawing explaining the results of the galactose and hippuric acid tests.

high blood phosphatase level with a high degree of flocculation speaks for hepatitis, while with a low degree of flocculation an uncomplicated extrahepatic obstruction is probable. By itself, however, the phosphatase determination is not of much diagnostic aid, since it possibly indicates only the degree of biliary obstruction which can be recognized much more simply by the urobilinogen excretion in the urine.

Duodenal Drainage.—By this procedure—which is now much less used than it was previously—one can first note the presence or absence of bile from the duodenum by the color of the duodenal contents. If bile is present, liver bile and the darker gallbladder bile (obtained after duodenal instillation of 30 cc of a 40 per cent solution of magnesium sulfate) may be obtained separately.

Microscopic examination of the sediment shows many pus cells in the liver bile in cases

of cholangitis and in the gallbladder bile in cases of suppurative cholecystitis (empyema). Cholesterol, calcium carbonate and bilirubin crystals particularly in the gallbladder bile, speak for cholelithiasis. In

addition, the excretory function of the liver for dyes can be tested during the duodenal drainage by injecting azorubin S.

Technic for Azorubin-S Test.—Four cc of a 1 per cent solution of azorubin-S is injected intravenously and 20 cc of a 40 per cent solution of magnesium sulfate

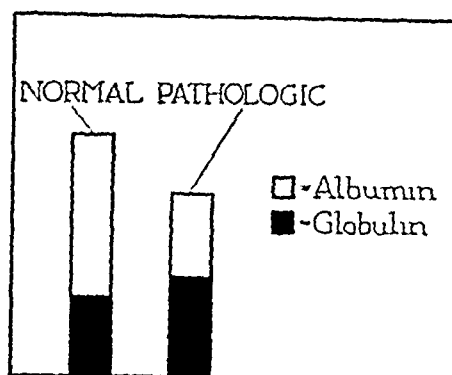


Fig. 6—Schematic drawing of the relation of the albumin and globulin in the blood serum in normal and pathologic conditions (cirrhosis, nephrosis).

is instilled into the duodenum. Normally a red coloration of the bile appears within twenty-five to thirty minutes. In liver damage the excretion of the dye is delayed or not excreted at all.

The Colloidal Gold Test—Physiology. This is discussed under cephalin-cholesterol flocculation tests.

Technic. This is described by Gray.⁷ The test seems promising but is somewhat difficult to perform.

Comment.—The application of the liver function tests mentioned raised the percentage of correct diagnoses—as checked by follow-up study, operation or postmortem examination—from 79 to 95 per cent. This indicates that the usefulness of the liver function tests is not as wide as is often assumed. It should be stressed that, despite a rather intensive clinical and laboratory work-up, the right diagnosis was not made in 5 per cent of the cases. During the five years of this study various improvements of the liver function tests were made and then number was increased. Nevertheless, the percentage of failures remained about the same throughout the years.

In analyzing these cases it was found that the chief cause for the failure was that patients with obstructive jaundice first came under observation at a time when secondary hepatitis had already developed. Obviously, impairment of liver function in cases of secondary hepatitis is identical with that in cases of primary hepatitis. Therefore improvement in the liver function tests alone will not decrease the percentage of failures in the differentiation between medical and surgical jaundice. An improvement can be expected only from more accurate clinical observation and care in taking the history. Any improvement of liver function tests would seem to lie mainly in the development of technically simpler procedures.

WHAT CRITERIA POINT TO IMMEDIATE SURGERY IN CASES OF OBSTRUCTIVE JAUNDICE BECAUSE OF IMMINENT LIVER BREAKDOWN?

1 Increase of the Icteric Index—Physiology. In obstructive jaundice, the urinary excretion of bilirubin removes relatively much of the regurgitated bilirubin. Thus after a while a fairly constant bilirubinemia results at an icteric index of 100 to 150. In parenchymatous jaundice, the associated kidney damage reduces the urinary excretion of bilirubin with consequently higher and rising icteric indexes.

4 Hanger, F. M. Serologic Differentiation of Obstructive from Hepatogenous Jaundice by Flocculation of Cephalin-Cholesterol Emulsions, *J. Clin. Investigation* 18: 261-269 (May) 1939.
5 Bodansky, Aaron. Phosphatase Studies. Determination of Serum Phosphatase. Factors Influencing Accuracy of Determination, *J. Biol. Chem.* 101: 93-104 (June) 1933.
6 Matsuo, Iwao. Biologische Untersuchungen über Farbstoffe. Kyoto, The Author 1935. Rosenberg, D. H., and Soskin, Samuel. The Azorubin S Test of Liver Function. An Evaluation with a Comparative Study of the Bromsulphalein and Hippuric Acid Test, *Ann. Int. Med.* 15: 1644-1654 (March) 1940.
7 Gray, S. J. Colloidal Gold Reaction of Blood Serum in Diseases of the Liver, *Arch. Int. Med.* 65: 523-544 (March) 1940.

The sudden rise of the icteric index from a fairly constant level points to a secondary parenchymatous complication

2 Falling Prothrombin Level During Administration of Vitamin K—Physiology In jaundice, the intestinal absorption of vitamin K is interfered with owing to the lack of bile acids in the intestine. In liver damage the storage of vitamin K in the liver is additionally impaired. Both factors cause prothrombin deficiency, which may be corrected by administration of vitamin K. In liver damage, however, the formation of prothrombin, even in the presence of vitamin K, is not normal. Therefore, after administering vitamin K to a jaundiced patient the consequent rise of the prothrombin level is prompt and prolonged if the liver is undamaged, whereas in cases of liver damage the rise is only slight and is not sustained.

Technic The determination of the prothrombin level may be done by the method of Quick⁸ and his co-workers or of Smith and his co-workers.⁹

If in a jaundiced patient under observation either the prothrombin level falls or, even worse, hemorrhagic diathesis appears, severe secondary liver damage has developed. That is confirmed by inadequate response to further vitamin K therapy.

3 Increase of the Nonprotein Nitrogen in the Blood—Physiology The nonprotein nitrogen level of the blood rises in parenchymatous liver damage partly because of increased protein breakdown and more so because of associated pathologic changes in the kidney. The latter is probably on the basis of an inability of the damaged tubular cells to prevent urea reabsorption.¹⁰

A sudden rise of the nonprotein nitrogen in a patient with jaundice is, therefore, an alarm signal.

4 Increased Alimentary Galactosuria or Decreased Excretion of Hippuric Acid—If, on repetition of these liver function tests, the previously normal results have turned pathologic, the development of a secondary hepatitis is indicated.

5 Millon's Test—Physiology In severe liver damage increased amounts of amino acids may be present in the blood and thus tyrosine appears in the urine, which is recognized by Millon's reaction.

Technic Add an equal amount of Millon's reagent¹¹ to urine and boil. A precipitation develops. A red color of the supernatant fluid indicates the presence of tyrosine. In case of albuminuria, the protein should first be removed from the urine in order to avoid the splitting off of tyrosine from the protein molecule.

WHAT DETERMINES THE DEGREE OF LIVER DAMAGE IN PATIENTS WITH JAUNDICE?

The tests presented here are those in which a somewhat quantitative relation exists between the results of the tests and the degree of liver damage. These relations are especially important in the follow-up of cases of chronic disease and in the evaluation of therapeutic procedures.

1 Hippuric Acid Excretion Test—The amount of hippuric acid excreted is to a certain extent inversely proportional to the degree of liver damage.

2 Cholesterol-Cholesterol Ester Ratio—Physiology Cholesterol is excreted with the bile, consequently in biliary obstruction the total cholesterol of the blood rises. Supposedly only the liver cells are able to esterify free cholesterol into cholesterol esters. In the presence of a normal liver, two thirds of the total cholesterol in the blood is in ester form (cholesterol-cholesterol ester ratio 1:2). In liver damage the esterification is impaired and consequently independent of the height of the total cholesterol, the ratio is changed to 1:1 or less than 1 (fig. 7).

Technic A modification described by Kraus¹² was used.

The disturbance of the cholesterol-cholesterol ester ratio is more pronounced the greater the degree of liver damage.

3 The Albumin/Globulin Ratio—Physiology This is described under cephalin-cholesterol flocculation tests in the section discussing which procedures differentiate between medical and surgical jaundice.

The degree of reversal of the albumin/globulin ratio depends on the degree of liver damage but to a certain

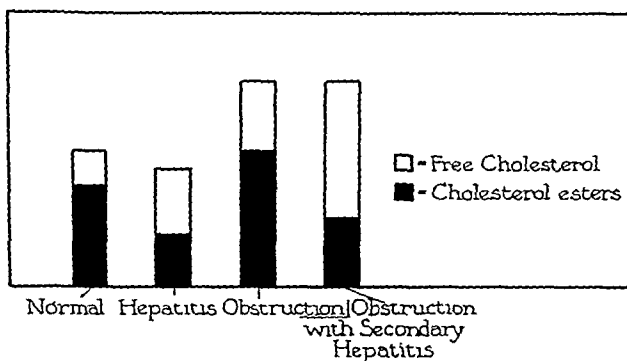


Fig. 7—Schematic drawing showing the relation between free and esterified cholesterol in normal persons and patients with liver disease.

extent on the development of ascites as well. Nevertheless, the albumin/globulin ratio and the absolute height of the albumin fraction is an especially valuable guide in the follow-up study in cases of cirrhosis.

4 Cephalin-Cholesterol Flocculation Test—The density of the flocculation varies directly with the degree of liver damage.

5 Takata-Ara Test—Physiology This is described in the section discussing which procedures differentiate between medical and surgical jaundice.

Technic The method of Jezler¹³ was used.

In chronic liver disease the variations in the number of test tubes showing precipitation is in direct proportion to the degree of liver damage.

WHAT INDICATES THE PROGNOSIS IN ACUTE HEPATITIS?

During the course of an acute hepatitis or the course of a superimposed hepatitis in cirrhosis sometimes a sudden turn for the worse due to breakdown of the liver may appear. The alarm symptoms of an imminent liver necrosis are similar to those of an approaching

⁸ Quick, A. G. Determination of Prothrombin. *Proc. Soc. Exper. Biol. & Med.* 12: 788-789 (Dec.) 1939.

⁹ Ziffren, S. E., Owen, C. A., Hoffman, G. R., and Smith, H. P. Simple Bedside Test for Control of Vitamin K Therapy. *Am. J. Clin. Path. Tech. Suppl.* 1: 13-16 (Jan.) 1940.

¹⁰ Meyer, K. A., Papper, H., and Steigmann, Frederick. Significance of Rise of Nonprotein Nitrogen in Medical and Surgical Jaundice. *J. A. M. A.* 117: 847-850 (Sept. 6) 1941.

¹¹ One part of metallic mercury is dissolved in two parts of nitric acid (specific gravity 1.42) by gradual heating. After the mercury has dissolved two parts of water are added.

¹² Kraus, J. A. and Kalal, Evelyn. Efficient Separation of Cholesterol and Cholesterol Esters. *Physiol. Blood & Tissues* 1: 1-7 (1942).

¹³ Jezler, A. Ben. *Arch. Intern. Med.* 111: 1-10 (1942).

secondary hepatitis in an obstructive jaundice. On the other hand, recovery may be ensuing while the jaundice is still unchanged. Here liver function tests chiefly indicate the dawn of recovery.

Signs of Alarm (Liver Failure)—1. Rise of the icteric index.

2. Millon's test becomes positive.

3. Drop in prothrombin level, only partly relieved by administration of vitamin K.

4. Drop in the cholesterol esters.

5. Rise of the nonprotein nitrogen.

Signs of Recovery—1. Rise of the urinary urobilinogen in the face of a decrease in the bilirubinuria.

2. Rise of the cholesterol esters.

3. Increased diuresis.

Physiology—During acute hepatitis the water avidity of the tissues is increased, producing a latent edema. In recovery this stored fluid is excreted. In the daily urinary output is charted a sudden rise of the diuresis points to improvement.

4. Graham-Cole test becomes negative.

Physiology—Tetraiodophenolphthalein is excreted into the bile in a concentration which does not give a shadow on roentgen examination of the patient. After concentration of the bile in the gallbladder the tetraiodophenolphthalein becomes sufficiently concentrated to produce a shadow on the roentgenogram. This shadow is not visible (positive Graham-Cole test) if (1) a damaged liver does not excrete the dye and the kidney excretes it, (2) in obstruction of the biliary passages, (3) in the presence of damage of the mucosa of the gallbladder which interferes with concentration of the bile and (4) if a gallbladder reflex emptying occurs before the roentgenogram is taken.

Generally in jaundice the Graham-Cole test will be positive whether the jaundice is due to hepatitis or to obstruction. In beginning recovery from hepatitis, however, the Graham-Cole test may become negative while some jaundice is still present.

LIVER FUNCTION CHANGES OF DIAGNOSTIC SIGNIFICANCE IN NONJAUNDICED PATIENTS

In the absence of jaundice, slight changes in the liver function from the normal may be significant. In the nonjaundiced patients the more sensitive liver function tests are indicated. There are many conditions in which liver function tests may be of diagnostic or therapeutic help in the absence of jaundice. The four most common situations in which these tests are useful are here discussed.

A. Early Cirrhosis—In a patient with a questionable early cirrhosis the demonstration of slight liver impairment will support the diagnosis.

The following findings are significant:

1. Increased icteric index.

2. Increased urobilinogen in the urine.

3. Bromsulphalein retention.

Physiology—Bromsulphalein is normally excreted by the liver through the bile. In disturbances of biliary excretion, the blood level after the injection of a test dose remains high. This test is of no use in the presence of jaundice, since both hepatitis and obstruction interfere with the excretion of the dye.

Technic—Two mg. of bromsulphalein in a 5 per cent solution per kilogram of body weight is injected intravenously and the amount of dye retained is determined by comparing an alkalized serum sample (blood drawn from the other arm thirty minutes later) to

standards under the colorimeter. A retention of dye in more than traces is a sign of impaired biliary excretion and of liver damage in the absence of jaundice. The colorimetric readings permit a quantitative estimation.

4. Low albumin fraction and reversed albumin/globulin ratio.

5. Positive Takata-Ara test.

6. Dense flocculation of the cephalin-cholesterol emulsion.

7. Low cholesterol esters.

B. Chronic Gallbladder Disease—In some cases of chronic gallbladder disease without manifestation of jaundice, slight liver damage may be present, as demonstrated by the following tests:

1. Increased icteric index.

2. Bromsulphalein retention.

3. Dense flocculation of the cephalin-cholesterol mixture.

4. Decreased hippuric acid excretion.

C. In Controlling the Therapy with Hepatotoxic Drugs—Following the treatment with certain drugs (arsenicals, cinchophen, sulfonamide compounds and bismuth among others) hepatic jaundice may occur. This calls for immediate cessation of the therapy. With some of the drugs, however, especially the arsenicals, continuation of the therapy is sometimes desirable after the jaundice has subsided. Before such therapy is resumed liver function tests should be done to exclude persisting liver damage. In the presence of the latter, the therapy cannot be resumed. The status of liver function should also be determined whenever possible before treatment is started with a drug which may cause liver damage.

The following findings indicate impairment of liver function:

1. Increased urobilinogen in the urine.

2. Bromsulphalein retention.

3. Increased icteric index.

4. Decreased hippuric acid excretion.

5. Dense flocculation of a cephalin-cholesterol emulsion.

D. Hyperthyroidism—In hyperthyroidism impairment of liver function may parallel the degree of thyrotoxicosis. Some¹⁴ feel that the impairment of liver function may serve as an indication of the disease equal to or even more reliable than determination of the basal metabolic rate.

The following tests seem to be useful in evaluating the presence and degree of liver damage:

1. Galactose tolerance test.

In hyperthyroidism there is probably, in addition to liver damage, a faster intestinal absorption of galactose, which may raise the urinary excretion.

2. Hippuric acid excretion test.

3. Bromsulphalein test.

4. Cephalin flocculation test.

In other more rare cases in which liver function tests are indicated in the absence of jaundice, the tests discussed will usually also be of aid.

SUMMARY

Liver function tests according to their usefulness in given situations are indicated in various clinical conditions.

¹⁴ Boyce, F. F. Factors in Mortality of Thyroid Disease in Non-endemic Area, Analysis of 817 Consecutive Surgical Cases and 103 Consecutive Surgical and Nonsurgical Deaths with Note on Value of Quantitative Test of Liver Function in Estimation of Hepatic Damage. *South. Surg.* 9: 96-113 (Feb.) 1940.

In the differential diagnosis between surgical and medical jaundice, less sensitive liver function tests are required. In cases of prolonged jaundice the differential diagnosis may be impossible with any type of liver function test owing to the secondary hepatitis in obstructive jaundice. In the presence of jaundice the correct diagnosis can be made in the majority of cases by a good history, careful physical examination and simple qualitative urinary tests.

EMBOLIC ARTERIAL OCCLUSION OF LOWER EXTREMITIES

WITH REPORT OF FOUR SUCCESSFUL
EMBOLECTOMIES AND A REVIEW
OF THE LITERATURE

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The early recognition and operative treatment of embolic arterial occlusion of the extremities is still relatively infrequent. With the exception of the work reported by Swedish authors, surgical interest and treatment in this condition has been comparatively scant until very recently. It is significant that Deitch¹ reports only 10 successful embolectomies in Great Britain up to 1936. I therefore believe that my recent experiences with 4 successful embolectomies warrants a report of these cases and a review of the subject of arterial embolism of the extremities.

ETIOLOGY

The most frequent cause of arterial embolus in the systemic circulation is a mural thrombus in the left auricle or left ventricle of the heart—in the left auricle as a result of rheumatic heart disease with mitral stenosis or degenerative heart disease with auricular fibrillation and in the left ventricle as a result of cardiac infarction from coronary occlusion. Other possible causes are the so-called paradoxical emboli arising from the peripheral veins or the right auricle and passing through a patent foramen ovale to the left side of the heart, also thrombi arising from the pulmonary veins or from the walls of proximal arteries or aneurysm. These embolic masses may be well organized hard or even arteriosclerotic plaques, this type usually lodges and remains in one piece. On the other hand the embolus may be soft and friable breaking off into many pieces after the original impact with the vessel wall. Emboli usually lodge at the site of bifurcation of major peripheral arteries blocking both branches. Key, in an analysis of 382 cases, finds the bifurcation of the common femoral artery the most frequent site of embolic obstruction accounting for 55 per cent of all cases. The 4 cases to be here described occurred in the region of the common femoral or external iliac arteries.

The sequence of conditions occurring immediately following the impact of an embolus on a vessel wall presents an interesting corollary to the symptomatology, prognosis and treatment. A comparison of the embolus with the lumen of the vessel in which it lodges suggests that in many cases the immediate occlusion is due to the intense spasm of the vessel and the regional arterial tree affected. In about two hours, however, there is beginning formation of the distal secondary propagation thrombus. The distal secondary thrombus formation becomes so extensive after nine or ten hours and occludes so many collateral vessel orifices as to prevent return of circulation to an extremity even after operative removal of the embolus. This phenomenon emphasizes the rationale of combating vasospasm by the various measures to be discussed under therapy.

SYMPTOMATOLOGY AND DIAGNOSIS

The symptoms of sudden arterial occlusion are extremely variable and multiple. Severe pain is not always characteristic and the tendency to look for pain as the chief manifestation of embolism is probably responsible for the frequent failures to recognize the condition early. When pain does occur it is probably related to the intense arterial spasm of the distal vessel and collaterals initiated by the sudden impact of the embolus on the vessel wall. Thomas Lewis² believes that pain is due to ischemia of the muscles of the extremity involved and is therefore more significant in persons who have recently been active. In bedridden inactive patients muscle ischemia is not a pertinent factor and numbness and paralysis are more significant symptoms. Pain and tenderness along the course of the embolus and distal propagation clot are only late results. Pain itself may be present anywhere in the limb distal to the site of occlusion. Thus pain in the back would suggest occlusion at the bifurcation of the aorta. The variability of the pain factor is particularly attested in the cases reported in this paper since all the patients were partially or completely confined to bed for treatment of heart lesions at the time when the acute embolic accident occurred.

Other characteristic findings are absence of the peripheral pulses, a waxy whiteness or blotchy cyanosis of the skin, palpable coldness of the limb, impaired sensation, diminished reflexes and variable degrees of motor paralysis of the limb. A rather striking feature which was observed in my cases was a progressive diminution in the force and amplitude of the femoral pulse in embolism of the common femoral artery, as the hours elapsed a secondary thrombosis completed the extent of the mechanical occlusion of the vessel until the femoral pulse was gradually completely obliterated. De Takats³ points out that arterial embolism may have premonitory symptoms. A slight degree of numbness, tingling or coldness of the limb may appear days or weeks before the sudden complete vascular occlusion. These symptoms he believes to be due to the release of minute fragments from the central clot that is about to break loose.

Arterial thrombosis may be a complicating factor either as the original causative agent or as the agent

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¹ Deitch, H. I. Three Arterial Embolectomies in the Same Patient. *Ann. Surg.* 47: 477 (Feb. 19) 1936.

² Key, Einar. Embolism of the Peripheral Arteries. *Brit. J. Surg.* 4: 350-361 (Oct.) 1916. Embolectomy in the Treatment of Circulatory Disturbances of the Extremities. *Surg. Gyn. & Obst.* 63: 119-120 (Oct. 15) 1936.

³ Lewis, Thomas. Pain as an Early Symptom of Arterial Embolism and Its Causation. *Clin. Sci.* 2: 37-41 (July) 1936.

⁴ De Takats, G. W. and de Takats, Cera. Peripheral Vascular Disease. A Review of Some of the Recent Literature and a Critical Review of the Surgical Treatment. *Arch. Int. Med.* 60: 22-35 (Sept.) 1936.

provoking recurrence of the occlusion after embolectomy has been performed. Arterial thrombosis usually originates on a background of peripheral arteriosclerosis and myocardial disease. There is frequently a previous history of intermittent claudication, coldness and discoloration of the extremities. Injury to the vessel intima as a result of arteriosclerosis and slowing of the circulation from myocardial disease with insufficiency are the important inciting factors in arterial thrombosis. The relationship of this condition to anticoagulant therapy will be discussed later in the paper.

Localization of the site of embolic occlusion does not usually present any great difficulty. The best clinical guide to the site of occlusion is the first bifurcation of the main arteries above the upper limit of physical findings (i. e., numbness, coldness, discoloration and the like). Thus for example in the lower extremity if the upper limit of physical findings is at the knee joint, the probable site of occlusion is the bifurcation of the common femoral artery. The explanation for the difference between the anatomic site of the occlusion and the level of physical findings is that the collateral circulation is usually well able to supply nutrient blood for a considerable distance beyond the site of occlusion, until, that is, occlusion of the collaterals also occurs as a late thrombotic process. Visualization of the site of block by means of arteriography has also been utilized but is frequently not practicable and usually not necessary.

TREATMENT

The prime requisite to proper therapy in acute arterial embolism of the extremities is a constant awareness of the possibility of such an accident by those treating patients with heart disease, thereby enabling prompt, early recognition of the condition. Every hour lost before treatment is instituted threatens not only the life of the limb but the life of the patient as well. The immediate measures to be taken in every early case are threefold: (1) relief of arterial spasm, (2) slowing of the blood clotting time to minimize intravascular thrombosis and (3) prompt operative embolectomy if a trial of conservative medical therapy has not restored the circulation.

Relief of arterial spasm can be effected by two measures: (1) the use of papaverine hydrochloride intravenously and (2) interruption of the sympathetic pathways by paravertebral block. The intense arterial spasm is believed to be responsible for the resulting pain and for the closure of collateral vessel openings distal to this site of occlusion. It is best combated by intravenous papaverine hydrochloride, in $\frac{1}{2}$ to 1 gram (0.03 to 0.06 gm.) doses, to be repeated at intervals of one hour. In a small percentage of cases papaverine has undoubtedly caused a sufficient release of spasm to permit the passage of the embolus beyond a major arterial bifurcation, permitting restoration of circulation by this conservative measure. However, McKechnie and Allen⁵ believe that if there is not a prompt restoration of circulation after the first or second intravenous dose of papaverine hydrochloride, further conservative therapy is useless and immediate operative embolectomy should be performed. My associates and I have continued the administration of papaverine hydrochloride postoperatively to control pain and combat any vascu-

lar spasm resulting from operative trauma. Graham⁶ advises the use of papaverine hydrochloride and other nonoperative measures, such as passive vascular exercise, only for cases seen too late for operative embolectomy. Griffiths⁷ reports poor results with papaverine hydrochloride and conservative measures such as pavaex therapy, stating that such procedures merely caused prolonged delay and prevent early operative intervention. Denk,⁸ on the other hand, is confident that he has obtained satisfactory results in a fair number of cases by the intensive use of papaverine hydrochloride alone.

Linton⁹ states that the early use of paravertebral block to interrupt sympathetic pathways and counteract arterial spasm is useful in preventing blockage of collaterals and in controlling pain. Roome¹⁰ also reports the use of lumbar sympathetic block for the relief of pain and spasm following acute arterial occlusion but states that in his experience it has had no effect on the subsequent development of gangrene if embolectomy is not performed. Leriche¹¹ advises arteriectomy, that is, actual excision of the portion of the artery containing the clot, under the following conditions: (1) if operation is performed more than twenty-four hours after embolic occlusion, (2) if the endothelium under the embolus appears severely damaged and (3) if gangrene threatens despite embolectomy. He believes that this procedure abolishes reflex spasm above and below the site of obstruction.

It is our belief that conservative measures may be tried for four to six hours after occurrence of the embolic occlusion, and if after this time such measures have not caused prompt restoration of circulation immediate operative embolectomy should be performed. Or if six to ten hours have already elapsed since the onset of the occlusion, operative embolectomy should be performed without further delay.

TECHNIC OF OPERATION

The site of the operative approach is anesthetized with local infiltration of procaine hydrochloride. In all 4 cases here reported operation was performed at the site of the common femoral artery, a vertical incision extending from Poupart's ligament along the course of the artery a distance of about 4 inches. The femoral artery is gently mobilized, after the femoral sheath has been incised, and a complete cuff of adventitia removed from the wall of the artery with the aid of saline infiltration between adventitia and muscularis. Two bulldog clamps (or rubber shod Allis clamps) are placed proximal and distal to the embolic occlusion for control of arterial hemorrhage. With the clamps in place (under the specific control of an assistant), an incision is made axially through the vessel wall distal to the embolus. The organized embolic mass is identified and dislodged. It is gently attempted by catheter suction or an

- 5 McKechnie, R. E., and Allen, E. R. Sudden Occlusion of the Arteries of the Extremities. Study of One Hundred Cases of Embolism and Thrombosis, Surg., Gynec. & Obst. 63: 231-240 (Aug.) 1936.
- 6 Graham, Duncan. Embolism and Thrombosis of the Larger Arteries. Their Diagnosis and Treatment, Canad. M. A. J. 36: 33-38 (Jan.) 1937.
- 7 Griffiths, D. L. Arterial Embolism, Lancet 2: 1339-1344 (Dec. 10) 1938.
- 8 Denk, W. Zur Behandlung der arteriellen Embolie, Munchen med. Wochenschr. 81: 437-439 (March 23) 1934.
- 9 Linton, R. R. Peripheral Arterial Embolism. A Discussion of the Postembolic Vascular Changes and Their Relation to the Restoration of Circulation in Peripheral Embolism, New England J. Med. 224: 129-134 (Jan. 30) 1941.
- 10 Roome, N. W. Sympathetic Blockade in Peripheral Vascular Accidents, Canad. M. A. J. 44: 594-596 (June) 1941.
- 11 Leriche, Rene, Fontaine, Rene and Dupertuis, S. M. Arteriectomy in the Treatment of Obstructive Arterial Disease, Surg., Gynec. & Obst. 64: 149-155 (Feb.) 1937.

intra-arterial scoop The proximal bulldog or rubber shod Allis clamp is then opened *in situ* by the assistant and the intra-arterial blood pressure will usually force the embolic mass out through the arterial incision. If the embolus has been driven out in one piece, there will immediately follow a forcetful stream of blood under full arterial pressure and the assistant is instructed to close the proximal clamp. If such a forcetful arterial gush does not result the artery must be carefully investigated further proximally to dislodge one or more additional embolic masses higher up, possibly in the region of the external iliac. Such intra-arterial probing must be done extremely gently with as little trauma to the intima as possible. When a forcetful arterial flow has been obtained, the proximal clamp is replaced and the distal clamp is opened. If no blood flow results from the distal vessel, it is probably occluded by a propagation thrombus, which must be carefully dislodged by catheter suction or careful, gentle intra-arterial manipulation. The degree of organization, its extent and adherence to the vessel intima will depend on the length of time elapsed between the onset of the occlusion and the operation. In 1 of our cases the distal propagation thrombus removed in one piece measured 14 inches. When full arterial flow has been reestablished from both proximal and distal openings of the artery closure of the axial incision in the artery is performed by a careful continuous eversion suture of fine black silk affecting approximation of the intima in eversion. Whenever necessary several interrupted sutures are taken to control bleeding from the incision in the artery when the clamps are removed. As soon as closure of the arterial wall is completed, a full arterial pulsation can be seen transmitted down along the distal vessel and in some cases there is immediate restoration of warmth, color and peripheral pulsation in the lower limb.

The basis for the use of heparin in thrombosis and embolism has been thoroughly established by Murray¹² and Best in intensive studies. We have essentially followed their technic of administration as follows. The heparin solution is added to an intravenous saline drip. Usually 1,000 units of heparin *i. e.*, 10 mg. is added to each hundred cubic centimeters of saline solution. The saline and heparin mixture is allowed to run into the vein at such a rate that the clotting time of the patient's blood is maintained at about fifteen minutes *i. e.*, two or three times the normal value. The rate at which the solution runs in is usually about 25 drops a minute but may vary from case to case. The clotting time may be determined by one of the simple methods such as the breaking off of bits of a capillary tube filled with blood obtained by superficial capillary bleeding. In cases in which there is associated heart failure when administration of large amounts of intravenous fluids was contraindicated McClure and Lam have used the injection of undiluted heparin, repeated every three hours, with satisfactory maintenance of the clotting time at about fifteen minutes, that is using about 100 mg. every three hours. By the continuous intravenous drip method, about 20 to 25 mg. an hour is sufficient to maintain the clotting time at the desired level. We have used the intermittent administration of undiluted heparin as required by the cardiac status of the patient

with satisfactory results. The need for an antiheparin is rather unimportant since the clotting time returns to normal within one hour after its administration has been stopped. We have made it a practice to begin the administration of heparin as soon as the diagnosis of an embolic arterial occlusion is made, and it is continued whenever feasible for ten days, by which time it is felt that adequate reestablishment of circulation has taken place. The preoperative administration of heparin makes for rather a bloody field at the operative site but has in no way interfered with hemostasis or healing of the operative wound.

All instruments and suture materials are kept immersed in sterile liquid petrolatum and the operative field is kept constantly flushed with a warm 2 per cent solution of sodium citrate. Very fine black silk on an atraumatic eye needle is used for arterial suturing and hemostasis. When the operative procedure is completed the limb is carefully wrapped in thick cotton batting reinforced with flannel bandage from the toes to the groin. Postoperatively, general body warmth is maintained and heparin and papaverine hydrochloride administration are continued for five to ten days, depending on the rapidity with which a satisfactory clinical result is obtained.

PROGNOSIS

Most authors are in agreement that a living limb one month after embolectomy may be considered a successful result. Key,¹³ in a study of a series of 382 cases in Sweden, states that prognosis depends on the following factors: 1 The mortality rate of limb and patient rises rapidly after six hours following the occurrence of the acute embolic occlusion. 2 The poor general condition of patients subject to embolic occlusions militates against successful results. 3 Previous arteriosclerosis and rough handling of the vessel involved during operation predisposes to postoperative thrombosis involving collateral vessels as well as the main vessel.

Of this series of 382 cases Key reports that in 22 per cent the operation was successful, in 18 per cent subsequent amputation was required and in 60 per cent the patient died in the hospital within one month after the operation. Of sixty-six embolectomies performed on the iliac vessels, only ten were successful.

Griffiths states that the numerous failures after embolectomy are due to prolonged delay, late recognition of the condition and time consuming attempts at conservative therapy after operative treatment has been instituted. Danzis, in a review of case reports from the literature, found that there were 60 per cent successful results among those patients operated on within the first four hours and only 18 per cent successful results among those operated on after twelve hours. Of those patients not receiving embolectomy 13 per cent had amputations and 87 per cent were dead within two weeks after the acute embolic occlusion. The latest operation with a successful result was that of Holst in which a femoral embolectomy was done twenty-seven hours after occlusion.

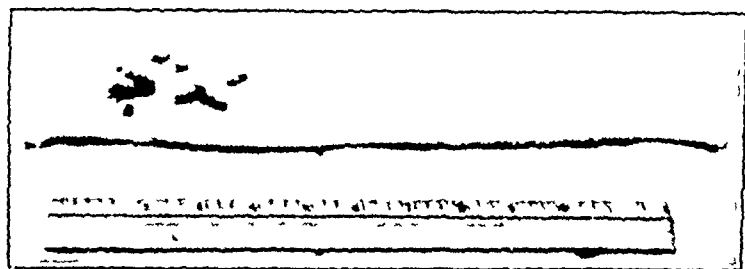
Graham offers the following as the causes of failure of restoration of circulation to the limb after embolectomy: (a) recurrent embolic accidents, (b) preexisting organic disease of the peripheral arteries and (c) reformation of the thrombus on the damaged intima.

¹² Murray G. D. W. Heparin in Surgical Treatment of Blood Vessels. *Arch. Surg.* 40: 307-325 (Feb.) 1940. Heparin in Thrombosis and Embolism. *Brit. J. Surg.* 27: 567-593 (Jan.) 1940.

Lund,¹³ in another review of a large group of cases in Sweden, states that the patients who did not have in embolectomy nearly all died within a short period of time whether they had gangrene and amputation or not. Of those patients successfully operated on, 25 per cent were dead in one year, 50 per cent in three years, 60 per cent in five years and 85 per cent in ten years.

REPORT OF CASES

CASE 1—H. B., a white man aged 49, admitted to the medical service of the Metropolitan Hospital on April 22, 1941, complained chiefly of difficulty in breathing and swelling of the scrotum and ankles of one year's duration, which had become progressively worse, he had previously been hospitalized elsewhere for the same complaints. Significant physical findings at the time of admission were auricular fibrillation, systolic murmur at the cardiac apex, a blood pressure of 130/80 moist rales at both lung bases, liver enlarged 5 cm. and tender to palpation, questionable presence of ascitic fluid and 1 plus edema of the ankle. An electrocardiogram indicated auricular fibrillation, severe myocardial damage suggestive coronary artery disease, possibly rheumatic. Therapy consisted of mercurium, digitalis, theophylline with ethylenediamine, clinical improvement was good until May 15, when the patient experienced a sudden severe pain in the left foot with a feeling of coldness and numbness in the left leg and thigh. Examination about one hour after the onset revealed cyanosis, coldness and



Specimens removed at operation in case 3. Above, multiple, hard organized, embolic masses removed through opening in common femoral artery; below, single distal tail-like propagation thrombus 14 inches in length removed retrograde through opening in common femoral artery.

diminished sensation of the left leg up to the knee. All peripheral pulses were absent with the exception of the femoral, which was poorly palpable. Oscillometric readings were completely absent below the groin. Operation was performed four and one-half hours after the embolic accident, through a longitudinal incision in the upper part of the left thigh under local anesthesia. The common femoral artery was exposed and incised longitudinally. An embolic mass about $\frac{1}{2}$ inch in diameter was removed without resulting bleeding, a probe was inserted proximally toward the external iliac, with gradual loosening of an additional embolic mass, which was forced out of the incision in the femoral artery with a terrific gush of bleeding, this mass was about 2 inches in length, hard and well organized. Suction applied to a soft rubber catheter in the distal femoral artery removed a soft tail-like thrombus about 6 inches long. Closure of the artery and wound was performed, heparin therapy was carried out as described. Normal warmth, sensation and circulation were restored to the left leg about the fifth day after operation.

On May 27, twelve days after the embolic accident to the left leg, the patient began to complain of increasing numbness, coldness and paralysis in the right leg. These symptoms were of about eleven hours' duration before the patient thought them important enough to report to the intern. Examination revealed a mottled discoloration, coldness and diminished sensation up to about the knee. All pulses except the femoral were absent, and oscillometric readings were absent below the midthigh. Operation was performed about twelve hours after onset of symptoms, with removal from the common femoral artery of an embolic mass 1 inch in length, there was an immediate gush of blood

proximally, and on removal of an 8 inch long distal propagation thrombus there was brisk bleeding from the distal femoral artery. The usual closure and postoperative therapy were carried out and satisfactory restoration of circulation to the limb was evident on the second day after operation. Of some interest are the tissue examination reports of the specimens removed at operation, the mass obtained at the first operation showed the usual firmly organized thrombus, whereas the embolus removed at the second operation revealed a decided purulent involvement of the organized clot. The patient was discharged from the hospital and has been under treatment in the cardiac outpatient department. Examination of the extremities about one year after the second embolectomy revealed both limbs to be warm and of normal sensation, with moderate edema about the ankles, the patient has had no complaints referable to the extremities.

CASE 2—M. H., a Negro aged 26, admitted to the surgical service of the Metropolitan Hospital on April 25, 1941, complained chiefly of progressively increasing pain in the right upper quadrant of the abdomen of five days' duration. There had been no nausea or vomiting until the day of admission, when the patient vomited three times with definite aggravation of the pain in the right upper quadrant. There was no other significant past history. Physical findings at the time of admission were as follows: temperature 99.4 F, pulse rate 100 and respiratory rate 28. The abdomen was moderately distended and tympanic, with exquisite tenderness, muscle resistance and hyperesthesia in the right upper quadrant. There was a sinus tachycardia with reduplication of the second sound, the blood pressure was 142/100, the white blood cell count 14,600 with polymorphonuclear leukocytes 88 per cent, urinalysis was negative except for a faint trace of albumin. The admission diagnosis was acute cholecystitis. The patient was treated expectantly for three days, and with no evidence of clinical improvement and a rising white blood count cell laparotomy was performed. The gallbladder and ducts were entirely normal, and no other intra-abdominal disorder was found except slight enlargement and hyperemia of the liver. Postoperatively the patient continued to have a spiking temperature with persistent tachycardia and increasing dyspnea, on repeated occasions he had episodes of severe pain in the left lower quadrant, the right lower quadrant and the left kidney region. An electrocardiogram showed auricular changes and myocardial damage. Blood cultures were repeatedly negative and urines showed granular casts. The Wassermann reaction was reported 3 plus. On May 29 (approximately one month after the onset of illness) the patient complained of coldness and loss of feeling and power in the right lower extremity. Examination revealed all pulses absent below the femoral artery, coldness, impaired sensation and absence of oscillometric readings below the right groin. A diagnosis was made of embolic occlusion of the right common femoral artery and operation was performed fourteen hours after the first onset of leg symptoms. An embolic mass about $\frac{1}{4}$ inch in diameter was removed from the common femoral artery and a long tail-like thrombus 8 inches in length was removed from the distal femoral artery with full restoration of femoral bleeding. The usual operative and postoperative technic was followed. On the third day after operation the right lower extremity was warm and had regained normal sensation, the peripheral pulses were still not obtainable. The medical condition persisted unchanged and medical consultation was of the opinion that the entire clinical picture could be explained on the basis of an active myocarditis with mural thrombi and repeated visceral and peripheral embolic episodes.

CASE 3—F. K., a white woman aged 64, admitted to the Flower and Fifth Avenue Hospitals on Sept. 29, 1941, had been under treatment for the past year for auricular fibrillation with mild cardiac decompensation. During the previous three weeks she had complained of precordial pain, palpitation and dyspnea. About twelve hours prior to admission the patient complained of severe pain in the calf of the right leg followed by a sensation of weakness and numbness in the leg. She massaged the leg and applied a hot water bottle to the calf region before calling her family physician, who made a diagnosis of embolic occlusion. Repeated intravenous papaverine hydrochloride was unsuccessful and operative intervention was advised. At the

¹³ Lund C. C. The Treatment of Embolism of the Greater Arteries. Ann. Surg. 106:880-909 (Nov.) 1937.

time of admission to the hospital about twelve hours after the occurrence of the accident the right leg was cold and cyanotic with patches mottling up the knee, almost completely insensitive and showing evidence of a second degree burn of the calf region. Occlusive readings were not obtained below the groin. The heart was enlarged to the left and downward, with clinical evidence of auricular fibrillation, an enlarged tender liver and a moderate amount of pulmonary basal rales. The blood pressure was 128/80. Operation was performed about thirteen hours after onset by the usual technique, it was noted on the operating table that the femoral pulse which had previously been palpable could no longer be obtained. When the common femoral artery was opened there was no bleeding. By combined careful probing and catheter suction several hard organized embolic masses were expelled from the opening in the femoral artery followed by a powerful gush of bleeding. There was no bleeding from the distal femoral artery. Catheter suction was applied and a single tail like propagation thrombus about 14 inches in length was removed, followed by free active bleeding from the distal femoral. Almost immediately after repair of the arterial wound the foot and leg were warm to palpation and peripheral pulses were felt. Postoperative convalescence was entirely normal except for separation of the burned skin from the calf and great toe. Excellent vascular granulations and filling in took place in a comparatively short time. At the last follow up examination nine months after operation the patient was up and about moderately active and under good cardiac regulation she had, however developed a progressive psychosis apparently on a cerebrovascular basis.

SUMMARY

1 A survey of the recent literature emphasizes that prompt operative intervention (within six to eight hours after acute embolic occlusion) offers a good prognosis for a live limb and a live patient.

2 Of those patients not receiving the benefit of embolectomy about 90 per cent die within two weeks, whether amputation is performed or not.

3 Patients under treatment for chronic cardiovascular disease should be constantly observed for the possibility of an acute embolic occlusion of the extremities.

4 Arterial embolectomy of the extremities is a simple safe operative procedure performed under local anesthesia, with no mortality rate per se.

5 The introduction of heparin therapy has remarkably facilitated the surgery of embolism and has minimized the danger of recurrent thrombosis.

6 The attempts at conservative treatment of acute embolic occlusion should not be prolonged beyond six hours after occurrence of the accident, if these measures are unsuccessful after a six hour trial immediate surgery should be performed.

7 Of the four successful embolectomies reported two were performed on 1 patient for two separate embolic accidents. The number of hours elapsed between the onset of embolic arterial occlusion and the time of operation were respectively four and one-half hours, twelve hours, fourteen hours and thirteen hours.

Intuition in Science—We often underrate the importance of intuition. In almost every scientific problem which I have succeeded in solving even those that have involved days or months of work the final solution has come to my mind in a traction of a second by a process which is not consciously one of reasoning. Such intuitive ideas are often wrong. The good must be weeded out from the bad—sometimes by common sense or judgment—at other times by reasoning—Langmuir. *Irving Science: Common Sense and Decency*. *Science* 97:1 (Jan 1) 1943.

USE OF PENICILLIN IN SULFONAMIDE RESISTANT GONORRHEAL INFECTIONS

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The preparation of a highly concentrated and active form of penicillin was first reported by Chain, Florey and others¹ in 1940. In 1941 Abraham and others² reported more extensively on their investigative studies including the first clinical trials. They mentioned that the growth of six different strains of *Neisseria gonorrhoeae* was inhibited in dilutions in the order of 1:2,000,000. Another strain was inhibited only up to 1:32,000. These investigators, however, pointed out that the actual figures reported must be taken with reserve because the potency of the penicillin varied as the work progressed. At the end point was based on twenty-four hour readings the results may indeed vary considerably. Subsequent experience largely has confirmed this early work.³ Herein we report experimental and clinical results with *Neisseria gonorrhoeae*. While we have prepared small amounts of penicillin the material used in our studies was furnished for the most part through the courtesy of Abbott Laboratories Incorporated.

Because of the limited amounts of penicillin available it did not seem justifiable to use penicillin in gonorrheal infections which are fairly amenable to sulfonamide therapy. The need, however, is apparent for an effective therapeutic agent against infections due to this organism which are known to be resistant to sulfonamide preparations. We elected therefore to study the effect of penicillin experimentally against several strains of *Neisseria gonorrhoeae* isolated from patients in treatment of whom adequate sulfonamide therapy had failed.

EXPERIMENTAL DATA

In vitro tests to determine the bactericidal action of penicillin on *Neisseria gonorrhoeae* were done in the following manner on three strains of the organism. A laked blood base was used for the test because by previous experience it had been found the most satisfactory method for preserving the viability of *Neisseria gonorrhoeae*. It was made by adding to sterile distilled water an equal amount of sterile citrated blood. Two different lots of penicillin were used, the first of which contained 174 Oxford units per milligram and the second 230 Oxford units per milligram. A primary dilution of 1:500 was made of the first lot and a com-

From the Division of Medicine (Dr. Herrell), the Section on Urology (Dr. Cook) and the Section on Bacteriology (Dr. Thompson) the Mayo Clinic.

1 Chain, E., Florey, H. W., Gardner, A. D., Heatley, N. G., Jennings, M. A., Orr-Ewing, J., and Sanders, A. G. Penicillin as a Chemotherapeutic Agent. *Lancet* 2:226-228 (Aug. 24) 1940.

2 Abraham, E. P., Chain, E., Fletcher, C. M., Gardner, A. D., Heatley, N. G., Jennings, M. A., and Florey, H. W. Further Observations on Penicillin. *Lancet* 2:177-188 (Aug. 16) 1941.

3 Heilman, Dorothy H., and Herrell, W. E. Comparative Antibacterial Activity of Penicillin and Gramicidin. *Tissue Culture Studies*. *Proc. Staff Meet. Mayo Clin.* 17:321-327 (May 27) 1942. Herrell, W. E., and Heilman, Dorothy. *Tissue Culture Studies on Cytotoxicity of Bactericidal Agents. I. Effect of Gramicidin, Tyrocidine and Penicillin on Cultures of Mammalian Lymph Node*. *Am. J. M. Sc.* 203:157-162 (Feb.) 1943. Herrell, W. E., Heilman, Dorothy H., and Williams, H. L. The Clinical Use of Penicillin. *Proc. Staff Meet. Mayo Clin.* 17:609-616 (Dec. 30) 1942. Hobby, Gladys L., Meyer, Karl, and Chaffee, Eleanor. Activity of Penicillin in Vitro. *Proc. Soc. Exper. Biol. & Med.* 50:277-280 (June) 1942. Observations on the Mechanism of Action of Penicillin. *ibid.* 50:281-283 (June) 1942. Chemotherapeutic Activity of Penicillin. *ibid.* 50:283-288 (June) 1942. Meyer, Karl, Chaffee, Eleanor, Hobby, Gladys L., Dawson, M. H., Schwab, Erwin, and Fletcher, G. On Penicillin. *Science* 96:20-21 (July 31) 1942. Herrell.

parable dilution in terms of Oxford units was made of the second lot which was also considered to be 1:500 for the purpose of this experiment. These primary dilutions then were used to make the higher dilutions of penicillin in the laked blood base. Preliminary trials showed that dilutions of 1:100,000 and 1:200,000 were most suitable for the tests since the end point in the test could be reached before there was any great

TABLE 1—The Antibacterial Effect of Penicillin on *Neisseria Gonorrhoea*

Strain	Dilution	1 Hr.	2 Hrs.	3 Hrs.	4 Hrs.
1	1:100,000	+++	0	0	0
	1:200,000	+++	+	0	0
	Control	+++	+++	+++	+++
2	1:100,000	+++	++	+	0
	1:200,000	+++	++	+	0
	Control	+++	+++	+++	+++
3	1:100,000	+++	+	+	0
	1:200,000	+++	+	+	0
	Control	+++	+++	+++	+++

+++ heavy growth, ++ moderate growth, + slight growth, 0, no growth

reduction of numbers of the bacteria in the control tubes. A heavy suspension of *Neisseria gonorrhoea* was made in 1 cc. of the laked blood base by removing the growth from the surface of a chocolate blood agar plate which had been incubated from twenty-two to twenty-four hours. Enough of this heavy suspension was added to the dilutions of penicillin in laked blood and to the control tube of laked blood so that if a 3 mm. loopful was streaked at once on a chocolate blood agar plate the resulting culture would show between 300 and 400 colonies. The tubes were placed in an incubator at 37° C. and subcultures were made on chocolate blood agar at hourly intervals from the test dilutions and from the control tube.

The results obtained are shown in table 1. It was noted that there was a sharp drop in the number of viable organisms in contact with penicillin between the first and the second hour in strains 1 and 3 and between the second and the third hour in strain 2. Table 1 also shows that all the organisms in contact with the dilutions of penicillin were no longer viable after three or four hours while the control tubes still had large numbers of viable organisms. It was apparent that after four hours there was some reduction of the number of organisms in the control tubes, and for that reason it was thought best to use such dilutions of penicillin as would give an end point within that period.

CLINICAL TRIALS

Penicillin, in addition to being antibacterial for the organism, fortunately is excreted rather rapidly in the urine. The twenty-four hour urine of patients receiving the amounts of penicillin used will usually contain approximately 3 Oxford units of penicillin per cubic centimeter of urine. In other words, between a third and a half of the material is excreted through the urinary apparatus. This is, of course, highly desirable in the treatment of infections of the type being considered. The high degree of solubility of the material also permits it to reach the involved tissues readily. From these observations, therefore, it seemed entirely logical to expect satisfactory clinical results from the use of penicillin in the treatment of infections due to *Neisseria gonorrhoea*.

In view of the highly effective antibacterial activity of penicillin against these strains of *Neisseria gonorrhoea*, the 3 patients from whom they were isolated

were treated with the intravenous administration of penicillin according to the method recently described by one of us.⁴ For the treatment of these infections the largest amount of penicillin administered in twenty-four hours was 32,000 Oxford units. Half of the twenty-four hour dose was dissolved in 1 liter of isotonic solution of sodium chloride. If for any reason the administration of isotonic solution of sodium chloride is undesirable, penicillin may be administered in a 5 per cent solution of dextrose in triple distilled water without any loss of activity. Initially between 100 and 200 cc. of the material is administered intravenously at a fairly rapid rate. Following this the rate of injection is regulated to between 30 and 40 drops per minute. The second liter containing penicillin may be attached to the continuous intravenous system eight to ten hours later. Repeated venipunctures may be avoided by allowing the solution of dextrose to drip in slowly during the interval in which penicillin is not being administered. A simple arm splint is applied to keep the arm in position. This is tolerated well by the patient and renders the continuous intravenous administration possible and not uncomfortable. When pyrogen free penicillin has been used, no toxic reactions have been observed. The solution containing penicillin is made up immediately before use. There is no evidence of loss of potency of the material which is kept in the closed system and is administered in the manner described. It should not be overlooked that administration of the solution of penicillin is continuous rather than intermittent.

A summary of the amounts of penicillin used, the number of days of administration and the results in the 3 cases herein reported is shown in table 2.⁵ The rather striking and early clinical improvement together with the complete lack of any toxic effect due to administration of penicillin was gratifying.

CASE 1—A white man aged 30 presented himself because of a urethral discharge which had persisted for thirty days. The urethritis had its onset six days after exposure. He was treated immediately with an adequate course of sulfathiazole but nothing more than temporary improvement was obtained. He received another course of sulfathiazole as an ambulatory patient without any apparent effect. He then was hospitalized for a third attempt at chemotherapy.

TABLE 2—Penicillin Therapy in Sulfonamide Resistant *Gonorrhea*

Case	Smear	Chocolate Blood Agar Culture	Penicillin		Days Treated	First Negative Culture Hrs.	Result
			Total, Mg.	Oxford Units			
1	Positive	Positive	340	68,000	2½	17	Cure
2	Positive	Positive	391	92,000	3½	48	Cure
3	Positive	Positive	442	104,000	3½	48	Cure

At the time of his admission a complete general examination gave negative results. There was a copious urethral discharge which on smear and culture showed the presence of *Neisseria gonorrhoea*. The genitalia were normal otherwise. The prostate was slightly enlarged and tender. The complete blood examination, including a flocculation test for syphilis, gave entirely normal results. The routine examination of urine revealed a slight amount of albumin, and the microscopic examination showed an occasional erythrocyte and pyuria, grade 4 on the basis of 1 to 4.

⁴ Herrell, W. E. Further Observations on the Clinical Use of Penicillin, Proc. Staff Meet., Mayo Clin. 18:6576 (March 10) 1943.
⁵ Since this paper was submitted for publication we have used penicillin in 2 additional cases of sulfonamide resistant gonorrhea. In 1 case, in which the infection had been present for four months, the cultures became negative forty-eight hours after the administration of penicillin was started. In the other case the infection had been present for eleven months and the first negative culture was obtained in twenty-one hours.

The patient was hospitalized and penicillin therapy was begun. Penicillin was administered by the intravenous drip method. The first liter contained 16,000 Oxford units and its administration was started at 5 p. m. on the day of his admission. Five hours after the treatment was begun the patient stated that the dysuria and urethral distress had subsided completely. By 10 a. m. the following day there was no urethral discharge, and no material could be obtained even after prostatic massage. In other words the patient was free from symptoms within seventeen hours after the institution of penicillin therapy. Prostatic secretion and first urine cultures taken seventeen hours after the institution of treatment did not reveal any *Neisseria gonorrhoeae*. Another attempt at culture was made twenty-four hours later but the results were completely negative. Forty hours after the institution of treatment routine urinalysis did not reveal any albumin, and the microscopic examination revealed no erythrocytes and only an occasional pus cell.

During the first twenty-four hours the patient received 2 liters of the penicillin preparation, which represented a total of 32,000 Oxford units, or 160 mg. For the second twenty-four hours he received 2 liters of the penicillin preparation, each containing 12,000 Oxford units or a total of 24,000 units for the second twenty-four hours. He received 1 more liter of penicillin after this which contained 12,000 Oxford units and because of the complete absence of any clinical findings treatment was discontinued and he was dismissed. Ten days later the patient returned for examination. He had been completely well and cultures taken after he had imbibed alcohol rather heavily and following coitus were entirely negative. The patient has remained entirely free from symptoms.

CASE 2—A white man aged 29 had been ill for five weeks. He had had a persistent purulent urethral discharge due to a gonorrheal infection contracted following exposure shortly before his illness. He had received sulfathiazole, sulfanilamide and finally sulfadiazine in amounts which would be considered quite adequate. Six days before admission there had developed acute urinary retention which required catheterization for relief. At that time purulent urine was obtained. Severe bilateral pain in the lower part of the abdomen had developed with some extension into both flanks. The patient suffered a great deal of pain during the act of urination and there were extreme frequency and urgency. His temperature ranged between 99 and 101 F. The prostate was enlarged, grade 4. It was extremely tender and the possibility of a prostatic abscess was considered. Examination of the abdomen revealed extreme tenderness and muscular spasm in both lower quadrants. There was also some tenderness in both lumbar areas. The temperature on admission was 101 F. The remainder of the physical examination gave negative results.

The routine urinalysis did not reveal any albumin or sugar. Microscopic examination revealed occasional erythrocytes and pyuria grade 2 with 50 cells per field. The concentration of hemoglobin and the erythrocyte count were normal. However, the leukocyte count was 14,600 per cubic millimeter of blood and the sedimentation rate was 94 mm per hour. Cultures of the prostatic secretion and first urine revealed many gonorrheal organisms present.

Penicillin therapy was begun shortly after the laboratory studies were reported. During the first twenty-four hours the patient received 32,000 Oxford units of penicillin given as previously described. During the second twenty-four hours he received 24,000 Oxford units. During the third twenty-four hours another 24,000 Oxford units was administered and during the final twelve hours of treatment 12,000 Oxford units, the total duration of treatment being three and a half days. Five and a half hours after the institution of treatment the patient stated that the abdominal pain and soreness which had been very distressing had subsided completely. He continued to have some perineal distress and the prostate was quite tender on examination. Forty-eight hours after the institution of treatment the prostate was less tender and it was approximately half the size it had been previously. The patient had little difficulty in urinating and stated that he felt entirely normal. His temperature did not rise above normal after the first twenty-four hours of treatment. When forty-eight hours of treatment had been completed cultures of the urine following prostatic massage did not reveal any gonorrheal organisms. Two subse-

quent cultures were also entirely negative. The patient was allowed to be up and around the hospital but did not receive any more therapy after treatment for three and a half days. Two days later he was dismissed. He was free from symptoms and the final culture of the prostatic urine after massage was negative. The routine urinalysis gave completely negative results except for the presence of four pus cells per field.

CASE 3—A youth aged 18 was admitted with a complaint of a urethral discharge which had persisted for four months. The urethritis had developed two days after exposure, and treatment had been instituted immediately following the diagnosis of gonorrheal urethritis. The first course of treatment consisted of sulfathiazole for twelve days. His dysuria and urethral pain were relieved but the discharge continued. Subsequent to this he had a course of twelve days' treatment with sulfanilamide. There was no diminution of the urethral discharge and bacterial cultures remained positive. A third course, which consisted of sulfanilamide, then was given. Following this he was treated for two and a half months by means of sulfathiazole given in courses with short rest periods. There was no improvement. Finally he received local urethral instillations of mild protein silver.

At the time of admission there was much urethral discharge. The prostate was slightly enlarged and quite tender. The remainder of his physical examination gave essentially negative results. The routine urinalysis showed albuminuria grade 2. The microscopic examination revealed occasional erythrocytes and pyuria grade 4. The concentration of hemoglobin was normal and the flocculation reaction for syphilis was negative. The leukocyte count was 9,600 per cubic millimeter of blood. Smears of the urethral discharge and chocolate blood agar cultures were both positive for *Neisseria gonorrhoeae*.

Penicillin therapy was instituted as soon as the diagnosis of gonorrheal urethritis and prostatitis was confirmed. During the first and second days of treatment the patient received 32,000 Oxford units of penicillin per day. The third day he received 28,000 Oxford units, and during the first twelve hours of the fourth day he received 1 liter containing 12,000 units. Twelve hours after the institution of treatment the patient stated that the dysuria associated with urination was practically gone. At this time there was still a slight amount of urethral discharge. However, the patient stated that it was less than he had noted for one month. Except for a slight urethral discharge he felt practically normal by the end of forty-eight hours' treatment. At this time bacterial cultures of the prostatic secretion and first urine were entirely negative. Another similar specimen obtained twenty-four hours later did not reveal any *Neisseria gonorrhoeae*. The microscopic examination of the urine revealed between 20 and 30 cells per microscopic field. The patient was dismissed. A recheck examination seven days later did not reveal any evidence of gonorrheal infection and bacterial studies again gave entirely negative results.

SUMMARY

We have studied experimentally the antibacterial activity of penicillin against several strains of *Neisseria gonorrhoeae* isolated from patients in whom the infection was completely resistant to what might be considered adequate treatment with sulfonamide preparations. These strains of organisms are inhibited completely in fairly high dilutions of an active form of penicillin. Bacterial cultures reveal that the number of organisms is decreased greatly at the end of one or two hours' contact with penicillin. Between the second and third or third and fourth hours in contact with penicillin no viable organisms were found. This experimental evidence immediately suggests that penicillin should prove effective in the treatment of clinical infections due to these sulfonamide resistant bacteria.

The complete absence of toxicity following the intravenous administration of pyrogen free penicillin, the lack of any discomfort to the patient and the rather rapid disappearance of clinical symptoms have been observed in three cases of sulfonamide resistant gonor-

thelial infections. Because of the limited amounts of penicillin available we feel that penicillin therapy should be reserved and studied further in those cases in which the infection is resistant to the accepted forms of treatment now being used. In all the cases reported, in addition to the clinical response noted negative bacterial cultures were obtained sometime between seventeen and forty-eight hours after the institution of penicillin therapy.

INTRAPULMONARY KLEBSIELLA PNEUMONIAE INFECTIONS

AN ANALYSIS OF THE LITERATURE REPORT OF
TWO UNUSUAL CASES WITH RECOVERY

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In 1882 Friedländer¹ announced the discovery of a micro-organism which he believed to be the cause of lobar pneumonia and which in his original communications he described as a micrococcus. Since this time many reports of infection due to *Klebsiella pneumoniae* (commonly called Friedländer bacillus) have appeared in the literature especially during the past twenty-five years. A review of these papers as well as of the popular textbooks of today, makes it evident that most of the attention has been focused on the pulmonary lesions with their complications. The literature dealing with extrapulmonary *Klebsiella pneumoniae* infections is scanty and has not been correlated. This has prompted the writing of this paper along with a desire to report 2 unusual cases with recovery and the use of sulfadiazine therapy in 1

PATHOLOGY

Morphology—During the first few years following the discovery of the organism there was much confusion owing to a superficial resemblance between Friedländer's organism and *Diplococcus pneumoniae*. However in 1886 Frankel² and Weichselbaum,³ by their careful researches were able to show that the 'micrococcus' of Friedländer was really a short encapsulated bacillus. Since this time enough data have been accumulated so that the morphologic characteristics can be agreed on. *Klebsiella pneumoniae* is a short, gram negative plump rod with rounded ends and is surrounded by a large capsule. The organisms are often relatively small and arranged in pairs. The average measurements are from 0.5 to 1.0 micron in width and 1 to 3 microns in length. Forms approaching both extremes may be encountered in one and the same culture. On prolonged cultivation they may become pleomorphic and grow out as long rods or filamentous or even club shaped bacilli. They are nonmotile and possess no flagella. Spores are not formed. The bacillus is characteristically surrounded by a well developed capsule, which is most perfectly demonstrated in preparations taken directly from some animal fluid, such as the secretion or exudate from infected areas.

Physiology—The organism is easily cultivated, growing readily on all the usual culture mediums. Growth is most rapid at a temperature of 37.5 C but occurs

also between 12 and 45 C. It is aerobic and facultatively anaerobic. The growth on agar is very characteristic appearing glossy, smooth and viscid. The colonies are large, grayish white and extremely mucoid. From the papers of Osterman and Rettger⁵ one finds that the *Klebsiella pneumoniae* group is an extremely variable one and is most apt to be confused with the coli-aerogenes group. These authors have done considerable work in the differentiation of these groups.

Classification—*Klebsiella pneumoniae* is known by many names. Various authors have referred to the organism as the Friedländer bacillus, *Bacillus pneumoniae*, *Bacillus mucosus capsulatus*, *Pneumobacillus* and *Bacillus encapsulatus pneumoniae*. Julianelle in 1926⁶ and again in 1930,⁷ by the study of agglutination and precipitin reactions, was able to distinguish three types A, B and C. All others were placed in a heterogeneous group X. It is quite probable that in the future group X may be further broken down, just as was group IV of the pneumococcus. *Klebsiella pneumoniae* A is by far the most frequently seen, B is immunologically related to the pneumococcus type II, the C group appears infrequently and is much less virulent than the first two.

Distribution—Ford⁸ states that *Klebsiella pneumoniae* is widely distributed in nature, as it has been shown to exist in the soil, in the air, in dust, in mud and in canal water. It also appears to be a rather frequent

Primary Sites of Infection in One Hundred and
Twenty-Eight Cases

Primary Site	Number	Per Cent
Gastrointestinal tract	61	31
Genitourinary tract	50	25
Biliary passages and liver	46	23
Lungs and upper respiratory tract	25	12.5
Miscellaneous skin and meninges	10	5
Vagina, uterus and adnexa	6	3

inhabitant of the human body both in the respiratory and in the intestinal tract. Bloomfield¹⁰ reports that 58 per cent of normal persons have the bacillus present in the respiratory tract—most frequently localized in and about the tonsils. Dudgeon¹¹ states that the organism is found in the intestinal tract of 5.5 per cent of normal persons.

SITE OF PRIMARY INFECTION

Although in the minds of most physicians and in textbooks the organism is primarily associated with pneumonia or other infections of the respiratory tract, Baehr, Schwartzman and Greenspan,¹² in a report of 198 cases from the Mount Sinai Hospital in New York, claim that this conception is wrong. They make the statement that the respiratory tract is a less common site of primary infection. The primary sites found in the 198 cases reported by them are given in the accompanying table.

- 5 Osterman, E. and Rettger, L. F. A Comparative Study of Organisms of Friedländer and Coli Aerogenes Groups. *J. Bact.* 42: 699-719, 721-743 (Dec.) 1941.
- 6 Julianelle, L. A. A Biological Classification of Encapsulated *Pneumoniae*. *J. Exper. Med.* 44: 113 (July), 683 (Nov.) 735 (Dec.) 1926.
- 7 Julianelle, L. A. The Distribution of Friedländer Bacilli in Different Types. *J. Exper. Med.* 52: 539 (Oct.) 1930.
- 8 Ford, W. W. Textbook of Bacteriology, Philadelphia, W. B. Saunders Company, 1927, p. 562.
- 9 Gay, F. R., and his associates. Agents of Disease and Host Resistance, Springfield, Ill., Charles C. Thomas, Publisher, 1935, p. 691.
- 10 Bloomfield, A. L. The Mechanism of the Bacillus Carrier with Special Reference to the Friedländer Bacillus, *Am. Rev. Tuberc.* 1: 67-7 (Jan.) 1921.
- 11 Dudgeon, L. S. A Study of Intestinal Flora Under Normal and Abnormal Conditions, *J. Hyg.* 25: 119 (July) 1926.
- 12 Baehr, George, Schwartzman, Gregory, and Greenspan, E. B. Bacillus Friedländer Infections, *Ann. Int. Med.* 10: 1788-1801 (Jul.) 1937.

From the Surgical Service of Grace Hospital.

- 1 Friedländer, Virchow's Arch. f. path. Anat. 87, 1882, Fortschr. d. Med. 1, 1883, ibid. 2, 1884.
- 2 Zinsser, Hans, and Bayne Jones, Stanhope. A Textbook of Bacteriology, ed. 8, New York, D. Appleton Century Company, 1939.
- 3 Frankel, Albert. *Ztschr. f. klin. Med.* 10: 426, 1885; 1886.
- 4 Weichselbaum, Anton. *Med. Jahrb.* 1: 483, 1886.

From the table one may readily see that the intraperitoneal combination of gastrointestinal and biliary tracts account for more than 50 per cent of the cases. The lungs and upper respiratory tract, including the pharynx, tonsils, larynx and nose, in this series of cases appear as the primary sites in only 12.5 per cent.

PREDISPOSING CAUSES

Listed in various textbooks and papers the main predisposing causes are alcoholism, trauma and submergence. In reviewing the latest cases diabetes mellitus appears to be a common accompanying condition. What role the diabetes plays is hard to say—it may tend only to lower the patient's resistance and so make him more susceptible to *Klebsiella pneumoniae* infections as well as to other infections. Bachr and his associates¹⁴ point out that stasis in the biliary or urinary tract, either by stone occlusion or external pressure definitely plays a role in predisposing to infection in these regions.

PATHOLOGIC AND CLINICAL FEATURES

The pathologic lesions vary with the site of primary infection and the subsequent course of events. In the experimental work reported by Gay and his associates⁹ subcutaneous inoculation in mice produced a spreading lesion containing a viscid exudate consisting of fibrin, bacilli and leukocytes. Intraperitoneal injection into mice resulted in death. Autopsy revealed viscid stringy exudate containing leukocytes in the peritoneal cavity, general septicemia being demonstrated by cultures.

In the human being the pathologic condition produced in the lungs has been well described. The pathologic condition is not as well known in the extrapulmonary lesions. However from the reported cases one can see that *Klebsiella pneumoniae* is a pathogen which may be associated with suppurative processes in any part of the body, more particularly in the gastrointestinal, genitourinary and biliary systems. The suppurative processes tend to be extensive and of a rapidly spreading nature. In many cases complications such as septicemia, liver abscesses, meningitis, pelvic abscesses and subphrenic abscesses make their appearance.

Intra-abdominal infections are usually secondary to a perforative lesion of the colon or appendix. Eighty-seven per cent of the cases reported by Baehr and his associates¹ resulted from appendical abscesses. Other causes may be perforation of a carcinoma, rupture of a diverticulum or traumatic perforation of the bowel. In these cases peritonitis occurs and may be rapidly followed by subphrenic abscess, liver abscesses, empyema, septicemia and pulmonary metastatic abscesses.

Primary liver abscesses fortunately are uncommon. Boettiger and his associates¹³ who reported 2 cases resulting in death say that in their review of the literature less than 25 cases of primary liver abscesses have been reported since 1900. Many of these cases reported as primary liver abscesses are probably in reality secondary to intestinal or biliary disease for like *Escherichia coli* and other intestinal organisms, *Klebsiella pneumoniae* may enter the portal system and be excreted by the liver. Under this circumstance excretory infections are apt to occur if stasis is present.

In the urinary tract *Klebsiella pneumoniae* is often associated with other organisms—*Escherichia coli*, *Proteus vulgaris* and *Bacillus proteolyticus* most commonly.

Here again when stasis is present, excretion of the organism through the kidney is apt to cause infection. During the past few years in American journals prostatic¹⁴ and perirenal¹⁵ abscesses with complicating pathologic conditions have been reported.

Bachr and his associates¹⁴ in their series found that 38 of the 46 patients with infections of the biliary tract had gallstones in the gallbladder or common bile duct. The pus in the infected gallbladder and common duct tends to be thin and presents no distinctive features, although in some cases it may be foul smelling, thick and mucoid.

In the female genital tract suppuration is present—usually in the adnexa. Pelvic abscesses are apt to develop. A case of uterine gangrene and septicemia following criminal abortion was reported by Hipp in 1936.¹⁶

In the ears a purulent otitis media occurs and is apt to be followed by mastoiditis. Cavernous sinus phlebitis has also been reported.¹⁷

Cases of primary meningitis, osteomyelitis and keratitis have been recorded both in American and in foreign journals.

As a caustic agent in septicemia *Klebsiella pneumoniae* is rather uncommon. For Kolmer¹⁸ in his observations on 282 cases of septicemia of all types, remarks that *Klebsiella pneumoniae* septicemia is rarely encountered. However when *Klebsiella pneumoniae* infection does already exist septicemia is not too unusual. Baehr and his associates¹⁴ report that in 16 of their 198 cases (8 per cent) septicemia developed. Meyer and Antman¹⁹ in 1939 brought out the fact that 109 cases of *Klebsiella pneumoniae* septicemia had been reported in the literature. Since 1939 a few more cases have been added to the literature. A feature of interest is that in many of the cases of septicemia the site of origin remained obscure. However with the newer knowledge that in about 75 to 80 per cent of cases the primary site of infection is in the gastrointestinal, genitourinary or biliary tract it is quite probable that the original focus will be discovered more often.

COURSE

The course of *Klebsiella pneumoniae* infections depends on the location of the primary site and the complicating features. In general the disease usually starts rather suddenly with fever and malaise, local pain and tenderness are present. As the infection progresses, the suppurative process soon becomes evident with the cultures showing the organism in large numbers. Until recently a fulminating course with many complicating features has been the usual accepted picture. Of late it has been recognized that *Klebsiella pneumoniae* infections may also run a chronic low grade course in extrapulmonary lesions as well as in pulmonary infections as reported by Solomon.²⁰

14 Pfeiffer D. B. *Klebsiella Pneumoniae Bacteremia Due to Prostatic Abscess—Case with Recovery*. Ann Surg 106: 1115-1118 (Dec.) 1937.

15 Kindall L. *Perirenal Abscess with Gas Formation and Metastatic Pulmonary Abscesses Due to Friedlander Bacillus*. Case J. Urol 46: 555-561 (Sept.) 1941.

16 Hipp J. *Uterine Gangrene and Septicemia Due to Friedlander Bacillus Following Criminal Abortion*. Case Ann Anat Path 13: 116-121 (Jan.) 1936.

17 Allen B. *Otitis Cavernous Sinus Phlebitis Due to Friedlander Bacillus*. J Mount Sinai Hosp 2: 169-173 (Nov-Dec.) 1933.

18 Kolmer J. A. Ann Int. Med 5: 612-631 (Nov.) 1934.

19 Meyer K. A. and Antman Leo. *Treatment of Friedlander's Septicemia by Sulfapyridine with Recovery*. J A M A 113: 16-17 (Oct.-23) 1939.

20 Solomon Saul. *Chronic Friedlander Infections of Lungs—Report of Seventeen Cases and Observations on Therapy with Sulfapyridine and Sulfanilamide*. J A M A 115: 1527-1536 (Nov. 2) 1940.

13 Boettiger Carl, Weinlein Mandel and Werne Jacob. *Primary Suppuration of Liver Due to Friedlander's Bacillus*. J A M A 114: 1050-1055 (March 23) 1940.

TREATMENT AND PROGNOSIS

During the early history of *Klebsiella pneumoniae* infections the only treatment given was supportive and symptomatic. As a result the prognosis was uniformly grave. Although definite mortality figures for extrapulmonary lesions are not available during this early period, in a review of the literature from 1882 to 1938 of pulmonary lesions Hartman²¹ found 232 cases with satisfactory records of *Klebsiella pneumoniae pneumonia* with a mortality of 94 per cent. In the 198 cases reported by Bach and his associates²² in 1937 biliary tract infection carried a mortality of 30 per cent as compared with 17 per cent mortality in urinary tract infections. In this report also 16 cases of *Klebsiella pneumoniae* septicemia occurred, of which 4 were not fatal (a mortality rate of 75 per cent).

Another nonspecific form of treatment instituted shortly after the turn of the century was surgical drainage. There is no doubt that this procedure in many cases did save lives.

During the past few years besides the use of several chemical agents, including the iodides, more specific therapy in the form of serum and the sulfonamide compounds has been introduced.

According to Robertson²³ type II antipneumococcus serum, which is known to cross agglutinate certain members of the Friedlander group, has been used with some success. Perlman and Bullowa²⁴ agree that this serum may be of value in *Klebsiella pneumoniae* B infections.

An autovaccine has been used with successful results, as reported in some of the foreign journals.²⁵

Bullowa,²⁶ using specific serum therapy in 8 cases of *Klebsiella pneumoniae pneumonia*, reports a mortality of 50 per cent as compared with a mortality of 89 per cent in the non-serum treated group. The use of serum is still in the experimental stage and, although theoretically it may sound good, it is not very practical, for the serum is not easily available, the cost is high and the cases for treatment are so few that the serum degenerates between infrequent usage.

The sulfonamide compounds, more particularly sulfapyridine, have given some hopeful results. Long and Bliss²⁷ in their book report favorably both from experimental and from clinical studies. Solomon²⁸ was encouraged by the results with sulfapyridine in his series of 17 cases of chronic pulmonary infections. Cures have been reported in various journals since 1939 with sulfonamide therapy in the treatment of *Klebsiella pneumoniae* septicemia,²⁹ meningitis²³ and pneumonia.²⁹

REPORT OF CASES

CASE 1—History—W. R., a white man aged 52, a machine operator, admitted to Grace Hospital in 1941, had one week previously suddenly become aware of a sharp aching pain on the inner aspect of his left ankle. The pain was continuous, radiated upward toward the knee and persisted to the time of admission. Swelling and redness appeared about the inner aspect of the ankle after three days and then rapidly increased. He became bedridden at this time because of pain and the increasing swelling and soreness. There was no history of any injury to the ankle or any part of his body. He had had no previous similar episodes. He stated that he had not had a recent cold or sore throat and he had no urinary or gastrointestinal complaints.

He had been known to have diabetes for one year before admission to the hospital, controlled on a diabetic diet and 20 units of insulin daily. A careful review of the systems revealed no abnormalities. There had been no previous operations or accidents. He had been drinking alcoholic beverages in moderation. He had been married for thirty-three years and his wife and six children were alive and well.

Physical Examination—The patient was alert and cooperative and complained of pain in the left ankle. The ears, nose, mouth and throat were normal except for extremely carious teeth. The heart, lungs and abdomen were normal. A rectal examination revealed the prostate to be slightly enlarged but not tender, irregular or boggy. Local examination of the left ankle revealed tenderness, swelling and redness of the ankle and foot. Motion of the ankle was limited almost completely because of pain. No external abrasion or laceration could be seen. There was no evidence of lymphangitis or lymphadenitis. His temperature was 101.4 F, pulse rate 94, respiratory rate 20 and blood pressure 120 systolic and 70 diastolic.

Laboratory Examinations—Examination of the urine at the time of admission revealed 4 plus sugar and 2 plus acetone, blood sugar was 350 and nonprotein nitrogen 40. White blood cells numbered 28,000 with 90 per cent polymorphonuclear leukocytes, of which 12 per cent were nonsegmented. The red blood cell count was 4,800,000 and the hemoglobin content 92 per cent (Dare method). The Wassermann and Kahn reactions of the blood were negative.

Course—The diabetic service was called in to treat the patient's diabetic condition. Treatment in the form of elevation of the extremity, ice bags to the foot and ankle later changed to hot magnesium sulfate soaks, sedation and sulfathiazole 2 Gm immediately and 1 Gm every four hours was instituted.

During the first week in the hospital the patient appeared quite toxic, his temperature ranged between 101 and 104 F. A blood culture yielded no growth. X-ray examination revealed no evidence of osteomyelitis of the ankle. The sulfathiazole blood level remained between 4 and 5 mg per hundred cubic centimeters. Sedimentation time was fifteen minutes, and the repeated white blood cell count was 22,000 with 78 per cent polymorphonuclear leukocytes. The foot and ankle became more swollen and then localized abscesses appeared over the lateral and medial malleoli and over the dorsum of the ankle. On the eighth hospital day he was taken to the operating room, where the abscesses were incised and drained, with the release of large quantities of chocolate colored viscid pus. Cultures of this pus yielded a pure growth of *Klebsiella pneumoniae* classified as belonging to group A.

Repeated blood cultures were negative. Smears and cultures from the nose and throat were negative for *Klebsiella pneumoniae*. During the next few days there was a rapid progression of the suppurative process up the leg, with many areas of fluctuation appearing in the leg. The patient was given a transfusion of 650 cc of citrated blood and again was taken to the operating room, where multiple incisions were made in the leg. Pus was found extending throughout the entire leg, subcutaneously, in the fascial spaces and in the muscle bellies. Because of this, most of the leg was laid open and rubber catheters were inserted through and through for drainage and irrigation. He was given another transfusion postoperatively and was placed on sulfadiazine therapy with an initial dose of 4 Gm and then 1 Gm every four hours. The pus again yielded *Klebsiella pneumoniae* in pure culture. Repeated

21 Hartman, M. M. Recovery from Acute Friedlander Pneumonia. Report of Case and Review of Literature, *Ann Int Med* 14: 513-521 (Sept.) 1940.

22 Robertson, C. W. Meningitis Due to Friedlander Bacillus. Recovery of Case Treated with Sulfapyridine, *Cand M A J* 15: 70-71 (July) 1941.

23 Perlman, E., and Bullowa, J. G. M. Primary Bacillus Friedlander Pneumonia. Therapy of B. Friedlander B. Pneumonia, *Arch Int Med* 67: 907-920 (May) 1941.

24 Rouffart Marin, J. Septicemia Due to Friedlander Pneumobacillus. Case Cured by Autovaccine, *Bruxelles med* 19: 1145-1146 (July 16) 1939. Tingerland, A., Hub, M., and Marsalak, J. Chronic Suppurative Diseases of Adnexa Due to Friedlander Pneumobacillus Successfully Cured with Autovaccine, *Časop lek česk* 78: 1145-1147 (Oct 20) 1939.

25 Bullowa, J. G. M. The Management of Pneumonias.

26 Long, P. H., and Bliss, Eleanor A. The Clinical and Experimental Use of Sulfanilamide, Sulfapyridine and Allied Compounds, New York, Macmillan Company, 1939, p. 36.

27 Drot, M., and Dutrey, M. Septicemia Due to Friedlander Bacillus with Pulmonary Localization. Cure After Sulfapyridine Therapy. *Cas. Bull et mem Soc med d hop de Paris*, 56: 541-544 (Oct 29) 1940.

28 Garcia Montes, G., and Aballis Real, W. Purulent Meningitis Due to Friedlander Pneumobacillus. Cured by Sulfapyridine, *Bol Soc cubana de pediat* 12: 5-15 (Jan) 1940.

29 Muschenheim, C. Chronic Friedlander Infections of the Lung, *Internat Clin* 3: 216-224 (Sept.) 1940. Sinclair, F. Friedlander Pneumonia Successfully Treated with Sulfapyridine, *Brit M J* 1: 196 (Feb 8) 1941.

blood cultures again were negative and repeated x-ray examinations of the left ankle were negative for osteomyelitis. Irrigation of the leg with 5 per cent solution of sodium sulfadiazine was carried out through the catheters. During the next week (third week) the patient looked and felt much improved, his temperature returned to between 99 and 100.4 F and the white blood cell count diminished. However on the eighth day following these last incisions it was noticed that the leg was again filling up with purulent material, his temperature rose to 101 F and his white blood cell count rose to 27,500 with 90 per cent polymorphonuclear leukocytes.

A midthigh amputation was decided on in an attempt to save the patient's life. This was done under spinal anesthesia. During the amputation a pocket of pus was encountered on the lateral aspect of the thigh. This region was gently but carefully debrided, sulfadiazine 5 Gm. was inserted locally and the stump was left open except for one suture to bring the skin over the end of the bone. Cultures of the pus from this region again showed the Friedländer organism. He was again placed on sulfadiazine postoperatively and was given two transfusions of 300 cc each. During the next twelve days he appeared to be making good progress; the stump remained fairly clean, no new progression of the infection was noticed and his temperature remained normal. The sulfadiazine level remained between 5 and 7 mg per hundred cubic centimeters. The stump granulated in well and the remainder of his course was uneventful except for the necessity of having a small abscess opened up at the midportion of the stump which soon healed over. He was discharged on crutches on his forty-eighth hospital day, twenty-eight days after the midthigh amputation.

Second Admission.—Approximately two months after discharge from the hospital the patient was readmitted with pain, tenderness and swelling of the stump and with a temperature of 103 F. Soon after this admission the stump opened spontaneously and discharged about 200 cc of foul smelling, chocolate colored pus, cultures of this showed *Klebsiella pneumoniae*. After observation for six days during which time the stump did not seem to drain well he was taken to the operating room where the draining abscess of the stump was opened up widely and all the infected granulation tissue was carefully scraped out. Sulfadiazine 10 Gm was inserted locally and he was started on the same drug 1 Gm every four hours by mouth. The blood concentration of the drug was maintained between 6.5 and 9 mg per hundred cubic centimeters for the next two weeks and then gradually decreased. He remained afebrile, the stump healed well and his diabetes was easily controlled. Four weeks after this second admission he was discharged to his family physician. He was seen in the surgical follow-up clinic two weeks, two months and four months after discharge. At each return visit he showed more improvement, he was gaining weight and the stump remained well healed. He was seen again one year after onset of his infection, at which time he was wearing a permanent type of prosthesis and was walking about with the aid of a cane. He had gained 35 pounds (16 Kg.) his general health was excellent and the stump was clean and well healed.

CASE 2³⁰.—M. M., a housewife aged 39, admitted to Grace Hospital in October 1937 had a typical history and physical manifestations of an acute exacerbation of chronic cholecystitis with cholelithiasis. All other systems were normal. A Graham visualization test of the gallbladder revealed a pathologic non-filling gallbladder but no definite evidence of gallstones. On the sixth hospital day she was taken to the operating room, where a gangrenous gallbladder containing stones was removed. The gallbladder was so friable that during its removal it was torn open. A cigaret drain was inserted in the operative region before the abdominal wall was closed. The patient felt well during the first twenty-four hours but then had respiratory distress and cyanosis and a spiking temperature course began 100 to 104 F. Physical examination and x-ray examinations with a portable apparatus were suggestive of either atelectasis or pneumonia in the right lower lobe. During the next three weeks she had a stormy septic course during which time the operative wound stopped draining, repeated white blood cell counts ranged between 18,000 and 35,000 with polymorphonu-

clear leukocytes between 80 and 90 per cent. Two blood cultures were negative. She was given repeated transfusions, parenteral fluids and oxygen intermittently as needed. A subphrenic abscess was suspected during the latter part of this three week period and finally it was deemed advisable to explore the subphrenic region. A thoracotomy was done in the eighth interspace in the posterior axillary line. Considerable sero-sanguineous fluid was found in the pleural cavity, the wound was probed with dry gauze and on aspiration with a needle through the diaphragm dirty yellowish green viscid pus was aspirated. This pus yielded a pure culture of *Klebsiella pneumoniae*. The patient was placed on sulfanilamide therapy, and several days later the subphrenic region was entered from above and a mushroom catheter was inserted through the diaphragm. Drainage was profuse for the first two days, consisting of fibrin leukocytes and red blood cells. Cultures of the drainage were positive for the gram negative Friedländer organism. Later on the amount of drainage decreased and cultures showed *Klebsiella pneumoniae* and *Bacillus pycnaneus*. During the next three weeks the patient was kept on a regimen of sulfanilamide medication and repeated small transfusions. She improved slowly both clinically and by x-ray evidence and was discharged from the hospital eight weeks from the date of admission. At home the thoracotomy wound drained for about five weeks and then closed spontaneously. X-ray films at this time showed decided improvement, the diaphragm was elevated and the pleura was thickened but there was no evidence of fluid levels or any pocketing abscess. She has been followed at intervals during the past five years. After an initial period of two years during which time she complained of weakness, easy fatigability, an occasional cough and aches and pains in the joints of her shoulders and hands, she has been feeling well, complaining only of mild dyspnea on moderate exertion for the past three years.

COMMENT

Both of the cases herein reported are examples of extrapulmonary *Klebsiella pneumoniae* infections. The first case apparently was one of infection in the soft tissues about the ankle as the primary site of the infection, although there was no local trauma and there were no abrasions or lacerations. Cultures of material from the nose and throat were negative for *Klebsiella pneumoniae*, as were several blood cultures. Stool cultures were not done, but the patient exhibited no symptoms or signs of enteritis or colitis. The organism was definitely established by the various differential tests as *Klebsiella pneumoniae* belonging to group A. The suddenness of onset was typical as were the suppurative process and the septic course. As in many of the latest cases reported, the man had diabetes mellitus as an accompanying condition. When an abscess was encountered during the midthigh amputation, it was felt that the patient's prognosis was poor for the infection was a severe progressive one with a very virulent strain of *Klebsiella pneumoniae* as evidenced by the previous rapid extension throughout all the tissues of the leg. I have little doubt that adequate surgical drainage and the use of sulfadiazine both locally and generally brought about recovery in this case. Septicemia did not occur or else was so transitory that it was not picked up in the repeated blood cultures.

Case 2 is similar to cases reported by Baehr and his associates in that the primary site of the Friedländer infection was in the biliary tract. As is usual in many of these cases there was a parade of complicating pathologic conditions. In this case a localized peritonitis was followed by a subphrenic abscess and then later by empyema. The predisposing cause here was probably stasis in the biliary tract due to stones. Here again recovery was probably brought about by the combination of adequate surgical drainage and sulfanilamide therapy.

30 Reported through the courtesy of Dr. Anthony J. Mendillo.

SUMMARY AND CONCLUSIONS

1 In 2 unusual cases of extrapulmonary *Klebsiella pneumoniae* infections recovery occurred

2 The use of sulfadiazine in case 1 is, I believe the first recorded instance of the use of this drug for Friedlander infections in the literature

3 The combination of adequate surgical drainage when possible and sulfonamide therapy at present appears to be the best form of treatment

4 Because of a persistent high mortality rate in *Klebsiella pneumoniae* infections it is felt that further therapeutic trials should be attempted with the newer sulfonamide compounds and also with the newer antibacterial agents such as gramicidin, penicillin and aspergillin

Clinical Notes, Suggestions and New Instruments

THROMBOPLINIC PURPURA DEVELOPING AS A COMPLICATION OF SULFATHIAZOLE AND SULFADIAZINE THERAPY

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Although many types of complications have been described since the sulfonamide compounds were introduced into the treatment of infectious diseases, there are not many instances in which thrombopenia with associated purpura has been reported as a complication of therapy with these drugs. Markel and Rike¹ reported the development of hematuria, melena and oozing of blood from the gums and a wound incision in a case in which sulfamylamide was given postoperatively. The platelet count was 180,000, the bleeding time was prolonged and the clotting time was normal but the clot failed to retract in twelve hours. Necropsy failed to demonstrate any abnormality of the bone marrow. Hoffman² reported hematuria, gingival bleeding, a hemorrhagic macular rash covering the lower extremities and melena in a case in which sulfapyridine was given. No blood studies were reported. Baradulin³ described a generalized purpuric rash with multiple petechiae in the mucous membranes of a patient who received "streptocidin" (a sulfonamide compound). The tourniquet test was positive, but further studies were not reported. Dolgopoi and Hobart⁴ reported a diminution of platelets in association with a severe leukopenia in a case in which sulfapyridine was given. Goldbloom and his associates⁵ described a toxic thrombopenia in a woman aged 50 who received 90 grams (6 Gm.) of sulfapyridine. The platelet count dropped to 25,000 and the bleeding time was prolonged to twenty-five minutes, with a delayed clot retraction time. Gingival hemorrhages and vaginal bleeding developed. Bone marrow studies were negative. The platelets were suppressed for three days and then returned to normal. Kracke⁶ mentioned a case in which severe throm-

bopenia was presumptively due to the administration of sulfathiazole. Quick and Lord⁷ described the findings in a case of acute hemolytic anemia which developed after the administration of sulfathiazole. The patient had a purpuric rash and a positive reaction to the tourniquet test. Mention was not made of the number of platelets in the blood. Rosenfeld and Feldman⁸ reported the occurrence of a severe thrombopenic hemorrhagic state during the administration of sulfathiazole. During the thrombopenic reaction, the platelet count was 2,000 per cubic millimeter, the bleeding time was six minutes, the coagulation time was four minutes and the tourniquet test was strongly positive. Five days after discontinuance of sulfathiazole, the platelets were again abundant and subsequent doses of sulfathiazole failed to produce the thrombopenic state. Werner⁹ reported a case of thrombopenic purpura which was due to idiosyncrasy to sulfathiazole. The patient was given 139 Gm. of sulfathiazole over a period of five days, at which time a slight rash developed. Twenty days later he was given 1 Gm. of the drug and purpuric signs developed within twelve hours. Platelets were not present in the blood smear. Finally, Meyer and Perlmuter¹⁰ reported the findings in a case of aplastic anemia secondary to sulfathiazole. At the height of the reaction, the patient had no platelets in the blood smear, 1,710,000 red blood cells per cubic millimeter, 5 Gm. of hemoglobin per hundred cubic centimeters of blood and 1,600 white blood cells per cubic millimeter with only 8 per cent of neutrophils.

We wish to report 2 cases in which thrombopenia developed after the administration of the sulfonamide compounds. In the first case thrombopenia developed after the administration of sulfathiazole and on subsequent testing the same manner of reaction was found to sulfadiazine. In the second case purpura developed during the administration of sulfadiazine, and death occurred.

CASE REPORTS

CASE 1—J. H., a married man aged 61, a clothes cutter was admitted to the Rochester Municipal Hospital Nov. 9, 1941, with a history of sudden onset twenty-four hours previously of shaking chills, weakness, fever and pain in the lower left part of the chest aggravated by breathing and coughing. Twelve hours before admission his cough was productive of bloody sputum. On examination the temperature was 39.5 C (103.1 F) rectally, pulse rate 110, respiratory rate 28 and the blood pressure 100 mm. of mercury systolic and 66 mm. diastolic. He was dyspneic and acutely ill. He complained bitterly of pain in the left lower part of the chest. The cough was still productive of bloody sputum. Physical signs of consolidation were present in the left lower lobe of the lung. The remainder of the examination was not remarkable. There were no purpuric lesions.

The laboratory data were as follows. The blood Wassermann reaction was negative. The red blood cell count was 5,600,000 per cubic millimeter. The blood hemoglobin was 14.5 Gm. per hundred cubic centimeters and the white blood cell count was 19,000 per cubic millimeter. The blood smear showed 94 per cent neutrophils and a normal number of platelets. Urinalysis was negative. A roentgenogram of the chest demonstrated consolidation in the left lower lobe. Blood and sputum cultures were positive for type II pneumococcus.

Sulfathiazole was given by mouth in divided doses. After 12 Gm. had been given an oozing epistaxis was noted. At this time the nonprotein nitrogen value of the blood was 50 mg. per hundred cubic centimeters and the total protein value of the blood 5.4 Gm., the albumin being 3 Gm. and the globulin 2.4 Gm. The blood sulfathiazole level was 4.8 Gm. The mild epistaxis persisted and for the first time a petechial rash appeared over the legs and buttocks and in the oral mucous membranes. Two frankly bloody stools were passed. Administration of sulfathiazole was immediately stopped after

7 Quick, E. D., and Lord, F. D. Acute Hemolytic Anemia Following Sulfathiazole Administration, *J. A. M. A.* **117**: 1704 (Nov. 13) 1941.
8 Rosenfeld, Samuel, and Feldman, Frederic. Thrombopenic Purpura Due to Sulfathiazole, *J. A. M. A.* **118**: 974 (March 21) 1942.
9 Werner, W. I. Thrombocytopenic Purpura Following Administration of Sulfathiazole, *Southwestern Med.* **26**: 49 (Feb.) 1942.
10 Meyer, L. M., and Perlmuter, Martin. Aplastic Anemia Due to Sulfathiazole, *J. A. M. A.* **119**: 558 (June 13) 1942.

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1 Markel, Casper, and Rike, B. J. Symptomatic Purpura Hemorrhagica Following Administration of Sulfamylamide, *Rocky Mountain M. J.* **36**: 793 (Nov.) 1939.

2 Hoffman, C. A. Report of a Case of Purpura Due to Sulfapyridine, *West Virginia M. J.* **36**: 169 (April) 1940.

3 Baradulin, D. Hemorrhagic Dermatitis Developing After Sulfamylamide Treatment of Acute Gonorrhea, *Sovetsky Uruchebny Zhurnal* **3**: 231 (March) 1941.

4 Dolgopoi, Vera B., and Hobart, H. M. Granulocytopenia in Sulfapyridine Treatment, *J. A. M. A.* **113**: 1012 (Sept. 9) 1939.

5 Goldbloom, A. A. Greenwald, Louis, and Reinstein, Harry. Toxic Reactions to Sulfapyridine, *J. Lab. & Clin. Med.* **27**: 139 (Nov.) 1941.

6 Kracke, R. R. Diseases of the Blood and Atlas of Hematology, ed. 2, Philadelphia, J. B. Lippincott Company 1941, p. 443.

a total of 14 Gm had been given in a period of thirty-six hours. At this time the Francis test was negative, the blood leukocytes numbered 12,700 per cubic millimeter and the hemoglobin was 10.2 Gm per hundred cubic centimeters. The blood smear showed 90 per cent neutrophils and 10 per cent lymphocytes. Only 1 platelet was seen in the entire preparation. Examination of the urine revealed no abnormalities. The blood nonprotein nitrogen value was decreased to 35 mg per hundred cubic centimeters and the sulfathiazole level was 55 mg. Six hundred cc of compatible fresh citrated whole blood and 160,000 units of type-specific antipneumococcus rabbit serum were administered promptly. There was rapid clinical improvement and the platelets reappeared in the blood smear. All purpuric tendencies ceased. Serum sickness developed fourteen days after the administration of rabbit serum.

When the patient had completely recovered from the serum reaction and the pneumonia it was thought advisable to test him for sensitivity to sulfathiazole. The patient showed no

was noted. The patient became more acutely ill and on the day of admission was semistuporous. Of note in the past history was the fact that the patient had had pneumonia in 1939 which had been successfully treated at home with the administration of sulfapyridine. No toxic symptoms were recalled by the patient's family. The general health had been excellent except for some complaints referable to degenerative arthritis. No history of allergy or drug sensitivity was obtained.

On examination, the temperature was 37.1 C (98.8 F), rectally the pulse rate 92, the respiratory rate 42 and the blood pressure 135 mm of mercury systolic and 80 mm diastolic. She appeared acutely ill and semistuporous, with rapid shallow respirations. The pharynx was slightly injected and dry. At the base of the right lung posteriorly there were signs of consolidation—that is, dullness to percussion, increased tactile fremitus and vocal fremitus and bronchial breath sounds.

Laboratory examinations revealed the serologic test for syphilis to be negative. The white blood cell count was 21,000

TABLE 1—Results of Experiments Made in Case 1

Date	Time	Drug (cc)	White Blood Cells per Cu. Mm.	Red Blood Cells Millions per Cu. Mm.	Platelets Estimated from Smear	Platelets per Cu. Mm.	Bleeding Time in Minutes	Rumpel-Leede Test	Clotting Time in Minutes	Differential Blood Smear					
										P	L	M	E	B	
Sulfathiazole Experiment															
1/5/41	1 p m	1.5	7,800	3.57	Adequate	150,000	3.5	Negative	7.7-10	15	15	8	1	1	
	3 p m	1.5		3.75	Decreased	75,000	3.5	5 petech		13	21	4	1	1	
	3 p m	1.5			Decreased	50,000	7.0	40 petech							
1/6/41	1 a m				Rare	40,000	7.0	40 petech							
	9 a m					50,000									
	1 p m					80,000	5.0		5.9-9						
1/7/41	9 a m				Decreased	75,000				73	13	9	2	3	
	4 p m			3.5		100,000		1 petech							
1/8/41	2 a m		8,800		Decreased	50,000				68	23	7	1	1	
	4 p m					115,000									
1/9/42	9 a m				Adequate	35,000		Negative		63	28	8	1	0	
	4 p m					130,000		Negative							
1/10/42	9 a m				Adequate	130,000		Negative		65	28	7	0	0	
1/17/42	2 a m				Adequate	100,000		Negative		6	15	8	1	0	
Sulfadiazine Experiment															
1/17/42	1 a m				Adequate	170,000		Negative		6	15	8	1	0	
	1 p m	2.0			Adequate	140,000	5.5	Negative	9.5-7						
	3 p m	2.0				110,000		Negative							
	3 p m	1.0				75,000	4.0	14 petech							
1/18/42	1 a m	1.0		3.40	Decreased	70,000	4.0	5 petech		65	26	7	2	0	
	9 a m	2.0		3.65		90,000		1 petech							
	4 p m			3.60	Very rare	45,000	4.0	17 petech		65	26	7	2	0	
1/19/42	9 a m		1,600	3.60	Decreased	55,000				75	23	3	1	1	
	4 p m					115,000		Negative							
1/19/42	8 p m				Adequate	120,000	3.0	Negative		65	23	8	1	2	
1/19/42	8 p m				Adequate	140,000	3.0	Negative		75	14	6	2	3	

Clotting time was done by the Lee-White method.

Rumpel-Leede test was done by reading the number of petechiae in 1 square inch area of the skin after a cuff was applied to the arm for 5 minutes with the pressure kept midway between the systolic and diastolic levels.

P refers to neutrophils; L to lymphocytes; M to monocytes; E to eosinophils and B to basophils. The figures indicate the percentage of each of these cells.

On all clotting times reported in this table the clot retraction was good.

reaction to the scratch test, the patch test and the intradermal injection of a 10 per cent saline suspension of the drug. Following this 0.1 Gm and 0.25 Gm were given orally on successive occasions and no fall in the platelet count was observed. At this time three doses of 1.5 Gm of sulfathiazole were administered by mouth at four hour intervals. Eight hours after this test had been started there was a definite diminution of the platelets in the peripheral blood smear. The bleeding time was increased to eight minutes and the Rumpel-Leede test became positive. A tendency to spontaneous bleeding was not noted.

The patient left the hospital and returned two weeks later, Jan. 5, 1942, for a careful evaluation of his sensitivity to sulfathiazole and sulfadiazine. The observations made at this time appear in table 1.

CASE 2—C. B., a widow aged 79, was admitted to the Rochester Municipal Hospital on Feb. 26, 1942, with a history of onset of chills and fever one week previously. Three days before admission to the hospital a cough productive of blood streaked sputum developed and fever as high as 102 to 103 F

per cubic millimeter and the blood smear showed 86 per cent neutrophils and adequate platelets. The red blood cells were normal. Type VIII pneumococcus was isolated from the sputum. A blood culture was negative. A roentgenogram of the chest showed consolidation in the right upper and right lower lobes.

Shortly after admission 140 cc (approximately 318,000 units) of type VIII antipneumococcus rabbit serum was administered without a reaction. Sulfadiazine was given by mouth in amounts sufficient to maintain a blood level between 9 and 13 mg per hundred cubic centimeters. On February 27 six more vials (approximately 150,000 units) of rabbit serum was given intravenously. The patient continued to appear acutely ill with persistent signs of consolidation and increased respirations. On March 2 it seemed apparent that congestive heart failure was developing and rapid digitalization was undertaken. Throughout this period the white blood cells remained elevated between 13,000 and 19,000 per cubic millimeter and the temperature ranged between 38 and 39.5 C (100.4 and 103.1 F). Repeated blood cultures, examination of the urine and repeated

TOXIC REACTIONS OF PAREDRIANE SULFATHIAZOLE
SUSPENSION

REPORT OF TWO CASES

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roentgen examinations of the chest failed to reveal any cause for the unfavorable clinical course. The sputum was retyped and again found to contain type VIII pneumococcus. A thoracentesis was performed on March 6. Twenty cc of blood tinged, sterile fluid was obtained. Throughout this period, the patient received 3 Gm of sulfadiazine each day without manifesting any toxic symptoms. A few crystals were noted in the urine, but the urinary output and sediment and the blood nonprotein nitrogen remained within normal limits.

On March 8, the patient suddenly had a precipitous drop in the white blood cell count from 26,000 to 1,900 per cubic millimeter. The following day a generalized hemorrhagic and petechial rash was noted. This was most prominent over the chest in the axilla over the lower part of the abdomen and over the posterior wall of the chest. Small petechiae were noted in the conjunctivae and mucous membranes of the mouth. There was no melena or hematuria. The Rumpel-Leede test was strongly positive. The bleeding time was three minutes and the clotting time four minutes. The clot retracted poorly and was friable. The blood smear showed a decided reduction of blood platelets. Blood studies were made daily until the patient died. Table 2 shows the pertinent findings.

Despite multiple transfusions and symptomatic treatment, the patient continued to grow weaker, with increasing manifestation of bleeding into the skin and mucous membranes and died March 13. Permission for autopsy was not granted.

TABLE 2—Pertinent Findings in Case 2

Date	Hemo- globin Gm per 100 Cc	Red Blood Cells, Millions per Cu Mm	White Blood Cells per Cu Mm	Platelets Estimated from Smear	Platelets per Cu Mm	Blood Smear Percent age of Neutro- phils
2/5/42	15.5	4.0	21,000	Adequate		50
4/7/42			20,000			
4/8/42	15.5		1,900			70
4/9/42			1,500	Sharply reduced		15
4/10/42			11,000		50,000	
4/11/42	14.5	5.0	9,000	Reduced	60,000	87
4/12/42			12,000		10,000	
4/14/42				Reduced	50,000	80

COMMENT

The first patient had a severe thrombopenic hemorrhagic state during the administration of sulfathiazole. He received a total of 14 Gm by mouth during a thirty-six hour period and at the same time had a severe pneumonic infection with a positive blood culture which subsequently became negative. He was also given rabbit serum and had a severe attack of serum sickness. However when all this had cleared he was again shown to be sensitive both to sulfathiazole and to sulfadiazine, thrombopenia developing after the administration of both of these drugs. It is obvious that his sensitivity to sulfathiazole was stronger than to sulfadiazine. We did not continue our experimental dosages to the stage of spontaneous bleeding tendencies.

The second patient experienced a fatal thrombopenic hemorrhagic state during the administration of sulfadiazine. Although she had no bacteremia, it is not feasible to assume that the thrombopenia was due solely to sulfadiazine, as we cannot dismiss her general toxicity as the causative element that played a part in her fatal thrombopenic hemorrhagic state.

SUMMARY

One patient had an unequivocal sensitivity to sulfathiazole and sulfadiazine with resulting thrombopenia and purpura. The other patient experienced thrombopenia and purpura following the administration of sulfadiazine.

In view of the definite demonstration of sensitivity to the drug in case 1 two months after the first reaction to it, we feel that extreme caution should be used with reference to its readministration following the development of thrombopenia, even though Rosenfeld and Feldman³ found that this was not true in their experience.

As this new drug has been presented to the medical profession, it is desirable that any untoward reactions from it be brought to the immediate attention of the physician.

Paredrine-sulfathiazole suspension is a preparation introduced by the Smith, Kline and French Pharmaceutical Company. The active components are a suspension of microcrystal sulfathiazole 5 per cent in an isotonic solution of 1 per cent paredrine hydrobromide (p-hydroxy- α -methylphenethylamine). The preservative used is sodium ethyl mercuri thiosalicylate 0.005 per cent, gelatin is present in 0.1 per cent. The product has been recommended by its makers as a vasoconstrictor of the nasal mucosa, with the additional value of the antibacteriostatic action of sulfathiazole. It may be introduced into the nasal cavity and sinuses by drops, atomizer or the displacement method of Proetz. The cases under study have been treated at the Otolaryngological Clinic of the St. Louis University Group of Hospitals.

CASE 1—C. L., a white youth aged 18, had frequently received Proetz displacements with 0.25 per cent ephedrine sulfate in isotonic solution of sodium chloride for a subacute ethmoiditis with no unfavorable reactions. When a paredrine-sulfathiazole suspension was administered in the usual manner, the immediate response of the patient was uneventful. Thirty minutes later, however, he complained of "chilly" sensations over the entire body followed by palpitations and a generalized headache. He was put to bed and given 3 grams (0.2 Gm) of soluble pentobarbital, shortly afterward, 1 gram (0.06 Gm) of codeine sulfate was administered hypodermically. This medication did not modify the symptoms and the headache grew more severe. Nausea, which was present throughout, terminated in severe vomiting. His temperature was subnormal (97 F), the blood count was within normal limits. For twenty-four hours the palpitations and headache persisted to a mild degree. Forty-eight hours later, no symptoms remained and the patient had no apparent ill effects.

CASE 2—L. V., a white married woman aged 54, had been treated for a sphenopalatine neuralgia. She had received displacement treatments, three times, twice with a 0.25 per cent solution of ephedrine sulfate in isotonic solution of sodium chloride and once with the aforementioned paredrine sulfathiazole suspension. At no time had she displayed any toxic reactions.

Twenty minutes after receiving the fourth treatment (the second with paredrine-sulfathiazole suspension) she was seized with sudden severe pain generalized over the head. Her hands and legs had sensations of chilliness, while her heart palpitated forcibly. A few minutes later she lay down and was given 10 grams (0.65 Gm) of acetylsalicylic acid as well as cold packs to her head, in a short while she experienced nausea, vomiting and diarrhea. The pain and discomfort increased to such an extent that, four hours after the treatment, the patient was hospitalized. Three grams (0.2 Gm) of sodium amytal and 1 gram (0.06 Gm) of codeine phosphate were given, resulting however in only slight alleviation of the pain. Four hours later and again in four hours, $\frac{1}{2}$ grain (0.03 Gm) of codeine was administered orally.

On admission to the hospital her temperature was 96.6 F, blood pressure 135/84, pulse rate 86 and respiratory rate 20. The blood counts were within normal limits. The headaches continued to a lesser extent into the following day, when she was able to rise from the recumbent position only with moderate to severe pain. Nausea, vomiting and diarrhea did not recur. After approximately six more hours she was completely without headaches and, although still weak, was able to continue her work.

Prior to these episodes I had not observed any reaction other than the usual headaches which occasionally accompany the Proetz displacements. The solution used was obtained from a container which had been opened several days previously but had been tightly stoppered. Other patients had similar treatments from the same solution with no complications.

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Special Article

HANDBOOK OF NUTRITION XXV

CONDITIONED MALNUTRITION

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NEW YORK

These special articles on food and nutrition have been prepared under the auspices of the Council on Foods and Nutrition. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the Council. These articles will be published later as a Handbook of Nutrition.—Ed

The terms "malnutrition," "nutritional deficiency disease," "nutritional failure," "beriberi," "pellagra," "scurvy," "riboflavin deficiency" and similar terms signify to many persons disorders arising solely from an inadequate diet. But all these may occur in the presence of dietary adequacy. As pointed out by Kruse,¹ these terms should denote a deficiency in the bodily tissues rather than in the diet. If a tissue deficiency arises from an inadequate diet it is known as a primary deficiency. If the tissue deficiency is caused by factors other than an inadequate diet alone it is known as a conditioned or secondary deficiency. Conditioned deficiencies are caused by factors that interfere with the ingestion, absorption or utilization of essential nutrients, or by factors that increase their requirement, destruction or excretion.²

The importance of these conditioning factors as a cause of deficiency disease has not been generally recognized. In surveys of the nutritional status of population groups there has been a tendency to neglect the causal role of these conditioning factors and attribute all malnutrition to dietary inadequacies alone. On the other hand, in hospital and office practice the finding of clearcut gross manifestations of deficiency disease caused by conditioning factors may lead to one of the following two errors. The first is to consider the lesion a manifestation of the original or conditioning disease unrelated to tissue nutritional deficiency. The second, after recognizing the nutritional basis of the secondary manifestation, is to ascribe the original or conditioning disease to nutritional deficiency. Those making the first error ignore the existence of deficiency disease, while those making the second error attribute most deviations from normal health to malnutrition.

The prevention and treatment of these conditioned deficiency diseases are often the decisive factors in determining recovery after surgery³ and in many severe infections. Likewise their prevention and treatment often decide the success of other therapeutic measures directed toward alleviating the conditioning disease. In addition, the comfort, length of life and economic usefulness of many patients depend on adequate nutrition.⁴

THE POSSIBLE NONSPECIFICITY OF CERTAIN LESIONS OF MALNUTRITION

The gross evidence (table 1) and the better established special examinations (table 2) for the detection of malnutrition as outlined by Jolliffe, McLester and Sherman⁵ are listed in the accompanying tables. Since these manifestations, whether primary or conditioned, are identical, it is not necessary to redescribe them here. It is necessary to point out, however, that with few exceptions the findings characteristic of malnutrition are nonspecific. Some lesions attributable to malnutrition may be produced by local tissue deficiency⁶ as a result of circulatory disturbances, trauma, pressure or infection. These local conditioning factors may produce lesions identical with those of a systemic deficiency. Other lesions may not be related to either systemic or local tissue deficiency but may be due to

TABLE 1—Gross Evidences of Malnutrition

System	Finding	Suggested Deficiency or Syndrome
Eyes	Xerosis conjunctivae and corneae Central ophthalmoplegia	Vitamin A Thiamine
Mucous membranes	Scarlet red stomatitis and glossitis with or without secondary Vincent's infection Magenta glossitis Atrophic glossitis	Nicotinic acid Riboflavin Nicotinic acid B complex, addisonian anemia Plummer-Vincent syndrome Ascorbic acid Riboflavin
	Scorbutic gums Cheilosis Nonspecific urethritis, balanitis, vaginitis	Nicotinic acid
Skin	Pellagrous dermatitis Seborrheic lesions in nasolabial folds on face behind ears and in skin folds Hyperkeratosis and hyperfolliculosis Hemorrhagic manifestations Fissures in angles of mouth	Nicotinic acid Riboflavin Vitamin A Vitamin K Ascorbic acid Riboflavin
Neurologic	Characteristic bilateral symmetrical polyneuropathy Combined system syndromes Wernicke's syndrome Nicotinic acid deficiency encephalopathy Progressive stupor and hebeticity Certain organic reaction psychoses	Thiamine Thiamine B complex, addisonian anemia Thiamine B complex Nicotinic acid Nicotinic acid Nicotinic acid thiamine and B complex
Skeletal	Rachitic deformities and osteomalacia	Vitamin D Calcium Phosphorus
General	Underweight pallor underheight edema	Calories proteins iron B complex

some factor other than malnutrition. These facts indicate that all the diagnostic skill and clinical acumen employed by physicians in any other branch of clinical medicine must be employed in the interpretation of lesions usually ascribed to malnutrition. The following observations illustrate this point.

Xerosis conjunctivae is a lesion characteristic of vitamin A deficiency in animals⁷ and one that responds to massive vitamin A therapy in man.⁸ From this it

5 Jolliffe Norman, McLester J S and Sherman H C. The Prevention of Malnutrition. J A M A 115: 944 (March 21) 1942.

6 McCullough Kendrick and Dalldorf Gilbert. Epithelial Metaplasia. Experimental Study. Arch Path 24: 486 (Oct.) 1937. Dalldorf Gilbert. The Pathological Responses to Vitamin Deficiencies. Bull New York Acad Med 14: 635 (Oct.) 1938. Straumfjord J V. Lesions of Vitamin A Deficiency: Their Local Character and Chronicity. Northwest Med 41: 229 (July) 1942.

7 Bessey O A and Wolbach S B. Vascularity of the Cornea of the Rat in Riboflavin Deficiency with a Note on Corneal Vascularization in Vitamin A Deficiency. J Exper Med 69: 1 (Jan.) 1939. Vitamin A. Physiology and Pathology. J A M A 110: 2072 (June 18) 1938. Wolbach S W. The Pathologic Changes Resulting from Vitamin Deficiency. ibid. 105: 7 (Jan. 2) 1937.

8 Kruse H D. Medical Evaluation of Nutritional Status. IV. The Ocular Manifestations of Vitamin A Deficiency. A Special Consideration of the Detection of Early Changes by Biomicroscopy. Pub Health Rep 56: 1301 (July 27) 1941. Milbank Mem. Fund Quart. 19: 207 (July) 1941.

1 Kruse H D. A Concept of Malnutrition. Milbank Mem. Fund Quart. 20: 245 (July) 1942.

2 Jolliffe Norman. Chapter on Nutrition and Deficiency Diseases in Preventive Medicine in Modern Practice. New York: Paul B. Hoeber, 1942.

3 Brown P B and Donald C J Jr. Prognosis of Regional Enteritis. Am J Digest Dis 9: 87 (March) 1942. Starr Paul. Value of Vitamins in Surgical Practice. Collective Review. Internat. Abstr. Surg. 74: 309 (In Surg. Gynec. & Obst. April 1942). Hartzell J B and Crowley R T. Vitamin Therapy in the Surgical Patient. Am J Surg 56: 288 (April) 1942. Pollack Herbert, Ellenburg Max and Dolger Henry. Postoperative Precipitation of Vitamin B Complex Deficiencies. J Mount Sinai Hosp 5: 925 (Jan. Feb.) 1942.

4 Jolliffe Norman. Treatment of Neuro-psychiatric Disorders with Vitamins. J A M A 117: 1496 (Nov. 1) 1941.

should not be inferred that all "spots" or elevations that appear on the eyeballs peripheral to the cornea are xerosis conjunctivae. Some are, but others are pterygium and others scleral deposits of varying composition. The contention of Kruse¹ that xerosis conjunctivae is a manifestation of chronic vitamin A deficiency has been criticized by Berliner,⁹ who points out that not all the photographs published by Kruse¹ were characteristic of xerosis conjunctivae and that the vitamin A blood levels are not low and that many of the lesions in question are those usually ascribed to simple senile changes. It should be noted, however, that trained ophthalmologists after gross and slit lamp examinations frequently disagree on the appropriate anatomic labeling in a high proportion of "spot" cases. The blood level of vitamins does not necessarily reflect the state of the tissues and cannot be used as a criterion for the absence of a deficiency disease particularly a chronic deficiency anatomically manifest.¹⁰ In this type of malnutrition the blood reflects the recent intake of vitamin A. Also to designate lesions of the conjunctiva as senile changes with the implication that senility

10 subjects given 50,000 units of vitamin A twice daily by mouth for ten months, 7 showed definite evidence of responding in the manner described by Kruse. It seems, therefore, that some of these lesions respond to vitamin A therapy. Some may not, but sufficient time has not yet elapsed to decide this point definitely. Complete solution of this problem requires further study, especially the biomicroscopic slit lamp examination of the conjunctivas of experimental subjects maintained with diets deficient in vitamin A.

Corneal vascularity is undoubtedly associated with riboflavin deficiency in many subjects.¹³ In acute cases this condition can be observed by slit lamp biomicroscopy to disappear following riboflavin administration, to return when riboflavin is withheld and to disappear again when treatment is resumed. In this acute type of lesion the ocular symptoms of burning, itching, asthenopia, photophobia and lacrimation are extremely common. Some investigators¹⁴ have used corneal vascularity as an index of riboflavin deficiency in surveys of population groups. Several observers¹⁵ have warned, however, that it is not yet confirmed that all or nearly all of these vascular changes are due only to riboflavin deficiency or that they are a necessary accompaniment of other undoubted signs of riboflavin deficiency. Youmans and Patton¹⁶ have observed a considerable number of subjects with mild but definite corneal vascularization not accompanied by ocular symptoms and in whom there was no correlation with dietary intake of riboflavin, other dietary factors or other evidence of deficiency disease. Reexamination of these subjects showed an improvement or disappearance of the vascularization in the winter or spring season compared with the fall, in spite of a lower intake of riboflavin in the former period. This study suggests that factors other than riboflavin are concerned. Youmans and Patton¹⁶ say "there is some evidence to suggest that such a factor (there may be others) is light, which may be concerned in the production of a vascularization through the mechanism of a local deficiency without any general deficiency being present. In general, the conclusion which seems indicated is that corneal vascularization, even of the characteristic type and of definite degree, does not always mean a general riboflavin deficiency." Youmans and Patton¹⁶ then point out that under these circumstances the lesion loses some of its value as a diagnostic test of riboflavin deficiency in population groups. For clinical purposes however, this finding is not only the most helpful and reliable but the simplest and quickest means of detecting mild riboflavin deficiency. To distinguish it from those instances of vascularization which seem to be caused by other agencies, it is as a rule necessary only

TABLE 2—Special Examinations for Detection of Malnutrition

Examination	Condition It May Detect
Röntgenogram of hand and wrist, elbow and hip	Rickets and scurvy in children; osteomalacia and scurvy in adults
Röntgenogram of heart	Advanced beriberi
Electrocardiogram	Changes suggestive of thiamine deficiency
Biomicroscopic examination with slit lamp	Capillary invasion of cornea (riboflavin deficiency); changes in conjunctivas (vitamin A deficiency)
Red blood cell count	Iron deficiency anemia; add on iron anemia; macrocytic anemia
Hemoglobin	
Stained blood smear	
Red blood cell volume	Vitamin C undernutrition
Urine ascorbic acid	
Serum calcium	Vitamin D deficiency
Serum phosphatase	
Serum phosphorus	Vitamin B ₁ deficiency
Blood pyruvic acid	
Serum protein or albumin	Protein deficiency
Blood prothrombin	Vitamin K deficiency

per se is responsible for them is unsatisfactory. This merely identifies the condition with a population in which it is frequently found but does not explain its cause. Even in arteriosclerosis, age is not the essential cause. As William Boyd¹¹ has stated, "The advance in years merely permits some slowly acting cause to produce the effects in the vessels." In discussing the lesions of chronic malnutrition, Kruse¹ states that "not all elderly persons show the changes. On the other hand they occur in children. Time, not senility, is the essential point and time does not start the changes, it is simply a dimension over which they progress. They are specific avitaminoses in a state of chronicity, due usually to respective dietary deficiencies running over a period of years. Their prevalence and severity vary with the number and degree of deficient diets. Most important of all, they are reversible, yielding slowly but completely to appropriate therapy." This latter point has been partially confirmed by Jolliffe and Stern,¹² who observed that of

- 13 Sydenstricker, V. P., Sebrell, W. H., Cleckley, H. M. and Kruse, H. D. The Ocular Manifestations of Ariboflavinosis. *J. A. M. A.* **111**: 2437 (June 22) 1940. Johnson, L. V. and Eckhardt, R. E. Rosacea Keratitis and Conditions with Vascularization of Cornea Treated with Riboflavin. *Arch. Ophthalmol.* **23**: 899 (May) 1940. Sydenstricker, V. P., Kelly, A. R., and Weaver, J. W. Ariboflavinosis with Special Reference to the Ocular Manifestations. *South. M. J.* **34**: 165 (Feb.) 1941.
- 14 Kruse, H. D., Palmer, C. E., Schmidt, W., and Wiel, Dorothy C. Medical Evaluation of Nutritional Status. I. Methods Used in a Survey of High School Students. *Milbank Mem. Fund Quart.* **18**: 257 (July) 1940. Wiel, Dorothy C., and Kruse, H. D. Medical Evaluation of Nutritional Status. V. Prevalence of Deficiency Diseases in Their Subclinical Stages. *ibid.* **19**: 241 (July) 1941.
- 15 Sebrell, W. H. Vitamins and Public Health. *Fed. Proc.* **1**: 319 (Sept.) 1942. Jolliffe, Norman and Goodhart, Robert. Vitamins in the Practice of Medicine. *ibid.* **1**: 316 (Sept.) 1942. Youmans, J. B., Patton, E. W., Robinson, W. D., and Kern, Ruth, M. S. An Analysis of Corneal Vascularity as Found in a Survey of Nutrition. 57th annual meeting of Assn. of Am. Physicians, May 5, 1942. Nick, Pauline Berry and Smith, Janice Minerva. Methods of Conducting Mass Studies in Human Nutrition. Pennsylvania State College Bull., to be published.
- 16 Youmans, J. B., and Patton, E. W. The Laboratory Diagnosis of Nutritional Deficiencies. *Clinic.* **1**: 303 (Aug.) 1942.

9 Berliner, M. L. Regarding Early Detection of Avitaminosis A by Gross or Biomicroscopic Examination of Conjunctiva. *Am. J. Ophthalmol.* **25**: 302 (March) 1942.

10 Patek, A. J., Jr. and Hug, Charles. Effect of Administration of Thyroid Extract and of Alpha Dinitrophenol on Dark Adaptation. *Proc. Soc. Exper. Biol. & Med.* **16**: 180 (Jan.) 1941.

11 Boyd, William, quoted by Piersol, G. M. Arteriosclerosis. Social Significance and Recent Advances in Treatment. *Bull. New York Acad. Med.* **18**: 36 (Jan.) 1942.

12 Jolliffe, Norman and Stern, Marvin. Objective Manifestations of Nutritional Deficiency Diseases. *Clinics.* **1**: 282 (Aug.) 1942.

to consider with it the history the findings of the physical examination and the results of a therapeutic trial.

The central bilateral ophthalmoplegia of Wernicke's syndrome is due to severe acute thiamine deficiency,¹⁷ but ophthalmoplegias occur from many other causes. Central ophthalmoplegias are common in central nervous system syphilis multiple sclerosis, basilar meningitis diphtheritic neuritis and encephalitis.¹⁸ A characteristic bilateral symmetrical polyneuropathy occurs in chronic thiamine deficiency, but a clinically similar polyneuropathy may be due to infectious polyneuritis of the Guillain-Barré type¹⁹ to various intoxicants, to heavy metal poisonings¹⁵ or even to deficiencies of vitamins other than thiamine.²⁰

The mucous membrane lesions in and about the mouth²¹ present complex diagnostic problems. Some cases showing a magenta glossitis respond to riboflavin,²² some to pyridoxine²³ and others only to crude liver extract administered parenterally. Cheilosis may appear the same whether due to ariboflavinosis, to edentulous mouth,²⁴ to allergy or to lipstick. Scarlet fungiform papillae at the tip of the tongue are the earliest visible signs of mild acute nicotinic acid deficiency,²⁵ but pipe smoking, particularly in persons unaccustomed to a pipe, may produce a similar picture. Vincent's gingivitis and stomatitis may occur in deficiencies of both ascorbic acid and nicotinic acid.¹² This infection becomes active only in the presence of necrotic tissue. Ascorbic acid and nicotinic acid deficiencies are only two of many causes of tissue necrosis in the mouth.

CONDITIONING FACTORS

Following the definition of a conditioned deficiency disease given at the beginning of this paper, the various illnesses and conditions that may produce such deficiencies are listed in tables 3 to 8. It must be emphasized that these tables are not complete but are intended merely to list the more common illnesses, therapeutic measures and physiologic alterations which condition the production of a deficiency syndrome.

Interference with Ingestion—Strictly speaking, deficiency disease produced by interference with ingestion should not be considered conditioned. Since failure to ingest adequate amounts of food is alone responsible, it would be reasonable to consider these cases as primary deficiencies. Practically, however, in view of the frequency with which disease may interfere with adequate food intake and because of the significance of

this classification for preventive therapy, its inclusion as a conditioning factor is warranted. The more common of these conditions are listed in table 3. Gastrointestinal and neuropsychiatric disorders, food allergy and nausea or pregnancy are noted for their interference with food intake, and the literature is replete with references to deficiency diseases developing under these conditions.

In hospitals a meal placed at the patient's bedside is often considered, on the record at least, as eaten, while actually the patient may have consumed little or none of it. Although this may occur under many conditions, it is particularly likely to occur in elderly patients whose hospitalization is more custodial than therapeutic, who may be confused and whose dentures may be in the property room. Within one week 5 such patients with gross deficiency disease have been admitted to my service from custodial institutions. Jolliffe, Fein and Rosenblum²⁶ have recently reported an illustrative case of classic scurvy pellagra and riboflavin deficiency in a person transferred from a custodial institution where she had been a patient for the previous five years.

Alcohol though it also produces deficiency disease by other means,²⁷ may prevent an adequate food intake.

TABLE 3—Factors Interfering with Ingestion

1	Gastrointestinal disorders Acute gastroenteritis gallbladder disease peptic ulcers diarrheal diseases and obstructive lesions of gastrointestinal tract
2	Neuropsychiatric disorders Neurasthenia neurosis psychoneurosis psychosis migraine and neurologic disorders interfering with self feeding
3	Anorexia Alcohol operations and anesthesia infectious diseases congestive heart failure thiamine deficiency visceral pain
4	Food allergy
5	Loss of teeth
6	Pregnancy
7	Therapy Diets restricting ingestion of essential foods

It does this by replacing other food and by causing nausea and vomiting through its irritant action on the gastric mucosa. This may result in a thiamine deficiency causing anorexia, which in turn results in deficient intake of other nutrients. In this respect thiamine deficiency is frequently the underlying cause of other deficiencies. In some subjects the anorexia caused by lack of thiamine is a protective mechanism guarding the subject against a high caloric intake. However, civilized man on developing anorexia limits his food intake as a rule not to smaller amounts of a balanced diet but to crackers, toast, tea, coffee sugar and alcohol. With such a diet almost any of the deficiency diseases may develop.

Therapeutic measures often produce deficiency diseases by needlessly restricting the ingestion of certain essential nutritional factors. For example diets prescribed for patients having allergy, peptic ulcers, biliary disease, nephritis hypertension, colitis, diabetes or obesity are often deficient in one or more of the essential nutrients. Such diets may occasionally produce more serious disease than the original condition for which the diet was prescribed. Especially harmful are "slimming" diets published in newspapers. Fortunately their low caloric content gives some measure of pro-

17 Jolliffe Norman Wortis Herman and Fein H D. The Wernicke Syndrome. *Arch. Neurol. & Psychiat.* 46: 569 (Oct.) 1941.
Wortis Herman and Jolliffe Norman. The Present Status of Vitamins in Nervous Health and Disease. New York State J. Med. 41: 1461 (July 15) 1941.
Alexander Leo Bernbert and Wernicke's Hemorrhagic Polioencephalitis III Cong. Neurol. Internat. Comptes rend des seances, Copenhagen Aug. 21 1939 p. 913.

18 Wechsler I S. A Textbook of Clinical Neurology. Philadelphia and London W. B. Saunders Company 1939.

19 De Sanctis A G and Greene Martin. Acute Infectious Polyneuritis. A Diagnostic Problem During a Polioepidemic. *J. A. M. A.* 118: 1445 (April 25) 1942.

20 Wintrobe M M Miller M H and Falles R H Jr. What is the Antineuritic Vitamin? Read at the 57th annual meeting of the Association of American Physicians May 3 1942.

21 Jeghers Harold. Nutrition. The Appearance of the Tongue as an Index of Nutritional Deficiencies. *New England J. Med.* 227: 221 (Aug. 6) 1942.
Martin Hayes and Koop C E. The Precancerous Mouth Lesions of Avitaminosis B. Their Etiology Response to Therapy and Relationship to Intraoral Cancer. *Am. J. Surg.* 57: 195 (Aug.) 1942.

22 Sydenstricker V P. Clinical Manifestations of Nicotinic Acid and Riboflavin Deficiency (Pellagra). *Ann. Int. Med.* 14: 1499 (March) 1941.

23 Ruffin J M and Smith D T. Pellagra Therapy. *Tr. Am. Clin. Otol. A.* (1939) 55: 192 1940.

24 Ellenberg Max and Pollack Herbert. Pseudoarboflavinosis. *J. A. M. A.* 119: 790 (July 4) 1942.

25 Kruer H D. The Lingual Manifestations of Anacinaemia with Especial Consideration of the Detection of Early Changes by Biomicroscopy. *Milbank Mem. Fund. Quart.* 20: 262 (July) 1942.
Jeghers²¹ Martin and Koop.

26 Jolliffe Norman Fein H D and Rosenblum L A. Riboflavin Deficiency in Man. *New England J. Med.* 221: 921 (Dec. 14) 1939.

27 Jolliffe Norman. The Influence of Alcohol on the Adequacy of the B Vitamins in the American Diet. *Quart. J. Med.* on Alcohol 1: 74 (June) 1940.

tection for short periods of time, but, if persisted in, serious damage due to malnutrition may occur. The physician should discourage such unbalanced diets, but if despite advice they are persisted in a multivitamin preparation, preferably containing the full daily allowances recommended by the Food and Nutrition Board of the National Research Council,²⁸ should be prescribed. Even well planned reducing diets prescribed by the physician are likely to be short in the B vitamins. For this reason their supplementation with a satisfactory source of these vitamins is desirable. Dried brewers' yeast and extracts of brewers' yeast may be used for this purpose.

Increased Bodily Requirements—Strictly speaking, malnutrition caused by failure to meet increased bodily requirements need not be considered as conditioned, since it is inadequate ingestion of food that is alone responsible. Practically, however, when the metabolic requirement is increased beyond the usual or average range it is warranted to consider this as a conditioning factor. Fever increases the basal metabolism by 7.2 per cent for each degree F.,²⁹ while strenuous physical exertion may increase it as much as fifteen times the basal level.³⁰ The requirement of many nutritive essentials parallels total metabolism whether the change in

TABLE 4—Factors Increasing Nutritive Requirement

- 1 Abnormal activity as associated with prolonged strenuous physical exertion, delirium and certain psychoses
- 2 Abnormal environmental factors
Excessively high temperatures, as in the tropics, in desert and in certain industries
Excessive light glare as from snow or flick lights
- 3 Fever
- 4 Hyperthyroidism
- 5 Pregnancy and lactation
- 6 Therapy such as thyroid, alpha dinitrophenol, parenteral dextrose solution, fever therapy, high carbohydrate diets

total metabolism is brought about by physical exertion, disease environment or drugs. These conditions are listed in table 4.

The occurrence of deficiency diseases conditioned by fever, hyperthyroidism, pregnancy and lactation are well known. Less well recognized are the effects of abnormal physical activity and unusual environmental factors. Johnson and his collaborators³⁰ have recently demonstrated an increased requirement of the B vitamins conditioned by moderately strenuous physical activity common to farmers, soldiers and other workers. In a group of men subjected to physical labor equivalent to an output of 4,000 to 5,000 calories, definite deterioration in physical fitness occurred well within one week of starting labor with a diet deficient in the vitamin B complex. Such deterioration could be prevented or cured by the entire B complex containing only 0.6 mg. of thiamine daily but not by 20 mg. of thiamine hydrochloride alone. The applicability of these findings to workers in industry, to men in the armed forces and to patients having delirium or a psychosis with pronounced increase in psychomotor activity is obvious.

Sunlight has been recognized as a precipitating agent in pellagra since Gheradini³¹ in 1792 produced pellagrous skin lesions on various parts of the body by exposure to the sun. In fact this disease is known among the peasants in Italy as *mal del sole*. Since the recognition of pellagra in this country, many clinicians³² have called attention to the possible relationship between exposure to sunlight and the development of the skin lesions. Others³³ have confirmed Gheradini's experiments and in addition have shown that the same exposure in normal subjects leads only to the development of a healthy tan. Furthermore, other trauma, such as radiant energy, dirt, filth and chemical trauma, is believed also to condition nicotinic acid deficient persons to the development of skin lesions.³³ Sunlight not only conditions nicotinic acid deficient persons to skin lesions but is thought by some³⁴ to play a role in conditioning riboflavin deficient persons to corneal vascularization. Johnson and Eckhardt¹³ have demonstrated the effect of sunlight in hastening the onset of corneal vascularization in riboflavin deficient rats, and Sydenstricker, Kelly and Weaver¹³ suggest the possibility that prolonged exposure to bright light may cause destruction of riboflavin in the cornea with the production of ocular signs in the absence of lesions elsewhere. Mechanical irritation has been shown to determine the localization of epithelial metaplasia in vitamin A deficiency,³⁵ while ill fitting dentures and edentulousness which causes caving in of the angles of the mouth may condition the lips to cheilosis.³⁶

By increasing total metabolism, various therapies may produce a conditioned deficiency disease. Drugs such as dinitrophenol, thyroxine and thyroid³⁰ and fever therapy³⁰ act by increasing metabolism, while parenteral administration of dextrose, insulin shock therapy and high carbohydrate diets act by increasing the requirement for coenzymes without an increase in total metabolism.³⁰ Many investigators believe that long continued parenteral administration of dextrose is dangerous to patients, particularly those in a borderline state of nutrition. The oxidation and decarboxylation of pyruvic acid, one of the intermediate products of carbohydrate metabolism, requires an enzyme-coenzyme system consisting of a specific protein enzyme (carboxylase), a cocarboxylase (thiamine-pyrophosphate) and magnesium. Other essential components in the mechanism of carbohydrate oxidation include flavo protein, the dietary precursor of which is riboflavin, coenzymes I and II, the dietary precursor of which is niacin amide, adenosine triphosphate and the iron containing cytochrome system.³⁸ Bollman³⁷ has demonstrated that rats partially depleted of their stores of B vitamins and subsequently maintained with dextrose have a longer survival time if thiamine also is administered. No appreciable further effect was noted when the other B vitamins were supplied. Apparently the period of depletion had affected the body stores of thiamine more than it had the other factors of the B complex. Sydenstricker,²² Jolliffe and Goodhart,³⁸ and

31 Gheradini quoted by Harris, Seale, *Clinical Pellagra*, St Louis C. V. Mosby Company, 1941.

32 Reviewed by Harris³¹.

33 Smith, D. T., and Ruffin, J. M. Effect of Sunlight on the Clinical Manifestations of Pellagra, *Arch. Int. Med.* 59: 631 (April) 1937.

34 Kruse, H. D. Personal communication to the author. Tisdall, F. F. Personal communication to the author.

35 Daum, Kate, Boyd, Kathryn, and Paul, W. D. Influence of Fever Therapy on Blood Levels and Urinary Excretion of Ascorbic Acid, *Proc. Soc. Exper. Biol. & Med.* 40: 129 (Jan.) 1939.

36 Goodhart, Robert and Bueding, Ernest. Carbohydrate Metabolism in Practice of Medicine, *M. Clin. North America* 27: 315 (March) 1943.

37 Bollman, J. L. Dextrose Administration and Vitamins B, *Proc. Soc. Exper. Biol. & Med.* 50: 18 (May) 1942.

38 Jolliffe, Norman, and Goodhart, Robert. Beriberi in Alcohol Addicts, *J. A. M. A.* 111: 380 (July 30) 1938.

28 Recommended Allowances for Various Dietary Essentials, Committee on Food and Nutrition, National Research Council, *J. Am. Dietet. A.* 17: 565 (June-July) 1941.

29 Duncan, G. G. *Diseases of Metabolism*, Philadelphia, W. B. Saunders Company, 1942.

30 Johnson, R. L., Darling, R. C., Forbes, W. H., Brouha, L. Egaña, E., and Graybiel, A. The Effects of a Diet Deficient in Part of the Vitamin B Complex on Men Doing Manual Labor, *J. Nutrition* 21: 585 (Dec.) 1942.

Spies³⁹ have reported the precipitation of deficiency diseases in man by dextrose infusions. Sydenstricker²² believes that "waterlogging" after the parenteral administration of dextrose and saline solution is more often a manifestation of deficiency than otherwise. The preventive practice of simultaneously administering thiamine, riboflavin and nicotinamide along with each dextrose infusion is based on sound theoretical and practical considerations.

Excessive consumption of carbohydrate acts in the same way as parenteral administration of dextrose and there is much evidence in the literature that this is a common method of inducing deficiency diseases.⁴⁰ Stepp and Schroeder⁴¹ and German, Morvan and Babin⁴² have reported instances of beriberi occurring in persons who would have had an adequate thiamine intake except for their unusually high carbohydrate diet. Jolliffe and his co-workers⁴³ have demonstrated the same phenomenon in alcoholic patients.

Interference with Absorption—As our knowledge of deficiency diseases increases it becomes more and more evident that disturbances of absorption from the intestinal tract play an important role in the production of deficiency disease. As pointed out by Beams, Free and Glenn,⁴⁴ absorption may be impaired because of anatomic, chemical or physiologic changes. These changes are mediated by reduced absorbing surfaces, altered secretions and hypermotility and further modified by various alkalis, adsorbents and lubricants introduced by the mouth. The more common of these conditioning factors are listed in table 5.

In the diarrheal diseases hypermotility plays the most important role, since the rapid passage of food through the intestinal tract leaves little time for digestion, solution and absorption of the essential factors. In the more chronic diarrheal states, as in sprue or chronic ulcerative colitis, reduction of absorbing surfaces may be equally important. The clinical importance of diarrhea in producing deficiency disease is evidenced by the many recent reports of pellagra, beriberi, scurvy, riboflavin deficiency, vitamin A deficiency, protein deficiency edema and hypocalcemia induced by this conditioning factor.⁴⁵

Achlorhydria may impair the absorption of ascorbic acid⁴⁶ and of thiamine.⁴⁷ Because of its prevalence particularly in elderly people, achlorhydria always should be suspected in unexplained malnutrition, and malnutrition should be looked for in every subject having achlorhydria.

The role of bile salts in the absorption of the fat soluble vitamins, particularly K, is so well known⁴⁸ that it needs only to be mentioned.

The role of vitamin deficiencies themselves in acting as a conditioning factor by impairing absorption is just beginning to be recognized. The intestinal absorption of galactose and probably other sugars is impaired in experimental B complex deficiencies in the rat⁴⁹ and in the dog.⁵⁰ Groen⁵¹ has shown reduced absorption of dextrose in deficiency states, and Beams, Free and Glenn⁴⁴ have also shown impaired absorption of galactose from the intestinal tract in patients suffering from pellagra, sprue and rosacea keratitis. After therapy, absorption returned to normal in the pellagrins and in some of the patients with rosacea keratitis but in none of the patients with sprue. Lepore and Golden⁵² have reported x-ray evidence of a characteristic small intestine lesion in some cases of deficiency diseases which could be cured by B complex therapy. They believe

TABLE 5—Factors Interfering with Absorption

- | | |
|---|---|
| 1 | Gastrointestinal diseases associated with hypermotility or reduction of absorbing surfaces |
| 2 | Achlorhydria |
| 3 | Biliary disease especially obstructive jaundice |
| 4 | Vitamin deficiency |
| 5 | Therapy
Liquid petrolatum colloidal adsorbents severe catharsis gastric or intestinal resections and short circuiting operations |

that the impaired absorption was caused by disturbances in motility. Recent reports⁵³ indicate that carcinoma of the intestinal tract causes defective absorption of vitamin A which can be corrected by B complex therapy.

Therapy may play an important role in interfering with absorption. Gastrointestinal surgery, particularly resection and short circuiting operations⁵⁴ has long been known to produce macrocytic anemia similar to Addisonian pernicious anemia, and there are many case reports to indicate it as a factor in the production of

39 Spies T D Cooper Clark and Blankenhorn M A The Use of Nicotinic Acid in the Treatment of Pellagra J A M A 120 622 (Feb 26) 1938

40 Reviewed by Williams R R and Spies T D Vitamin B₁ (Thiamine) and Its Use in Medicine New York Macmillan Company 1938

41 Stepp W and Schroeder H Beriberikerkrankung beim Menschen hervorgerufen durch ubermassigen Zuckergenuss Munchen Med Wchn chr 83 763 (May 8) 1936

42 German A Morvan A and Babin R Alimentary Dis equilibrium and Intestinal Fermentation as a Cause of Beriberi Bull Soc Path Exot 31 147 1938

43 Jolliffe Norman Colbert C N and Joffe P M Observations on the Etiologic Relationship of Vitamin B₁ to Polyneuritis in the Alcohol Addict Am J M Sc 191 515 (April) 1936 Jolliffe Norman and Colbert C N The Etiology of Polyneuritis in the Alcohol Addict J A M A 107 642 (Aug 29) 1936

44 Beams A J Free A H and Glenn P M The Absorption of Galactose from the Gastrointestinal Tract in Deficiency Diseases Am J Digest Dis 8 415 (Nov) 1941

45 Jolliffe Norman and Rosenblum L A The Oral Manifestations of Vitamin Deficiency J A M A 117 2245 (Dec 27) 1941

46 Reese B B Jr and McCoard A B Vitamin A Absorption in Celiac Disease J Pediat 15 183 (Aug) 1939 May C D and McCreary J F Absorption of Vitamin A in Celiac Disease Interpretation of Vitamin A Absorption Test ibid 18 200 (Feb) 1941

47 Goldberg H K and Schlueke Kaufman Necrosis of the Cornea Due to Vitamin A Deficiency Report of a Case Arch Ophth 25 122 (Jan) 1941

48 Albright Fuller and Stewart J D Hypovitaminosis of All Fat Soluble Vitamins Due to Steatorrhea New England J Med 223 239 (Aug 15) 1940 Spies T D Walker A A and Woods A W Pellagra in Infancy and Childhood J A M A 113 1481 (Oct 14) 1939

49 Beams W B and Spies T D Vitamin Deficiencies in Diarrheal States ibid 115 1038 (Sept 28) 1940 Caruthers L B Pellagra in India Tr Roy Soc Trop Med & Hyg 25 (July) 1941

50 A C Ghaloungui P and El Gharini Abbas Defective Gastrointestinal Absorption in Pellagra J Egypt M A 22 191 (April) 1939

51 Clark R L Jr Vitamin Deficiency Complicating Chronic Ulcerative Colitis Proc Staff Meet Mayo Clin 13 232 (April 13) 1938

52 Mc Lester J S Nutrition and Diet in Health and Disease ed 3 Philadelphia and London W B Saunders Company 1940

46 Alt H L Chinn Herman and Farmer C J The Blood Plasma Ascorbic Acid in Patients with Achlorhydria (Pernicious and Iron Deficiency Anemia) Am J M Sc 197 229 (Feb) 1939 Wright I S and Ludden J B Treatment with Vitamin C (Cevitamic Acid—Ascorbic Acid) Method for Compensating for the Factor of Error Due to Renal Retention of Vitamin C Found in All Previous Saturation and Blood Tests M Clin North America 24 743 (May) 1940

47 Melnick Daniel Robinson W D and Field Henry Jr Fate of Thiamine in the Digestive Secretions J Biol Chem 138 49 (March) 1941

48 Field Henry Jr Robinson W D and Melnick Daniel Destruction of Thiamine by Unacidified Bile and Pancreatic Juice A Possible Explanation of the Cord Changes in Pernicious Anemia J Clin Invest 19 791 (Sept) 1940

48 Reviewed by Spies T D and Butt H R in Duncan B Butt H R and Snell A M Vitamin K Philadelphia and London W B Saunders Company 1941

49 Leonards J R Free A H and Myers V C The Effect of Vitamin B Deficiency in the Intestinal Absorption of Galactose in the Rat Am Chem Soc Spring Meet Memphis Tenn 1942

50 Free A H Leonards J R and Myers V C Studies on the Absorption and Metabolism of Galactose and Glycine in Dogs with Vitamin B Deficiency meeting of Am Soc Biol Chemists Boston April 1942

51 Groen Juda The Absorption of Glucose from the Small Intestine in Deficiency Disease New England J Med 218 247 (Feb 10) 1938

52 Lepore M J and Golden R S A Syndrome Due to Deficiency of Vitamin B Complex J A M A 117 918 (Sept 13) 1941

53 Abels J C Gorham A T Pack G T and Rhoads C P Metabolic Studies in Patients with Cancer of the Gastrointestinal Tract I Plasma Vitamin A Levels in Patients with Malignant Neoplastic Disease Particularly of the Gastrointestinal Tract J Clin Investigation 20 749 (Nov) 1941

54 Mc Lester J S Personal communication to the author

other deficiency syndromes." Ingestion of liquid petrolatum daily or almost daily is a common practice among many people who are well except for constipation of varying degrees. That such an agent interferes with the absorption of fat soluble vitamins has been indicated by a number of observers.⁵⁵

Interference with Utilization—This factor is extremely complex and difficult for direct experimental verification. Evidence for interference with utilization is largely circumstantial. In the presence of an adequate intake it is necessary to rule out malabsorption, increased destruction in the bowel, excessive excretion and abnormal requirement before concluding that utilization is defective. It is known for instance that the body must convert carotene to vitamin A, phosphorylate thiamine to coenzyme I and II, and that riboflavin is essential to more enzyme systems than any other of the known vitamins. Some of these changes may occur in tissue cells in general, but the evidence at this time indicates that the liver is the main organ in which these processes take place. Be that as it may, it is in hepatic disturbances that malutilization is most frequently encountered. In the presence of liver dysfunction these disturbances may be due not only to

TABLE 6—Factors Interfering with Utilization

- | | |
|---|---|
| 1 | Hepatic dysfunction as in
Liver disease, diabetes mellitus, alcoholism |
| 2 | Hypothyroidism |
| 3 | Malignancy |
| 4 | Therapy
Sulfonamide drugs, radiation therapy, phenytoin |

failure of conversion but to inability of the liver to store a nutrient. The body is then dependent on the day to day intake. This intake naturally varies, with the result that an excess today cannot be stored for a deficit almost certain to occur on some future day.

The more common illnesses associated with impaired utilization are listed in table 6. A tissue deficiency in vitamin A attributable to impaired conversion of carotene to vitamin A has been reported in liver cirrhosis,⁵⁷ diabetes mellitus,⁵⁸ obstructive jaundice⁵⁹ and hypo-

thyroidism.⁶⁰ The low plasma levels of vitamin A observed at times in patients having gastrointestinal cancer have been explained as a failure to utilize due to hepatic dysfunction. The high frequency of nutritional diseases in chronic alcohol addicts⁶¹ is well known. Hepatic dysfunction undoubtedly plays a role in these cases. The prevalence of abnormal dark adaptation in hypothyroidism has been thought to imply that the thyroid hormone plays a part in the conversion of the carotene to vitamin A.⁶⁰

Therapy also may interfere with the utilization of vitamins. Although deficiency disease produced by sulfonamide compounds has been attributed mainly to sterilization of the intestinal tract and inhibition of intestinal synthesis of certain factors,⁶² West⁶³ has shown that diarrhea and weight loss in dogs induced by nicotinic acid deficiency and correctable by giving nicotinic acid was not corrected if sulfapyridine was given with the nicotinic acid. On the other hand, raw liver would cure these dogs even in the presence of sulfapyridine, suggesting that sulfapyridine inhibits the action of nicotinic acid but not of the preformed coenzymes present in raw liver. To test out the clinical importance of this finding I have maintained 5 pellagrins in relapse with a basal diet poor in nicotinic acid and administered sulfapyridine in sufficient quantities to obtain a blood level of 8 to 12 mg. One Gm. of sulfapyridine was thereafter administered every four hours, and 400 to 1,000 mg. of nicotinic acid was administered by mouth daily. All the signs and symptoms of pellagra responded as promptly as could be expected if sulfapyridine had not been administered. With the doses of nicotinic acid given (probably excessive) I failed in these few cases to observe any inhibiting effect of sulfapyridine.

Rhoads⁶⁴ has produced cancer in susceptible rats by administering a carcinogen. This action was completely prevented by feeding yeast and partially prevented by riboflavin and casein. With in vitro experiments it then was shown that butter yellow blocked the function of coenzyme I. A constituent of this enzyme is nicotinic acid amide. Rhoads concluded "that the administration of at least one carcinogenic chemical injured normal cells by interfering in some way with an enzyme system which is essential for their normal chemical and so their normal life. The results suggested, furthermore, that this principle of the poisoning by a specific chemical of at least one, and possibly more than one, normal enzyme system caused the normal cell to become a cancer cell." Furthermore, these studies "suggest the necessity of a complete and precise examination of a large number of patients having malignant neoplasms in order to ascertain whether or not they show any evidence of an interference with chemical

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58 Brazer, J. G., and Curtis, A. C. Vitamin A Deficiency in Diabetes Mellitus, *Arch. Int. Med.* 65 90 (Jan) 1940.

59 Stewart, J. D., and Rourke G. M. Vitamin A Metabolism in Obstructive Jaundice, *J. Clin. Investigation* 20 453 (July) 1941.

60 Wohl, M. G., and Feldman J. B. Vitamin A Deficiency in Disease of the Thyroid Gland. Its Detection by Dark Adaptation, *Endocrinology* 24 389 (March) 1939.

61 Jolliffe, Norman. Vitamin Deficiencies and Liver Cirrhosis in Alcoholism. Introduction and Part I. *Quart. J. Stud. on Alcohol* 1 517 (Dec) 1940. Vitamin Deficiencies and Liver Cirrhosis in Alcoholism. Part II. Circulatory Disturbances. Part III. Pellagra, *ibid* 1 727 (March) 1941. Jolliffe, Norman. Worts Herman and Stein M. H. Vitamin Deficiencies and Liver Cirrhosis in Alcoholism. Part IV. The Wernicke Syndrome. Part V. Nicotinic Acid Deficiency Encephalopathy. Part VI. Encephalopathies with Possible Nutritional Involvement. *ibid* 2 73 (June) 1941. Jolliffe, Norman, and Jellinek, E. M. Vitamin Deficiencies and Liver Cirrhosis in Alcoholism. Part VII. Cirrhosis of the Liver. *ibid* 2 544 (Dec) 1941.

62 Daft, S. S. Ashburn W. L. and Sebrell W. H. Biotin Deficiency and Other Changes in Rats Given Sulfanilylguanidine or Succinylsulfathiazole in Purified Diets, *Science* 96 321 (Oct 2) 1942.

63 West, Randolph. Inhibition by Sulfapyridine of the Curative Action of Nicotinic Acid in Dogs, *Proc. Soc. Exper. Biol. & Med.* 16 369 (March) 1941.

64 Rhoads C. P. Recent Studies in Production of Cancer by Chemical Compounds. The Conditioned Deficiency as a Mechanism, *Bull. New York Acad. Med.* 18 53 (Jan) 1942.

systems of which vitamins form essential compounds" Drake and his co-workers⁶⁶ have shown in guinea pigs that phenytoin produces a rapid and progressive fall in the blood ascorbic acid level and recently he⁶⁶ has shown that phenytoin lowers the blood ascorbic acid level in human beings. Similarly radiation sickness has been attributed to failure of coenzyme formation from thiamine or nicotinic acid or both⁶⁷.

Increased Excretion—The role of increased excretion of vitamins in the production of malnutrition has received little attention, although the production of hypoproteinemia by albuminuria and salt depletion either by excessive sweating or by polyuria, are well known phenomena. The possible factors causing increased excretion are listed in table 7. I know of no case report in the literature in which a vitamin deficiency was thought to be produced solely by this conditioning factor. Cowgill⁶⁸ has shown, however, that vitamin B₁ deficiency symptoms appear earlier in dogs maintained with a forced water intake than in dogs that were permitted to drink water ad libitum. He attributed this to increased excretion of vitamin B₁. The possibility of "washing out" the water soluble vitamins must therefore be considered in uncontrolled diabetes mellitus and diabetes insipidus. The loss of vitamins by lactation may be a precipitating factor for deficiency diseases. I have seen 3 patients with severe gestational polyneuropathy who had had only minor symptoms during pregnancy but who rapidly developed severe polyneuropathy during the second week post partum. It was felt that the drain of lactation was the final straw in the pathogenesis of this severe thiamine deficiency.

Methods for determining vitamins in the sweat are technically difficult and not yet satisfactory, so that the practical significance of vitamin depletion by excessive perspiration has yet to be shown convincingly.

By increasing excretion, therapy may contribute to the production of deficiency disease. The forcing of fluids, especially over long periods of time as in certain urinary tract infections, and the loss of fluids by diuresis as in anasarca may be the last straw required to produce a deficiency. Salicylates have been reported⁶⁹ to increase urinary excretion of ascorbic acid, but Youmans and his co-workers⁷⁰ could not confirm this observation.

Increased Destruction—Increased destruction of vitamins may occur in the gastrointestinal tract prior to absorption or in the tissues following absorption. The conditioning factors thought to cause increased destruction of vitamins in human beings are listed in table 8. This list does not include either induced thiamine deficiency in animals caused by enzymatic destruction of thiamine by raw carp or of biotin deficiency in man

induced by egg white injury, as neither has been shown to occur spontaneously in man, although neither is beyond possibility.

Green⁷¹ and Coombes⁷² and their associates have shown thiamine deficiency to be the cause of Chastek paralysis in silver foxes. This deficiency was caused by raw carp, which, when mixed with the food, causes rapid destruction of thiamine. Cooking the carp effectively destroys its ability to inactivate thiamine. It is not known whether any other variety of fish has this ability. I have recently examined four ship-wrecked sailors whose diet for forty-eight days consisted chiefly of raw fish and raw turtle. None of these men showed clinical evidence of thiamine deficiency, and their blood thiamine levels were within normal range.

Induced biotin deficiency in man has been produced experimentally by Sydenstricker and others⁷³. He accomplished it by severe dietary restriction plus the feeding of large amounts of raw egg white. The avid-albumin in egg white presumably "fixes" the biotin in the intestinal tract.

The susceptibility of ascorbic acid and thiamine to destruction in alkaline environment has led to some

TABLE 7—Factors Increasing Excretion

- 1 Polyuria as in Diabetes mellitus diabetes insipidus
- 2 Lactation
- 3 Excessive perspiration
- 4 Therapy
Long continued excessive fluid intake as in urinary tract infections

TABLE 8—Factors Increasing Destruction

- 1 Achlorhydria
- 2 Lead poisoning? trinitrotoluene poisoning?
- 3 Therapy
Alkali sulfonamides arsenicals

investigation of the role played by achlorhydria and alkaline therapy. Alt, Chinn and Farmer⁷⁴ have shown a 65 per cent destruction of ascorbic acid in three hours at a pH of 7.95, representing achlorhydric gastric juice, and obtained results on patients with achlorhydria suggesting decreased assimilation of ascorbic acid. Kendall and Chinn⁷⁴ have obtained from the gastric contents and feces of achlorhydric patients bacteria which destroy ascorbic acid and suggest "that the ascorbic acid fermenting strains may gain the ascendancy in the alimentary canal of certain persons, leading in them to a detectable ascorbic acid deficit." Wright and Ludden⁷⁵ have also observed signs of vitamin C deficiency in persons with achlorhydria in spite of a

66 Drake M E, Gruber C M, Haurly V G and Hart E R. The Effects of Sodium Diphenyl Hydantoinate (Dilantin) on Blood Ascorbic Acid Level in Guinea Pigs. *J Pharmacol & Exper Therap* 72: 383 (Aug) 1941.

67 Drake M E. Personal communication to the author.

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69 Cowgill G R. Vitamin B Requirement of Man. New Haven Yale University Press 1934.

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74 Sydenstricker V P, Singal S A, Briggs A P, De Vaughn N M and Isbell Harris. Observations on the Egg White Injury in Man and Its Cure with a Biotin Concentrate. *J A M A* 115: 1159 (April 4) 1942. *abstr Science* 93: 176 (Feb 13) 1942.

75 Kendall A I and Chinn Herman. The Decomposition of Ascorbic Acid by Certain Bacteria. *Studies in Bacterial Metabolism CIX. J Infect. Dis* 62: 330 (May June) 1935.

liberal ascorbic acid intake. They were also able to demonstrate lack of absorption in these subjects after an oral test dose.

McNuck, Robinson and Field⁷⁵ have shown that thiamine is stable in gastric juice over a pH range of 1.5 to 8.0 during sixteen hours of incubation. In the presence of added antacids the thiamine is completely destroyed and in the presence of bile or pancreatic juices 50 to 90 per cent was destroyed. The same investigators noted subnormal urinary excretion of a test dose of thiamine in subjects who were given alkalis. Tests in this laboratory by Goodhart⁷⁶ also indicate that achlorhydria may interfere with the absorption of thiamine.

Recent investigations indicate that some of the vitamins, particularly ascorbic acid, may play a prominent role in the detoxications. Martin, Fisher and Thompson⁷⁷ have reported that ascorbic acid, cystine, aminoacetic acid and calcium gluconate definitely reduced the acute toxic manifestations of sulfanilamide, sulfathiazole and sulfapyridine in rats, while thiamine and nicotinic acid were ineffective. Holmes and his associates⁷⁸ have included that toxic lead compounds react with ascorbic acid to form a poorly ionized nontoxic salt of lead. The data of Farmer, Abt and Aron⁷⁹ indicate that the lowering of plasma ascorbic acid in neoparsphenamine therapy may be the consequence of an attempt on the part of the body to detoxify the drug. The recent findings of Drake⁷⁹ on phenytoin, previously discussed in the section on malutilization, also may be explained as a diversion of ascorbic acid to detoxify this drug.

CONCLUDING COMMENT

The term malnutrition signifies not a dietary inadequacy but a tissue deficiency of an essential nutrient. This tissue deficiency may be caused by the failure to ingest an adequate diet. This tissue deficiency may also be caused by factors which interfere with ingestion, absorption or utilization of essential nutrients or by factors that increase the requirement for vitamins, their destruction or excretion. These are known as conditioning factors and when a deficiency disease is produced through their mediation it is known as a conditioned deficiency disease or conditioned malnutrition. The more common illnesses, physiologic factors and therapeutic measures that may produce a conditioned deficiency disease have been listed and briefly discussed. These findings warrant the conclusion that many diseases and some of the therapeutic measures used to combat them interfere with nutrition and are potent factors in the production of deficiency diseases. It is also an inescapable conclusion that the treatment of malnutrition is in each person an individual medical problem requiring exact diagnosis and therapeutic measures which cannot with safety be left in the hands of nonmedical persons. The physician who does so is derelict in his duty to his patient.

39 East Seventy-Fifth Street

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE VALUE OF THE XANTHINE COMPOUNDS HAS BEEN DISPUTED ON MANY OCCASIONS. IN 1930 AND IN 1937 (J. A. M. A. 91:1306 [APRIL 26] 1930 AND 108:2203 [JULY 26] 1937) THE COUNCIL REVIEWED THE CLAIMS FOR XANTHINE COMPOUNDS IN ORDER TO AID THE MEDICAL PROFESSION IN EVALUATING THE CLINICAL POSSIBILITIES OF THESE AGENTS. TO BRING THIS INFORMATION UP TO DATE, THE COUNCIL HAS AGAIN INITIATED A STUDY OF THE THERAPEUTIC CLAIMS BY ASKING DR. NORMAN H. BOYER TO PREPARE THE FOLLOWING REVIEW OF RECENT WORK ON THIS SUBJECT.

IT AUTHORIZES PUBLICATION OF THIS REPORT. THE COUNCIL WISHES TO EXPRESS ITS APPRECIATION TO DR. BOYER FOR HIS REVIEW.

AGUSTIN E. SMITH, M.D., Secretary

AMINOPHYLLINE AND RELATED XANTHINE DERIVATIVES

PRESENT STATUS OF THERAPEUTIC CLAIMS

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The methyl derivatives of xanthine for which therapeutic claims have been made include caffeine, theobromine and theophylline. The slight solubility of the latter two limits their usefulness, but soluble double salts of either theobromine or theophylline can be formed with a number of compounds. The most widely used combinations are theobromine calcium salicylate or sodium acetate and theophylline ethylenediamine (aminophylline). Caffeine, although the first of the xanthines to be studied and used, has in recent years succumbed to the greater interest shown in theobromine and theophylline. The stimulating effects of caffeine on the central nervous system are somewhat greater than shown by theobromine and theophylline, and its effects on the circulation are definitely less. Theophylline may also produce stimulation of the central nervous system. In addition, the latter drug has the disadvantage of causing gastric and occasionally renal irritation.

DIURETIC ACTION

The value of the xanthines as diuretics dates back to the observations of Babcock,¹ Askanazy,² Breuer³ and Dessauer.⁴ These observations have now been amply confirmed, the efficacy of the xanthines as diuretic in congestive heart failure is established. They are usually ineffective when edema is due to extracardiac causes and are inferior in diuretic activity to the mercurial compounds. The convenience of oral therapy often is a distinct advantage of the xanthines.

Diminished dyspnea following the use of xanthines, especially in arteriosclerotic subjects, has been attributed to improvement in collateral coronary circulation,⁵ but this is only speculation and in view of the established diuretic property of these drugs it seems likely that the latter mechanism is the more important one.

Although commonly used as an emergency measure during an attack of paroxysmal dyspnea or acute pulmonary edema due to heart failure, there is no crucial evidence indicating that the xanthines exert any immediate beneficial action under such circumstances. They may, however, be useful in preventing future attacks.

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¹ Babcock, R. H. The Remarkable Effects of Diuretin in Removing Dropsy, with Report of Cases. New York M. J. 54:37, 1891.

² Askanazy, S. Klinisches über Diuretin, Deutsches Arch. f. klin. Med. 56:209, 1895.

³ Breuer, R. Zur Therapie und Pathogenese der Stenokardie und verwandte Zustände, München med. Wchnschr. 19:1604, 1902.

⁴ Dessauer, P. Euphyllin ein neues Diuretikum, Therap. Monatsh. 22:401, 1908.

⁵ Smith, F. M., Rather, H. W., and Paul, W. D. Theophylline in the Treatment of Disease of the Coronary Arteries, Arch. Int. Med. 56:1250 (Dec.) 1935.

⁷⁵ Goodhart, Robert. Unpublished observations.

⁷⁶ Martin, G. J., Fisher, C. V., and Thompson, M. R. Therapeutic and Prophylactic Detoxification of Sulfanilamide, Sulfapyridine and Sulfathiazole, Ann. Int. Med. 69:662 (April) 1942.

⁷⁷ Holmes, H. N., Campbell, Kathryn and Amberg, E. J. The Effect of Vitamin C on Lead Poisoning, J. Lab. & Clin. Med. 24:1119 (Aug.) 1939.

⁷⁸ Farmer, C. J., Abt, A. F. and Aron, H. C. S. Influence of Arsenicals, Bismuth and Iron on the Plasma Ascorbic Acid Level, Proc. Soc. Exper. Biol. & Med. 44:495 (June) 1940.

⁷⁹ Drake, Gruber, Hauray and Hart⁶³ Drake⁶⁸.

MYOCARDIAL STIMULATION

Starr and his collaborators⁶ found that theophylline when given to patients intravenously increased the cardiac output and left ventricular work without increasing the size of the heart. This was interpreted to indicate myocardial stimulation. The effect of caffeine was in the same direction but of less magnitude and, in the statistical sense, was considered to be insignificant. Boyer and Green⁷ found by a totally different method that the xanthines often produced stimulation of the heart and that in this respect the action was similar to epinephrine though less pronounced.

DISEASE OF THE CORONARY ARTERIES

The place of the xanthines in the therapeutics of coronary occlusion and angina pectoris is a subject about which a great deal of controversy and confusion exists. The effects of the xanthines on the coronary arteries, on coronary blood flow and on myocardial infarction has been extensively studied in the experimental animal. In early studies these drugs were observed to produce dilatation of excised coronary arteries. This is obviously a crude, unphysiologic method and does not permit interpretation in terms of clinical medicine or response of the intact animal. Furthermore, the demonstration of dilatation of the large arteries, which lend themselves to such studies, is no criterion of increased flow through smaller arterioles and capillaries. Later methods involving the measurement of outflow from the coronary sinus or coronary inflow by means of the thermostromuhr indicated an increase in coronary flow but have the disadvantage of measuring mean flow only and furthermore, both methods have been shown to be subject to serious error.⁸ Boyer and Green,⁷ using a method which allows determination of the flow existing at any moment of the heart cycle, found that the xanthines decreased flow during systole, indicating that the compression of the coronary bed during contraction of the heart was increased. This myocardial stimulation could be shown to precede the increase in total coronary flow, and the suggestion was made that the increase in metabolites liberated in the heart may have produced some or all of the coronary dilatation. Unless it can be shown that the increase in coronary flow is greater than the increase in cardiac metabolism, these drugs cannot be considered effective in increasing the relative blood supply to the heart. The nature of the experiments did not allow the authors to arrive at conclusions on this point. It should be noted that in all reported experimental studies the increase in coronary flow produced by the xanthines has been very transient.

An attempt has been made to discover the effect of the xanthines on myocardial infarction resulting from ligation of a coronary artery in the experimental animal.

Fowler, Hurvitz and Smith⁹ reported that the extent of cyanosis appearing in an area of the heart acutely deprived of its blood supply was lessened by the administration of aminophylline. Personal experience indicates that such an estimation is extremely difficult. Furthermore, if it does occur it can be attributed to the emptying of venous channels by the increased vigor of myocardial contraction previously referred to, as well as, or better than, to opening of collateral vessels. These authors also estimated that the size of the infarction in dogs killed at intervals of days or weeks following coronary artery ligation and given theophylline with ethylenediamine was smaller than in untreated dogs. Gold, Travell and Modell¹⁰ came to exactly the opposite conclusions by carefully measuring the size of the infarct. Actually the infarcted area in the treated animals averaged 18.3 per cent larger than in similar animals untreated with aminophylline. The authors found it difficult to understand how aminophylline could make matters worse and thought that the difference may have been accidental. There is no denying the possibility of an accidental difference of this magnitude, but it is also possible that the increase in metabolic demands induced by the drug may have had a hand in increasing the size of the infarct. Furthermore, Gold, Travell and Modell found that ventricular tachycardia appeared in 87 per cent of the animals untreated with aminophylline, whereas it occurred in 47.4 per cent of the animals receiving the drug. Unfortunately these investigators used cats, while Fowler, Hurvitz and Smith used dogs as the experimental animal. It is, however, extremely unlikely that the divergent results can be accounted for entirely on the basis of species difference. LeRoy, Fenn and Gilbert¹¹ concerned themselves with the immediate mortality (twenty-four hours) of dogs subjected to ligation of a coronary artery and the effect of drugs on the mortality rate. Under the conditions of their experiments they found an immediate mortality of 70 per cent in untreated dogs. The rate for dogs receiving theobromine with sodium acetate was reduced to 23 per cent and for dogs receiving theophylline was 56 per cent. Considerable doubt may be justifiably raised as to the significance of the reduction (14 per cent) produced by theophylline. The beneficial effects of theobromine sodium acetate, however, appear to be much more definite. Since the immediate mortality is mainly concerned with the onset of cardiac arrhythmias (i.e. ventricular fibrillation) these results are somewhat at variance with those reported by Gold, Travell and Modell. Wiggers and Green¹² were unable to show any immediate favorable effect of the xanthines on blood flow or muscular contraction in an area deprived of its blood supply by coronary artery ligation.

Clinical evaluation of the xanthine drugs in the treatment of coronary artery disease is more important and at the same time much more difficult than determining their effect on experimental animals. The majority of reports in the literature indicate that these drugs are valuable in the treatment of angina pectoris or acute

9 Fowler W M, Hurvitz H M and Smith F M. Effect of Theophylline Ethylenediamine on Experimentally Induced Cardiac Infarction in the Dog. *Arch Int Med* 56: 1242 (Dec.) 1935.

10 Gold Harry, Travell J and Modell Walter. The Effect of Theophylline with Ethylenediamine (Aminophylline) on the Course of Cardiac Infarction Following Experimental Coronary Occlusion. *Am. Heart J* 14: 244 (Sept.) 1937.

11 LeRoy G A, Fenn G K and Gilbert N C. The Influence of Xanthine Drugs and Atropine on the Mortality Rate After Experimental Occlusion of a Coronary Artery. *Am. Heart J* 23: 697 1942.

12 Wigger C J and Green H D. The Ineffectiveness of Drugs on Collateral Flow After Experimental Coronary Occlusion in Dogs. *Am. Heart J* 11: 527 1936.

6 Starr Isaac, Gamble C F, Margolies A, Donal J S, Joseph N and Eagle E. A Clinical Study of the Action of Ten Commonly Used Drugs on Cardiac Output, Work and Size on Respiration on Metabolic Rate and on the Electrocardiogram. *J Clin Investigation* 16: 799 (Sept.) 1937.

7 Boyer N H and Green H D. The Effects of Nitrites and Xanthines on Coronary Inflow and Blood Pressure in Anesthetized Dogs. *Am. Heart J* 21: 199 1941.

8 Katz L N, Jochim K and Bohning A. The Effect of the Extravascular Support of the Ventricles on the Flow in the Coronary Vein. *Am J Physiol* 122: 236 (April) 1938. Katz L N, Jochim K and Weinstein W. The Distribution of the Coronary Blood Flow. *ibid* 122: 252 1938. Johnson J R and Wiggers C J. The Alleged Validity of Coronary Sinus Outflow as a Criterion of Coronary Reactions. *ibid* 118: 38 1937. Shipley R E, Gregg D E and Wearn J T. Operative Mechanism of Some Errors in the Application of the Thermostromuhr Method to the Measurement of Blood Flow. *ibid* 126: 263 1942. Gregg D E, Pritchard W H, Ebbstein R W, Shipley R E, Rott A, Dingle J, Steege T W and Wearn J T. Observations on the Accuracy of the Thermostromuhr. *ibid* 136: 239 1944.

coronary thrombosis¹³. However, there is no lack of adverse reports. Gold, Kwit and Otto¹⁴ and Evans and Hoyle¹⁵ concluded that the xanthines exert no specific beneficial action which would justify their use in the treatment of angina pectoris. Those who favor the use of the xanthines have attributed failures to advanced disease of the coronary arteries which is beyond help of any kind while those who do not believe in the efficacy of the drugs have attributed success in individual cases to placebo-like action. The mere existence of honest differences in opinion suggests that these drugs may be without specific action in the treatment of cardiac pain. Clinical evaluation of the use of any procedure in the treatment of angina pectoris is rendered difficult by the natural course of the disease, with spontaneous remissions and exacerbations, by the subjective nature of the disease and by the many factors which may influence the occurrence of pain. In order to obviate or control some of these factors, objective measurement of the effect of the xanthines has been attempted. Brown and Riseman¹⁶ used the response to a standard exercise test as a criterion for the effect of the xanthines on the amount of work which could be accomplished before pain was induced. Unfortun-

ately this report gives no actual figures for the amount of work performed before and after the administration of the drugs but simply the percentage of patients "improved." They reported improved exercise tolerance in 31 per cent of patients treated with theobromine and 54 per cent treated with theophylline. When these xanthines were combined with sodium acetate the number of patients showing improvement increased to about 80 per cent.

In another report Riseman and Brown¹⁷ claimed that aminophylline improved the exercise tolerance by as much as 100 per cent. Such improvement must have been exceptional, for a table giving the actual number of trips over a two step platform gave the figures reproduced herewith.

This is certainly not impressive evidence for improvement. Only 2 of the 9 patients according to the suggestive evidence presented in their table were able to tolerate more exercise after the administration of aminophylline than before. In evaluation of the treatment of a disease as variable as is angina pectoris much more striking results should be demanded before therapeutic claims are made. Levy, Bruenn and Williams¹⁸ tested the effect of aminophylline on the occurrence of pain and on electrocardiographic changes induced by breathing a low oxygen mixture in patients with coronary artery disease. They found that aminophylline intravenously increased the duration of anoxemia tolerated before pain appeared by an average of approximately four and one-half minutes (63 per cent) and decreased the average arithmetical ST segment deviation by approximately 2.2 mm (50 per cent). Aminophylline by mouth was less effective and, on the average, increased the duration of tolerated anoxemia by a little over two minutes (26 per cent) and decreased the average ST segment changes by 1.4 mm. The evidence presented by these figures is suggestive but certainly not conclusive. The number of patients tested was small (10) and the average differences produced by aminophylline administered orally is not so great as to preclude some doubt as to their significance. It should also be noted that of ten tests with intravenous aminophylline 1 patient experienced pain after a shorter period of breathing the low oxygen mixture than when in the untreated state.

Number of Trips Without Medication and After Aminophylline

No. Treatment	Aminophylline 3 Grams (0.2 Gm.) Four Times a Day
20-32	29
26-40	23
16-23	16
26-31	22
50-11	54
35-34	57
31-42	35
8-11	10
31-40	41

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CHEYNE-STOKES RESPIRATION

Hot black coffee is a time honored respiratory stimulant, and caffeine has long enjoyed a reputation of effectiveness in the treatment of periodic breathing. Recently the other xanthine compounds have been utilized and studied with regard to their effectiveness. Marias and McMichael¹⁹ reported that intravenous aminophylline was almost always effective in restoring rhythmic breathing but that frequently the effect was transient, especially when the irregular respiration was associated with severe heart failure or with head injuries or intracranial hemorrhage. In other cases the effect of a single injection lasted hours or even permanently abolished the respiratory arrhythmia. The authors attributed the favorable action of aminophylline to direct stimulation of the respiratory center, since they found no change in pulse rate, blood pressure or cardiac output to indicate central circulatory stimulation. As was previously indicated, the experience of other investigators is not in accord with the latter findings. Marias and McMichael inferred that the action of the drug did not depend on dilatation of the cerebral blood vessels with consequent improvement in blood supply to the respiratory center because of the observation that aminophylline increases pulmonary ventilation in normal subjects. It was assumed by the authors that a drug which enhanced the removal of metabolic products from the respiratory center would tend to depress respiration in normal persons. An increase in both rate and depth of respiration in normal subjects by aminophylline has been confirmed and the suggestion made that the drug be routinely used to prevent postoperative atelectasis.²⁰

Nathanson and Fitzgibbon²¹ also found aminophylline to be effective in the treatment of Cheyne-Stokes

13 LeRoy, G. V. The Effectiveness of the Xanthine Drugs in the Treatment of Angina Pectoris, *J. A. M. A.* **116**: 921 (March 8) 1941.
 14 Missel, H. M. Clinical Observations on the Value of Various Xanthine Derivatives in Angina Pectoris, *J. Lab. & Clin. Med.* **24**: 380 (Jan) 1939.
 15 Gilbert, N. C., and Kerr, J. A. Clinical Results in Treatment of Angina Pectoris with the Purine Base Derivatives, *J. A. M. A.* **92**: 201 (Jan 19) 1929.
 16 Smith, R. A., and Paul, S. Brown and Riseman¹⁶.
 17 Gold, Harry, Kwit, N. F., and Otto, Harold. The Xanthines (Theobromine and Aminophylline) in the Treatment of Cardiac Pain, *J. A. M. A.* **108**: 2173 (June 26) 1937.
 18 Evans, W., and Hoyle, C. The Comparative Value of Drugs Used in the Continuous Treatment of Angina Pectoris, *Quart. J. Med.* **26**: 311, 1933.
 19 Brown, M. G., and Riseman, J. E. F. The Comparative Value of Purine Derivatives in the Treatment of Angina Pectoris, *J. A. M. A.* **109**: 256 (July 24) 1937.
 20 Riseman, J. E. F., and Brown, M. G. Medicinal Treatment of Angina Pectoris, *Arch. Int. Med.* **60**: 100 (July) 1937.

18 Levy, R. L., Bruenn, H. G., and Williams, N. E. The Modifying Action of Certain Drugs (Aminophylline, Nitrites, Digitalis) on the Effects of Induced Anoxemia in Patients with Coronary Insufficiency, *Am. Heart J.* **19**: 639, 1940.
 19 Marias, O. A. S., and McMichael, J. Theophylline Ethylenediamine in Cheyne Stokes Respiration, *Lancet* **2**: 437, 1937.
 20 Spelling, L., Weisman, S., and Pipermaster, R. The Effect of Intravenous Theophylline with Ethylenediamine (Aminophylline) on the Rate and Depth of Respiration, *Surgery* **11**: 600, 1942.
 21 Nathanson, M. H., and Fitzgibbon, J. P. Pharmacology of Cheyne Stokes Respiration, *Am. Heart J.* **17**: 691, 1939.

respiration. When given intravenously its action was immediate and the effect often lasted for hours. In some instances oral medication with aminophylline was also thought to be helpful.

BRONCHIAL ASTHMA

In 1921 theobromine and theophylline were shown to have a bronchodilator action on excised pig bronchi.²² This observation has recently been confirmed by Young and Gilbert,²³ who also used isolated bronchi. The latter authors found that aminophylline exerted a protective action against bronchial constriction produced by histamine, that ethylenediamine alone is ineffective, and that the action of aminophylline was a direct one on the bronchial muscle. More recently Luduena,²⁴ using the whole animal also confirmed the bronchodilator effect of theophylline derivatives. Not only did the xanthines produce dilatation of "normal" bronchi but they overcame in variable degree, bronchoconstriction produced by histamine, barium pilocarpine and anaphylaxis. The xanthines were inferior to epinephrine by a very large margin (1,000 to 2,000 times). In pithed dogs a similar though less pronounced effect of the xanthines was observed, indicating that action on the central nervous system is not an essential factor in its efficacy. The author attributed the decreased effectiveness in the pithed animal to poorer general condition of animals so treated. When animals were given moderate doses of the xanthines over a period of weeks no microscopic changes could be demonstrated in the tissues. However, when larger doses were administered over a period of weeks slight microscopic changes were observed in the meninges and kidneys.

Meanwhile these drugs had been found useful in the clinical treatment of bronchial asthma,²⁵ finding their greatest field of usefulness for patients who had become unresponsive to epinephrine. The clinical usefulness of aminophylline in the treatment of bronchial asthma has been confirmed by a large number of clinicians whose opinions have not found their way into the literature.

HYPERTENSION AND PERIPHERAL VASCULAR DISEASE

No careful clinical study of the effects of xanthines on hypertension has appeared, but it is the general consensus that these drugs are without value in reducing high blood pressure.

In 1934 Scupham²⁶ reported that clinically the xanthines appeared to do good in some cases of some kinds of peripheral vascular diseases. It was absolutely ineffective in Raynaud's disease and in acrocyanosis. It seemed to help some cases of thromboangitis obliterans or arteriosclerotic vascular disease. Unfortunately most of the cases reported by this author were hospitalized and other forms of recognized treatment for vascular disease were administered.

McGovern, McDevitt and Wright²⁷ using skin temperature changes as a criterion and administering large

doses of theobromine with sodium salicylate (2.6 Gm.) by mouth, concluded that this drug was too feeble and unreliable a vasodilator to be of value in the treatment of peripheral vascular disease. Stewart and Jack²⁸ measured peripheral blood flow by changes in the thermal conductance of the skin. By this method aminophylline produced an increase in peripheral blood flow of 40 to 195 cc per square meter of body surface per minute in eighteen to twenty-five tests. The effect was always transient and this fact, together with doubts related to the method used, renders the report of questionable value in demonstrating that aminophylline is a valuable therapeutic agent in the treatment of peripheral vascular disease.

SUMMARY

1 The xanthine derivatives are useful diuretics in congestive heart failure. The diuretic action of theophylline is somewhat more intense but less lasting than theobromine compounds. The latter give rise to less gastric irritation than do theophylline compounds, although enteric coating minimizes this difference. There is no satisfactory evidence to show that these drugs exert an immediate action which justifies their use in acute pulmonary congestion or edema.

2 The xanthines stimulate the myocardium to increased vigor of contraction. This is accompanied by increased cardiac output and increased work of the heart.

3 Increased coronary blood flow produced by theophylline in the experimental animal follows rather than precedes the myocardial stimulation. Until it can be shown that the increase in coronary flow is disproportionately large in comparison to the increase in cardiac metabolism the experimental basis for the clinical use of theophylline in increasing the blood supply to the heart must rest on insecure ground. Evidence that the xanthines exert a favorable influence on experimental myocardial infarction is inconclusive but seems slightly in favor of the absence of any such favorable action.

4 Clinical evaluation of the usefulness of the xanthines in the treatment of coronary artery disease is far from satisfactory. It seems wise to place the burden of proof on those who claim therapeutic efficacy, and the evidence presented so far does not seem altogether unequivocal. Reports based on the evaluation of the subjective accounts of patients is open to serious errors and attempts to determine the objective effect of these drugs, while commendable, are not beyond criticism. The employment of accepted statistical methods in arriving at conclusions although not compensating for poor methods or controls would do much in clarifying the significance of such studies.

5 The xanthines are useful in the treatment of Cheyne-Stokes respiration. At times the effect is transient but in other cases the effect may last several hours.

6 Aminophylline is effective in the treatment of bronchial asthma, it finds its greatest field of usefulness in patients who have become epinephrine fast. In general it is less effective than epinephrine and should not supplant the latter.

7 There is no basis for claims that the xanthines effectively reduce high blood pressure.

8 The available evidence is opposed to claims that these drugs are useful in the treatment of peripheral vascular disease.

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23 Young R. H. and Gilbert R. P. The Use of Theophylline with Ethylenediamine (Aminophylline) for the Control of Bronchial Spasm. *J. Allergy* 12: 235 (March) 1941.
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26 Scupham G. W. Effect of Theobromine on Peripheral Vascular Disease. *Arch. Int. Med.* 51: 685 (Oct.) 1934.
27 McGovern T., McDevitt E. and Wright, I. S. Theobromine Sodium Salicylate as a Vasodilator. *J. Clin. Investigation* 15: 11 1936.

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SATURDAY, MAY 29, 1943

IODINE AND THE THYROID

Since 1895, when Baumann discovered iodine in thyroglobulin, a protein isolated from the thyroid, this element has been closely associated with the physiology of the gland. Most of the 30 to 40 mg of iodine in the body is localized in the thyroid, whose tissue has extraordinary ability to fix and retain iodine.¹ Thyroxin and diiodotyrosine are the two iodine-containing compounds which have been isolated from the hydrolysis products of thyroid protein. However, they account for only about two thirds of the total iodine in the gland, the nature of the combination of the remainder being unknown.

Recent studies have thrown light on the ability of iodized proteins to simulate thyroxin activity. Krauss and Monroe² produced a remission of experimental hyperthyroidism through the use of iodized milk. Therapeutic effects of iodized whole serum protein have been demonstrated in human patients with athyrosis³ and similar results which have been described in guinea pigs treated with iodized casein.⁴ The chemotherapeutic pattern of stimulation by these artificially iodized proteins is probably the same as when desiccated thyroid is used, as shown by successful isolation of thyroxin from the hydrolysis products of iodized casein.

Some indication of the pathway of synthesis of the thyroid hormone has been provided by recent experiments in which radioactive iodine was employed. Mann and his co-workers⁵ injected radioactive iodine into dogs, and the relative amounts of inorganic iodine, diiodotyrosine and thyroxin in the thyroid substance were calculated from the relative specific radioactivities

of these fractions. From the data these investigators concluded that diiodotyrosine seems to be the precursor of thyroxin. Data which might be taken as support for this conclusion were secured by Morton and Chaikoff⁷ from in vitro experiments. Slices of thyroid from dogs, rats and sheep were incubated in a nutrient medium containing radioactive iodine. The medium was then hydrolyzed and both diiodotyrosine and thyroxin which contained the labeled iodine were isolated. The relative proportion of the added radioactive iodine appearing in the two compounds which varied in the different species of animals were such as to indicate that there is a close relationship between the diiodotyrosine and the thyroxin.

The observations here reported emphasize the close qualitative chemical and functional relationship between the thyroid protein and artificially iodized proteins. Quantitatively the thyroid protein is much more potent than the iodized protein thus far prepared. Nevertheless here is the possibility of preparing this active therapeutic agent in the laboratory or on a large scale. With respect to the mode of formation of the thyroid hormone, suggestive evidence is at hand through the use of radioactive iodine.

ALLERGIC TUBERCULOSIS IMMUNITY

Widely accepted views as to the relationship between allergy and immunity in tuberculosis are challenged by Woodruff and Kelly¹ of the Detroit Tuberculosis Sanatorium. In a recent summary Rich² concluded that allergy is not a necessary accompaniment of an effective immunity in any infectious disease. This conclusion was based largely on experiments³ which indicated that allergic guinea pigs given desensitizing doses of tuberculin are able to withstand subsequent infection with highly virulent strains of tubercle bacilli as well as control guinea pigs left in their original hypersensitive state. This result is of practical clinical interest, since it suggests that tuberculin therapy is without deleterious effects.

Subsequently Willis⁴ questioned the experimental basis for this conclusion, since he found that there was but slight difference between allergic and desensitized guinea pigs if given massive test doses of highly virulent tubercle bacilli but that the results were quite different with smaller or less virulent doses. With doses that allow the injected animals to remain alive for at least six months, a 100 per cent mortality of the tuberculin desensitized animals took place long before all nondesensitized controls had died. Moreover, in the desensitized animals the lungs were almost

¹ Hertz, Saul, Roberts, A. Mearns, J. H., and Evans, R. D. *Am J Physiol* **128** 565 (Feb) 1940. Leblond, C. P., and Sue, P., *ibid* **134** 549 (Oct) 1941.

² Krauss, W. L., and Monroe, C. F. *J Biol Chem* **89** 581 (Dec) 1930.

³ Lerman, Jacob, and Salter, W. T. *Endocrinology* **25** 712 (Nov) 1939.

⁴ Reinecke, E. P., Williamson, M. B., and Turner, C. W. *J Biol Chem* **143** 285 (March) 1942.

⁵ Ludwig, W., and von Mutzenbecher, P. *Ztschr f physiol Chem* **258** 195 (April 25) 1939. Harrington, C. R., and Rivers, R. V. P. *Nature* **141** 205 (July 29) 1939.

⁶ Mann, Walter, Leblond, C. P., and Warren, S. L. *J Biol Chem* **142** 905 (Feb) 1942.

⁷ Morton, M. E. and Chaikoff, I. L. *J Biol Chem* **117** 1 (Jan) 1943.

¹ Woodruff, C. E., and Kelly, R. G. *J Immunol* **45** 79 (Oct) 1942.

² Rich, A. R. *Physiol Rev* **21** 70 (Jan) 1941.

³ Cummings, D. E., and Delahaut, A. B. *Tr Nat Tuberc A* **1934**, p 123.

⁴ Willis, H. S., and Woodruff, C. E. *Am J Path* **14** 337 (V) 1938.

completely hepaticized by tuberculous pneumonia with little or no involvement of the liver or the spleen. In the allergic controls the pulmonary involvement was minimal, the spleen being the organ showing the maximum predilection to the disease. Lack of acquired allergy was apparently responsible for the free and unrestrained growth of tubercle bacilli in the desensitized lungs.

During the past three years 218 normal guinea pigs have been infected subcutaneously with fatal doses of virulent human tubercle bacilli in the Detroit Laboratory and tested quantitatively for skin sensitivity throughout the course of the disease. In all cases the acquired skin sensitivity increased to a maximum in about four to five weeks. After this the animals could be divided into two groups. In one group the skin sensitivity decreases rapidly after the fifth week, the animals becoming desensitized by about the twelfth week, which spontaneous desensitization was invariably followed by death. On necropsy extensive pulmonary involvement was noted with enormous numbers of tubercle bacilli in the lungs. In the other group the acquired skin sensitivity was not decreased but increased slightly above the five week level. These durallergic animals remained alive well beyond the fourteenth week and on etherization showed but few acid fast bacilli in pulmonary sections or smears.

From such data Woodruff and Kelly conclude that a quantitative relationship between skin sensitivity and pulmonary resistance to tuberculosis exists, non-allergic or spontaneously desensitized pulmonary tissues favoring a profuse local proliferation of the tubercle bacilli. Spontaneous desensitization is demonstrated also in human tuberculous patients.

Current Comment

VENEREAL DISEASE IN THE NAVY

For approximately thirty years, as was mentioned in a previous comment,¹ gonorrhea has consistently remained either in first or in second place among the leading causes of morbidity in the Navy. The over-all admission rate for the entire Navy, according to Lang was 60.61 per thousand for this disease alone. Especially encouraging, therefore, is the report of Comdr. T. J. Carter² on the figures for venereal disease admission to the Navy for the years 1940 through 1942. From these it appears that for the Navy the rate for all venereal disease was 80 per thousand in 1940, was 51 in 1941 and was about 36 in 1942. These figures represent decreases of 36 per cent between 1940 and 1941 and of 29 per cent between 1941 and 1942. The trend is downward by 55 per cent over the three year period. In the suppression of the spread of the

infection, the "place of exposure" assumes real importance. Analysis of the 1942 cases reveals that ten leading cities alone are the source of 41 per cent of all cases in the Navy about which data are available. These ten cities likewise account for 57 per cent of the venereal disease cases originating in the United States. During 1942 only 28 per cent of the Navy venereal disease problem came from foreign ports. Thus the bulk of the problem will remain in the United States for some time to come. The measures proposed by the Special Committee on Enforcement of the National Advisory Police Committee on Social Protection may bring about an even further reduction in these figures.

PREVENTION OF SULFADIAZINE CRYSTALLURIA

A method of preventing "renal irritation" (crystalluria) following sulfadiazine therapy is suggested by detailed studies of the solubilities of sulfadiazine and its conjugation products reported by Gilligan and his colleagues¹ of Cornell University Medical College. Previous clinical data² have shown that the incidence of sulfadiazine crystalluria is higher in acid than in neutral or alkaline urines, suggesting the possibility that precipitation of sulfonamide excretion products in the renal tubules is determined by the p_H level. To test this theory large amounts of acetylsulfadiazine were added to phosphate buffer solutions ranging in p_H from 5.2 to 8.0. The mixtures were shaken for eighteen hours in a water bath at 37 C and then filtered at the same temperature. Analyses of the resulting filtrates by the Bratton technic³ showed an acetylsulfadiazine solubility of about 10 mg per hundred cubic centimeters at p_H 5.2, increasing to about 60 mg at p_H 6.5. With alkaline urines (p_H 7.5) the solubility was over 500 mg per hundred cubic centimeters, a ten to fifty times greater solubility than in acid buffer solutions. Similar data were obtained with free or uncombined sulfadiazine. Clinical studies suggested by these data revealed a 27 per cent incidence of crystalluria following sulfadiazine therapy in 172 cases of acid urine. In 147 urines previously rendered alkaline by oral administration of sodium bicarbonate, only 2 specimens showed crystals. Both cases cleared on further administration of sodium bicarbonate. The conclusion was drawn that sulfadiazine crystalluria can be prevented in all cases by oral administration of this alkali. The dosage necessary to maintain the urine at an alkaline level is of course, variable. From 137 to 195 Gm daily given in six divided doses, is suggested by the Cornell clinicians. This amount is well tolerated and does not give clinical evidence of alkalosis. In renal or cardiac insufficiency Gilligan suggests that such amounts may be contraindicated. Whether or not prophylactic urinary alkalization modifies the therapeutic efficiency of sulfadiazine has not yet been determined.

1 Gilligan, D. R., Garb, S. and Plummer, Norman. *Proc. Soc. Exper. Biol. & Med.* 52: 248 (March) 1943.

2 Schwartz, Leon, Flippin, H. F., Reinhold, J. G. and Damir, A. H. *The Effect of Alkali on Crystalluria from Sulfathiazole and Sulfadiazine*. *J. N. M. A.* 117: 514 (Aug. 16) 1941.

3 Bratton, A. C. and Marshall, E. K., Jr. *New Coupling Component for Sulfanilamide Determination*. *J. Biol. Chem.* 128: 237 (May) 1939.

1 *Epidemiology of Gonorrhea and the Navy*. Current Comment. *J. N. M. A.* 120: 926 (Nov. 21) 1942.

2 Carter, T. J. *Statement on Venereal Disease in the U. S. Navy, 1942*, read before the Special Committee on Enforcement of the National Advisory Police Committee on Social Protection, Washington, D. C., April 2, 1942.

SYMPOSIUM ON RELATIONS OF MEDICINE AND LAW

The Department of Legal Medicine of the Harvard Medical School has announced its sponsorship of a symposium series on scientific proof and relations of medicine and law. The papers comprising the series, fifty-three in number, deal with clinical forensic medicine, forensic pathology, scientific crime detection, modes and mechanisms of scientific proof, medical criminology, expert testimony, private and public law problems of interest to physicians and other equally important interrelationships between medicine and law.

Arrangements have been made for a wide publication of the papers in a number of medical and law journals, some of which are devoting entire issues to the symposium. To enable those interested to know in what journals the individual papers are published, a master index to the series has been prepared in booklet form.¹ This symposium represents an ambitious and intelligent effort to clarify some of the problems in which medicine and the law have common interests and to illustrate the breadth of the field in which such problems arise. It should arouse a keener interest in and a fuller understanding of a subject that deserves more thoughtful consideration by both physicians and lawyers than has been given it in this country.

MOSQUITO VECTORS AND ANIMAL RESERVOIRS OF ENCEPHALITIS VIRUSES

Since the outbreak of encephalitis in St. Louis in 1933, other outbreaks have been recognized as predominantly due to the same virus. Significant observations have resulted from recent field and laboratory studies on this subject in the Yakima Valley, Washington. Both St. Louis and western equine viruses have been isolated repeatedly from one species of mosquito there, *Culex tarsalis* Coq. Antibodies to both viruses have been found in 50 per cent of apparently healthy domestic fowl in that area and also in a high proportion of fowl in other areas. The question was whether this mosquito would become infected and infective with each of these two viruses as the result of feeding on domestic fowl. Hammon, Reeves and Gray¹ report the results of their attempt to reproduce in the laboratory this hypothetical cycle believed to occur naturally (mosquito-fowl-mosquito). They fed fowl on blood virus suspensions and demonstrated transmission not only by *Culex pipiens* and *Culex coronator* as previously reported but also by three other genera of mosquitoes and a tick. Probably in at least one epidemic area (Yakima Valley) both St. Louis and western equine encephalitis viruses were mosquito borne, and the source of mosquito infection was a huge inapparent reservoir among domestic fowl and possibly other vertebrates. Apparently control should be directed primarily at the arthropod vectors, with human vaccination also under special circumstances.

¹ This index may for a brief time be procured from the Editor in Chief of the symposium, Dr. Hubert Winston Smith, Langdell Hall, Harvard Law School, Cambridge, Mass., for 15 cents plus 1½ cents postage.

¹ Hammon, W. McD., Reeves, W. C., and Gray, M. Mosquito Vectors and Inapparent Animal Reservoirs of St. Louis and Western Equine Encephalitis Viruses, *Am. J. Pub. Health* 33: 201 (March) 1943.

ELECTROCARDIOGRAPHIC CHANGES WITH EXERCISE

In a series of electrocardiographic investigations of normal persons, Barrow and Ouer¹ observed the effects of vigorous participation in various sports and correlated the results with the factors of age, smoking and cardiovascular stability as measured by the Schneider index. The observations were performed on a series of 100 normal men on whom electrocardiographic changes were produced by vigorous participation in such active sports as handball and badminton. Tracings were taken immediately before and immediately after exercise. Significant changes in the auriculoventricular or the intraventricular conduction time were not observed. Inversion of the P wave in lead CF₁ after exercise occurred in about half the group. Changes in the T wave were common, but frank inversion of this wave or distortion of the ST segment was not found. A change in the size of the QRS complex was most common, being found in four fifths of the men in the series. Half of the men studied were under 40 years of age, averaging 31, while the other half were over 40, averaging 49. Significant electrocardiographic differences between the two age groups, however, were not found. Similarly a definite difference in the average rating of the two age groups could not be determined by the Schneider index. Three fifths of the men were smokers; they had a Schneider index slightly lower than the non-smokers. The effects of exercise on the whole were thus not particularly striking, though the authors state that one should be suspicious of intrinsic myocardial damage when distortion of the ST segment or frank inversion of the T wave in significant leads is produced by exercise. Perhaps it is safe to believe that in the majority of instances the legs or other elements of the musculoskeletal system would tend to give out before the heart, thereby serving as a factor of safety.

PROBLEMS OF CONVALESCENCE

The Subcommittee on Clinical Investigation of the National Research Council has decided to bring the problems of convalescence to the attention of investigators and clinicians throughout the country. What is the real nature of convalescence? Why is it frequently prolonged after the fever subsides? Why must there be a period of gradual recuperation after trauma or major surgery? These are problems suggestions in regard to which, with proposals for investigation, are invited. The military importance of these problems is evident when one considers the number of casualties and the importance of prompt rehabilitation for active duty. The value of a better understanding of convalescence in all forms of medical practice is obvious. Suggestions with regard to investigative projects in the field of convalescence should be sent to the Subcommittee on Clinical Investigation, National Research Council, 2101 Constitution Avenue, Washington, D. C.

¹ Barrow, W. H., and Ouer, R. A. Electrocardiographic Changes with Exercise, *Arch. Int. Med.* 71: 547 (April) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession

ARMY

WITH GENERAL CHENNAULT IN BURMA AND CHINA

Two years ago while serving as a flight surgeon in North Carolina Lieut Col Thomas C Gentry, M C U S Army, was called to Washington to discuss with Capt Chas L Chennault a retired air corps officer with whom he had previously served, proposed plans for organizing a volunteer group for duty along the Burma Road and in China. Lieutenant Colonel Gentry was authorized by special authority of China's minister Dr T V Soong to hire the necessary personnel to care for about three hundred specialists who were to make up the American Volunteer Group and to buy medical supplies sufficient for twelve months' service in the orient. He bought a portable x-ray unit surgical instruments and supplies blood plasma, antimalarial drugs, vitamins and thirty hospital beds. The medical staff was to include a general surgeon an orthopedic surgeon an internist, an eye, ear nose and throat specialist, a dental officer two female nurses one male nurse, a flight surgeon's assistant, a dental technician one ambulance driver and two first aid men. In the *Military Surgeon* for May Colonel Gentry states that, although malaria has taken a terrible toll for centuries in northern Burma and southwestern China, not a single death due to illness occurred in the American Volunteer Group 'during the year we spent in Burma and China'. While the Burma Road was under construction thousands of workmen died of malaria and two commissions were sent out by the U S Public Health Service to supervise anti-malarial work. The excellent health of the American Volunteer Group is attributed to the physical condition maintained by every member, who even in the extreme heat of Burma engaged in outdoor athletics to the amazement of the natives, also to the fact that all members of the group fully cooperated with the medical members and came to them early when illness developed. Many a pilot in this group owes his life to his physical condition which enabled him to endure repeated air raids and to walk back many miles to his base after forced landings. Eight pilots were lost in accidents incident to routine training flights, only five were actually shot down in combat, seven were killed by fire from the ground while on bombing missions and three others were captured during raids over the enemy lines. The Americans with one hundred planes destroyed five hundred Japanese planes. Flying fatigue became a menace when replacements which had been promised did not arrive and it became necessary for the fliers to stand alert for long periods with no days off. In order that some pilots especially in need of rest might have an excuse for leave from combat duty, Lieutenant Colonel Gentry says that elective operations were performed on a few. This group arrived in Rangoon on Aug 15, 1941 and the U S Army Air Forces took over the American Volunteer Group on July 4, 1942. New personnel and equipment then came from home although about forty veterans of the American Volunteer Group remained with their gallant leader now Major General Chennault.

TWO HUNDRED FLIGHT NURSES

The Army Air Force Air Evacuation Group at Bowman Field Louisville, Ky held graduating exercises recently for a class of two hundred flight nurses who on the following morning staged a demonstration including the rapid conversion of a transport plane into a hospital plane, the removal of wounded from an advanced airfield and the nursing treatment of wounded during flight. Brig Gen David N W Grant the air surgeon, addressed the class and presented the diplomas.

THE STATION HOSPITAL AT FORT LEONARD WOOD

The Station Hospital at Fort Leonard Wood, Missouri celebrated its second anniversary on May 3. Fort Leonard Wood, one of the largest army posts in the country, located deep in the Ozark Mountain section of Missouri has a vast hospital with a capacity of about 2,250 beds occupying some 200 acres of rolling countryside.

The commanding officer Col Leeson O Tarleton Medical Corps a graduate of Harvard University in the class of 1910 is serving not only as commanding officer of the hospital but also as station surgeon.

The present staff includes 69 officers, 155 nurses 677 enlisted men and 208 civilians. As of May 1 the professional staff of the hospital was as follows:

ADMINISTRATIVE SERVICE

Col Leeson O Tarleton commanding officer and station surgeon
Major Arthur E Putz executive officer
Major Robert A Murray assistant executive officer registrar and receiving and disposition officer

SURGICAL SERVICE

Col Millard F Arbuckle chief of surgical service
Major Ronald F Elkins chief of proctology section
Major Richard E Speirs ward surgeon
Major George F Swanson ward surgeon
Capt Raymond E Cooper chief of anesthesia section
Capt Thomas E Ferrell Jr chief of clean surgery section
Capt Donald A Kendall assistant chief of surgery service
Lieut Vernon G Watters Jr chief plastic surgery section

(ORTHOPEDIC)

Major Wesley H Burnham chief of orthopedic section
Capt James F Kennedy thoracic surgeon
Capt Hanns C Schwyzer chief of chest surgery section
Lieut Melville Rosenbusch chief of physical therapy section

(EYE EAR NOSE AND THROAT)

Lieut Col Leander T Simons chief of eye ear nose and throat section
Major William F Boiler chief of ear nose and throat subsection
Capt Marshall Y Soldmeier bronchoscopist
Lieut Stanley S Chunn ward surgeon
Lieut Robert B Stump ophthalmologist

MEDICAL SERVICE

Lieut Col Neville E Stewart chief of medical service
Major Charles R McAdam assistant chief of medical service
Major Armand W Hanss chief of officers and nurses section
Major Howard J Lee chief of general medicine section
Major Franklin O Meister ward surgeon
Capt Robert A Coen ward surgeon
Capt Jacob W Fleming Jr chief of gastroenterology section
Capt Delmar R Gillespie cardiologist
Capt Emil C Vrozek chief of dermatologic section
Capt Ingall H Neas assistant chief of neuropsychiatric section
Capt Philip W Smith chief of urology section
Capt Howard A Stellner ward surgeon
Lieut Usher L Frankel ward surgeon
Lieut Otto E Ramik ward surgeon
Lieut John M Rhodes ward surgeon
Lieut Walker M Turner ward surgeon
Lieut Mervyn H Williams ward surgeon

RADIOLOGY SERVICE

Lieut Col Weaver A Rush chief of radiology service
Major Laura C Pumphrey assistant chief of radiology

OUTPATIENT SERVICE

Capt. Carl L Mangiameli chief of outpatient service

LABORATORY

Capt. Miles E Foster Jr chief of laboratory service
Capt Julius H de Maciewicz assistant chief of laboratory
Capt Myron S Silverman bacteriologist

SPECTACLES FOR ENLISTED MEN

The Adjutant General's Office, Washington, D. C., issued the following memorandum on May 11:

1. Pamphlet No. 85, War Department, 1943, consolidates all previous instructions and regulations concerning issuance of spectacles; changes the basis of issue and provides substantially that enlisted men will be issued two pairs of spectacles, if authorized, as soon as possible after date of induction. This issuance will be made at the home station without regard to movement overseas.

2. Until such time as the effect of the instruction contained in Pamphlet No. 85 is achieved and in the exceptional cases which will arise thereunder, training center commanders are permitted to ship replacements to depots with only one pair of spectacles when time does not otherwise permit. The prescription for obtaining the additional pair of spectacles will accompany the records of the enlisted man to the depot and action will be initiated at that station to have the prescription filled. Personnel will not be detained at depots for lack of these spectacles; the additional pair will be forwarded to them at their proper overseas address.

BRIG GEN GRANT CONTINUES AS
AIR SURGEON

In a readjustment of the functions of headquarters components of the Army Air Forces designed to decentralize control, announced recently by the War Department, the offices at headquarters are reduced from twenty-five to thirteen and there will be six major components of the air staff instead of nineteen as formerly. The headquarters staff of Gen. Henry H. Arnold, Commanding General, Army Air Forces, includes among others a chief of staff, Major Gen. George I. Stratemeyer, three deputy chiefs and six assistant chiefs of staff. A new Office of Special Projects has been created and a new commandant, Army Air Forces Flight Control Commandant, formed. Major Gen. Follet Bradley, who has been on special duty at headquarters Army Air Forces, becomes Air Inspector and Brig. Gen. David A. W. Grant, continues as Air Surgeon.

FORMER COLONEL WEARS
LIEUTENANT BARS

The maximum use of available manpower and the placement of skilled but aged persons is illustrated in the case of a former colonel who wears a lieutenant's bars in order to qualify for an assignment. Dr. Philip S. Potter, pediatrician, had in twenty-four years' work advanced to the rank of colonel in the Medical Reserve Corps, which he entered on discharge as a captain when he returned from France in 1918. While the present war was about to leave him on the sidelines the 68-year-old physician was confident that he could serve. While he has not been called to active duty as a colonel, his experience is being used by the Army at the California Quartermaster Depot, where he now serves as a first lieutenant and thus releases a younger medical officer for duty with troops.

POSTHUMOUS AWARD OF DISTINGUISHED
SERVICE CROSS

Lieut. Victor H. Karpas of the U. S. Army Medical Department was awarded the Distinguished Service Cross posthumously, according to the *Chicago Daily News* of April 7, for heroism during the invasion of Algeria last November 2. Lieutenant Karpas, it is said, refused to abandon ship and in the midst of an operation on a wounded sailor he was struck by an enemy shell and killed. Lieutenant Karpas was 33 years of age and a graduate of the University of Illinois School of Medicine, Chicago.

THE FIRST DENTIST PARACHUTE
JUMPER

Lieut. Herbert O. Epplen of the U. S. Army Dental Corps, who recently graduated from the Parachute School at Fort Benning, Ga., was the first officer of the dental service to qualify as a parachute jumper. Lieutenant Epplen was assigned to duty with the 503d Parachute Infantry Regiment.

AVIATION MEDICAL EXAMINERS

Another class of aviation medical examiners graduated on March 11. Graduation exercises were held at the School of Aviation Medicine in Texas and at the three army air forces classification centers, where the practical portion of the course was conducted. Following is a list of the students graduated:

ALABAMA
Andrew D. Henderson, Captain, Mobile
Benjamin I. Jackson Jr., Captain, Montgomery
William H. Spruell, 1st Lieut., Russellville
ARIZONA
Delbert W. Hess, 1st Lieut., Tucson
William P. Holbrook, Lieut. Col., Tucson
Meyer M. Mandel, 1st Lieut., Tucson
ARKANSAS
Lucas M. Bryd Jr., 1st Lieut., Little Rock
Milton C. John Jr., 1st Lieut., Stuttgart
Ely D. Rowland, Captain, Hot Springs National Park
Carl R. Williams, 1st Lieut., Morilton
CALIFORNIA
William L. Arko, 1st Lieut., Oakland
Anthony G. Badami, 1st Lieut., San Jose
Richard O. Bagley, 1st Lieut., San Francisco
Louis H. Bassett, 1st Lieut., San Diego
Daniel W. Boudett, 1st Lieut., San Francisco
Robert B. Case, 1st Lieut., Oakland
Ralph Chapman, 1st Lieut., Los Angeles
Harry S. Chong, 1st Lieut., Berkeley
David Clithero, 1st Lieut., Los Angeles
Charles B. Craycroft, 1st Lieut., San Jose
Paul H. Cronenwett, 1st Lieut., Mammoth
Roger W. Hackley, 1st Lieut., Oakland
Howard Hammond Jr., 1st Lieut., San Rafael
Bruce F. Hartwell, 1st Lieut., Orange
Robert M. Ireland, 1st Lieut., Los Angeles
Julius Lewis, 1st Lieut., Berkeley
Frank C. McLone, 1st Lieut., Ontario
John W. Moore, 1st Lieut., Quincy
Leslie S. Orleans, 1st Lieut., Los Angeles
Arvon E. Oswald, 1st Lieut., Bakersfield
Max L. Salvator, 1st Lieut., Sacramento
Ralph V. Sloan, 1st Lieut., Glendale
Richard A. Warrick, 1st Lieut., Los Angeles
Don E. Woodard, 1st Lieut., Oakland
Ney J. Zahry, 1st Lieut., Bakersfield

Lloyd H. Jennings, 1st Lieut., Starke
Joseph I. G. Lester Jr., 1st Lieut., Miami
Frederick P. Poppe, 1st Lieut., Coral Gables
Raymond R. Sessions, 1st Lieut., Kissimmee
Willett E. Wentzel, 1st Lieut., Bradenton

GEORGIA
Joseph L. Berg, 1st Lieut., Augusta
William D. Jarratt, Captain, Macon

IDAHO
John R. Mangum, 1st Lieut., Nampa

ILLINOIS
Walter Pope Alvis, 1st Lieut., Evanston
Melbourne W. Boynton, Major, Chicago
John G. Ersfeld, 1st Lieut., Chicago
John P. Kieffer, Captain, Chicago
James O. Lawrence, 1st Lieut., Chicago (Evanston)
Isidore Lerner, 1st Lieut., Chicago
Barney Malbin, 1st Lieut., Chicago
Wiley R. Marvel, 1st Lieut., Weldon

Wesley B. Olver, 1st Lieut., Belvidere
Samuel B. Prevo, Major, Marshall
Donald J. Reichert, 1st Lieut., Evanston
Julius B. Richmond, 1st Lieut., Chicago
Jack H. Sloan, Captain, Chicago (Highland Park)
William B. Smith, 1st Lieut., Grand Ridge

Grant Suttie, 1st Lieut., DeKalb
Gilbert Alphonse Towle, 1st Lieut., Chicago Heights
Lawrence E. Woodard, Captain, Evanston
Gordon W. Wormley, 1st Lieut., Rockford

INDIANA
George W. Dyer, 1st Lieut., Terre Haute
Gordon H. Haggard, Major, Indianapolis
August M. Hasevinkle, 1st Lieut., Fort Wayne
Francis P. LaFata, 1st Lieut., Gary
Gilbert G. Lapid, 1st Lieut., East Chicago
Arthur D. McKinley, 1st Lieut., Speedway
James S. Murray Jr., 1st Lieut., Indianapolis
Harold E. Ropp, Captain, New Harmony
Karl W. Vetter, 1st Lieut., Elkhart
Ralph C. Wilmore, 1st Lieut., Indianapolis

IOWA
Paul D. Bruns, 1st Lieut., Des Moines
Jesse L. Cochran, 1st Lieut., Carroll
Richard D. Crow, 1st Lieut., Shreveport
Thomas R. Dolan, 1st Lieut., Greene
John L. Ehrenhaft, 1st Lieut., Iowa City
Henry H. Gurau, 1st Lieut., Des Moines
Robert H. Harris, 1st Lieut., Mason City
Joseph I. Ptacek, 1st Lieut., West City
Lee E. Rosebrook, 1st Lieut., Ames
James W. Standeven, Captain, Oakland

KANSAS
Spencer H. Boyd, 1st Lieut., Topeka
Samuel T. Coughlin, Major, Lawrence
James G. Gaume, 1st Lieut., Ellsworth
Edwin R. Hill Jr., Major, Lincoln

KENTUCKY
Shelby G. Bale, Captain, Louisville

COLORADO
Herbert V. Temple, 1st Lieut., Haybro

CONNECTICUT
Joseph B. Hanley, 1st Lieut., Terryville
Mayo R. Purple, Captain, New Haven

DELAWARE
Walter E. Gunby Jr., 1st Lieut., Seaford

DISTRICT OF COLUMBIA
Philip A. Cox, 1st Lieut., Washington
Milton Morton Greenberg, Captain, Washington
Norman B. Kanof, 1st Lieut., Washington
Alfred J. Krug, 1st Lieut., Washington
Oliver K. Niess, Lieut. Col., Washington
Richard K. O'Loughlin, 1st Lieut., Washington

FLORIDA
Karl B. Hanson, Captain, Jacksonville

Robert W. Bu hart, Captain Ful ton
Walter R. Byrne Captain Russell ville
Arch M. Carr 1st Lieutenant, Middlesboro
Paul E. Harper 1st Lieutenant, Driskie
William M. Townsend 1st Lieutenant Falmouth

LOUISIANA

James E. Bill 1st Lieutenant Shreveport
Orion E. Dalton 1st Lieutenant New Iberia
John F. Daniel 1st Lieutenant New Orleans
John S. Herring Captain New Orleans
Charles S. Hopt Holt Jr 1st Lieutenant Shreveport
Edward Perry Thoma Captain New Orleans
Lee William on 1st Lieutenant New Orleans

MAINE

Philip B. Thomas 1st Lieutenant Bangor

MARYLAND

Joseph M. George Jr 1st Lieutenant Sudlersville
William A. Horley 1st Lieutenant Baltimore
Saul J. Robinson 1st Lieutenant Baltimore

MASSACHUSETTS

Joseph A. Daly 1st Lieutenant Natick
Harry L. Day Captain Worcester
Sam on Fisher Captain Revere
Ray S. Gilmore 1st Lieutenant Lowell
Bernard Rapoport 1st Lieutenant Boston
Norman Simon 1st Lieutenant Lawrence
Roger A. Violette 1st Lieutenant Fall River
James F. Whitten 1st Lieutenant Amesbury

MICHIGAN

Donald K. Barstow 1st Lieutenant St Louis
Thornton I. Boileau 1st Lieutenant Detroit
George E. Clark Jr 1st Lieutenant Detroit
George R. Clinton 1st Lieutenant Mason
Theodore R. Florentz 1st Lieutenant Detroit
Edward H. Lass 1st Lieutenant Oxford
Harold A. Machin 1st Lieutenant Kalamazoo
Paul H. Muske 1st Lieutenant Detroit (Dearborn)
William G. Robinson 1st Lieutenant Hart
Gerald Rottschaefer 1st Lieutenant Detroit
Marion A. Sapala 1st Lieutenant Detroit
John P. Williams 1st Lieutenant Detroit

MINNESOTA

Joseph E. Frank Captain Marshall
John L. Noble 1st Lieutenant St Paul

MISSISSIPPI

Bert R. Burgoyne 1st Lieutenant Laurel
Richard A. Street Jr Captain Vicksburg

MISSOURI

Edward J. Becker 1st Lieutenant Clayton
David R. Edwards 1st Lieutenant St Joseph
Herbert C. Sweet 1st Lieutenant Koch
William L. Topp 1st Lieutenant St Louis

NEBRASKA

Henry G. Crellin Captain Lyons

NEW HAMPSHIRE

Gardner F. Manning 1st Lieutenant Manchester
Charles E. Moors Jr 1st Lieutenant Rochester
Marc E. Richard Captain Dover

NEW JERSEY

Robert E. Bennett 1st Lieutenant Palmyra

Francis J. Ben. 1st Lieutenant Chat ham
Jerome M. Cebula 1st Lieutenant, Jersey City
William Pax on Chaltant Jr 1st Lieutenant Ventnor
Edward M. Coe, 1st Lieutenant Union City
James R. Eynon Lieutenant Collingswood
Anthony J. Girardo 1st Lieutenant Berlin
Eugene L. Miller 1st Lieutenant Newark
Edwin J. O'Brien 1st Lieutenant Plainfield
Daniel H. Stephenson 1st Lieutenant, Camden
Walter H. Timberlake Major Atlantic City

NEW MEXICO

Leland Sparks Evans Captain Las Cruces
William A. Glacier 1st Lieutenant Carlsbad
Walter S. Smith 1st Lieutenant Pine Haven

NEW YORK

Jesse Appel 1st Lieutenant New York
Daniel D. Argentieri 1st Lieutenant Brooklyn
John F. Arant 1st Lieutenant Wilson
George J. Baron 1st Lieutenant Rochester
Karl H. Behm 1st Lieutenant Westbury
Gerald J. Booken 1st Lieutenant New York
Natale G. Brunetta 1st Lieutenant New York
Earl E. Conaway 1st Lieutenant Brooklyn
Joseph G. Constantino Captain Ozone Park
Arthur C. Davis 1st Lieutenant Glens Falls
Arnon R. Edwards 1st Lieutenant Ithaca
Wade B. Ellis Captain Buffalo
Jacob S. Garber Captain Jamaica
Maurice A. Golden 1st Lieutenant Long Island City
Frederick W. Goodrich 1st Lieutenant Catskill
Murray J. Hamberg 1st Lieutenant Elmhurst
James G. Harritt 1st Lieutenant Buffalo
Joseph H. Healy 1st Lieutenant Brooklyn
Edward J. Keegan 1st Lieutenant Oneonta
John E. Lally 1st Lieutenant New York
Anthony J. Leone 1st Lieutenant Ithaca
Robert W. Lipsett 1st Lieutenant Buffalo
Brahm A. Mandour 1st Lieutenant Utica
Albert D. Meacham 1st Lieutenant Binghamton
Francis J. Murray 1st Lieutenant New York
Daniel J. O'Connor Major New York
Theodore F. Paprocki 1st Lieutenant Bay Shore
Robert Park Jr 1st Lieutenant Manhasset
Brittain F. Payne Major New York
Morris R. Rapoport 1st Lieutenant New York
Leslie B. Roberts 1st Lieutenant New York
Beryl D. Rosenberg 1st Lieutenant Richmond Hill
Emanuel Roth 1st Lieutenant Brooklyn
Lester D. Rothman 1st Lieutenant New York
Jack Sang 1st Lieutenant New York
William Sapsin 1st Lieutenant Canton
Arthur G. Schwartz 1st Lieutenant Rome
George F. Seelinger 1st Lieutenant Williston Park
William G. Self 1st Lieutenant Brooklyn
Meyer Silvert 1st Lieutenant Bronx
Carl B. Smith 1st Lieutenant Victor
Jacob M. Sobel 1st Lieutenant New York
Lawrence L. Spitzer 1st Lieutenant New York
Albert M. Tocker 1st Lieutenant Brooklyn
Marvin Weinberg 1st Lieutenant New York
Aron S. Weston 1st Lieutenant Brooklyn

Irwin W. Winfield, 1st Lieutenant New York
Lawrence B. Winkelstein 1st Lieutenant New York

NORTH CAROLINA

Lemuel U. Creech 1st Lieutenant High Point
Harry S. Hickman 1st Lieutenant Hudson
Frank R. Mann Jr 1st Lieutenant Durham
Lundie C. Ogburn Captain, Winston Salem
Homer H. Price 1st Lieutenant Draper

NORTH DAKOTA

Robert G. McCurdy Captain Bismarck

OHIO

James D. Apple 1st Lieutenant Dayton
Paul Victor Barto 1st Lieutenant Columbus
Ord C. Blackledge 1st Lieutenant East Cleveland
Christopher A. Colombr 1st Lieutenant Lakewood
William C. Craig 1st Lieutenant Columbus
John H. Dornheggen 1st Lieutenant Cincinnati
Joseph C. Forrester Captain Columbus
Samuel K. Ger on Captain Lancaster
Thomas M. Have 1st Lieutenant Springfield
Philip T. Kimes Major Columbus
Jones C. Laughlin 1st Lieutenant Cleveland
George H. Lemon 1st Lieutenant Fayette
Harvey A. Lewis 1st Lieutenant Cleveland
George Macatee Jr 1st Lieutenant Cleveland
Morris B. Martin 1st Lieutenant Springfield
Theodore R. Mattocks 1st Lieutenant Marietta
Allen P. Newman 1st Lieutenant Toledo
Charles J. Prochaska Major Lyndhurst
Frederick R. Scroggin 1st Lieutenant Cincinnati
Trent W. Smith 1st Lieutenant Norwood
Henry Spitzer 1st Lieutenant Cleveland
Byron C. Stuhlman 1st Lieutenant Dayton

OKLAHOMA

George T. Allen Captain Oklahoma City
Murray M. Cash 1st Lieutenant Tulsa
John R. Curry 1st Lieutenant Blackwell

OREGON

Neil F. Black Captain Klamath Falls
Paul Metz 1st Lieutenant Portland
Douglas Q. Thompson 1st Lieutenant Pendleton
Herman F. Vehrs 1st Lieutenant Portland

PENNSYLVANIA

Richard A. Caldwell 1st Lieutenant Pittsburgh
Benjamin Dickstein 1st Lieutenant Philadelphia
Arthur J. Fischer 1st Lieutenant Pittsburgh
Morton Joshua Freedman 1st Lieutenant Philadelphia
Jacob H. Garber 1st Lieutenant Elizabethtown
William W. Glass 1st Lieutenant Philadelphia
Homer A. Graham 1st Lieutenant Pittsburgh
John R. Grob 1st Lieutenant Philadelphia
Edgar S. Highberger 1st Lieutenant Greensburg
Benjamin W. Jenkins 1st Lieutenant Philadelphia
Bernard M. Kalstone 1st Lieutenant McKeesport
Anthony J. Kameen 1st Lieutenant Fore City
Allen R. Kannapel Captain Lehigh ton
Eugene F. Lester Jr 1st Lieutenant Erie
Paul D. McGhee Jr 1st Lieutenant Philadelphia
Thomas J. McKenna 1st Lieutenant Blaunox

James P. Proudfit 1st Lieutenant Washington
Edward C. Raffensperger, 1st Lieutenant Philadelphia
Philip A. Schifalacqua, 1st Lieutenant Philadelphia
Willard D. Stewart 1st Lieutenant, Pleasantville
Robert S. Stricker 1st Lieutenant Wilkes Barre
Paul J. Whitaker 1st Lieutenant Pittsburgh
Edward J. Winter 1st Lieutenant Reading
Harold A. Yoh 1st Lieutenant Reading
Dale E. York 1st Lieutenant Philadelphia

RHODE ISLAND

Richard S. Arlen Captain Providence
Edwin B. Gammell 1st Lieutenant Hope Valley
William A. McDonnell 1st Lieutenant Providence

SOUTH CAROLINA

Charles B. Sadler 1st Lieutenant Charleston
John Westley Speake 1st Lieutenant Spartanburg

SOUTH DAKOTA

Roland F. Hubner 1st Lieutenant Yankton

TENNESSEE

John W. Anderson 1st Lieutenant Nashville
Ralph D. Ashbaugh 1st Lieutenant Nashville
Glen R. Johnson Captain Memphis

TEXAS

Woodrow M. Ament 1st Lieutenant Cameron
Cecil M. French 1st Lieutenant Dallas
Woodson W. Harris 1st Lieutenant Houston
Ernest E. Lowrey 1st Lieutenant Gatesville
John Q. Rounaville 1st Lieutenant Houston
Oscar O. Selke Jr 1st Lieutenant Houston
George Y. Siddons 1st Lieutenant Fort Worth
Howard P. Wheeler 1st Lieutenant Georgetown
Neul C. Windrow Jr 1st Lieutenant Houston

UTAH

Abram H. Cannon 1st Lieutenant Salt Lake City

VIRGINIA

Donald L. Aron 1st Lieutenant Danville
Nathaniel T. Ballou Jr 1st Lieutenant Fredericksburg
Robert H. Detwiler Captain Arlington
John A. Dunn Captain Blackstone
Robert B. Walleth Captain Orange

WASHINGTON

Clarence W. Bledsoe 1st Lieutenant Seattle
Walter C. Cameron Major Tacoma
Donald R. Crow 1st Lieutenant Seattle
Gordon C. Hackett 1st Lieutenant Longview
Ralph H. Highmiller Captain Olympia
John D. Way 1st Lieutenant Seattle
Melvin J. Wirz 1st Lieutenant Seattle

WEST VIRGINIA

Emory H. Main 1st Lieutenant Philippi
Charles R. Morris 1st Lieutenant Wheeling
John F. Stecker 1st Lieutenant Morgantown

WISCONSIN

Robert E. Callan 1st Lieutenant Watousa
Willard E. Klockow 1st Lieutenant Muscoda
William H. Schuler 1st Lieutenant Fenimore
Paul A. Seeböhm 1st Lieutenant Madison

WYOMING

Franklin D. Yoder 1st Lieutenant Cheyenne

NAVY

IOWANS DONATE EQUIPMENT TO
NEW BATTLESHIP

The Medical and Surgical Relief Committee of America has presented the new 45,000 ton battleship U S S *Iowa* with six emergency field sets, six operating kits and other medical supplies with a total value of more than \$3,000. Dr. Walter L. Biering, health commissioner of Iowa and chairman of the Iowa division of the Medical and Surgical Relief Committee, said that the committee has received further requests from the *Iowa*. All kinds of dental instruments are urgently needed as well as one hundred operating gowns, transmission apparatus and other medical supplies. Dr. Harry Hurd of Des Moines is launching a campaign to raise funds to meet the dental needs of the *Iowa*. All funds raised will be turned over to the new battleship and where possible equipment purchased by Iowans will carry a plaque inscribed with the name of the donor. Contributions should be sent to the Iowa representatives of the Medical and Surgical Relief Committee, Dr. Walter L. Biering, Dr. Harry Hurd and Dr. Robert I. Parker of Des Moines, Dr. Rose I. Butterfield of Indianapolis, Iowa or directly to the committee headquarters, 120 Lexington Avenue, New York.

MEDICAL KITS FOR PATROL BOATS

The Women's Auxiliary to the Kent County Medical Society, Grand Rapids, Mich., residents of Cleveland and others contributed funds for the purchase by the Medical and Surgical Relief Committee of America, 120 Lexington Avenue, New York City, of ten emergency medical kits for the coast guard patrol boats of the Ninth Naval District at Cleveland. This is the first of a shipment of fifty kits to patrol boats of the thirteen naval districts of the coast guard and to the submarine chasers of the Navy. These portable medical kits are filled with essential drugs and emergency instruments and are complete enough to cope with casualties until the ship reaches a base hospital. Detailed instructions are included in the kit so that it may be used by the pharmacist's mate or other members of the crew in the absence of a physician. The kit also contains mirrors for signaling, a simple fishing outfit and bait, and vital tools in case the crew has to take to the life rafts.

To equip emergency medical kits the Medical and Surgical Relief Committee of America has launched a salvage campaign

urging women and sportsmen to collect small knives, especially wooden handled knives, scissors, tweezers, mirrors, bandages and safety pins, and discarded fishing lines, reels, hooks and sinkers. The committee requested all physicians who attended the recent annual meeting of the New York State Medical Society in Buffalo to bring with them any spare or discarded instruments and surplus drugs as a contribution to this and other phases of its work. The medical members of the National Advisory Committee of the Medical and Surgical Relief Committee include Rear Admiral Ross T. McIntire, Surgeon General, U S Navy; Dr. Stuart L. Craig, Lieut. Comdr. Carnes Weeks, Dr. Conrad Berens, Dr. Joseph Felson, Dr. Morris Fishbein, Dr. Franz Groedel, Dr. Malcolm Goodridge, Dr. Crenshaw D. Briggs and Dr. Marjorie E. Reed.

LIEUT. RITTER A PRISONER OF
THE JAPANESE

Mrs. Edward F. Ritter, Mattoon, Ill., has been officially informed, it is reported, that her son, Lieut. Edward F. Ritter II of the U S Navy Medical Corps, is a prisoner of the Japanese in the Philippine Islands. Lieutenant Ritter graduated from Harvard and received his M.D. degree from Northwestern University Medical School in 1938. After serving a year's residency at Passavant Hospital, Chicago, he was transferred to a Naval hospital in New York and was sent to the Philippine Islands about a year and a half before the attack on Pearl Harbor.

NAVY CROSS AWARDED TO DR. PRATT

Lieut. Comdr. Theodore C. Pratt, MC, USNR, on leave of absence from the surgical staff of the Massachusetts General Hospital and of the Palmer Memorial Hospital, has been awarded the Navy Cross "for extraordinary heroism and distinguished service in line with his profession as chief surgeon of a division field hospital on Guadalcanal." The citation states that Dr. Pratt courageously operated on and supervised treatment of casualties while the hospital was being bombed by enemy planes and shelled by surface craft during last August and September.

CIVILIAN DEFENSE

OFFICE OF CIVILIAN DEFENSE ADVISES
GAS CLEANSING STATIONS AT
HOSPITALS

Hospitals should make complete plans for the immediate establishment, when needed, of "gas cleansing stations" for the care of injured persons who have been exposed to war gases, the Medical Division of the Office of Civilian Defense advised on May 25 in Operations Letter No. 124 (Supplement No. 4 to Operations Letter No. 42). Large communities should establish at least one gas cleansing station without delay for training purposes.

The OCD recommends that the term "gas cleansing" be used to describe the procedure of removing vesicant liquids from persons and that the term "decontamination" be reserved for areas and objects.

The primary purpose of gas cleansing stations is the protection of hospitals and casualty stations and their staffs and patients from contamination by injured persons who have been exposed to vesicant agents, the operations letter points out. Contaminated persons who are not disabled are expected to cleanse themselves in the nearest private home or in other local facilities.

Existing facilities in casualty receiving hospitals must be converted into gas cleansing stations, it is pointed out, since, under present conditions of scarcity of materials and manpower, con-

struction of new facilities is generally not justified. Hospital facilities that should prove suitable are suggested as follows: hydrotherapy rooms, nurses' or interns' locker and shower rooms, part of the outpatient department, garages or other separate structures. In the event that these are not available, facilities to care for persons who are both injured and contaminated must be arranged in schools, gymnasiums, swimming pools, shower rooms, club houses and community centers.

Cleansing stations should be equipped to take care of one third to one half of the hourly casualty receiving capacity of the hospital to be served, the OCD recommends. The professional staff will consist of mobile medical teams assigned when the station is activated, supplemented by additional attendants from the Emergency Medical Service. In addition to cleansing and emergency treatment, the staff of the gas cleansing station will assist in undressing the injured, moving stretchers, caring for clothing and valuables, maintaining supplies and dressing wounds.

It is recommended that cleansing stations be established at or near hospitals and casualty stations which they are to serve. Every hospital that may be required to handle an appreciable number of casualties should have access to such cleansing stations.

The local chief of Emergency Medical Service is responsible for the development of these stations, with the advice of the senior gas officer of the community.

MISCELLANEOUS

ARMY-NAVY E AWARDS

Brig Gen Fred W. Rankin of the Surgeon General's Office and President of the American Medical Association made the presentation of the flag at ceremonies at which the Army-Navy E Production Award was made to the Stamless Rubber Company, New Haven Conn., and Capt Reynolds Hayden medical officer of the Third Naval District, presented the E insignia to representatives of the employees of the company.

In recognition of the volunteer services of Nassau County physicians in the blood donor work conducted by the Nassau County Red Cross, the Army-Navy E award which the blood donor unit has been given was forwarded on March 30 to the Nassau County Medical Society in Mineola N. Y. Local physicians are in constant attendance at all blood donor sessions which are scheduled in villages throughout the county. The time schedules are arranged so that physicians relieve one another when necessary but one doctor at least is always present to conduct the necessary examinations.

The following additional industrial plants have been granted the Army-Navy E award for outstanding performance on war work: the Cleveland Dental Manufacturing Company, Cleveland; the Norwich Pharmaceutical Company, Norwich N. Y.; M & R Dietetic Laboratory, Inc., Columbus, Ohio; Armour and Company and the Armour Laboratories, Union Stockyards, Chicago; The Kelley Koett Manufacturing Company, Covington Ky.; E. R. Squibb and Sons of Brooklyn and New Brunswick, N. J. who were granted the Army-Navy E award in September 1942 have added a star to their E pennant as an outward symbol of the renewal for another six months of this award.

Hynson, Westcott & Dunning, Inc., Baltimore manufacturers of drugs, and its employees were presented with the Army-Navy E Award in ceremonies held at the Hotel Belvedere in that city on April 12.

DETROIT RANKS SECOND IN BLOOD DONATIONS

Although fourth in population among American cities Detroit stands second in its volume of blood donations. The chairman of the Detroit Blood Donor Service Committee is Frederick S. Stearns, chairman of the board of Frederick Stearns & Company, a Detroit drug manufacturing concern. Mr. Stearns became chairman of the Blood Donor Station in January 1942 and by mid-April the number of donors in the Detroit area had reached 162,153. March a record month saw 24,181 volunteers donate 21,298 pints of blood. Mr. Stearns has organized volunteer groups in many manufacturing plants. Three mobile blood donor units cover the metropolitan area within 40 miles of Detroit and these are booked solidly up to July. A substation at the Ford River Rouge plant processes an average of 200 donors a day. Blood donor honor rolls are prominent on the walls of this plant and there is interdepartmental rivalry for the highest donor total. Chairman Stearns credits the Detroit record to the application of a well known merchandising principle: correct treatment of the 'customer' so that he keeps coming back. Of the 21,000 donors in March of this year more than 9,000 of them had previously donated blood.

MEDICAL AND SURGICAL RELIEF COMMITTEE

The Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York City, shipped fourteen medical field sets last month to nine Caribbean ports to aid in the medical care of the survivors of torpedoed ships and twenty-two more emergency medical field sets are ready for shipment by the committee to other Caribbean ports. In its three years of work which is conducted by a nationwide group of physicians, the Medical and Surgical Relief Committee of America has distributed more than a half million dollars worth of medical and surgical supplies to the people and fighting forces of the United Nations. The medical director of the committee is Dr. Joseph P. Hoguet.

RUSSIAN WAR RELIEF, INC.

Shipments from Russian War Relief, Inc. with headquarters at 11 East Thirty-Fifth Street, New York, to the Soviet Union left American ports in the first quarter of 1943 at the rate of \$1,000,000 a month and the total of medical supplies, clothing, tools, seeds and knit goods up to March 31 of this year had a value of more than \$3,000,000, and in addition the organization had relief supplies on hand awaiting shipment or in transit, purchase commitments and records of previous shipments which amounted to nearly \$5,000,000 as of March 31. While, since the inception of this corporation in 1941 Russian War Relief has shipped and entered into purchase commitments for goods valued at nearly \$8,000,000. Edward C. Carter, president of the relief agency, told the board of directors in New York April 26 that the bank reserve and incoming cash contributions and war chest allocations of the relief agency are being used to purchase supplies requested by Soviet authorities as quickly as they can be ordered or found available.

INNOVATORS OF SCIENCE

GRIGORY SHAKHOV

[NOTE—By cable from Russia comes the following account of medical progress in Russia.—Ed.]

Col. Alexei Maximenko of the Red Army Medical Service spent the bitter winter of 1941-1942 in Leningrad finishing scientific work to which his teacher had devoted a good half of his long life.

Neither incessant enemy air raids nor artillery bombardments, neither hunger nor cold prevented him from working with a group of artists on the production of a tremendous atlas. Only once did he leave his work to go out on the roof when the house in which he was living was showered with enemy incendiary bombs. Then part of the fruit of many years of work was consumed by flames. By the end of 1942 the Atlas of Nerve and Vein Systems was completed. The initiator and principal producers of the atlas were duly recognized by the nation and were awarded first class Stalin prizes.

Twenty years ago semiliterate young shoemaker Alexei Maximenko was working as a medical orderly on the civil war front. There he first came in touch with medicine. After the civil war Maximenko attended one of the many preparatory schools known as workers' faculties which the Soviet government opened. Ten years later in 1931 he was graduated from the Academy of War Medicine of which he now is professor.

Victor Shevkunenko did not select Maximenko as his pupil and leading assistant by chance. Shevkunenko concluded that the organism of man follows laws discovered by Darwin concerning changing of species. He undertook the task of determining the law of anatomic differences. The atlas contains that part of his observations which is most developed: the greatest possible deviation from normal in structure of the peripheral nervous system and the vein system.

After visiting all main scientific centers in Europe and the United States of America at the expense of the Pirogov stipendium Maximenko returned home and for twenty years engaged in surgical and topographic anatomy at the same time working in the clinic. During this period in the department which he directed over four hundred and fifty scientific papers appeared, forty professors, fifty lectures and a large number of assistants received diplomas. His researches and those of his students who numbered some one hundred and fifty persons finally took a completely new direction in applied anatomy—that of clinical anatomy. The material which Victor Shevkunenko and a large number of doctors collected in the space of thirty-five years was a result of the study of anatomic deviations in the structure of man from Maximenko's Atlas.

In wartime says Alexei Maximenko this material has tremendous significance. In this war the number of limb injuries is extremely great and thousands of doctors every day meet various surprises when treating them.

ORGANIZATION SECTION

OFFICIAL NOTES

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 5 p. m. Eastern War Time (4 p. m. Central War Time, 3 p. m. Mountain War Time, 2 p. m. Pacific War Time). An exception is the Chicago area where the broadcasts are heard by transcription at 10:30 p. m. Saturdays over Station WMAQ.

The titles and guest speakers for the first three programs are as follows:

- June 5 Medical Discoveries in Wartime
Speaker: Dr. Morris Fishbein, Editor of *The Journal*
- June 12 Doctors for Tomorrow
Speaker: Brig. Gen. Fred W. Rankin, M. C., A. U. S., President of the American Medical Association
- June 19 Report to America—See special announcement

SPECIAL BROADCAST, DOCTORS AT WAR, JUNE 19

The closing program of Doctors at War, scheduled for June 19, will be entitled "Report to America." On this program will appear two Army medical officers broadcasting by short wave from two foreign theaters of war, one Navy officer broadcasting from a foreign theater and one Navy officer broadcasting from a home base. The names of these officers and their locations are not divulged in advance, for military reasons. For the same reason, their subjects will not be announced. We are assured, however, of fresh and timely material arising out of the immediate medical situation in the Army and the Navy. Four doctors actually at war will make a first hand report to America.

This broadcast has been made possible through the generous cooperation of the National Broadcasting Company in arranging the short-wave pickups from foreign advance bases.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status—S. J. Res. 16 has passed the Senate, authorizing an appropriation of \$500,000 to construct at St. Lawrence Newfoundland a hospital, dispensary or other memorial in token of the appreciation of the United States to the people of St. Lawrence for saving the lives of officers and men of the U. S. S. *Pollux* and the U. S. S. *Triniton*, wrecked near that community in 1912. H. R. 997 has been reported to the House proposing to amend the National Defense Act of June 3, 1916 by eliminating the Medical Administrative Corps in the Medical Department of the Regular Army and substituting therefor a Pharmacy Corps. H. R. 2713 has passed the House making appropriations for the Navy Department and the naval service for the fiscal year ending June 30, 1944. The bill provides that the appropriations for the Naval Establishment may be used for the pay of commissioned medical officers who are graduates of reputable schools of osteopathy.

Bills Introduced—H. Res. 230, submitted by Representative Kelley, Pennsylvania, proposes to authorize the House Committee on Labor (1) to ascertain by investigation the extent and character of aid now given by the federal, state and local governments and private agencies to the physically handicapped, (2) to investigate the diffusion within the United States of such aid to the physically handicapped and (3) to ascertain the employment opportunities obtaining for the physically handicapped. H. R. 2657, introduced by Representative O'Connor, Montana, provides that, whenever the Secretary of the Interior shall find that the Bureau of Indian Affairs is unable to obtain the services of a sufficient number of physicians and dentists who are citizens of the United States adequately to perform the functions of the bureau with respect to the conservation of the health of Indians, he may, with the approval of the Civil Service Commission, engage the services by contract or otherwise of competent physicians and dentists who are not citizens, for periods of time not to extend beyond the termination of the war and six months thereafter. H. R. 2761, introduced by Representative Andresen, Minnesota, proposes to establish a Civilian Supply Administration with authority, among other things, to ascertain the quantities and types of goods and services, including but not limited to food, clothing, shelter, fuel, transportation and medical care, necessary to keep the civilian population healthy and functioning effectively and to apply to

the appropriate government agencies for the amounts and types of manpower, materials, facilities, transportation and other resources determined to be essential to produce and distribute the necessary goods and services.

STATE MEDICAL LEGISLATION

Alabama

Bills Introduced—S. 41 proposes numerous amendments to the existing law relating to the reporting of births and deaths. Its general purpose is to conform the Alabama law with the vital statistics laws of other states. S. 70 and H. 310 are companion bills and provide for the sexual sterilization of certain inmates who have been committed to hospitals for the insane in the state as a condition to the release or discharge of such inmates, of certain persons who have been lawfully committed to institutions for the treatment of mental defectives or feeble minded, of certain inmates of the state penitentiary who are sexual perverts, sadists, homosexualists, masochists, sodomists or afflicted with any grave form of sexual perversion or constitutionally inferior recidivists, of certain inmates of any reform school, industrial school, or training school or reformatory, and of certain other persons not inmates of any institution who are found by the county board of censors of the county medical society of any county in the state to suffer from a mental deficiency transmissible to offspring. H. 367 proposes to enact a food, drug and cosmetic act.

California

Bills Enacted—A. J. R. 49, adopted, May 5, memorializes Congress to consider the advisability of making an appropriation to provide funds for paying women in training to become trained nurses a salary during their years of training. A. 326, approved May 18, amends the existing law relative to the practice of nursing so as to permit the rendering of nursing services by unlicensed persons during a national emergency arising out of war or during an epidemic or other public disaster (chapter 571 Laws of 1943). A. 928, approved, May 15, defines cannabis sativa as the male or female of any species commonly known as cannabis sativa, hemp, Indian hemp or marihuana (chapter 428 Laws of 1943). A. 945, approved, May 13, provides for the issuing of temporary certificates to practice pharmacy valid to

a period of six months (chapter 392 Laws of 1943) A 1171 approved, May 15, provides for the appointment by the board of medical examiners or one or more committees to determine (1) whether an applicant fulfills all of the requirements for the certificate for which he is applying (2) where an examination is required, whether the applicant shall be admitted to the examination and the terms and conditions of his admittance and whether he fails or passes, (3) whether a recommendation should be made to the members of the board that the certificate applied for be issued The purpose of this law is to expedite the granting of licenses to practice medicine (chapter 471 Laws of 1943) A 1174, approved, May 15 provides a method by which a revoked or suspended license to practice medicine may be reinstated after one year has elapsed from the date of revocation or suspension (chapter 472 Laws of 1943)

Colorado

Bills Enacted—H 323, approved, April 22 appropriates to the state board of health the sum of \$12 000 for the purchase of a portable photoroentgen (x-ray) unit to be used for the prevention and control of tuberculosis H 572 approved, April 28 provides for the establishment and maintenance of public hospitals in counties of the state to be controlled by boards appointed by the county commissioners Each such board will consist of seven members none of whom may be either a practicing physician or an elective or appointive state, county or city official The new law provides that every county hospital established under it may accept pay patients

Connecticut

Bill Introduced—H 1383 provides that any graduate of an approved medical school may serve as a resident physician in any state-aided hospital for the duration of the war and for not more than six months thereafter if the written consent and approval of the Connecticut medical examining board has been obtained

Florida

Bill Enacted—H 335 which became a law without the governor's approval May 12 authorizes the city of Miami to levy an annual tax not to exceed 4 mills on the dollar on the real and personal property within the limits of the city for the purpose of maintaining and operating a hospital

Bill Introduced—H 679 proposes to create a board of psychological examiners to examine applicants for licenses to practice psychology defined "as the use and practice of any and all psychological arts sciences methods or procedures, now known or hereafter to be known, for the prevention relief or

cure of mental or nervous maladjustments, ailments or diseases, including suggestotherapy, hypnotherapy, psychotherapy, psychoanalysis and other similar arts, sciences, methods, or procedures"

Illinois

Bill Enacted—H 8, approved, May 12 imposes a duty on each county to provide funds for the treatment of persons afflicted with cancer or tumor who are unable to pay for such treatment If the general funds of the county are insufficient to pay for such treatment, a special tax may be levied and collected for that purpose The county board of each county will appoint a duly licensed physician to examine applicants for the benefits provided by this law

Bill Introduced—S 468 proposes to amend the Non-Profit Hospital Service Plan Act to provide that before a contract with any subscriber becomes effective, and as a condition precedent the subscriber must submit to a medical examination before some physician to be designated by the corporation and a copy of the physician's report must be attached to and become a part of the contract

Nebraska

Bills Introduced—Legislative Bill 441 proposes to amend the premarital examination law to provide that no person shall make a charge in excess of 1 dollar for making an examination under the terms of the act Legislative Bill 442 proposes to amend the prenatal examination law to provide that no person shall make a charge in excess of 1 dollar for an examination made under the law

Rhode Island

Bill Enacted—H 668 approved, April 27 appropriates the sum of \$25 000 to be expended under the direction of the state director of health for the hospitalization of wives and children of men in the armed services below the grade of commissioned officer who are unable to pay for such hospital care

Wisconsin

Bill Enacted—A 305, approved May 18 imposes an annual registration requirement on persons engaged in the practice of medicine and surgery, osteopathy or osteopathy and surgery in the state, registration to be effected in the month of January in each year The registration fee is to be fixed by the state board of medical examiners for each year but may not exceed \$3 in any year The registration requirement will be inapplicable to any physician while serving in the armed forces of the United States or of an allied government (chapter 155 Laws of 1943)

Bill Introduced—A 601 proposes to amend the workmen's compensation act so as to permit chiropractic services to be supplied by an employer in lieu of medical treatment

MEDICAL ECONOMIC ABSTRACTS

SHAWNEE COUNTY (KAN) PLAN

Seven months of successful experience with a prepayment plan for dependents on a more comprehensive scale of operation and with several novel features now affords some valuable suggestions to the many state and county medical societies now operating or contemplating the starting of similar plans Shawnee County which includes the city of Topeka has a population of over 90 000

The agreement between the Shawnee County Medical Society and the Shawnee County Board of Social Welfare and the State Department of Social Welfare provides that all cases for Old Age Assistance Aid to Dependent Children and General Assistance may receive the benefits of medical care, if they choose to do so by the payment of \$3 per month These payments for General Assistance cases are made directly by the welfare agencies either monthly or at six months intervals in advance¹

It was mutually agreed that all assistance cases persons or patients affected shall have a free choice of physicians participating

The county medical society agrees to furnish ordinary and reasonable medical and surgical care compatible with the standards and ethics established by the profession and within the ability and scope of the participating physicians and within the customary and usual practice of the physicians whereby the well being of patients is assured by providing them with the best possible medical care including ordinary and reasonable hospitalization, drugs and medicines, and specialized services when such are approved by the county medical society and when such drugs and medicines are included in a prescription issued to patients by participating attending physicians It is understood however that the services include only those which are deemed to be essential to the needs and welfare of patients and which are approved by the county medical society

The following services are not included surgery and treatment not within the customary and usual practice of the participating physicians surgery and treatment for which necessary equipment facilities or incidentals are not available or provided dentistry nursing appliances including eye glasses and services available through other agencies

Careful preparation preceded the inauguration of the plan All members of the county medical society were questioned as

to willingness to cooperate and the capacity in which they wished to serve.

On the basis of the replies to the questionnaire, 28 members were assigned to home call service, 10 to the clinic staff and 11 for specialized services in their offices or at hospitals. The Shawnee County Medical Society was particularly fortunate at this step of the organization as the city of Topeka turned over to the society all the facilities in its new modern and moderately equipped city clinic rooms. With these facilities the society was able to set up fourteen specialized clinics in addition to the general medical clinic which is held daily, each doctor serving an average of two hours each week. In addition to the medical clinic, the following clinics are now in operation: surgery, gynecology, eye, ear, nose and throat, pediatrics, proctology, tuberculosis, child welfare, diabetic, neuropsychiatric, interpartum, dermatology, urology, cardiology and venereal disease. When surgical operation is required the patient may also choose any surgeon in the society to do what is necessary. A druggist is employed by the society at the clinic to fill the prescriptions during clinic hours. Emergency prescriptions are either filled by the druggist or supplied by the attending physician from a kit issued by the dispensary. The average number of prescriptions issued in a month is around eighteen hundred.

MEDICAL PLANNING IN SOUTH AFRICA

The Federal Council of the South African Medical Association at its meeting on April 26, 1941 appointed a planning committee to study and prepare proposals regarding the organization of medical care.¹ This committee considered its task to be:

- (a) Pointing out clearly the defects of present day services.
- (b) Stating what should be aimed at in an ideal service.
- (c) Describing the various practical methods that might be adopted to arrive at this ideal.
- (d) Attempting to arrive at unanimity in the profession in recommending the adoption of some particular scheme for the improvement of health services and to do everything possible to press for such a scheme being put into operation by the government.

The association had previously adopted a resolution to support a national health insurance scheme introduced by the government, but, when the committee conducted a referendum to determine whether this action still represented the opinion of the medical profession a vote of 113 to 95 was registered against the support of the resolution.

As a first step the members of the association were urged to suggest plans and express themselves fully concerning the most

desirable action to be taken. There was an extensive response, so that articles on planning have appeared in practically every number of THE JOURNAL since that of the 10th of May 1941. A wide variety of proposals for plans were received, several of which were endorsed after discussion by one or more divisions of the association.

As the next step the committee classified these plans as far as possible and has now asked for another referendum to determine the attitude of the medical profession and afford a guide toward action. In the first referendum about 10 per cent were in favor of the present system, or the maintenance of the status quo. The plans of those who desired some change fell into two classes: "(a) Those retaining private practice as an integral part of the health services. (b) Completely socialized health services. Private practice would not be prohibited but would not be an integral part of the scheme."

The first question asks the physicians to state which of these two classes of plans is preferred. A brief sketch of each of the proposals is then given with opportunity to indicate a choice or modifications of some of the plans. Altogether a yes or no vote is requested on twenty-three questions indicating a preference for a correspondingly wide choice of proposals. It is hoped in this way to obtain a fairly accurate picture of the attitude of the profession, on a wide variety of proposals which will form a basis for further action.

The proposals to be voted on cover a wide field. The multiple benefit society, a form of contract practice, is rapidly expanding and it has recently received official government encouragement. An earlier vote indicated a certain amount of support for this type of practice but on the other hand, there were more votes against it than for any of the other forms of organized service suggested. National health insurance is regarded by a "fair number of practitioners" as a "logical first step to be taken in the direction of an organized medical service," although nowhere does there seem to be anything like complete satisfaction with it either on the part of the profession or the public.

There are a number of plans that are classified as "socialized medicine," since "private competitive practice is not contemplated as an integral part of any of them," although it will not be forbidden or even discouraged. All such plans contemplate: (a) Cutting at the roots of ill health by drastic reforms in such fields as nutrition, housing, physical education, rehabilitation and social security generally. (b) Unified control of all health activities. (c) State finance and cooperation with other state departments. (d) Representation of medicine and allied professions in administration and control. (e) Health education. (f) Health conservation.

¹ A Health Service for South Africa. South African M. J. 16: 425 (Dec. 26) 1942.

WOMAN'S AUXILIARY

New Jersey

A joint meeting of the Contemporary Club of Newark and of the Woman's Auxiliary to the Essex County Medical Society was repeated by request on January 26. Invitations were sent to all social organizations, public health and welfare agencies, as well as hospital representatives and nurses. The speakers were introduced by Dr. William W. Cox, president of the Essex County Medical Society. Lieutenant Jean Robb of the Woman's Auxiliary Army Corps spoke on the purpose of the Waacs. Dr. J. Wallace Huff talked on "Medicine in War" from the civilian doctor's point of view. Dr. Stuart Z. Hawkes spoke on "Medicine in War" from the military angle.

Mrs. Max Kummel, chairman of public relations of the auxiliary, and Mrs. Frank A. Bien were the joint chairmen of this program.

Pennsylvania

A meeting of the Allegheny auxiliary in Pittsburgh recently was called to order by the president, Mrs. Robert C. Hibbs, who announced that \$1,700 had been turned over to the Student Loan Fund by the auxiliary. This fund, which has been in existence for twelve years, was organized for the benefit of

needy medical students of the University of Pittsburgh. Early in the year a request was made by the university. The auxiliary was happy to respond with the amount stated, which is the largest ever given by the auxiliary since the fund was started.

The food mart, under the chairmanship of Mrs. N. Park Davis with Mrs. Henry D. Jorden as co-chairman, proved a great success. The cakes, pies, cookies, rolls, preserves and jellies were donated. Members also contributed handwork. The proceeds, nearly \$470, will go to the Student Loan Fund.

West Virginia

At the nineteenth annual meeting of the Woman's Auxiliary to the West Virginia State Medical Association at Charleston May 17 and 18, Mrs. John P. Helmick of Fairmont was installed as president, succeeding Mrs. Ralph Hogshead of Mammoth. Other officers installed were Mrs. H. P. Evans of Keyston, Mrs. W. E. Hoffman of Charleston, Mrs. N. L. Haislip of Wheeling and Mrs. H. D. Gunning of Ronceverte as vice presidents, Mrs. J. W. Carney, Logan, recording secretary, and Mrs. S. W. Davis, Fairmont, corresponding secretary. Mr. Scott A. Ford, Edwight, is the president-elect and will take office at the annual meeting in 1944.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Dr Soiland Honored—The Radiological Section of the Los Angeles County Medical Association gave a dinner May 5 in honor of Capt. Albert Soiland (MC), U.S.N.R. celebrating his seventieth birthday. In 1933 the sixtieth birthday of Dr Soiland was celebrated by the dedication to him of the May issue of *Radiology*. A founder of the American College of Radiology serving as its president in 1931 he was also a sponsor of the plan to establish the Section on Radiology of the American Medical Association and in 1926 was elected its chairman.

University Appointments—Dr Ernest D. Gardner instructor in anatomy at Stanford University School of Medicine San Francisco has been appointed assistant professor of anatomy at the University of Southern California School of Medicine Los Angeles and Dr Arnold Lazarow of the department of anatomy, University of Chicago School of Medicine has been named research assistant in the department of anatomy at Southern California. Dr Jurgen Ruesch of Zurich and Basel has been appointed lecturer in psychiatry at the University of California Medical School San Francisco. Since the outbreak of the war he has held a Rockefeller Foundation fellowship and has been working in Boston hospitals and at the Harvard Medical School Boston. *Science* reports.

ILLINOIS

New Reportable Diseases—Effective on May 15 the following have been added to the list of reportable diseases in Illinois: rheumatic fever hemorrhagic jaundice (Spirchetosis icterohemorrhagica Weil's disease), infectious hepatitis (acute catarrhal jaundice), infectious keratoconjunctivitis (superficial punctate keratitis nummular keratitis).

Chicago

Dr George Gardner Named Assistant Dean at Northwestern—Dr George H. Gardner associate professor of gynecology at Northwestern University Medical School has been appointed assistant dean and Dr Alexander A. Day has been named acting assistant dean in place of Lieut. Col. Harold A. Davenport, M.C., U.S. Dr Gardner graduated at Johns Hopkins University School of Medicine Baltimore in 1921, serving there on the faculty until 1926, when he joined the staff at Northwestern as clinical assistant in gynecology. He is president-elect of the Chicago Gynecological Society.

The Ricketts Prize—The Howard Taylor Ricketts Prize of the University of Chicago has been divided between Dr Howard C. Hopps, instructor in pathology, and Leo R. Melcher, Ph.D. formerly assistant in immunology in the department of bacteriology and parasitology and now a student at Northwestern University Medical School. Dr Hopps' research showed that although some allergy-causing substances may hinder the healing of wounds if they are used in treatment catgut, used in wound repairs and often suspected of having this effect, actually is not responsible. Dr Melcher's work concerned the analysis of the substances in the worm *Trichina* which cause immunity in the disease of trichinosis. Dr Hopps graduated at the University of Oklahoma School of Medicine Oklahoma City in 1937 and two years later joined the department of pathology at the University of Chicago. Dr Melcher graduated at the University of Chicago in 1939 and received his Ph.D. in 1942.

Michael Reese Hospital Launches Program of Medical Teaching—The Michael Reese Hospital has inaugurated a program of medical teaching which is to be developed first on an intramural basis but which will gradually be merged into postgraduate teaching available to the medical profession at large. It is hoped that the program will be sufficiently advanced by the end of the war to help meet the demand for refresher courses for physicians now in the armed forces. The part time and full time staffs of the clinical departments of the hospital and the full time staffs of the Research Institute and of the clinical laboratories will all contribute to the teaching faculty. In line with the introduction of the new teaching program and as a part of the general reorganization at the hospital Dr Her-

man Smith, who has been the general superintendent of the hospital, now becomes the executive director and Dr Samuel Soskin head of the department of metabolism and endocrinology at Michael Reese for the past fourteen years, has been appointed medical director and dean of the new teaching and research faculty.

IOWA

Radio Program on Child Development—The seventeenth Iowa Conference on Child Development and Parent Education will be conducted by radio on June 15 in line with the national effort to reduce civilian travel. Today's Children Tomorrow will be the theme of the conference which is held annually under the auspices of the Iowa State Council for Child Study and Parent Education in cooperation with the Iowa Child Welfare Research Station Iowa City, and the extension divisions of the State University of Iowa, Iowa City, Iowa State College of the Agriculture and Mechanic Arts Ames and State Teachers College, Cedar Falls. Among the speakers will be Robert R. Sears, Ph.D. Iowa City on 'Shall We Neglect Our Children' and William F. Ogburn, Ph.D., Chicago, 'The Child in the Future'.

MAINE

State Medical Meeting—The house of delegates of the Maine Medical Association will meet at the Augusta House Augusta June 20. Dr Oscar F. Larson Machias, council chairman will preside at the first session in the absence of Dr Stephen A. Cobb, Sanford president-elect now in military service. Dr Carl H. Stevens Belfast president of the association will preside at the luncheon meeting at which Andre William Reggio surgeon (R), U.S. Public Health Service regional medical officer, First Civilian Defense Region Boston will discuss 'Emergency Medical Service—Office or Civilian Defense'. A second meeting of the house of delegates will conclude the one day session.

MASSACHUSETTS

Changes in Status of Licensure—At a meeting of the state board of registration in medicine April 14 it was voted to restore the license to practice medicine in the Commonwealth of Dr Daniel E. Nyman Arlington. The board also voted to revoke the license of Dr Solomon P. Bialow Waltham, because of gross misconduct in the practice of his profession as shown by his conviction in court.

Tufts Building Fund Now \$500,000—A new gift of \$47,800 from Dr and Mrs George G. Averill, Waterville Maine brings the building fund at Tufts College Medical School Boston, up to \$577,000. Dr Averill graduated at Tufts in 1896. The recent gift brings his total contributions to the building fund up to \$100,000. During 1942, \$50,000 was raised for the building fund and \$54,000 was received from individuals foundations and other sources for teaching research and scholarships.

New State Health Commissioner—Dr Vlado A. Getting since 1942 commissioner of health of Worcester has been appointed commissioner of public health of Massachusetts to succeed Dr Paul J. Jakmauh, Boston. Dr Getting graduated at Harvard Medical School, Boston in 1935 and subsequently received the degrees of master of public health and doctor of public health from Harvard University. After internship at the Worcester City Hospital he became associated with the state department of public health first as assistant epidemiologist then as director of a mosquito survey and last as a district health officer. Dr Getting was forced to resign from the medical corps reserve of the U.S. Army in 1942 because of a physical disability.

MICHIGAN

State Health Officer Reappointed—Dr Henry Allen Moyer Lansing has been reappointed state health commissioner for a four year term beginning June 30.

First Nursery Schools Open—The Detroit Board of Education on May 7 opened sixteen nursery schools for children from 2 through 5 years of age the first to be established with federal Lanham funds. Plans provide for the establishment of fifty such centers in Detroit.

State Increases Funds for Hospital Care—The state department of health announces that additional state funds will be available July 1 to aid Michigan counties in providing hospital care for persons who have tuberculosis. The legislature has provided \$2,900,000 to cover the state's share of the cost of hospital care for patients who are county charges during the next fiscal year or \$750,000 more than the current appropriation. A half million dollars is expected to cover the increase from \$1.50 to \$2 per patient day in the hospital in state pay-

ments to counties voted during the recent session. A separate \$250,000 item is for increased assistance to counties whose tax incomes are too small to cover their share of the cost of hospital care for their tuberculous charges.

Wayne County Health Department Created—On April 21 the board of supervisors of Wayne County established a Wayne County Department of Health. Members of the board of health include Drs. Floyd K. Babcock, Detroit (three year term), and John W. Nagle Wyandotte (two year term). Other members of the board are Charles L. Brike, deputy superintendent of schools (five year term), George Bonk, clerk of Taylor Township (one year term) and Joseph H. McCann, postgraduate student in public health at the University of Michigan (four year term). The establishment of the department followed a health survey briefly supervised by the Wayne County Board of Auditors, of which Dr. Paul A. Klebba, Detroit, is medical adviser. In addition to the five member board which will direct the department there will be a director, a deputy health officer, one sanitarian, one supervising nurse, four nurses, one statistical clerk stenographer and one laboratory technician.

University Cooperates with Foundation on Infantile Paralysis Study—The National Foundation for Infantile Paralysis and the University of Michigan have joined in a long-range program for the training of doctors, public health workers and laboratory technicians to study infantile paralysis and other virus diseases. The program which has been developing for three years, will be expanded to its full scope by June 1 when the university opens its new three-story School of Public Health at Ann Arbor. The new structure will house a unit devoted entirely to work in virus diseases, particularly infantile paralysis. The virologists who will be trained under the program will be prepared to attack the whole realm of virus diseases including not only infantile paralysis but also influenza, atypical pneumonitis, St. Louis and equine encephalitis, measles, chickenpox, smallpox and mumps. To aid in the necessary planning and execution of the project the National Foundation has made a three-year grant, totaling \$120,000, to the university in addition to three previous grants, totaling \$110,000, made in the past three years. According to a release from the foundation, this is the first time in the history of the foundation that three long-term grants have been made within the space of a single year. Recently a five-year grant of \$150,000 was made to Yale University, New Haven, Conn., to establish the Yale Poliomyelitis Study Unit, and in 1942 \$300,000 was given to Johns Hopkins University, Baltimore, under a five-year grant to establish and conduct the Center for the Study of Infantile Paralysis and Related Virus Diseases.

MINNESOTA

Dr. Snyder Gives the Dight Institute Lecture—Laurence H. Snyder, Sc.D., chairman of the department of zoology, Ohio State University, Columbus, delivered the second annual lecture under the Charles Fremont Dight Institute for the Promotion of Human Genetics on "Hereditary and Modern Life," April 19. The institute was established in 1942 (THE JOURNAL, June 13, 1942, p. 572) under the will of Dr. Charles Fremont Dight, who had been a member of the staff of the University of Minnesota Medical School, Minneapolis. The income of a fund of more than \$100,000 was bequeathed to the university to endow the institute, and studies were to be directed particularly to "a search for traits, such as metabolic disturbances, which may have genetic bases but are not recognized as hereditary traits."

MISSOURI

Virus Diagnostic Service—The laboratory section of the St. Louis Health Division has established a virus diagnostic unit for physicians wishing laboratory assistance in the diagnosis of virus diseases. At present the service is limited to the neurotropic virus diseases.

Personal—Dorothy A. Hehmann has resigned as executive director of the Missouri state cancer commission to become personal director of the New Haven Hospital, New Haven, Conn.—Dr. John I. Byrne, St. Joseph, has been appointed a member of the board of health, succeeding Dr. Leon Paul Forgrave, St. Joseph, resigned.

Annual Loeb Lecture—Col. Richard P. Strong, M.C., A.U.S., gave the eighth annual Leo Loeb Lecture at the Washington University School of Medicine, St. Louis, April 29. His subject was "The Importance of Tropical Diseases in Relation to the Present War." The lecture is sponsored by the Mu chapter of Phi Beta Pi in honor of Dr. Leo Loeb,

St. Louis, who in 1936, when the lectureship was established, was professor of pathology at the medical school. Dr. Loeb has been professor emeritus since 1937.

NEW JERSEY

New Medical Fund—Announcement has been made of a recently accumulated fund in the Newark Beth Israel Hospital Research Foundation in honor of the memory of Mrs. Dorothea Lichtman, wife of the president of the foundation, Abraham Lichtman. The foundation was formed in 1941 and is a corporation separate from the hospital organization but embracing what was then known as the institution's division of laboratories. It is supported by donations and by members of the hospital staff who carry on independent research.

NEW YORK

Aid for Adult Poliomyelitis Cases—*Health News* reports that an appropriation of \$20,000 has been made in the state budget for the coming fiscal year to provide state aid for such remedial care of adult poliomyelitis cases as may be authorized by local boards of health and health officers and approved by the state commissioner of health. Inquiries regarding procedures for making application for care under the provisions of this legislation should be directed to the district health officer.

Honorary Degrees Conferred—At its annual commencement, May 2, the University of Rochester, Rochester, conferred the honorary degree of doctor of science on Sister Elizabeth Kenny for her work in treating infantile paralysis. Similar degrees were conferred on Dr. Stanhope Bayne-Jones, professor of bacteriology at Yale University School of Medicine, New Haven, Conn., on leave as a colonel in the army medical corps, and Roger Adams, Ph.D., head of the chemistry department at the University of Illinois, Urbana, Ill., and one of the five chemists in charge of the nation's chemical warfare research.

Cancer Teaching Day—June 17 will be the occasion of the cancer teaching day at the Hotel Utica, Utica, under the auspices of the Medical Society of the County of Oneida, Utica Academy of Medicine, state medical society and its fifth district branch, and the state department of health. "The Management of the Patient with Advanced Cancer" will be discussed by Dr. Norman Treves, New York, and "Cancer of the Larynx, Bronchus and Esophagus" by Dr. Chevalier L. Jackson, Philadelphia. An evening meeting will be addressed by Drs. George E. Binkley and Lloyd F. Craver, New York, on "Cancer of the Colon and Rectum" and "The Significance of Enlarged Lymph Nodes" respectively.

Industrial X-Ray Laboratory—An industrial x-ray laboratory equipped with a million volt unit, a joint enterprise of the University of Rochester and eight industries, was formally opened on April 19. Ernest E. Charlton, Ph.D., of the General Electric Research Laboratories, Schenectady, who designed the apparatus, said in an address that the project represents "a novel and most useful cooperation in the joining of hands of university and industry in the developing of the full use of x-rays in the industrial field." The undertaking was financed by the Eastman Kodak Company, Rochester Products and Delco Appliance divisions of General Motors, the Pfaunder Company, the Rochester Gas and Electric Corporation, Consolidated Machine Tool Corporation, Symington Gould Company and the Rochester Brewing Company. According to *Science*, the university supplies the scientific staff to make the tests and is free to use the equipment for research in metallurgy, medicine and engineering. Part of a second million volt unit is installed in another part of the laboratory for medical research on cancer. The remainder will not be available until after the war, it was stated.

New York City

Fraternity Sells \$600,000 in War Bonds—A luncheon celebration will be held at the Waldorf Astoria Hotel, June 2, at which treasury department officials will name two heavy bomber planes in honor of the Phi Delta Epsilon Medical Fraternity, which sold \$600,000 in war bonds during the last drive.

The Adam Miller Lecture—Dr. Carl J. Wiggers, professor and head of the department of physiology, Western Reserve University School of Medicine, Cleveland, recently delivered the Adam Miller Lecture at Long Island College of Medicine, Brooklyn, on "Recent Experimental Approaches to the Shock Problem."

Funds for Child Care—About \$20,000 in state funds has been allocated to finance the child care activities at twenty-eight New York City settlement houses. The twenty-eight centers have applied for regular participation in the state war

council's child care program. An emergency authorization has been granted for two months and a permanent arrangement will be made after the city's new fiscal year begins, July 1.

Funds for Nursery Care—The Board of Estimate voted on April 22 to provide city funds estimated at about \$120,000 a year, to aid in paying for day nursery care of children of working mothers. The board acted under state legislation stipulating that the state will pay one third of the cost, the city one third and the mothers one third. The state legislature had appropriated \$2,500,000 for state aid in connection with wartime child care projects.

First Prize in Cancer Exhibit—The Cure of Cancer is the Duty of Society" was the theme of the first prize winning exhibit in the competition conducted in the city's schools by the New York City Cancer Committee of the American Society for the Control of Cancer. Eight boys and girls students of the Forest Hills High School, formed the prize winning team for the exhibit which portrayed some of the significant contributions made by laboratory investigations on mice and rats.

Refresher Course in Venereal Diseases—A clinical refresher course in the modern diagnosis and management of venereal diseases opened, May 12, at the Central Clinic of the city department of health, 130 Leonard Street, Manhattan under the auspices of the bureau of social hygiene. Dr. Louis Chargin, consultant to the bureau, will direct the course which will be held each Wednesday morning through June 30. The course offers practitioners the opportunity to observe laboratory and clinical diagnostic procedures and treatment methods for syphilis, gonorrhea, chancroid and other venereal diseases.

Physician Sentenced for Income Tax Evasion—According to the New York Times, Dr. Mandel Frankel was given a prison term of a year and a day, April 19 for evasion of income taxes amounting to more than \$36,000 for the years 1928 to 1938. The Times reported that the physician, said to be the operator of a large farm at Mount Bethel Pa., pleaded guilty to the charges last January. The newspaper further reported that Dr. Frankel was said by the government to have derived part of his income from an 'abortion mill' at 241 East 18th Street. He was allowed until April 29 to begin serving his sentence.

Dr. Bolduan to Retire June 1—Dr. Charles F. Bolduan, organizer and first director of the bureau of health education of the city department of health, will retire on June 1. At a dinner to mark his retirement, held on May 20, the speakers included Dr. James Alexander Miller, Edward H. Lewinsky-Corwin Ph.D., and Dr. Haven Emerson. Dr. Bolduan who reached the civil service age limit of 70 years on May 7, began his association with the department of health in 1904, when he was appointed bacteriologist. In 1907 he became assistant to the late Dr. Hermann A. Biggs, who was then general medical officer of the department. Six years later Dr. Bolduan established the bureau of health education. For the interim 1918-1928 he served with the U. S. Public Health Service. He formerly was professor of bacteriology at Fordham University School of Medicine (now extinct) and lecturer on preventive medicine and public health at Columbia University College of Physicians and Surgeons.

OHIO

Memorial to Dr. Crile—The Cleveland Clinic Quarterly has dedicated its April issue to the memory of the late Dr. George Crile, a founder and former president of the Cleveland Clinic Foundation. The Quarterly carries the addresses that were presented at the memorial service for Dr. Crile at Western Reserve University on January 24.

New Venereal Disease Control Officer—Roger E. Heering, passed assistant surgeon U. S. Public Health Service, has been lent to the state for service as venereal disease control officer. Dr. Heering came from district number 1, U. S. Public Health Service, with headquarters in New York where he had been venereal disease consultant for ten states included in the district. Dr. Heering had been lent to Ohio during the period 1939-1940 as venereal disease control officer in the Cincinnati area.

Retires as Secretary After Forty-Three Years—Dr. Oliver T. Sproull, West Union secretary of the Adams County Medical Society since 1900, declined reelection this year. Dr. Adams was a charter member of the society when it was organized in 1886. He has practiced in the county ever since he graduated at the College of Physicians and Surgeons, Baltimore, in 1886. His successor as secretary of the society is his daughter, Dr. Hazel L. Sproull, associated with him in practice at West Union.

PENNSYLVANIA

Personal—Dr. Thomas H. A. Stites has resigned as medical director of the Pennsylvania State Tuberculosis Sanatorium number 2 at Cresson, concluding twenty-nine years service to the state, sixteen of which have been spent at the Cresson Sanatorium. Dr. Stites plans to live at Nazareth. Dr. Augustus H. Clagett, Upper Darby, has resigned as secretary of the Delaware County Medical Society to take up residence in Ocean City, N. J. He is retiring from active practice. Dr. Richmond C. Holcomb, Upper Darby, will act as secretary for the unexpired term.

Philadelphia

Department of Health Resumes Bulletin—The Philadelphia Department of Health has resumed publication of a bimonthly *Health Bulletin* which was discontinued in 1941 because of insufficient funds. This year Mayor Samuel approved a sum granted by the city council to publish again the bulletin and other health reports.

HAWAII

Medical Society Commended for Prewar Services—A senate resolution was adopted on April 26 in the legislature of the Territory of Hawaii 'proclaiming and recording the outstanding service by the Honolulu County Medical Society and the physicians and surgeons volunteering for service on Dec. 7, 1941 in the care of the wounded or the armed forces.' The resolution points out that the Honolulu County Medical Society had its prewar services so well organized that the members of the profession were able to perform swiftly and efficiently the extraordinary tasks they were called on to do in caring for the casualties among the members of our armed forces. In recognition of the outstanding service, the senate adopted the resolution.

Hospital for Paralysis Patients—The Office of Civilian Defense has erected a wooden building on the grounds of the Shriners Hospital for Crippled Children, Honolulu as emergency quarters for patients with poliomyelitis, following an outbreak which was first reported in February. Newspapers report that since February 34 cases have been placed under treatment. The outbreak is said to be confined to congested areas of Honolulu and is not an epidemic. Seven adults are included among the patients. Lieut. Gen. Delos C. Emmons, commanding the Hawaiian Department of the U. S. Army, has contributed \$5,000 to the emergency infantile paralysis hospital from the army's community chest fund. Brig. Gen. Edgar King, U. S. Army department surgeon, furnished the material and army nurses for the hospital, which is staffed by civilian physicians.

GENERAL

Theobald Smith Award to Be Continued—The original gift from Eli Lilly and Company to the American Association for the Advancement of Science for the Theobald Smith Award was for a period of five years. The grant expired this year with the award to Dr. Sidney C. Madden, New York (THE JOURNAL, May 1, p. 51). The interest in the award which consists of \$1,000 and a bronze medal, has been so great and the researches by young scientists for which it has been given have been of such a high order of merit that Eli Lilly and Company have notified the association of their intention to continue the award for at least three years.

Memorial to Dr. William P. Wherry—The establishment of a memorial to the late Dr. William P. Wherry, Omaha for many years secretary-treasurer of the American Academy of Ophthalmology and Otolaryngology, has been authorized by the council of the academy. The memorial which is to be financed by the interest on \$16,000 to be raised by voluntary subscription and invested in war bonds is to be in the form of a paid-up membership in the academy to the person selected annually by the American Board of Otolaryngology as the most outstanding candidate examined. According to the *Transactions* of the academy, only one half of the objective has been subscribed.

Field Service to Aid Acceleration of Basic Nursing Education—To help schools of nursing plan acceleration or basic nursing education programs, the National Nursing Council for War Service has been granted a fund for field service by the W. K. Kellogg Foundation. The program of field consultation was to begin in April in the states requesting it and extend up to the time of the National League of Nursing Education's annual meeting in June. The director of the field service is Helen G. Schwarz, R.N., who is on a leave of

absence from her position as dean of the College of Nursing and Health of the University of Cincinnati and director of nursing in the Cincinnati General Hospital.

New Tuberculosis Research—A new tuberculosis research program has been initiated under the direction of Passed Assistant Surgeons Carroll E. Palmer and Herman E. Hilleboe of the U. S. Public Health Service with assistance from the National Tuberculosis Association. Student nurses in general hospitals will be the subjects for the study which aims to discover the constitutional factors that decide whether or not a person will be able to resist the tuberculosis germ invasion according to Factor X-ray. Student nurses were selected for the study because they are subjected to frequent contact with active cases of tuberculosis and can be examined at short intervals during their three year period of training.

Wartime Conference for Libraries Association—“Information for Victory” will be the theme underlying the several sessions of the 1943 Wartime Conference of the Special Libraries Association which will be held June 22-24 in New York at the Hotel Pennsylvania. Members of the Special Libraries Association, a national organization with eighteen chapters in the United States and two in Canada, are information specialists in advertising agencies, banks, chemical firms, engineering companies, insurance companies, government agencies, museums, newspapers, religious institutions, in short in virtually every field of knowledge. Miss Marguerite Burnett is chairman of the Wartime Conference Committee and librarian of the Federal Reserve Bank of New York.

Meeting of Genitourinary Surgeons—The fifty-ninth annual meeting of the American Association of Genitourinary Surgeons will be held at the Red Lion Inn, Stockbridge, Mass., June 10-12 under the presidency of Dr. Nathaniel P. Ruthven, Brooklyn. Among the speakers will be:

Dr. Vincent A. Baker, Fairleigh, N. J., Extraction of Ureteral Stones—Prevention of a New Instrument.

Dr. Alexander R. Seavey and Victor E. Marshall, New York, Methods of Renal Transplantation—The Ureter into the Bladder.

Dr. Ruben and Heinrich I. Weiden, Brooklyn, Lympho-vascular of the Bladder—Review of the Literature and Case Report.

Dr. John R. O'Connell and Russell B. Koch, Detroit, Recent Cases Illustrating Dangers of Failure of Salivary Drugs.

Dr. Reed M. Nesbit and Edgar A. Webb, Ann Arbor, Mich., Evaluation of the Papanicolaou Concentration Test of Renal Function.

Dr. Hugh H. Yau, Baltimore, Surgical Treatment of Elephantiasis.

Dr. du Vigneaud Receives Mead Johnson Award—The \$1000 award given each year by Mead Johnson & Co. for researches on the B complex vitamins has been awarded this year to Vincent du Vigneaud, Ph.D., professor of biochemistry, Cornell University Medical College, New York, for his work on the structure of biotin. The recipient of the award is chosen by a committee of judges of the American Institute of Nutrition and the award ordinarily is announced at the institute's annual meeting. The meeting was canceled this year because of the war. Associated with Dr. du Vigneaud in the two year research leading to the elucidation of the chemical structure of the formula of biotin announced last year are the following all of whom hold the degree of doctor of philosophy: Klaus Hofmann, Donald B. McVillie, Glen W. Kilmer, George B. Brown, A. W. Moyer, Julian R. Rachek, Marvin D. Armstrong, all of Cornell, and Hugh H. Darby of Columbia. Karl Folkers, Donald F. Wolf, Ralph Mozingo, John C. Katesztesy and Stanton A. Harris, all of the Research Laboratories of Merck & Co. Inc., Rahway, N. J.

Annual Meeting of Tuberculosis Physicians—The annual meeting of the American Academy of Tuberculosis Physicians will be held at the Palmer House, Chicago, June 9-10, under the presidency of Dr. Karl J. Henriksen, Chicago. Among the speakers will be:

Dr. Jacob W. Cutler, Philadelphia, Advanced Tuberculosis and Pregnancy as Influenced by Collapse Therapy.

Dr. Charles F. Taylor, Norton, Kan., Emphysema—Treatment.

Dr. Maurice A. Pollock, Toronto, Bronchiectasis.

Dr. Harry J. Corper and Maurice I. Cohn, Ph.D., Denver, Specific Tuberculosis Immunity During Infection.

Dr. Arthur H. Beebe, Sullman, Valley, Ill., Tuberculosis—Common Sense Angle—Forty Year View.

Dr. Laurie Lee Allen, Milwaukee, Nontuberculous Lesions of the Lungs.

Dr. David Salkin, Hopewell, W. Va., Treatment of Tuberculous Bronchitis.

Dr. Leroy Elrick, Denver, Coexistence of Pulmonary Tuberculosis and Mitral Stenosis—Report of Case with Autopsy Findings.

Dr. Giles Wolverson, Dayton, Ohio, Body Section Radiography—Its Practical Value in Pulmonary Tuberculosis.

Dr. William F. Petersen, Chicago (subject not announced).

Lieut. Comdr. Oscar S. Levin, Denver, U. S. Navy, retired, Tuberculosis—The Science of Tuberculosis, The Medical Tubercologist—A Specialist in the Science of Tuberculosis.

Dr. Zoltan Galambos, Chicago, will address the luncheon session Wednesday on “The Tuberculosis Specialist in Undergraduate, Graduate and Postgraduate Medical Education.”

Government Services

Information Concerning Drugs That Should Be Sold Only To or On the Prescription of Physicians, Dentists or Veterinarians

The Food and Drug Administration has received numerous requests from drug manufacturers, retail and wholesale drug associations and others for a list of those drug products which it considers dangerous when sold otherwise than on the prescription of a physician, dentist or veterinarian licensed by law to administer drugs.

In answer to such requests, the administration has pointed out that the Food Drug and Cosmetic Act places on the manufacturer and the distributor the responsibility for properly safeguarding the marketing of drugs which may be dangerous to the purchaser if distributed without restriction. Obviously it is impossible to list all drugs which may be dangerous, since not only the compositions but also the directions for use and the conditions in which their use is recommended may have a very definite bearing on the question of safety or danger. As examples of drugs which are considered dangerous when distributed for use otherwise than on prescription, the following have been mentioned:

Aconite	Radium
Aminopyrine	Sulfanilamide
Barbiturates	Sulfapyridine
Benzedrine sulfate (for internal use)	Sulfathiazole
Cantharides (for internal use)	Tansy, tansy oil
Chrysarobin or goa powder	Thiocyanates
Chrysophanic acid	Thyroid
Emchophen, neochophen and other emchophen derivatives	The anthelmintic drugs
Colchicine	Carbon tetrachloride
Colchicum	Tetrachlorethylene
Emetine	Male fern (aspidium)
Phosphides	Santonin
Phosphorus	Wormseed oil (chenopodium oil)
	Thymol

It is the opinion that preparations containing bromides should not be sold without prescription if the dosage provided involves the consumption of more than 30 grains per day or more than 15 grains during any three hour period.

The same is true of acetanilid in the case of medicines that provide a total daily intake of more than 5 grains or more than 2½ grains during any three hour period.

For bromide-acetanilid combinations it has been suggested that preparations for lay use should not provide more than a total daily dose of 15 grains of sodium bromide and 5 grains of acetanilid or more than 7½ grains of sodium bromide and 2½ grains of acetanilid during any three hour period. Comparable amounts of other bromide preparations should, of course, be subjected to the same restrictions.

There is ample scientific evidence to support the view that preparations providing a daily dose of more than 15 grains of acetophenetidin or more than 15 grains of antipyrine are dangerous within the meaning of section 502(j) when distributed for indiscriminate lay use. Investigations which are currently in progress strongly suggest the probability that somewhat smaller daily doses of these drugs may likewise be dangerous when consumed indiscriminately. After public notice the regulatory program will, of course, include actions based on sales of acetophenetidin and antipyrine under circumstances providing for a somewhat smaller daily dose if scientific opinion becomes available to establish the illegality of such sales.

In the judgment of the Food and Drug Administration epinephrine in solution of 1 per cent or stronger cannot safely be indiscriminately used, and the same is true of ipecac in daily dosage greater than 10 grains as well as of strychnine in a daily dose greater than 1/20 grain.

It has also expressed the opinion that products containing therapeutically effective proportions of digitalis, squill, strophanthus or other pharmacologically related drugs may not be safe for indiscriminate distribution.

It has been found that manufacturers of such drugs as have been mentioned have taken advantage of the regulation permitting omission of directions for use and substitution of the so-called “prescription legend.” Where the legend “Caution: To be used only by or on the prescription of a Physician (Dentist or Veterinarian)” appears on the package in lieu of directions for use, it is the obligation of the retailer to observe the injunction that the article be dispensed only on prescription.

The fact that the federal law is applicable to the distribution by retailers of drugs which have been in interstate commerce in no way restricts the enforcement of state and local acts relating to the sale of drugs or the practice of pharmacy.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 17, 1943

The Proposed National Medical Service

The acceptance by the British Medical Association of the government's invitation to enter into a discussion with the Ministry of Health on a scheme for a comprehensive service for the prevention and cure of disease available to all members of the community, was reported in a previous letter. In these discussions representatives of other medical bodies than the British Medical Association such as the medical colleges, are taking part. Though no reports have been published the declarations of ministers at political meetings enable a forecast to be made. The government proposes that the national health service shall be administered through the local government machinery which already controls the public health service. This proposal has given rise to the first issue between the profession and the government for the *British Medical Journal* has in an editorial strongly objected to the proposal which would place the medical profession under the control of local lay bodies. The alternative is control by some medical body. On the other hand the proposal to create health centers for the treatment of disease where physicians could meet and assist one another and where apparatus would be provided is welcomed by the profession and was previously recommended by the Medical Planning Commission of the British Medical Association. These centers would be an extension to the whole community of group practice which already exists as a private enterprise. The free choice of doctor by patients which already exists under the panel system has also been announced and is approved in the profession. Thus the time honored British institution the family doctor would continue.

In the medical press it is suggested that the mode of payment of the service should be a basic salary for physicians plus a capitation fee. The present sale of practices will come to an end but compensation for the loss of the investment is demanded. Private practice is not to be forbidden but as the service is to provide all possible treatment general and special hospital and domiciliary free of charge for every person it seems that private practice must sooner or later disappear. Another question is the position of the voluntary hospitals which were founded and maintained by the money of the charitable for the treatment of the poor. They provide the highest medical and surgical skill including all kinds of specialism. It is in them that British medicine has been made and in which its leaders such as Bright Graves and Hutchinson, to mention only the greatest made their discoveries. The staffs of these hospitals gave their services free and lived on the consulting practice outside. This must largely or entirely disappear as consultants are to be supplied under the National Medical Service. They too must look to it for their livelihood. The charitable who have supported these hospitals in the past will no longer have any incentive to do so as the government becomes responsible for all hospital treatment. That is supposing the crushing taxation which is likely to continue after the war leaves any money for charity. It seems therefore that the voluntary hospitals will be absorbed into the state scheme.

The proposed state medicine for all is indeed a revolution and is much greater than that brought about by the panel system which applied only to a section of the population. Putting aside a small minority who have socialist views the scheme is not wanted by the medical profession and is being imposed on it by the government. But opposition to it is voiced by only a few

as it is recognized that the government has the right as well as the power to decide the best system for the promotion of the national health. What physicians can insist on and are insisting on is consultation with them as to details. How the plan arose as part of the Beveridge report on a wide scheme of social reform was shown in a letter in *THE JOURNAL*, January 9, page 142. It has to be remembered that the plan emanates from a coalition government of all the political parties and is approved by them all. The only political difference is that the labor party has assumed the attitude of being more strenuous than the government and attacked it for want of energy. Thus the medical profession could not rely on the support of any political party if it opposed the scheme.

At a special representative meeting of the British Medical Association the government's invitation to enter into discussions without commitment was agreed to without dissent. A resolution that the section of the population with income above a certain level should continue to obtain domiciliary medical service on a private basis was referred to the council of the association. It was agreed that every practicable step be taken to give all members of the profession, whether members of the association or not an opportunity to express their views particularly the members of the profession now on war service.

The Official Medical History of the War

A committee of the war cabinet has been set up to control official histories of the war of which medical history including the civilian as well as the fighting services is to be included. Sir Arthur MacNalty formerly principal medical officer of the Ministry of Health is the editor in chief. The director generals of the fighting services will act as editors in respect to their departments. There is a board to supervise the collection of material prevent overlapping and select contributors. It has power to choose experts on special subjects and consult with investigation committees set up by other bodies notably the Medical Research Council. Close touch is maintained with various bodies and persons whose work has any bearing on matters of interest for the history. Government departments are cooperating by furnishing reports and official documents relating to medical administration and to technical and clinical subjects. The dominions and colonies and the Allied governments are collaborating. Close liaison has been established with the National Research Council in the United States which is collecting similar data and there is an exchange of experience and information. Attention is also being paid to medical literature already published.

Sir Arthur MacNalty has described to the Section of Medicine of the Royal Society of Medicine the scope of treatment of the various medicosociological problems relating to civil life which have arisen during the war. Each of the fighting services will contribute its own section describing its medical organization before the war its growth and increased functions during the war and the medical aspects of the various campaigns. Certain problems will be treated at length in those sections of the history likely to be published first so that war-time experience may be available as widely as possible. Contributors are being asked to submit progress reports because few monographs can be written until the war is over. Records should be made while the memory is fresh and changes in methods recorded when they take place. MacNalty indicated some of the headings in the technical volumes war nutrition physical training of recruits effects of shipwreck immersion and exposure blood transfusion effects of high explosive bombs blast and crush injuries burns plastic surgery epidemiology, venereal diseases psychiatric conditions industrial health and rehabilitation. A special volume will be devoted to statistics. He invited the help of the medical profession, on whose cooperation the success of the history would largely depend.

"Deck Ankles"

Under the designation "deck ankles" has been described in the *Journal of the Royal Army Medical Corps* a condition observed on troop ships. On about the tenth day of the voyage some men complain of sick parade of edema of the ankles for which there is no apparent cause. They represent about 15 per cent of the total strength on board. It was found that a similar condition had been noted on a previous trip. The swelling appeared insidiously and had no relation to injury. One or both ankles were affected. Some men complained of slight aching and stiffness of the ankles with discomfort and a tired feeling in the feet, especially at the end of the day. In about half the cases the swelling extended on to the dorsum of the foot. It always began at a level just above the edge of the uppers of the gymnasium shoes which had been worn since embarkment. In some cases the swelling reached as far as 4 inches above the tips of the malleoli, filling the hollows on each side of the Achilles tendon.

No discoloration was noticed at first, but in erythematous flush with fine ecchymoses soon appeared. Active movements were slightly restricted and without pain, passive movements free but slightly painful on full inversion or eversion of the foot. The tissues were mildly inflamed and the skin somewhat hot. No evidence of heart or kidney disease was found, and dietary deficiency was scarcely possible. Rest in bed was thought the most suitable treatment but was impracticable. Some were told to wear boots, and their average number of days on treatment was five, for those who continued to wear gymnasium shoes, twelve days. After the fourteenth day of the voyage the number of cases reporting declined and none reported at the end of the ensuing week. It is suggested that slight trauma, the result of walking on hard decks and repeated small twists of the ankle when ascending and descending hatchways, while wearing gymnasium shoes, produced the disability, that varicose veins, sun erythema and lack of "seasoning" among the troops were aggravating factors and that the wearing of boots, restoring the accustomed support to the ankles, constitutes a specific cure.

The Vector of Indian Kala-Azar Discovered

It has been proved that the sandfly *Phlebotomus argentipes* is the vector of Indian kala-azar. The discovery is the result of over twenty years' strenuous work in India by a number of investigators. It was early observed that the fly occurs wherever the disease is endemic. It was shown that if the fly is fed on parasite-containing blood of kala-azar patients the disease flagellate forms of *Leishmania donovani* develop in the foregut and midgut of some of the flies. It was then found that only isolated susceptible animals could be infected by the bites of infected flies, and experiments on human volunteers failed. An impasse seemed to have been reached. How this has been overcome is shown by a paper published in the *Indian Journal of Medical Research* (30:473 [July] 1942) by Swaminath, Shortt and Anderson. All five human volunteers were infected by the bites of experimentally infected flies, thus proving that the insect can transmit the disease from man to man. The reason why these experiments were successful appears to be that the flies were sustained during the two weeks development of the parasite in them on fruit juices instead of on blood, as in the previous experiments.

New Type of Air Ambulance for United States Troops in Britain

The United States Eighth Army Air Force has in this country a new type of emergency ambulance aircraft. The machines can be used to accommodate 18 stretcher cases and medical staff or as troop carriers or for carrying freight. The idea is that during the outward journey this big new type should carry troops or equipment, bringing back wounded on

the return journey. Air ambulances in Russia and North Africa have saved the lives of many wounded and of sick who would not have survived long and tiring journeys to base hospitals in road ambulances. Aircraft ambulances have also the advantages that they obviate the need for maintaining large stocks of medical supplies in forward positions and that they increase the efficiency of fighting units by relieving them of their responsibility for men put out of action by wounds or illness.

American Surgeon Joins the Editorial Board of the British Journal of Surgery

Col Elliott C. Cutler, professor of surgery at Harvard Medical School and now chief consultant in surgery to the United States forces in Britain, has accepted a seat on the editorial committee of the *British Journal of Surgery*. In announcing this the *Journal* states that his election is a symbol of the comradeship and brotherhood which unites our countries in the mighty struggle we are waging for the freedom of the world. This step is in accord with the feelings of the late Lord Moynihan, who presided over the policy of the *Journal* for twenty one years and did incomparable service in bringing together American and British surgeons.

BUENOS AIRES

(From Our Regular Correspondent)

March 3, 1943

Pulmonary Elasticity

Drs M. R. Castex, E. S. Mazzei and G. Caputo of the Instituto de Investigaciones Aplicadas a la Patologia Humana of the Academia Nacional de Medicina of Buenos Aires recently completed certain research work previously carried on with the aim of determining the elasticity of the lung, either normal or in the course of diseases of the respiratory tract. They established the physical conception of elasticity of the structure as the property of the pulmonary tissues to be distended by air and the regaining of their previous form when air is eliminated. The degree of pulmonary elasticity can be determined by (1) the force of distention and (2) the degree of distention which the force provokes. From an analysis of the various methods which have been tried up to now for the determination of the degree of pulmonary elasticity it appears that the Christie and McIntosh method is the most simple, exact and reliable. The standard measures of this method are (1) the intrapleural pressure, which indicates the force of distensibility of the lung, and (2) the volume of current air, which indicates the degree of distention produced. The authors' method is based on two factors. The first factor, the so-called unity of pulmonary distensibility, is the result of the differential figures of the greatest change of pleural pressure between inspiration and expiration, which is measured in centimeters of water. The resulting figure is divided by the volume of current air, which is expressed in hundreds of cubic centimeters. The second factor, which is called the coefficient of pulmonary distensibility, is independent of the size and height of the individual. This factor is the result of the change of intrapleural pressure in a regular respiration. The values obtained by the authors' method are in agreement with those obtained by Christie and McIntosh. The latter established figures between 3 and 4 and 7 and 8 as normal values for the coefficient of pulmonary distensibility and between 0.79 and 1.56 for the unity of pulmonary distention. The authors conclude that the technic of their procedure is simple and the method reliable. It is of value both for the roentgenologist and for the clinician, especially for the diagnosis of borderline cases with signs of fibrosis and accentuated bronchial changes. In anatomic emphysema the figures of the method are always abnormal, whereas the values are normal in cases of functional emphysema, which is frequent in patients with asthma.

Argentine League of Mental Hygiene

The Argentine League of Mental Hygiene was established in 1929. It supports several institutions, especially the Neuropsychiatric Institute, of which Dr. Litraneo Ciampi is the head. The institute has several departments for instruction in the teaching of elementary school as well as of manual and professional work, physical education and orthophonics. The league has two consulting offices for ambulant patients. The number of patients admitted for consultation in the offices increased from 10,000 in 1940 to 13,363 in 1941. The Department of Social Science works in collaboration with the league. The latter has also a school for visiting and social nurses of mental hygiene which has been functioning for the last ten years. It has also an office for juridical consultations. The *Revista Argentina de Higiene Mental* recently established by the league, will appear quarterly.

Antituberculous Vaccination in Bolivia

A laboratory for the preparation of BCG vaccine was recently established in Sucre, Bolivia, following initiatives of some members of the university of the city. The government of Bolivia recently created a department of antituberculosis vaccination in La Paz. This department depends on the national board for the antituberculosis crusade of the Ministry of Public Health. It is formed by two sections for the preparation and administration of the BCG vaccines respectively. Vaccination should be administered only in certain well organized territories. It will be given under strict conditions of scientific control.

TEL AVIV, PALESTINE

(From Our Regular Correspondent)

Feb 21, 1943

Bubonic Plague in Palestine

Since 1922, when bubonic plague appeared as a mild epidemic in Jaffa and in Tel Aviv, Palestine has been free from this disease. In 1922 there were nearly 150 cases of which about a third proved fatal. The epidemic was quickly brought under control. A dramatic description of the struggle against this epidemic is to be found in Victor Heiser's "An American Doctor's Odyssey." In May 1941 plague infected rats appeared and in July of the same year the first human case of bubonic plague was reported in Haifa. The report of the Department of Health of the Government of Palestine contains the following interesting details. The trapping and laboratory examination of rats has become a routine procedure in the ports of Palestine since 1920. The value of the measure was shown this year, when, during the first week of May, plague infection was demonstrated in a rodent taken in the port of Haifa. Evidence of increased rat mortality was quickly forthcoming and by the end of the month 11 more infected animals had been collected. Energetic measures were adopted. The harbor is of recent construction and during the building close attention was paid to rat proofing. Conditions were thus favorable for rat destruction, although this was offset at first by the large quantities of grain which were in storage in the sheds. By the end of June no further infected rats were being taken. When an epizootic is established it is unusual for human beings to escape and on July 13, in a quarter known as the Eastern Gate which lies close to the harbor the first human case occurred. Infected rats were found on the premises and from then onward spread of infection in both the rodent and the human population was maintained. There were 9 further human cases during the year.

Rat trapping was undertaken over a wide area. In eight months 5,000 rats were trapped, killed or found dead. 66 were infected. Where the harborages of rats permitted or demolition or removal this was done. Some 4,000 wood and tin shacks were dealt with in this manner. Accumulations of building debris and other rubbish were removed. Rat proofing was undertaken. Houses, shops, cellars, yards, walls and sewers

were treated. It is estimated that the equivalent of 800,000 square meters of surface were rendered rat proof. The cost of these operations was £P 7,000. The operations are being maintained and where necessary extended.

The initial demolitions resulted in the eviction of some 400 families, and this number has since been augmented. Temporary accommodation for a proportion of the families had to be provided. The housing problems do not stop here. Arrangements have been initiated to provide financial assistance for those people, and later perhaps for others living in the slums, who are prepared to replace their shacks by stone built houses. Government credits to the extent of £P 10,000 have been sanctioned for the purpose.

Existing economic conditions in Haifa present a barrier to the success of the campaign against plague. The soaring rents of recent years have driven people into the slums where conditions ideal for the rat, are fraught with danger for man.

The methods of rat destruction employed were confined to trapping or killing with batons. Poisoning with bait, smoke and other methods have not yet been adopted. Inoculation with plague vaccine was confined to contacts.

Sulapyridine therapy was employed early, in doses of 4 Gm in twenty-four hours for an adult without fatality.

The progress of the disease in each case was swift, and when death occurred it was usually after the first four days. In the fatal cases septicemia set in. In 1 case in which the disease developed exceptionally fast, bacilli were actually found in the sputum. Postmortem examination however, did not reveal pneumonia. It is probable that some cases were not diagnosed in time. Recently for example, an unidentified Arab, who had been trampled on by a horse, was discovered on a road having died from unknown causes. The autopsy revealed plague bacilli. A diphtheria patient, with characteristic diphtheria membrane in the throat and diphtheria bacilli in the throat was found to have swollen throat glands. After his death plague bacilli were found in the glands.

One patient was brought to the government hospital with a large open sore on his leg and swollen glands. Under normal circumstances it would not have occurred to the physician to examine the contents of the glands. But his glands were found to contain plague bacilli, plague bacilli were also found in the open sore on his leg.

Large quantities of vaccine are being prepared in the government laboratory and in the university laboratory for the coming spring. Except to a few doctors plague is an unknown disease to practitioners in this country. In this connection they have been greatly assisted by helpful advice and lectures given by English and Indian military physicians.

Marriages

WILLIAM YASUHI TAKAHASHI, Seattle, to Miss Mary Howard Constable of New York at Ann Arbor Mich., May 2

HOWARD VINCENT VALENTINE to Miss Lucille Maureen Decker both of Spokane, Wash. in Webster Mass. May 1

JOHN JOSEPH CREEDON, Flushing N. Y. to Miss Grace Constance Arbogast of White Plains in New York May 1

ALFRED J. NIEDERMAYER, Evansville Ind. to Miss Violette Capello of Elizabeth N. J., February 28

ROBERT LEE ATKINSON, Bloomington Ill. to Miss Martha Jane Prindle of Evanston in March

ODEN A. SCHAEFFER, Coral Gables Fla. to Miss Catherine Louise Smith of Miami April 11

ERNEST ROWAN Bogalusa, La. to Miss Reba Pylant of Petersburg Tenn. April 2

JOHN G. RUSSO, Madison Wis. to Miss Pia Camponeschi of Kenosha March 6

KENNETH H. SCHNEPP to Miss Lois Catron both of Springfield Ill. March 31

Deaths

Samuel Griffith Davis Jr † Baltimore, University of Maryland School of Medicine, Baltimore, 1893, specialist certified by the American Board of Anesthesiology, Inc., member of the American Society of Anesthetists, Inc. and the Association of Military Surgeons of the United States, fellow of the American College of Surgeons, professor of anesthesia at his alma mater, at one time professor of anatomy and operative surgery at the Woman's Medical College of Baltimore, served in the Tenth Regiment of the Maryland National Guard for twenty six years, as a captain and assistant surgeon in the Spanish-American War and as a major and chief surgeon on the Mexican border, anesthetist to the University, Mercy Union Memorial Bon Secours and the South Baltimore General hospitals and the Church Home and Infirmary, consulting anesthetist to St. Joseph's West Baltimore General and the Sunn hospitals, on the staff of the Hospital for Women, a life size portrait of 'The Three Musketeers' of medicine—Drs. Davis, Guy I. Hummer and Thomas S. Cullen—was presented to the Church Home and Infirmary in 1912 as a gift of the graduate nurses of the institution, aged 75, died April 21, of heart disease.

Taleasin H. Davies, Wilmington Del., University of the South Medical Department, Sewanee, Tenn., 1898, member of the Medical Society of Delaware, a member of the Delaware Commission for Mentally Defective, past president and secretary of the New Castle County Medical Society, for many years a member of the state board of medical examiners, at one time professor of neurology at the Temple University School of Medicine, Philadelphia, formerly superintendent of the Berks Industrial School, for many years president of the board of health of Wilmington, recently served on the advisory board of the draft board and in the same capacity during World War I, consultant and formerly assistant superintendent of the Delaware State Hospital, Farnhurst, consulting neurologist to the Wilmington General Hospital, chief of the staff of psychiatry and neurology of the Delaware Hospital where he died, March 25, of lobar pneumonia and cerebral hemorrhage, aged 67.

Hugh Atlee Beam † Moline, Ill., Northwestern University Medical School, Chicago, 1903, member of the American College of Chest Physicians and at one time president of the Illinois chapter, fellow of the American College of Physicians, for two years president of the Upper Rock Island County Tuberculosis Association, past president of the Rock Island County Medical Society, served as a captain in the medical corps of the U. S. Army during World War I and as a medical examiner for the draft board for rural Rock Island County, again appointed to the latter position in 1940, member and formerly president of the staffs of the Lutheran and Moline Public hospitals, for many years a medical director of the Rock Island County Tuberculosis Sanatorium, Rock Island, aged 60, died, March 31, in St. Luke's Hospital, St. Louis.

Marion Craig Potter, Rochester, N. Y., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1884, member of the Medical Society of the State of New York, past president of the Women's Medical Society of New York State, one of the members of the committee of medical women of the Council of National Defense during World War I, in 1928 was awarded the Santa Sava medal by the Serbian government for assistance in founding the American Women's Hospital at Monastir, on the staff of the Monroe County Hospital, a delegate to the White House Conference for Child Care and Protection, formerly on the editorial board of the *Medical Woman's Journal*, aged 79, died, March 23, of paralysis agitans.

Walter Elmo Kelton, Seattle, University of Pennsylvania Department of Medicine, Philadelphia, 1905, member of the Washington State Medical Association, served in the medical corps of the U. S. Army during World War I, on the staff of the King County Hospital, in 1935 appointed surgeon to federal prisoners, formerly vice president of the King County Medical Society, surgical consultant, department of labor and industries, for the state of Washington, consultant for the Northern Pacific Railway, aged 65, died, March 9, of coronary thrombosis.

Percy Crump Anders † Plainview, Texas, Birmingham (Ala.) Medical College, 1914, served during World War I, aged 59, died, March 26, of coronary thrombosis.

David F. Banker † Canton, Ohio, Western Reserve University Medical Department, Cleveland, 1900, on the staff of the Mercy Hospital, aged 74, died, March 5, of cardiac decompensation and arteriosclerosis.

Elmer E. Bechtell, Dayton, Ohio, Eclectic Medical Institute, Cincinnati, 1897, member of the Ohio State Medical Association, aged 75, died, March 31.

John Musser Beck, Alexandria, Pa., Medico Chirurgical College of Philadelphia, 1901, member of the Medical Society of the State of Pennsylvania, past president and secretary of the Huntingdon County Medical Society, for many years school director of Alexandria and medical inspector of schools of Huntingdon County, a trustee and president of the board of the Memorial Public Library, aged 70, died, March 16, of cardiovascular disease.

James Birkhead, Schenectady, N. Y., Columbia University College of Physicians and Surgeons, New York, 1899, member of the Medical Society of the State of New York, on the staff of the Ellis Hospital, aged 69, died, March 16, in St. Luke's Hospital, New York, of pneumonia and carcinoma.

William Black † Mankato, Minn., University of Minnesota College of Medicine and Surgery, Minneapolis, 1909, at one time chief of staff of the Immanuel Hospital, aged 64, died, February 12, of hypoplastic anemia.

Max Emanuel Bloch † Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900, aged 69, died, March 14, in the Illinois Masonic Hospital.

Hughling Ellsworth Bowerman, Leaf River, Ill., Bennett College of Eclectic Medicine and Surgery, Chicago, 1897, member of the Illinois State Medical Society, served as mayor and is a member of the Ogle County Board of Supervisors, aged 68, died, March 2, in St. Francis Hospital, Freeport, of carcinoma.

Thomas Edward Bowman, Harrisburg, Pa., Jefferson Medical College of Philadelphia, 1902, member of the Medical Society of the State of Pennsylvania, president of the city Civil Service Board, aged 64, on the staff of the Harrisburg Polyclinic, where he died, March 4, of cerebral thrombosis.

Jacob Bressler † New York, University and Bellevue Hospital Medical College, New York, 1912, on the staff of the Gouverneur Hospital, aged 53, died, March 10, of heart disease.

Charles H. Burgin, Delta, Colo., American Medical College, St. Louis, 1898, member of the Colorado State Medical Society, city health officer of Delta, formerly member of the board of education, aged 81, died, March 8, of coronary disease.

Dell Duncan Butler † Mount Lebanon, Pa., University of Pittsburgh School of Medicine, 1918, for many years on the staff of the Western Pennsylvania Hospital, Pittsburgh, aged 48, died, March 3, of coronary thrombosis while shoveling snow.

Vincent P. Capodici, Brooklyn, Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1905, aged 62, died, March 3, of cerebral hemorrhage.

James Oliver Carson † Bowling Green, Ky., University of Louisville Medical Department, 1878, formerly quarantine officer for the Kentucky State Board of Health, served as United States Pension Examiner, member of the board for medical examinations of physicians for the medical corps in the U. S. Army during World War I, fellow of the American College of Surgeons, on the staff of the City Hospital, past president and honorary member of the Rotary Club, aged 87, died, March 15, of heart disease.

Samuel Hopkins Cassidy, Keyport, N. J., University of Maryland School of Medicine, Baltimore, 1911, president of the board of health of Keyport, aged 63, on the staff of the Royal Pines Hospital, Pinewald, and the Dr. E. C. Hazard Hospital, Long Branch, where he died, March 14, of chronic nephritis and uremia.

Andrew Clark, Billings, Mont., Detroit College of Medicine, 1893, member of the Medical Association of Montana, aged 78, served on the staffs of the Billings Deaconess Hospital and St. Vincent Hospital, where he died, March 7, of myocardial insufficiency.

Nannie Clayton Clark, San Marino, Calif., Hahnemann Medical College and Hospital, Chicago, 1889, aged 82, died March 16, of carcinoma of the stomach.

Jeremiah Joseph Cohane, New Haven, Conn., Yale University School of Medicine, New Haven, 1898, member of the Connecticut State Medical Society, aged 67, on the staff of the Hospital of St. Raphael, where he died, March 9, of a fracture of the right hip and brain injury received in a fall on the ice.

Brice X. Corbin, Tacoma, Wash., Washington University School of Medicine, St. Louis, 1898, aged 72, died, March 1, of chronic myocarditis.

Katherine Louise Crawford, Ann Arbor, Mich., University of Michigan Department of Medicine and Surgery Ann Arbor, 1898, aged 84 died March 16 in Detroit of hypertensive heart disease.

Albert Manning Cross, Charleston W. Va. (licensed in West Virginia in 1929) served during World War I formerly on the staffs of the Weston (W. Va.) State Hospital and the Spencer (W. Va.) State Hospital aged 65, died February 21 in Hopemont of pulmonary tuberculosis.

Sturley Casper Davis * Tucson Ariz. Hospital College of Medicine Louisville Ky. 1906, member of the American College of Chest Physicians fellow of the American College of Physicians past president of the Pima County Medical Society, one of the founders and chief of the medical staff of the Thomas-Davis Clinic clinical director of the Southern Pacific Sanatorium served during World War I had been president of the school board and of the chamber of commerce aged 60 died March 14 of heart disease.

Charles M. Doty, Effingham Ill., St. Louis College of Physicians and Surgeons 1897 member of the Illinois State Medical Society, past president of the Effingham County Medical Society served as county coroner aged 72 formerly on the staff of St. Anthony's Hospital where he died March 5.

Wilmer Ingalls Gordon, Cleveland Albany (N. Y.) Medical College 1887 aged 83 died March 7 of decompensated heart disease.

Dayton T. Gould, Lodi Ohio, Western Reserve University Medical Department Cleveland, 1870 also a pharmacist chairman of the board of directors of the Berea Commercial and Savings Bank aged 96, died, March 9 of mitral regurgitation.

Charles Sumner Gracey, Cumberland Md. Maryland Medical College Baltimore 1912 aged 66 died March 2 in Everett Pa.

William Graf, Perrysville Ohio Medical College of Ohio Cincinnati 1900 aged 74, died March 2, in the Mansfield (Ohio) General Hospital of thrombosis.

Jesse Trott Grayston * Cedar Rapids Iowa University of Illinois College of Medicine Chicago 1913 fellow of the American College of Surgeons served during World War I on the staffs of the Mercy and St. Luke's hospitals aged 53 died March 7 of coronary occlusion.

Francis Freeman Grillet, Alanson Mich. Saginaw (Mich.) Valley Medical College, 1900 aged 74 died March 12 of myocardial insufficiency.

Emul Gunther, Sheboygan Wis. Rush Medical College Chicago 1892 for a short time served as city physician aged 75 died March 8 in St. Nicholas Hospital of cerebral sclerosis frozen feet and gangrene.

Ernest Hubbard Hamilton, Longview Texas University of Nashville (Tenn.) Medical Department 1900 member of the State Medical Association of Texas served overseas as a captain in the medical corps of the U. S. Army during World War I, was awarded decorations for bravery at one time surgeon in the U. S. Public Health Service Reserve formerly city health officer chief surgeon for the C. F. Lytle Construction Company Denison aged 67 died March 14 in Denison of bronchopneumonia.

Waldo Russell Harkness * Montpelier Vt. University of Vermont College of Medicine Burlington 1898 president of the staff of the Heaton Hospital aged 69 died March 14 of myocarditis.

Henry Reed Hatfield, Philadelphia Jefferson Medical College of Philadelphia 1881 formerly a lawyer at one time a judge advocate general of the First Brigade Pennsylvania National Guard with the rank of major aged 86 died March 11 of uremia.

Octavius J. Henderson, Montgomery W. Va. Medical College of Virginia Richmond 1889 member of the West Virginia State Medical Association past director of the Montgomery National Bank, aged 79 died March 13 of pneumonia.

James McPherson Howe, Hillsboro, Iowa State University of Iowa College of Medicine Iowa City, 1897 member of the Iowa State Medical Society aged 73 died March 11 of myocarditis.

Winfred Harold Iliff, Baxter Springs, Kan., University of Kansas School of Medicine, Kansas City, 1907, member of the Kansas Medical Society, secretary and past president of the Cherokee County Medical Society, served in the medical corps of the U. S. Army during World War I aged 59, died March 2, in St. John's Hospital, Joplin, of pneumonia.

William Henry James, Pennsville N. J., University of Vermont College of Medicine Burlington, 1885 member of the board of health aged 82 died, March 5 in Philadelphia of arteriosclerosis.

Adolph Samuel Katzman, West Hempstead N. Y. University and Bellevue Hospital Medical College New York, 1902 at one time a druggist served during World War I, aged 67 died March 12 of coronary thrombosis.

Claude J. Koonce, Halltown W. Va. Georgetown University School of Medicine, Washington D. C. 1896 aged 72 died March 12 in the Washington County Hospital Hagerstown Md., of lobar pneumonia and agranulocytosis.

Stephen S. Krajewski, Nanticoke Pa., Medico Chirurgical College of Philadelphia, 1911 formerly on the staffs of St. Joseph's and Mercy hospitals Denver on the staffs of the Nanticoke State Hospital and St. Stanislaus Orphanage, aged 62 died March 31 of pneumonia.

Alfred I. Lowenthal, New York University of Pennsylvania School of Medicine Philadelphia 1912 served during World War I on the staff of the Hospital for Joint Diseases aged 54 died, March 11 at his home in Leonia N. J. of cerebral hemorrhage and hypertensive cardiovascular disease.

John Edward Loyd, Natural Bridge Station Va. University of Virginia Department of Medicine Charlottesville 1901 member of the Medical Society of Virginia aged 67 on the staff of the Stonewall Jackson Memorial Hospital Lexington where he died March 5 of bronchiectasis.

Louis Emanuel Martin, Savannah, Ga. Meharry Medical College Nashville Tenn. 1909 on the staff of the Charity Hospital aged 68 died March 13 of right hemiplegia and nephritis.

Ernest B. McAndrew * Corning N. Y. University of Buffalo School of Medicine 1920 on the staff of the Corning Hospital aged 47 died March 15 of coronary thrombosis.

Elam Rowland McBroom, New Canton Ill. Chicago College of Medicine and Surgery 1908 also a Methodist minister veteran of the Spanish-American War aged 66 died March 18 of angina pectoris.

John Joseph Meany * Major M. C. U. S. Army Bloomington Ill., St. Louis University School of Medicine 1939 served an internship at the St. Louis City Hospital appointed a first lieutenant in the medical corps of the U. S. Army Feb. 6 1942 later became a captain major and flight surgeon with the third air defense wing aged 27 was killed in action in North Africa March 20.

Thomas Peacock Miller, Knoxville Tenn. Lincoln Memorial University Medical Department Knoxville 1910 served as a captain in the medical corps of the U. S. Army during World War I aged 65 died March 11 of pneumonia and multiple sclerosis.

Jackson M. Mills, New York University of Nashville (Tenn.) Medical Department 1884 Vanderbilt University School of Medicine Nashville Tenn. 1884 member of the Medical Society of the State of New York aged 78 died March 17 in the New York Hospital of benign hypertrophy of the prostate and bronchopneumonia following transurethral section.

Sydney G. Montell, Jonesboro Ark. (licensed in Arkansas in 1903) aged 73 died March 8 of cerebral hemorrhage.

Hassie Albert Moore, Lakeland Fla. University of Louisville (Ky.) Medical Department 1892 aged 83 died March 19.

William Lawrence Nunan, Philadelphia Jefferson Medical College of Philadelphia 1894 on the courtesy staff of the Hahnemann Hospital aged 73 died March 23 in St. Luke's and Children's Medical Center of renal calculi, renal infarct and heart disease.

KILLED IN ACTION



MAJ. JOHN JOSEPH MEANY, M. C.,
U. S. ARMY, 1915-1943

William George Priester † Houston, Texas, Louisville (Ky.) Medical College, 1904, fellow of the American College of Surgeons, on the staff of the Memorial Hospital, aged 61, died, March 20, of acute cardiac dilatation.

Howard Reed, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1891, member of the Medical Society of the State of Pennsylvania, served during World War I also a pharmacist at one time on the staffs of the University of Pennsylvania and Temple University hospitals, aged 77, died, March 13, in the U. S. Naval Hospital of carcinoma of the lower part of the intestine.

William Marvin Reser, La Fayette, Ind., Jefferson Medical College of Philadelphia, 1904, member of the Indiana State Medical Association, past president and secretary of the Tippecanoe County Medical Society, a charter member and past president of the Tippecanoe County Historical Society, on the staff of La Fayette Home Hospital, for twenty-five years examining physician for the Prudential Life Insurance Company, aged 79, died, March 19, of pulmonary tuberculosis.

Robert Barnwell Rhett † Charleston, S. C., Medical College of the State of South Carolina, Charleston, 1914, served in the medical corps of the British Army during World War I, major in the medical reserve corps of the U. S. Army, not on active duty, associate in ophthalmology, rhinology and otolaryngology at his alma mater on the staff of the Roper Hospital, aged 52, died, March 25, of myocarditis and angina pectoris at his summer home near Hendersonville, N. C.

John Frederick Rickenbach, Pittsburgh, Bellevue Hospital Medical College, New York, 1875, aged 94, died, March 9, in the German Protestant Home for Aged of heart disease.

Edgar Rood, Westfield, N. Y., University of Buffalo School of Medicine, 1878, aged 89, died, March 7, in Buffalo of angina pectoris.

Hugh Madison Ross, Chester, S. C., Medical College of the State of South Carolina, Charleston, 1911, served during World War I, aged 56, died, March 14, in the Pryor Hospital of ruptured diverticulitis.

Belle Bennett Sharpe, Pasadena, Calif., Hahnemann Medical College and Hospital, Chicago, 1905, aged 74, died, March 14, of cerebral hemorrhage and arteriosclerosis.

Charles Wade Simison, Hawley, Minn., University of Missouri School of Medicine, Columbia, 1907, member of the Minnesota State Medical Association, in 1938 elected vice president of the Northern Minnesota Medical Association, member of the sanitarium commission in Clay and Becker counties, aged 64, on the staff of St. Ansgars Hospital, Moorhead, where he died, March 6, of cerebral hemorrhage.

Clarence Elmer Smith † Missillon, Ohio, Ohio Medical University, Columbus, 1902, member of the city board of health, aged 67, on the staff of the Massillon City Hospital, where he died, March 9, of cerebral hemorrhage.

Edward Cooper Smith, Donalsonville, Ga., Atlanta College of Physicians and Surgeons, 1907, member of the Medical Association of Georgia, served as mayor of Donalsonville and as president of the chamber of commerce, aged 58, died, March 15, in Dothan of carcinoma of the lung.

Charles Wadhams Stevens † New York, College of Physicians and Surgeons, New York, 1892, formerly assistant professor of clinical ophthalmology at the New York Post-Graduate Medical School, Columbia University, veteran of the Spanish-American War, captain in the medical reserve corps of the U. S. Army not on active duty, for many years on the staff of the New York Post-Graduate Medical School and Hospital, aged 75, died, March 15, of heart disease.

George Edward Stevenson, Penn Yan, N. Y., Baltimore Medical College, 1895, member of the Medical Society of the State of New York, served during World War I, on the staff of the Soldiers and Sailors Memorial Hospital, aged 72, died, March 20, of coronary occlusion.

Le Roy Ray Stoddard, New York, New York Homeopathic Medical College and Hospital, New York, 1900, aged 66, was found dead in a hotel in Baltimore, March 18, of chronic myocardial degeneration.

Benjamin Strong, Lamar, Miss., University of Pennsylvania Department of Medicine, Philadelphia, 1891, member of the Mississippi State Medical Association, aged 79, died, March 15, of carcinoma of the stomach.

Hugh Nathan Sullivan, Ellendale, Tenn., Memphis Hospital Medical College, 1906, aged 60, died, March 14, in Memphis of arteriosclerosis and heart disease.

Albert Hamlet Sweeney, Fresno, Calif., Cooper Medical College, San Francisco, 1897, formerly health officer of Fresno, for twenty-five years division surgeon for the Santa Fe Railroad, aged 73, died, March 1, of heart disease.

Sherman Clark Sweeting, Pavilion, N. Y., Hahnemann Medical College and Hospital, Chicago, 1890, health officer of the towns of Covington, Bethany and Pavilion, aged 77, died, March 18, in the Wyoming County Community Hospital, Warsaw, of heart disease.

Joshua Tayloe † Washington, N. C., University of Pennsylvania School of Medicine, Philadelphia, 1923, fellow of the American College of Surgeons, past president of the Beaufort County Medical Society and the North Carolina Urological Society, vice president of the Seaboard Medical Society, chief of staff of the Tayloe Hospital, aged 44, died, March 5, of coronary thrombosis.

Arvid Ouchterlony Taylor † Maysville, Ky., University of Louisville Medical Department, 1906, formerly member and president of the board of education of Maysville, a member of the Mason County Board of Health, aged 59, died, March 9, of coronary occlusion.

Charles Byron Ward † Seattle, University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1908, specialist certified by the American Board of Radiology, Inc., member of the American Roentgen Ray Society, the Radiological Society of North America, Inc., and the American College of Radiology, aged 60, on the staff of the Providence Hospital, where he died, March 28, of coronary thrombosis.

Benjamin N. Watt, Washburn, Ill., Rush Medical College, Chicago, 1884, aged 88, died, March 10, of cerebral hemorrhage.

Villiers James Webber † Fairhope, Ala., American College of Medicine and Surgery, Chicago, 1906, served during World War I, aged 64, died, March 8, of pellagra.

Nels Werner † Eau Claire, Wis., Rush Medical College, Chicago, 1904, for many years on the staff of the Midelfart Clinic, on the staffs of the Luther and Sacred Heart hospitals, aged 63, died, February 26, of heart disease.

Jesse David Westmoreland, Belzoni, Miss., Memphis (Tenn.) Hospital Medical College, 1904, aged 68, died, March 17, in the King's Daughters' Hospital, Greenville, of cerebral hemorrhage.

Florilla Mansfield White, Palm Springs, Calif., Boston University School of Medicine, 1908, aged 71, died, March 15, of cerebral hemorrhage and arteriosclerosis.

DIED WHILE IN MILITARY SERVICE

Robert Anthony Kilduffe † White Sulphur Springs, W. Va., University of Pennsylvania School of Medicine, Philadelphia, 1913, member of the American Society of Clinical Pathologists, the Society of American Bacteriologists and the Association of Military Surgeons of the United States, formerly vice president of the New Jersey Society of Clinical Pathologists, served in France as chief of the bacteriologic division on the staff of the chief surgeon of the American Expeditionary Forces during World War I, formerly director of the laboratories of the Pittsburgh Hospital, while a resident of Atlantic City, N. J., was director of the laboratories of the Atlantic City Hospital and city bacteriologist, serologist to the Municipal Hospital and the Atlantic County Hospital for Mental Diseases, Northfield, pathologist and serologist to the Betty Bacharach Home for Crippled Children and pathologist to the Jewish Seaside Home for Children, began active duty Oct. 1, 1942 as a major in the medical corps of the Army of the United States, assigned to the Ashford General Hospital as chief of the laboratory service, editor of the *American Journal of Clinical Pathology*, associate editor of the *Journal of Laboratory and Clinical Medicine* and of the *International Medical Digest*, author of several manuals of laboratory procedure, co-author of "The Blood Bank and Technique and Therapeutics of Transfusion", aged 53, died suddenly, April 5, of coronary occlusion.

CORRECTION

Dr. Edward Herzog Is Not Dead—Information has been received that Dr. Edward Herzog of Long Island City, N. Y., is living. *THE JOURNAL*, March 6, page 781, erroneously reported the death of Dr. Herzog.

Correspondence

ARMY-NAVY MEDICAL TRAINING PROGRAM

To the Editor—The sweeping new "Army-Navy program, proposed to go into effect this June, deserves some comment at this time. The program includes fifteen months of "premedical" education and three years of concentrated formal medical education followed by a year of internship.

The practice of medicine is still both an art and a science. The country doctor, of whom the whole profession is proud, practiced more of the art than the science. But, to practice the art of medicine requires two essentials: culture and maturity. Today is an age of dehydration and compression but neither culture nor maturity can be compressed. As far as the science is concerned there are many men, not of the production line species, who are still learning after years of faithful application. The scientific method demands background, experience and attention to detail.

I am not so far removed from my school days to remember that I spent a considerably longer period than fifteen months to master the elemental sciences. I recall that I spent a considerably longer time to acquire what little culture I have. It might also be noted that I emerged from school capable of thought and insight into the physician's responsibilities to society.

Dr O. H. Perry Pepper, anticipating that our nation was approaching a crisis, sounded the note that we attempt to continue our education by our own efforts. He had the foresight to see that war would prevent one from entering the specialties as he delivered his final lecture to the graduating class. The plea of a great teacher to well educated men probably was made because he must have known that their experience was only beginning, not after five and one quarter years of "compressed" education, but after nine years of learning.

There are young men in our colleges now who want to study medicine. There are also men who would study medicine to escape more arduous tasks rather than out of a humanitarian bent. Let us beware that among the good barrel of apples rotten ones do not occur. This, then, is the plea that the standards and quality of our learning be maintained. Let us not forget we are mature in thought and that a heritage of culture has been passed on to us, not by education but by learning.

THOMAS MAXWELL First Lieutenant M C A U S

"Q FEVER"

To the Editor—My attention has been called to an article in THE JOURNAL (March 13 p. 828) entitled "Q Fever." Since the basis for the diagnosis of Q fever in this reported case was certain serologic tests done in this laboratory, I feel that two comments should be made. First, the diagnosis of Q fever was made on a complement fixation test the titer of which was only 1:4. Those interested in this test at this laboratory feel that such a titer is not significant particularly during the acute illness or early in the convalescence. Second, the article reports other serologic tests done at this laboratory but fails to mention that an agglutination of 1:80 against Eberthella typhosa was obtained. This was on a sample of serum submitted on August 11, some two and one half weeks after onset (July 25). In the case report there was no record of additional studies done later in the forty six day febrile illness.

It is felt then that this case reported as Q fever certainly had no confirmation in the laboratory and further that it was more suggestive of belonging to the group of long continued fevers than to the rickettsioses.

R. E. DYER M.D., Bethesda, Md

Director, National Institute of Health

[On receiving a copy of Dr. Dyer's communication, the author replied.]

To the Editor—I appreciate your sending me the criticism of my paper on Q fever. With regard to the omission of the typhoid test being positive 1:80, it is truly an omission that I was entirely unaware of. Fortunately I had saved all my data and many copies of the paper as it was written. The paper was rewritten and corrected many times in order to get it in correct form and that test was in the first typewritten copy, but evidently my secretary in recopying it several more times omitted it accidentally along with B paratyphoid A negative. In fact the entire line was omitted and I did not realize it until now. I was careful to be as exact as possible and to give credit where credit was due. You will note that the stool culture for typhoid also was negative.

As to the positive complement fixation test for Q fever 1:4, I asked about this in both of our hospital laboratories at the time, and it was felt that a 1:4 complement fixation test was definitely positive. I was not familiar with this test as it was new and I know little about the details of such a test but am surprised that it was not considered a positive test.

The criticism is rather severe and not entirely correct, as a clinical diagnosis was temporarily made on the finding as described in Manson's Tropical Diseases on Q fever. The following correction should be made because of the omission: Blood serum taken on Aug. 11, 1942 was reported as follows on August 22: Eberthella typhosa positive in dilution 1:80 and Eberthella paratyphosa A negative. To my mind this does not alter the case, for the weight of evidence points to Q fever.

The omission was accidental and if the complement fixation test of 1:4 was not conclusive, it was ignorance on my part.

F. EUGENE ZEMP M.D. Columbia, S.C.

IRRADIATION OF THE SPLEEN AND PITUITARY FOR CONTROL OF PUBERAL BLEEDING

To the Editor—Some inaccuracies in the article by Dr. Ira I. Kaplan in THE JOURNAL of April 10 require comment and adjustment. Irradiation of the pituitary gland for the control of uterine bleeding in the adult was first advocated by me in 1922 and 1923 (*Arch. f. Gynak.* 117:230, 120:194). This entirely new method was based on clinical and experimental evidence showing impairment of the development and the integrity of structure and function of the female generative tract as the result of destruction of the anterior lobe of the hypophysis or of damage to the midbrain. The fact that no harm may result from the application of properly screened hard roentgen rays to the brain of the adult emerged from the careful studies of Heneke, Lacassagne and Birch Hirschfeld while the investigations of Obersteiner revealed that the less resistant brain tissue of the adolescent organism may sustain microscopically demonstrable damage. Initially suppression of abnormal pituitary stimuli to the ovaries and hence regulation of excessive uterine bleeding constituted my professed purpose in applying x-rays to the hypophysial region. The results obtained with this novel treatment eloquently demonstrated the usefulness of the procedure. In view of my experimental evidence showing a distinct relationship between excessive anterior pituitary hormone activity and small cystic ovarian degeneration resulting in the overproduction of estrogenic substances and in turn of endometrial overgrowth (*Surg. Gynec. & Obst.* 22:222 [Feb.] 1931; *J. Obst. & Gynec. Brit. Emp.* 46:232 [April] 1939), a check on the pituitary impulse by irradiation appeared an obvious rationale. Indeed satisfactory relief of polycystic ovaries by the treatment under consideration has been reported (Stein, I. F., and Leventhal, M. L. *Am. J. Obst.* 29:181 [Feb.] 1935).

Further elaboration revealed numerous startling phenomena. As stated in the two articles which I have referred to, some uterine fibroids which had been irradiated directly before shrank considerably after one or two irradiations of the hypophysis. The reports which I published were substantiated by other observers indicating that the growth hormone of the anterior pituitary may bear some etiologic relationship to the origin of such tumor formation. Increase of the red blood count and the number of eosinophils represented another remarkable phenomenon. Particular interest attached to the observations which I made of reduction in the size of the hyperplastic thyroid following pituitary irradiation. In the light of the demonstration of the thyrotropic principle residing in the anterior pituitary some years afterward the explanation of this phenomenon is due to the suppression of the hyperactivity of this principle offered itself. Treatment of hyperthyroidism by pituitary irradiation was advocated twelve years later by Borik (*Radiology* 21:555 [May] 1935). It is worthy of note that quite recently this novel thought of influencing the hyperplastic thyroid by hormones directly or indirectly related to the hypophysis has come to the fore (Alton Ochsner). Incidentally it is pertinent to note the influence which pituitary irradiation has exercised on other conditions such as on the radiosensitive basophilic infiltration in posterior lobe hyperfunction (Pendergrass, Hodges and Griffith, *Am. J. Roentgenol.* 16:675 [Nov.] 1941; Hutton, Cushing). On the other hand clinical observations of the occurrence of diabetes insipidus, a temporary and of adipose genital atrophy (H. Hirsch) in the wake of pituitary irradiation in young persons provided a warning note that this treatment should be used with discernment. In harmony with the experimentally established fact mentioned that the brain of the growing organism may be injured by the application of radiant energy I feel that pituitary irradiation has no place in the treatment of gynecologic disorders in persons under 20 years of age irrespective of the dosage and method properly selected.

I. I. Hothwaite, M.D., Cincinnati

COLOR BLINDNESS IN PHYSICIANS

To the Editor—In *THE JOURNAL* April 17 I noted a query in regard to a medical student who is color blind. I claim to be an authority on the vicissitudes of color blind doctors and would like to give him the benefit of my experience. In 1917 I was rejected for the Army because of color blindness. In 1918 I was accepted as a flying cadet and served out the duration without being bothered with any colors at all. In 1926 misfortune caught me again when I attempted to obtain a commission in the Medical Corps and I was rejected for color blindness. This discouraged me somewhat and I have not been encouraged any by remarks of present day Army and Navy medical examiners. I have never had any difficulty in the practice of medicine other than in laboratory work and I didn't like that anyway. Now as to laboratory work, I accept tubercle bacilli and mitotic figures on faith alone, never having been able to see any. I would suggest to the student who is color blind that he be nice to the student next to him in the laboratory, preferably a female, and she will prove of inestimable value to him when it comes to colorimeters and such like. Also don't try to join the Navy or Air Force, as they are God's elect and won't have any color blind misfits. One other point. When he gets out of school, all of his friends will on occasion grab some piece of colored cloth and demand to know what color it is. This, I think, is justifiable ground for homicide. In conclusion, never argue with the Ishihara color test because he will always be wrong. However, we can see a lot of things in that which normal individuals can't see, so why worry?

G. A. DAVIDSON, M.D., Dallas, Texas

MEDICAL VOLUNTEERS FROM BROOKLYN

To the Editor—I noted with chagrin the inclusion of Brooklyn in the list of cities mentioned by you editorially on March 27 is one in which the number of physicians responding to the call of the Procurement and Assignment Service was far below quota. I feel quite sure that your inclusion of Brooklyn in this list was because of the fact that you were not in possession of the exact factual data, which I therefore herewith enclose. The total number of doctors in Brooklyn is 5,190, of which total there are now 2,004 in active service with the Army or Navy and about 50 more in other government services. There are about 81 more in process of receiving their commissions. You will note therefore that this would make 41 per cent of physicians in Brooklyn under the age of 64 in active government service. You will agree, I am sure, that this is an enviable record of which we are duly proud.

BENJAMIN M. BERNSTEIN, M.D., Brooklyn
Secretary, Medical Society of the County of Kings

COMMENT—On Nov. 30, 1942, metropolitan New York, which included Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, and Westchester counties still required 3,307 physicians to fill their quotas. Since that time there have been less than 1,000 physicians who have gone to active duty from the entire state of New York. Apparently most of the shortages are in other counties than Kings.—Ed

SIMPLIFIED TECHNIC IN CONTINUOUS CAUDAL ANALGESIA

To the Editor—Caudal analgesia in obstetrics as advocated by Drs. Hingson and Edwards is the second great step for the amelioration and the alleviation of the pain and anguish of child birth. The first was the introduction of chloroform to the practice of obstetrics.

My limited experience with caudal block has been satisfactory thus far to the women and to me.

There will of course, be many improvements in the original technic. The principal purpose of the apparatus used and described by the originators was to maintain a closed aseptic circuit and for the maintenance of a constant analgesic affect during all of the labor after the first insertion of the needle into the caudal canal.

I should like to describe a simpler closed circuit technic that can be used and watched over by personnel trained in obstetrics other than the attending obstetrician or anesthetist, the purpose being to make caudal analgesia available to all the private semiprivate and ward patients. Most hospitals have personnel well versed in determining the progress of labor, this trained group can well be entrusted with the added duty of watching over the effects of caudal analgesia.

The original technic as described by Hingson and Edwards is followed through the injection of 8 cc. of metycaine. At this point the technic varies. The syringe is disengaged from the caudal needle. A sterilized 2 inch rubber tube, closed at one end with an adapter to fit the needle at the other end, is fitted by its adapter into the needle hub and a closed sterile circuit is instantly created. The next 22 cc. of metycaine and all subsequent instillations are made through injections directly into the rubber tubing, which has first been wiped clean and sterilized with alcohol in much the same manner as any subcutaneous or intravenous injection.

After the insertion of the needle into the rubber tubing, slight negative pressure created by traction on the syringe piston can show whether there is any spinal fluid leakage. Following each instillation of metycaine the protruding needle hub with the attached rubber tube is wrapped in soft cotton and held in the fold of the buttocks with a few strips of adhesive tape.

J. A. MILLER, M.D., New York

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL May 22 page 2.

BOARDS OF MEDICAL EXAMINERS

ALABAMA * Montgomery June 15-16 Sec Dr B F Austin 519 Dexter Ave Montgomery
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ARKANSAS * Medical Little Rock June 3-4 Sec Dr D I Owen Harrison Bldg Little Rock June 3-4 Sec Dr C H Young, 1415 Main St Little Rock
CALIFORNIA * Written San Francisco June 28 July 1 Oral Los Angeles August 9 Sec Dr Frederick N Senter 1020 N Street Sacramento
COLORADO * Denver July 7-9 Final date for filing application is June 20 Sec Dr J B Davis 331 Republic Bldg Denver
CONNECTICUT * Written Hartford July 13-14 Reciprocity Hartford July 27 Sec to the Board Dr Creighton Barker 238 Church St New Haven Homoeopathic Derby June 8-9 Sec Dr J H Evans 148 Chapel St New Haven
DELAWARE * Dover July 13-15 Reciprocity Dover July 20 Sec Medical Council of Delaware Dr Joseph S McDonald 229 N State St Dover
FLORIDA * Jacksonville June 21-22 Sec Dr William M Rowlett Box 780 Tampa
HAWAII Honolulu July 12-13 Sec Dr J A Morison 5 Young Building Honolulu
IDAHO Boise July 13 Dir Bureau of Occupational License Mr Lela D Painter 355 State Capitol Bldg Boise
ILLINOIS Chicago June 22-24 Superintendent of Registration Department of Registration and Education Mr Philip M Harman Springfield
INDIANA Indianapolis Sept 14-16 Sec Board of Medical Registration & Examination Dr W C Moore 301 State House Indianapolis
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MAINE Augusta July 6-7 Sec Dr Adam P Leighton 192 State St Portland
MARYLAND Homoeopathic Baltimore June 13-16 Sec Dr J A Evans 612 W 40th St Baltimore
MASSACHUSETTS Boston July 13-16 Sec Board of Registration in Medicine Dr H Q Gallupe 413 F State House Boston
MICHIGAN * Ann Arbor and Detroit June 9-11 Sec Board of Registration in Medicine Dr J Earl McIntyre 100 W Allegan St Lansing
MONTANA Helena Oct 3-6 Sec Dr O G Klein First Nat'l Bank Bldg Helena
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NEW JERSEY Trenton June 15-16 Sec Dr E S Hallinger 28 W State St Trenton
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NORTH CAROLINA Raleigh June 14-18 Sec Dr W D James Hamlet
NORTH DAKOTA Grand Forks July 6-9 Sec Dr G M Williamson 41 S Third St Grand Forks
OHIO Endorsement Columbus July 7 Written Columbus Dec 4 Sec Dr H M Platter 21 W Broad St Columbus
RHODE ISLAND * Providence July 12 Chief Division of Examiners Mr Thomas B Casey 366 State Office Bldg Providence
SOUTH CAROLINA Columbia June 28-30 Sec Dr N B Heyward 1529 Blandena St Columbia
SOUTH DAKOTA Pierre July 20 Act Dir Medical Licensure State Board of Health Dr A Triolo Pierre
TEXAS Dallas June 13 Sec Dr T J Crowe 918 20 Texas Bank Bldg Dallas
UTAH Salt Lake City June 2-4 Dir Department of Registration Mr G V Billings 324 State Capitol Bldg Salt Lake City
WEST VIRGINIA Charleston July 6-8 Commissioner Public Health Council Dr C F McClintic State Capitol Charleston
WISCONSIN * Milwaukee June 29 July 1 Sec Dr C A Dawson Fremont Bldg River Falls
WYOMING Cheyenne June 7-8 Sec Dr M C Keith Capitol Building Cheyenne

Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

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DISTRICT OF COLUMBIA Washington Oct 18-19 Sec Dr G C Rubland 6150 E Municipal Bldg Washington
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Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospitals in General A Hospital Not a "Public Housekeeping Establishment" Within Meaning of State Minimum Wage Law—The plaintiff was employed in March 1937 by the Trinity Hospital Association of Minot N D a nonprofit corporation as a public housekeeper at a monthly stipend after the first five weeks of \$20 plus board room (which she apparently never utilized) laundry and free hospitalization in case of sickness. The North Dakota minimum wage and hour law as amended (Laws 1935 ch 162) empowers the commissioner of agriculture and labor to ascertain and declare minimum wages and the commissioner acting in pursuance thereof promulgated a so called Order No 1 which provided stated minimum weekly wages for various types of employees in public housekeeping establishments in the state the applicable minimum of which exceeded the equivalent periodical stipend of the plaintiff. She subsequently brought suit against the hospital to recover the difference between the wages paid her during the period from 1937 to 1940 and the applicable minimum set out in Order No 1. The hospital denied liability depending principally on the ground that the order relied on by the plaintiff did not apply to employment in nonprofit hospitals in North Dakota. From a judgment for the plaintiff the hospital appealed to the Supreme Court of North Dakota.

The sole question for our determination said the Supreme Court of North Dakota is whether or not the plaintiff is within the class of employees covered by Order No 1. Order No 1 refers only to employees of any public housekeeping establishment. No other class of employees is included. Therefore the plaintiff to claim the benefit of Order No 1 must bring herself within the class of employees covered by the order. The word hospital in general usage in the minds of the public is an institution in which the sick and injured are cared for. It is a place where patients receive medical attention. It is not a place like an inn or hotel where people go for food and entertainment. It is true a hospital must serve food to its patients as an incident to their care and treatment but it is not a public housekeeping establishment. Only the sick or injured are admitted to a hospital. It is not open to the public generally like a restaurant or hotel. The difference between a public housekeeping establishment such as a hotel inn or restaurant and a hospital is clearly explained by the Supreme Court of Iowa in *Hull Hospital v Wheeler* 216 Iowa 1394 250 N W 637. In that case a patient in the Hull Hospital in addition to care medicine and hospital supplies received board and room. The hospital sought to obtain an innkeeper's lien on certain rings belonging to the patient left in the custody of the hospital. By Code Iowa 1930 Section 10348 a hotel is given a lien on the baggage of its guests and hotel is defined to include inn rooming house and eating house or any structure where rooms or board are furnished whether for permanent or transient occupants. The Supreme Court of Iowa there said:

Although the denotation of the word hotel is thus extended nevertheless there is a plain limitation upon the kind of business that shall constitute a hotel. A hotel keeper entertains his guests. He furnishes them food drink shelter and lodging. Likewise an eating house furnishes its patrons food and drink. So too a rooming house provides the roomer with lodging and shelter.

On the other hand a hospital where the sick and injured are cared for nurses its patients and gives them medical attention. Obviously the room and board provided by the hospital are merely incidental to the nursing and medical treatment and not part of it. For instance a guest goes to a hotel for lodging shelter food and drink. Such is the purpose of the hotel. When a man is sick however he goes to the hospital not merely for food drink lodging and shelter but rather for nursing and medical care.

Plainly therefore the appellant [the hospital] is not entitled to a lien on the rings in the case at bar because a hospital is not a hotel.

While hotel restaurants and inns continued the Supreme Court of North Dakota may come under the classification of public housekeeping establishments since the main purpose of such institutions is to furnish food shelter and entertainment to guests. A hospital is not a public housekeeping establishment.

since its main purpose is to care for and give medical attention to sick, wounded and injured patients. The legislature in the passage of the minimum wage and hour law did not make it mandatory on the commissioner of agriculture and labor to take jurisdiction of all employees in the state. So far the commissioner has not made any order covering employees of a hospital and therefore there is no basis for recovery here. Whether or not the commissioner has a legal right to promulgate orders covering employees of charitable nonprofit corporations, therefore, is not involved in this case.

The judgment in favor of the hospital employee was reversed.—*Paul v. Trinity Hospital, 155 N. 6 A. 11 (2d) 392 (N. D., 1912)*

Workmen's Compensation Acts Inhalation of Sewer Gas as Efficient Cause of Perforation of Duodenal Ulcer

Dauber was able to work although suffering from a stomach ulcer causing a pyloric obstruction on a diet prescribed for him by Dr. Bank, a stomach specialist whom he consulted in June 1911. In the course of his employment with the City of Phoenix, Ariz., on Oct. 4, 1911, he was cleaning out a sanitary sewer pipe line. It was his duty to descend into a manhole to clean out the mud and slush that would be forced down the pipe line by water pressure and rodding against a tunnel shaped object made of canvas. Sewer gas was released by this process and passed through the opening in the top of the pipe into the manhole. While in a manhole about 5 p. m. all of a sudden a cloud of gas came in and rendered the workman unconscious. He was pulled out of the manhole. When he regained consciousness about fifteen minutes later he was greatly nauseated and began vomiting. He was taken home and put to bed but continued to suffer from severe nausea. Dr. Shupe was called in about 8 o'clock that evening and administered morphine "to quiet him and decrease his vomiting." However, the nausea returned as soon as the effect of the narcotic wore off, and about 10 p. m. the following evening he was taken to a hospital. Nausea nevertheless continued until about 8 p. m. on October 6, when a perforation of his stomach occurred followed by severe peritonitis. Immediately afterward Shupe performed an emergency operation and repaired the perforation. Dauber was still totally disabled at the time of a hearing held on Feb. 11, 1912, in proceedings he instituted to recover compensation under the workmen's compensation act of Arizona. At the hearing Dr. Bank, whom Dauber had consulted the previous June, testified that in his opinion inhaling the sewer gas would aggravate the ulcer from which Dauber was suffering and that a perforation of an ulcer of the stomach is caused by aggravation of the ulcer. Dr. Shupe testified that sewer gas poisoning induces nausea and vomiting and that in his opinion inhaling the sewer gas was the efficient cause of the rupture of the ulcer from which Dauber was suffering at the time of the alleged accident. The industrial commission, however, denied compensation on the ground that the evidence did not show that the disability from which Dauber was then suffering was the result of an accidental injury sustained while in the course of his employment. It reaffirmed its denial of compensation on a rehearing held about three months later, and Dauber appealed to the Supreme Court of Arizona.

Dauber contended that his mishap was an accident within the meaning of the workmen's compensation act and that the action of the commission was contrary to the evidence and should be set aside. It is elementary, of course, said the court, that Dauber before he is entitled to compensation must show that his injury was the result of an accident within the meaning of the workmen's compensation act. The court was of the opinion that the sudden and unexpected coming into the manhole of a cloud of sewer gas in sufficient quantity to render Dauber unconscious was an accident within the meaning of that term as used in the workmen's compensation act. Even though a small quantity of gas, said the court, is usually looked for in such places as those in which Dauber was working, the sudden appearance of such a quantity of it as to render him unconscious was wholly unexpected. Neither Dauber nor any one else who thought the gas might escape into the manhole in such dangerous quantities during the process of cleaning the sewer pipe would have ventured into the manhole where he would breathe it with such serious consequences. Dauber had smelled the

gas many times before in small quantities, but this was the first time that a cloud of it had come into the manhole where he was working and, this being true, it cannot be said that he should have known it would be there in such a dangerous quantity and that he assumed whatever risk there was in contacting it. As was said in *Van Vleet v. Public Service Company of York*, 111 Neb 51, 195 N. W. 467.

While the evidence shows that passing in a mild form is not uncommon among gas workers, it is equally proved that for workmen to be overcome to such an extent as to produce unconsciousness is very uncommon.

A somewhat similar statement is also found in Taylor's Principles and Practices of Medical Jurisprudence, volume 2, page 573, where, in a discussion of poisoning by sewer gas and exhalations from dead bodies, the following statement is made:

The cases are always accidental, though it is easily conceivable that a suicide or homicide might thus be effected.

Hence, the passing into the manhole of a cloud of gas which rendered Dauber unconscious was an untoward and unexpected event and clearly constituted an accident within the meaning of the compensation act.

The next question, said the court, is whether or not the accident resulted in injury to Dauber. The testimony of the only two physicians who appeared as witnesses in the case is that the inhalation of the sewer gas had the effect of perforating and rupturing his stomach and that this necessitated an emergency operation. The two physicians agreed that the nausea, retching and vomiting produced by the accident caused the injury. According to Dr. Shupe the retching and vomiting were the efficient cause of the rupture of the stomach ulcer, though Dr. Bank's view was that, while the retching and vomiting were factors in producing the rupture, the more important factor was the absence of food, which, because of acid, increased erosion of the stomach. So whether the rupture was produced by the retching and vomiting or by the absence of food in the stomach for so many hours is immaterial, since both of these conditions were the result of the nausea and vomiting brought about by the accident, the inhalation of the sewer gas. The fact that the gas itself may not have been the direct cause of the rupture is immaterial, it would be just as much the efficient cause thereof if it set in motion the agencies that did produce it—nausea, retching and vomiting—as it would have been had it caused it directly, and there can be no question but that the nausea, retching and vomiting were brought about by the accident. The fact that at the time of the accident, and for some months prior thereto, Dauber had been suffering from a duodenal ulcer did not deprive him of the right to compensation, since the accident was the cause of the rupture, for even though the perforation of the stomach would not have resulted from the accident had it not been for its weakened condition produced by the ulcer, his right to compensation for the injury was in no way affected thereby. When an accident aggravates a diseased condition, the rule established by the decisions of this court is that the workman is as much entitled to compensation for the injury as he would have been had it occurred while he was in a healthy condition.

The court accordingly set aside the award of the industrial commission denying compensation to the workman.—*Dauber v. City of Phoenix*, 130 P. (2d) 56 (Ariz., 1942)

Society Proceedings

COMING MEETINGS

HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION CHICAGO, BEGINNING JUNE 7 DR. OLIN WEST, 535 NORTH DEARBORN ST., CHICAGO SECRETARY

American Association of Genito Urinary Surgeons, Stockbridge, Mass., June 10-12 Dr. Charles C. Higgins, 2020 East 93d St., Cleveland Secretary
American College of Radiology, Chicago, June 6 Mr. Mac I. Cabal 540 North Michigan Blvd., Chicago Executive Secretary
American Ophthalmological Society, Hot Springs, Va., June 10-17 Dr. Walter S. Atkinson 129 Clinton St. Watertown, N. Y. Secretary
American Society of Clinical Pathologists, Chicago, June 4-6 Dr. Wm. S. Giordano, 531 North Main St. South Bend, Ind. Secretary
Montana Medical Association of, Billings, July 7-8 Dr. Thomas F. Walker 206 Medical Arts Building Great Falls, Secretary
Rhode Island Medical Society, Providence, June 2-3 Dr. William P. Buffum, 122 Waterman St., Providence Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (5 cents if one and 15 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Psychiatry, New York

99 475-632 (Jan) 1943

- Clinical Studies in Schizophrenia. Follow Up Study of Small Group of Cases of Deterioration with Few Special Trends (Schizophrenic Sur-
render) C M Campbell Boston—p 475
Thirty Condemned Men A J Rosanoff Sacramento Calif—p 484
Methods of Estimating Capacity for Recovery in Patients with Manic
Depressive and Schizophrenic Psychoses E F Gildea and Evelyn B
Man New Haven Conn—p 490
Clinical and Biologic Interrelations Between Schizophrenia and Epilepsy
P H Hoch New York—p 507
Follow Up Study of Series of Patients Treated by Electrically Induced
Convulsions and by Metrazol Convulsions B L Pacella and S E
Barrera New York—p 513
Consideration of Some Experiences with Electric Shock Treatment in
Mental Diseases with Special Regard to Various Psychosomatic Phenomena and to Certain Electrotechnical Factors W Sulzbach K J
Tillotson A Guillemain Jr and G F Sutherland Waverley Mass—
p 519
Comparative Electroencephalographic Observations Following Electro
Shock Therapy Using Raw 60 Cycle Alternating and Unidirectional
Fluctuating Current L D Proctor and J E Goodwin Toronto
Canada—p 525
Convulsive Shock Therapy in Elderly Patients Risks and Results A L
Evans Aurora Ill—p 531
*Study of Malnutrition in Chronic Schizophrenia C N Baganz Great
Lakes Ill and J M Norris Lyons N J—p 534
Studies on Prognosis in Schizophrenia-like Psychoses in Children R S
Lourie B L Pacella and Z A Piotrowski New York—p 542
Psychopathology of Aging O Dietrich and F V Rockwell New York
—p 553
Treatment of Involutional Psychoses with Diethylstilbestrol E Davidoff
E C Reifstein Jr and G L Goodstone Syracuse N Y—p 557
Alcohol Detoxication Mechanism in Central Nervous System J C
Dewan Toronto Canada—p 565
Disappointing Results with Bilateral Prefrontal Lobotomy in Chronic
Schizophrenia Gert Heilbrunn and P Hietko Chicago—p 569
Psychotic Visitors to Government Offices in the National Capital J L
Hoffman Washington D C—p 571
Psychosomatic Interrelationship of Uterine Retrodisplacement and Pro-
lapse to Normal and Psychotic Women H C Leavitt Kankakee
Ill—p 576
Moonlight and Nervous Disorders Historical Study J F Oliven
Chicago—p 579
Psychiatry as Social Science G Zilboorg New York—p 585
Review of Psychiatry Progress 1942 Military Forensic and Administra-
tive (?) Psychiatry W Overholser Washington D C—p 585
Lewis New York J C Whitehorn Baltimore with assistance of
R G Hoskins Boston K M Bowman San Francisco with assistance
of H C Solomon Boston J Wortis New York W G Lennox
Boston L Kanner Baltimore F G Ebaugh and C A Rymer
Denver—p 589

Malnutrition in Chronic Schizophrenia—Baganz and Norris determined the extent and degree of the malnutrition of 374 schizophrenic patients on admission and after they had been hospitalized up to eight years. In their determination they considered the height, the age and the degree of activity of each patient. For comparison the nutrition of the total hospital population was studied. On admission the malnutrition of patients with chronic schizophrenia was not significantly different from that of the entire hospital population. However while the entire hospital population changed little in the extent of malnutrition after admission there was a significant increase in the degree of malnutrition of the schizophrenic patients after eight years of hospitalization. The proportion of patients 10 or more pounds (4.5 Kg) underweight was approximately 50 per cent greater among those with chronic schizophrenia studied than among the entire hospital population and the same proportion was true of those with schizophrenia 20 or more pounds (9 Kg) underweight. The more active patients appeared to have the

lowest extent and degree of malnutrition. The extent and degree of malnutrition was apparently completely independent of the serving of an adequate caloric diet. The degree of malnutrition associated with chronic schizophrenia may offer an explanation for some of the common changes observed in the cardiac shadow and described as the "longitudinal heart of the precox."

American Journal of Surgery, New York

59 459 608 (March) 1943

- Trends in Spinal Anesthesia H S Ruth and D D Grove Philadel-
phia—p 462
Management of Retained Cervical Stump Brief Analysis of 44 Cases
C H Tyrone and J C Weed New Orleans—p 473
*Influence of Estrogens on Genuine Preeclampsia and Eclampsia E
Shute London Ont Canada—p 478
Acute Gastroduodenal Perforation R F Barber and J L Madden
Brooklyn—p 484
Snapping Hip H Dudgeon Jr Waco Texas—p 490
Subastragaloid Arthrodesis for Os Calcis Type of Flatfoot D G
Leavitt Seattle—p 501
Well Thigh Traction in Treatment of Intertrochanteric Fractures
I Stein and R M Lewis Philadelphia—p 509
Syndrome of Fixed Omentum G Ashworth Philippi W Va—p 513
Hernioplastic Operations on Rectum and Pelvic Floor C W Barrett
Chicago—p 519
Vesicointestinal Fistula—Actual and Incipient Early Diagnosis and
Treatment J A Lazarus and M S Marks New York—p 526
Abscesses About the Anorectum S T Ross Hempstead N Y—p 536
Symptomatic Pilonidal Cyst Operative Treatment M N Camp and
N Polites Camp Polk La—p 541
Suspensory Muscle of Duodenum J C Hale and J K Peden Dallas
Texas—p 546
Venography of Lower Extremity New Technique—Preliminary Report
E Zax Houston Texas—p 551
Use of Sulfathiazole Vaseline Ointment V Mooney and F A Taylor
Pittsburgh—p 554

Influence of Estrogens on Genuine Preeclampsia and Eclampsia—Shute reports the use of estrogen in the treatment of eclampsia in 11 women. It is unfortunate that certain workers have on this basis begun to administer simultaneously prodigious doses of estrogens and progesterone, which are antagonistic substances. All of the author's preeclamptic patients remained ambulant. As estrogen is more effective in preeclampsia than in eclampsia it should be used for prophylaxis rather than for therapy. Recognition of preeclampsia is the crux of the situation for which a blood estrogen assay is a sine qua non. Unless the assay method is used this therapeutic method will be discredited, for estrogens given to noneclamptic women may actually do harm perhaps precipitate abruptio placentae.

Am. J. Syphilis, Gonorrhea and Ven Dis, St Louis

27 1-132 (Jan) 1943

- Chemotherapeutic Prophylaxis with Sulfonamide Drugs I Effect
of Small Doses of Sulfathiazole or Sulfadiazine on Visual Efficiency
F W Reynolds Mildred S Evans and F B Walsh Baltimore
—p 2
Reinfection in Syphilis Newer Concept of Reinfection Encountered
with Ten Day Arsenotherapy of Early Syphilis Controlled by Quan-
titative Serologic Tests A C Schoch and L J Alexander Dallas
Texas—p 15
Experimental Prophylaxis of Chancroid Disease R B Greenblatt
E S Sanderson F Mortara and H S Kupperman Augusta Ga
—p 30
Further Evidence Concerning Specificity of Lymphogranuloma Vene-
reum Complement Fixation Test in Syphilis A W Grace New
York M F Shaffer and G Rake New Brunswick N J—p 44
Evaluation of Yolk Sac Antigen for Frei Test Comparison of Tests
Performed with Antigens from Yolk Sac Cultures and from Human
Pus Helen Ollendorff Curth New York—p 47
Microscopic Pathologic Appearance of Aorta in Treated and Untreated
Cases of Syphilitic Aortitis E G Howe New York—p 50
*Methyl Glucamine Ascorbate (Ascorbic Acid Derivative) as a Solvent
for Arsenical Drugs H Beerman H Pariser and Virgine Scherer
Wammock, Philadelphia—p 58
State Syphilis Consultation Program for Private Practitioners M M
Kroll Albany N Y—p 63
Syphilis in Industry A A Nelson Baltimore—p 73
Syphilis and Elizabethan Playwrights and Pamphleteers E L Zim-
mermann Baltimore—p 78

Methyl Glucamine Ascorbate as Solvent for Arsenical Drugs—In the last two years Beerman, Pariser and Wammock have evaluated the value of a vitamin C solvent for arsenical drugs in 114 syphilitic patients who had reactions which necessitated the withdrawal of trivalent arsenicals. The solvent used contained methyl glucamine ascorbate equivalent to 60, 100 and 500 mg. of a corbic acid in 10 cc. or a 7 per cent solution of

sucrose. This form of treatment definitely prevented a recurrence of the reaction in 58 per cent of the 111 patients, in 243 per cent the good effects that occurred could not with certainty be ascribed to the use of the solvent and in 177 per cent produced no appreciable effect in the prevention of nausea, vomiting and mitraloid crises. The solvent containing the 100 mg dose was especially effective.

Annals of Surgery, Philadelphia

117 161-320 (Feb.) 1943

- Surgical Treatment of Tophaceous Gout. R. R. Linton and J. H. Talbott. Boston. p. 161.
- Total Gastrectomy for Cancer. J. de Amer. Santiago Chile. —p. 181.
- Pilonidal Cyst. Local Use of Butylated Sulfamamide in Primary Closure. J. A. Scott. Fort Belvoir, Va. p. 191.
- Biliary Dyskinesia from Surgical Viewpoint. J. E. Strode. Honolulu Territory of Hawaii. p. 195.
- Administration of Morphine and Antispasmodics in Biliary Colic. R. R. Best and J. H. Barr. Omaha. p. 207.
- Multilocular Serous Cyst of Round Ligament Stimulating Incorporated Hernia. Report of 1 Case. D. Kerlucci and A. I. Shapiro. Brooklyn. p. 216.
- Acute Appendicitis During Later Decades of Life. Some Remarks on Incidence of Disease in Rural Area. J. H. Powers. Cooperstown, N. Y. p. 224.
- Pathology of Burns. Pathologic Picture as Revealed at Autopsy in Series of 61 Fatal Cases Treated at Hospital for Sick Children. Toronto. Canada. J. H. Erb, Ethel M. Morison and A. W. Farmer. Toronto, Canada. p. 234.
- Intra-Abdominal Use of Mikulicz. Pick. J. I. Jones. J. R. Pixon and R. F. Brubaker. Cleveland. p. 250.
- Reduction of Mortality in Surgical Management of Hyperthyroidism. Use of Short Interval Two Stage Lobectomy. W. C. Seely and H. B. Kernell. Durham, N. C. —p. 263.
- Echinococcus Cyst of Lung Exhibiting Unusual Radiologic and Surgical Features. C. D. Benson, W. A. Evans, Jr. and W. W. Zuelzer. Detroit. p. 268.
- Evolution of Spinal Fusion. M. B. Howarth. New York. p. 275.
- Stenosing Tendovaginitis at Radial Stylod (de Quervain's Disease). P. C. Potter. New York. p. 290.
- Trends in General Surgery. Review of Five Years Surgical Experience at Harper Hospital. M. J. Thorstad, H. C. Saltzman and A. D. McAlpine. Detroit. —p. 297.

Surgical Treatment of Tophaceous Gout—Linton and Talbott base their report on the surgical treatment of the tophaceous gout of 10 men and 1 woman from 20 to 80 years of age. 8 of them were more than 50. 2 were in their twenties and 1 was in the ninth decade. Seven of the patients had had their gout for twenty or more years. 2 for ten to twenty years and 2 for seven years. The surgical treatment of gout is applicable only to patients in whom large tophaceous deposits have developed. Surgery on the 11 patients was limited to the removal of urate deposits which involved the bony and soft structures about the elbows, forearms, wrists, hands and feet. The indications for surgical treatment are cosmetic reasons, pain, interference with movements, discharging sinus and extensive phalangeal involvement of the fingers or toes. Forty-six operative procedures were undertaken on the 11 patients. An analysis of the lesions revealed thirty-one subcutaneous tophi, thirty-six involving tendons and adjacent structures and twenty-six which arose from joints with invasion of bone and soft tissue. Of the ninety-three tophaceous deposits operated on only approximately 5 per cent occurred at the great toe. The surgical procedures on the hands were and should, of necessity, be more conservative than those on the feet. Follow-up studies six months or more postoperatively or to the death of the patient showed that in only three out of the ninety-three tophaceous deposits were there recurrences of any size, one was in the finger of a woman with extensive deposits, one was a recurrence of tophus in the flexor tendon in the palm because removal had been incomplete and one of the finger was among the earlier operations in which complete removal of the tophaceous deposit had not been obtained. Relief from pain followed the surgical removal of the tophaceous deposits in all the patients, 4 patients with extensive involvement of the feet, who were unable to walk or could walk only with extreme pain, were rehabilitated so that they could get about without pain. The 8 patients who had painful tophi removed from the hands and fingers obtained decided relief of symptoms and considerable functional restoration. Since good results are possible by the surgical removal of tophaceous deposits, even late in life, it is recommended that surgery be done earlier in the course of the disease than usually is considered desirable.

Morphine and Antispasmodics in Biliary Colic—Best and Barr carried out a series of experiments on the problem of relieving biliary colic. An antispasmodic drug which would consistently relax the wall of the gallbladder, the region of the cystic duct and the sphincter area at the lower end of the common duct would not only hasten and prolong the relief obtained by the necessary morphine but might also prevent further extension of the pathologic process by permitting free drainage of the biliary tract. With an intact gallbladder, biliary pain is most frequently due to increasing pressure within the gallbladder. With a pathologic gallbladder, the choledochal sphincter may or may not be in a spastic state, causing increased pressure in the biliary ducts which would also contribute to the pain. Atropine could be indicated, as at times it definitely relaxes the sphincter area or at least raises its threshold of irritability. Since this spastic state of the choledochal sphincter may be contributing to pain accompanying the gallbladder colic, morphine hypodermically and glyceryl trinitrate orally should be tried thirty minutes to a few hours later if the morphine-atropine combination has not given relief. Either atropine or glyceryl trinitrate should be given with morphine to help counteract the tone or spasm stimulating effect of the morphine on intrabiliary pressure. For patients who have had a previous cholecystectomy the morphine and glyceryl trinitrate combination should be tried first for biliary colic and if it does not afford relief a morphine-atropine injection should be given. Probably the morphine-atropine combination should be tried first for patients with an intact gallbladder and then the atropine with glyceryl trinitrate alternately every four hours. Morphine should be used in the four intervals only as needed. This may be continued for several days in the hope that the cystic duct will become sufficiently relaxed to permit egress of thick bile from the gallbladder into the common duct and then the sphincter of Oddi would be sufficiently relaxed to permit the bile to pass into the duodenum. When the gallbladder has been removed, the morphine-glyceryl trinitrate combination is most apt to give relief. The glyceryl trinitrate is then alternated with atropine every four hours for several days and morphine is added as necessary.

Pathology of Burns—Erb and his associates discuss pathologic changes in 61 fatal burn cases. Tannic acid was used in 41 and was not used in 20. The more important changes remote from the burned area involved liver, kidney, gastrointestinal tract and adrenal, with infection of one sort or another superadded. Duodenal ulcer was observed in 5, esophagitis or esophageal ulceration in 5, early gastric ulcer in 3 and adrenal hemorrhage in 4. Of the 41 patients whose burns were tanned, 25 presented hepatic necrosis. The shortest time that a patient survived after the burn in whom necrosis was found was six hours, the longest was nineteen days, 17 died within three to five days. Death up to the fifth day was attributed to toxemia and thereafter to infection. Signs of hepatic repair were noted in each of 5 patients who died between the eighth and the nineteenth day. Of 27 patients dying within three to nineteen days only 3 were free from hepatic necrosis. Hepatic necrosis did not occur in any of the group whose wounds were not tanned. 7 of whom died within three to fourteen days. Renal damage was observed in 19, and for all but the burn of 1 tannic acid was used. Following the introduction of tannic acid in 1921 the mortality rate from burns fell from 35.2 to 11.8 per cent and after the use of sulfonamides and other measures it fell to 2.9 per cent. Also with the introduction of tannic acid the time of death shifted from the first twelve to thirty six hours to the period of toxemia, the third to the sixth day, the period in which hepatic necrosis is most frequently observed. Patients dying with hepatic necrosis, apart from those dying of sepsis presented, on the whole, the same clinical picture of toxemia as did those without hepatic necrosis for whom tannic acid was not used and who died during the same period. Therefore hepatic necrosis, whatever its cause, is not necessarily the cause of death, although it may be a serious complication. Some therapeutic agent to be used with tannic acid should be sought which would preserve the benefits of tannic acid and at the same time protect the liver from the necrosis resulting from the absorption of a toxic substance from the burned skin and/or the direct or indirect result of tannic acid.

Archives of Pathology, Chicago

35 357-502 (March) 1943

- Metastasis of Mixed Tumors of Salivary Glands R M Mulligan Denver—p 357
Commercial Lead as Possible Inciting Factor in Bronchiogenic Carcinoma Report of 2 Cases C E Black East Lansing Mich—p 366
Morphologic Changes in Rat's Adrenal Cortex Under Various Experimental Conditions E I Sarason New York—p 373
Paravascular Tumors of Ovary W Schuller Chicago—p 391
Filarial Epididymotesticulitis J G Pasternack Staten Island N Y—p 414
Blood Cholesterol S Weinhouse Chicago—p 418

Metastasis of Mixed Tumors of Salivary Glands—

Mulligan's review of the localization of the metastases of 20 previously reported cases and 1 of his own shows that metastases were present in the lungs of 18 the pleura of 12 the liver of 10 the bones of 8 the lymph nodes of 6 the kidneys of 3 and the spleen of 2. The term "cylindroma" was employed in the microscopic description of the tumor of 8. In 4 others from the description given this same appearance was present. In 5 the designation was mixed tumor in 2 adenocarcinoma and in 2 malignant glandular epithelioma and alveolar sarcoma. The data suggest that when a patient in the fourth to the seventh decade of life has a tumor of a salivary gland a thorough examination must rule out metastasis if operation or irradiation of the primary tumor is contemplated.

Lead and Bronchiogenic Carcinoma—Lead and radium belong to the same chemical family. As commercial lead contains varying amounts of radioactive substances, usually radium D, it should be considered as a possible inciting factor in bronchiogenic carcinoma when its dust and fumes are inhaled over long periods. In the 2 cases that Black presents there was continuous exposure to lead for many years. That carcinoma may not manifest itself until many years after exposure to irritating dusts was borne out by the cases. The first patient had recurrent attacks of lead intoxication and an amount of lead in the urine indicating that lead was actually taken into the body. At necropsy chronic fibroid pneumonitis was found in both patients suggesting some form of chronic irritation.

Arkansas Medical Society Journal, Fort Smith

39 193-212 (Feb) 1943

- Common Head Injuries E M Miers Mena—p 193

39 213-228 (March) 1943

- Hypertension: Newer Theories, Prognosis and Treatment J N Compston Little Rock—p 213

Bulletin of Johns Hopkins Hospital, Baltimore

72 1-64 (Jan) 1943

- Vitamine Deficiency in Swine with Particular Reference to Anemia Epileptiform Convulsions and Fatty Liver M M Wintrobe R H Folts Jr M H Miller H J Stein R Alcajaga S Humphreys A Suksta and G E Cartwright Baltimore—p 1
Hormone Production by Placental Cells Maintained in Continuous Culture G E S Jones G O Gey and M K Gey Baltimore—p 26
Effect of Purified Diet Deficient in Carbohydrate on Rat R H Folts Jr and W M Straight Baltimore—p 39
Sulfanilamide as Prophylactic Agent in Rheumatic Fever Caroline A Chandler and Helen B Taussig Baltimore—p 42
Study of Thoracic Duct Lymph in Experimental Crush Injury and Injury Produced by Gross Trauma A Blalock Baltimore—p 54

Sulfanilamide as Prophylactic in Rheumatic Fever—Chandler and Taussig state that in the 16 patients to whom they gave sulfanilamide as a prophylactic for two seasons and in the 9 so treated for one season (forty-one patient seasons) a questionable recurrence of rheumatic fever occurred in only 1. In a comparable group of control patients 17 observed for two seasons and 7 for one season there were five recurrences. Studies of the beta hemolytic streptococci isolated from the patients' throats permit no conclusions but they do suggest that an investigation might be undertaken on a larger series of patients. In the sulfanilamide group 3 patients harbored group A streptococci for considerable periods of time. Antibodies were present for prolonged periods in 2 of the 3. Homologous antibodies were also present in 2 patients who harbored group C organisms for some time. In the control group 7 patients had streptococci at some time the organisms were isolated only once in each of them.

Bulletin New York Academy of Medicine, New York

19 77-150 (Feb) 1943

- Callbladder Disease: Etiology, Diagnosis and Treatment T H Russell R F Carter and E Oppenheim New York—p 77
Diagnosis and Prognosis of Brain Tumors G Horrax Boston—p 125
Some Recent Advances in Therapeutics Including Newer Drugs of Sulfonamide Group H Gold New York—p 132

Canadian Journal of Public Health, Toronto

34 51-96 (Feb) 1943

- Health Problems in National Defense Areas A R Morton Halifax N S—p 51
Nutritional Planning L B Pett Ottawa Ont—p 58
Crowning Recognition of Public Health and Preventive Medicine A Plouffe Montreal—p 63
Study of Effect of Fixed Pace Work on Health G H Turner Ottawa Ont—p 68
Health Education—Through the Drug Store Window H C Rhode Vancouver B C—p 74
The Sanitary Inspector and Public Relations M F Matthews Toronto—p 79

Canadian Medical Association Journal, Montreal

48 93-190 (Feb) 1943

- Incidence of Catarrhal Jaundice Compared with Jaundice Following Arsenotherapy for Syphilis H S Mitchell—p 94
Activities of the Royal Canadian Navy Medical Research Unit C H Best and D Y Solandt Toronto—p 96
Elementary Principles of Treatment of Head Injuries W Penfield and W Cone Montreal—p 99
Analysis of Pneumonia Deaths Since Introduction of Sulfonamide Therapy J C Meakins and R D McKenna Montreal—p 104
Problem of Functional Disease as Seen in Industry D E Bell Toronto—p 108
Thyrototoxicosis and Its Treatment W R Campbell Toronto—p 110
Accuracy of Tests for Syphilis with Particular Reference to Laughlin Method G F Laughlin Toronto—p 114
Memorandum on Possible Methods for Prevention of Rheumatic Manifestations in the Armed Forces R Hare Toronto—p 116
Diffusion of Sulfonamides Out of Certain Bases R A Waud and A Ramsay London Ont—p 121
Expectorant Action of Creosote and Guaiacols Mary E Stevens Alice K Ronan T S Sourkes and E M Boyd Kingston Ont—p 124
Exfoliative Dermatitis K A Baird West Saint John N B—p 128
Mortality and Morbidity Following Operations in a General Hospital D C Aikenhead and Evelyn Gamble Winnipeg Man—p 129
Second Year Anemias E Cairns Lethbridge Alta—p 132

Analysis of Pneumonia Deaths—Meakins and McKenna analyze 21 fatal cases of (pneumococcal) lobar pneumonia treated in the Royal Victoria Hospital during three years. All deaths occurred from infections with the lower types (through XIV) of pneumococci. The mortality rate of 10.5 per cent (21 of 200 cases) was comparable with that of most figures. The sex incidence of mortality was exactly proportional to that of the incidence of the disease 3 males to 1 female. All deaths except those of 2 infants were of persons more than 40, the average age of the patients who died was 56.3 years and that of the survivors was 36.1. The mortality rate among type III infection was disproportionately high (23.5 per cent). At least 10 of the patients who died had bacteremia. Malnutrition or associated disease (involving the cardiovascular system, lungs, kidneys, liver or sinuses) was present in more than 90 per cent of the patients who died and in only 29 to 32 per cent of the survivors. It is suggested that the recognition of nonspecific factors both in the determination of the prognosis and in the management of the disease would further lower the mortality rate from pneumococcal lobar pneumonia.

Connecticut State Medical Journal, Hartford

7 149-222 (March) 1943

- Social Functions of the Modern Hospital G M MacKenzie Cooperstown N Y—p 151
Rheumatic Fever in United States: Its Public Health Implications L Speker Hartford—p 156
Treatment of Acute Attack of Asthma J Weiner New Haven—p 164
Radioresistant Cancer of Upper Lip: Case Report E T Bradley New Canaan—p 166
Leiomyoma of Small Intestine: Case Report D C Patterson and W A Ceer Bridgeport—p 168
Osteochondritis Dissecans of Elbow Joint with Unusual Approach for Removal of Loose Body E H Croby Hartford—p 170
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Prelude to Surgical Anesthesia A H Miller Providence R I—p 176

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Gastroenterology, Baltimore
1 1-132 (Jan) 1943

- Prepyloric Lesions of Stomach—Medical and Surgical Aspects—Sara M. Jordan and L. H. Fisher Boston—p. 1
 Known and Unknown in Problem of Optimal Nutrition—A. J. Carlson, Chicago—p. 13
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 The Gastric Lesion—B. K. Crohn and R. David New York—p. 33
 Chronic Gastric Distention and Its Role in Chronic Gastritis—Analysis of the Problem—R. Schiller Chicago—p. 41
 Chronic Non-peptic Gastritis—Significance as Clinical Entity—G. B. Stern in the U. S. et. Mann—p. 51
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 Gastroscopic Study of Healthy Individuals—Preliminary Report—J. H. Entablen and G. B. Fox Portland, Ore.—p. 67
 Relationship of Concentration of Proteins in Serum to Postoperative Gastric Retention—L. K. Chauncey and H. K. Gray Rochester, Minn.—p. 72
 The Irritable Digestive Tract—W. C. Murray Rochester, Minn.—p. 95
 Effect of Antacid Therapy on Peptic Activity of Gastric Juice in Man—L. A. Warren, J. E. Ford and J. B. Kirsner Chicago—p. 102

Hypertrophic Gastritis—Benedict applies the term hypertrophic gastritis to the findings on gastroscopy of numerous verrucous elevations in the gastric mucosa, beading or caterpillar-like appearance of the rugae and dullness or diminished highlights in the mucosa. Among 1,500 gastroscopies he diagnosed hypertrophic gastritis without other gastric or duodenal pathologic changes in 117 (9 per cent). Of the total, 61 per cent were in males. The disease rarely occurs before 20 or after 70. The symptoms of hypertrophic gastritis in the order of their frequency are epigastric pain, vomiting, gas, sour eructations, heartburn and nausea without vomiting. There is no specific treatment. Of the 92 patients 26 were relieved by a bland diet alone and 72 by a bland diet with or without belladonna, alkaline powders, aluminum hydroxide, hydrochloric acid or liver therapy. Nine patients were not relieved by diet, 2 were not relieved by alkaline powders, 1 was not relieved by belladonna and of 5 operated on 3 were relieved. The improvement seen at subsequent gastroscopy was definitely correlated with the clinical improvement in most instances. The expert roentgenologist using the relief technic may be helpful in suggesting a possible diagnosis of gastritis, but only gastroscopy permits a positive diagnosis or differential diagnosis between the superficial, atrophic and hypertrophic forms. In differentiating some severe and doubtful cases of hypertrophic gastritis from carcinoma, gastrotomy and biopsy should be performed.

Proteins in Serum and Postoperative Gastric Retention—Chauncey and Gray estimated the concentration of protein in the serum of patients during the normal postoperative period of various surgical procedures on the upper portion of the gastrointestinal tract. There was a normal decline in the concentration of the total proteins and a decline in the concentration of the two fractions, the decline of the albumin fraction was slightly more pronounced than that of the globulin fraction. After the fifth postoperative day there was a steady and persistent increase in the concentration of total proteins and the albumin and globulin fractions. A concentration of less than 52 Gm of total protein per hundred cubic centimeters occurred frequently without gastric retention. Concentrations of less than 3 Gm of albumin per hundred cubic centimeters never were observed. Regeneration of globulin was not rapid. Estimations of the concentration of serum protein, the two fractions and the colloidal osmotic pressure of 15 patients after operations on the stomach whose postoperative course was marred by postoperative gastric retention revealed that gastric retention was

associated with a concentration of serum protein within normal limits or within normal postoperative limits. Gastric retention was associated with a colloidal osmotic pressure well in excess of the "critical edema level" (160 to 200 mm of water). The amount of retention was not paralleled by fluctuations in the concentration of serum proteins or the albumin fraction of the colloidal osmotic pressure. Retention frequently diminished and disappeared with a coincidental decrease in serum osmotic pressure and in the concentration of serum proteins. Clinical edema caused by hypoproteinemia was noticed postoperatively at the same time at which gastric retention disappeared.

Georgia Medical Association Journal, Atlanta
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- Care of Premature Infants—W. W. Anderson, Atlanta—p. 33
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 Proximal Ecthyma of Young Infants—Report of Case—L. M. Blackford and L. D. Hoppe, Atlanta—p. 47
 Lymphomyelitis Following Smallpox Vaccination—Report of Case—R. I. Rogers and W. H. Hill Grimsville—p. 48

Illinois Medical Journal, Chicago
83 77-144 (Feb) 1943

- Fetal Distress During Labor—C. J. Lund, Madison, Wis.—p. 96
 Respiratory Disturbances in Newly Born Infant—Edith L. Potter, Chicago—p. 100
 Prostagmine Pregnancy Test and Treatment for Delayed Menstruation—M. J. Snyder, Chicago—p. 107
 Conservative Management of Sinusitis—L. T. Curry, Chicago—p. 111
 Hypochromic Anemia and Malignancy—H. Swanberg Quincy—p. 116
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 Atypical Problems in Appendicitis—J. E. Bellas and D. V. Auld, Peoria—p. 121
 Report of 2 Cases of Glycogen Storage Disease in Two Members of One Family—L. T. Gregory, J. B. Gillespie Urbana, and R. C. Armstrong, Champaign—p. 123
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Indiana State Medical Assn Journal, Indianapolis
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 Army Air Corps' New Convalescent Program—H. A. Rush, Jefferson Barracks, Mo.—p. 127
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 Allergy in Hearing Defects—H. A. Kuhn, Hammond—p. 143
 Unusual Intranasal Tumor—B. E. Ellis, Indianapolis—p. 147

Iowa State Medical Society Journal, Des Moines
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- Observations on Treatment of Diabetes Mellitus—W. H. Olmsted, St. Louis—p. 95
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 Immunization Procedures for Smallpox and Scarlet Fever—A. M. Smythe, Des Moines—p. 102
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 Pernicious Anemia—Report of Case with Fifteen Year Remission—A. L. Jenks Jr., Des Moines—p. 112

Observations on Treatment of Diabetes Mellitus—Olmsted believes that if the diabetic patient receives a diet which fulfils the caloric, mineral and vitamin requirements and if he is kept sugar free and the obese diabetic patient reduced, the premature development of arteriosclerosis will be prevented and the patient will live approximately as long as any one else. His experience with protamine zinc insulins which contain less protamine leads him to believe that they are better adapted to the treatment of the disease than the forms of protamine zinc insulin now in use. The success of the dietetic management of

the diabetic patient depends a great deal on dietetic education and simple methods. Use of the measuring cup results in better control of the diet than the use of the metric system in spite of its undoubted accuracy.

Journal of Immunology, Baltimore

46 1-46 (Jan) 1943

- Neutralization Tests with Fractions of Polymyositis Anticrums (Hor.) J. A. Toomey, Cleveland C. F. McKhann, Ann Arbor Mich. and Kathleen Fahey, Boston—p. 1
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Journal-Lancet, Minneapolis

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- *Wounds of Heart: Review of Seventeen Cases with Four Operations H. M. Blegen, Minneapolis—p. 1
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The Depressed Patient G. R. Kamman, St. Paul—p. 11
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Relief of Colonic Obstruction H. W. Christianson, Minneapolis—p. 21
Medical Aspects of Dental Health in Childhood E. S. Platou, Minneapolis—p. 22

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Cause of Toxemia of Pregnancy R. T. LaVake, Minneapolis—p. 51
Report on Health Achievements in North Dakota F. J. Hill, Bismarck N. D.—p. 53

Wounds of Heart—Blegen thinks that in many hospitals the signs and symptoms of cardiac tamponade from injury is still unrecognized and that the patient presenting himself with the typical syndrome is often given up as beyond medical aid. Of 17 such patients admitted to St. Joseph Hospital during the last fourteen years 13 were Negroes and 4 were white. The wounds of 9 were due to gunshot of 5 to stabs and 2 to nonpenetrating body blows. In 7 cardiac tamponade was proved at operation or necropsy. Four of these patients were operated on, 2 recovered. Five patients died in the emergency room before treatment could be given. Surgery was not offered to 6 in spite of the fact that they lived longer than one hour and 1 recovered with conservative measures alone. One of the 2 patients who had a cardiac injury proved at necropsy as the result of nonpenetrating body blows had a cardiac tamponade as a result of a rupture of the right auricle and lived five hours after admission. The other patient had a ruptured auricular endocardium which was not detected clinically but which would have been compatible with life had he not died from an accompanying gas bacillus infection. As cardiac rupture with tamponade following a body blow may be relieved surgically all patients especially those injured in automobile accidents who show signs of cardiovascular collapse out of proportion to blood loss or other injuries should be examined carefully for tamponade with the hope of saving some of them by early operation.

Journal Neuropath and Exper Neurology, Baltimore

2 1-102 (Jan) 1943

- Calcified Epileptogenic Lesions as Caused by Incomplete Interruption with Blood Supply of Diseased Areas L. Alexander and B. Woodhall, Durham N. C.—p. 1
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Journal of Nutrition, Philadelphia

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Journal of Pediatrics, St. Louis

22 135-258 (Feb) 1943

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*Nonspecific Therapy in Anterior Polymyositis: Preliminary Report on Use of Vitamins B and E and Artificial Fever S. Stone, Manchester N. H.—p. 142
Anthropometry in Pediatrician's Office: Norms for Selected Body Measurements Based on Studies of Children of North European Stock Vernetta S. Vickers and H. C. Stuart, Boston—p. 155
Rh Factor in Relation to Jaundice of Newborn Infant (Erythroblastosis Fetalis) F. W. Gallagher, P. G. Davis and L. R. Jones, St. Louis—p. 171
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Percutaneous Ileum in Newborn Infant with Operation and Recovery C. E. H. A. Agert, A. J. Zisman and C. L. Shollenberger, Philadelphia—p. 233
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Nonspecific Therapy in Anterior Polymyositis—Stone used artificial fever and vitamins B and E as found in wheat germ oil in the treatment of the acute and subacute anterior polymyositis of 12 patients, 6 also received artificial fever. In none of the patients treated—all except 1 had paralysis of varying degrees of severity—did any deformities or contractures develop. Muscle tenderness was greatly diminished in all especially in those who received artificial fever and vitamin medication. The intravenous or intramuscular administration of thiamine hydrochloride during the acute stage appeared to exert a nonspecific beneficial influence on the patients' general condition and to lessen the severity of paresthesia. It was most effective when combined with artificial fever and given during the height of the fever. Vitamin E appeared to lessen the tendency to the development of fibrosis; increased muscle tone in chronic patients and possibly favorably influenced muscle regeneration when the nerve supply was not destroyed completely. Artificial fever therapy at 102 to 105 F was well tolerated by all patients. It helped to reduce muscle tenderness, relieved vasospasm and muscle spasm and improved the circulation of the spinal cord and brain by increasing the supply of oxygen to the central nervous system thus improving the nutrition of the neurons not already destroyed. When combined with vitamins B and E it rapidly improved the symptoms in patients with progressive fibrosis. While vitamins B and E and artificial fever are nonspecific in their mode of action they probably assist in the regeneration of the neurons partially affected by the virus, improve the patients' general condition and assist in preventing excessive fibrosis, a frequent cause of deformities and contractures.

Journal Pharmacology & Exper Therap, Baltimore

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- Sulfamethazine (2-*p*-Aminobenzenesulfonamino-4,6-Dimethylpyrimidine) New Heterocyclic Derivative of Sulfanilamide J. I. Rose, A. R. Martin and H. G. J. Bryan, Manchester, England—p. 127
- Sibley-Gilpin Shock Therapeutic Effects with Autonomic Depressants Motion Factors P. A. Zohl, S. H. Hutner and L. S. Cooper, New York—p. 143
- Effect of Sodium Citrate Administration on Excretion of Lead in Urine and Tissue L. A. Etkinoff and S. S. Kety, Philadelphia—p. 151
- Studies on Sulfonamide Resistant Organisms III. Origin of Sulfonamide Resistant Pneumococci L. H. Schmidt and Clara I. Selzer—p. 165
- Metabolism of Hydantoin Derivatives Closely Related to Dilantin C. H. Hine and L. J. Koelke, Madison, Wis.—p. 180
- Analytic Properties of Certain Drugs and Drug Combinations D. I. Smith, Marie C. D'Amour and L. L. D'Amour, Denver—p. 184
- Toxicity of Acetone L. A. Greenberg, New Haven, Conn.—p. 193

Journal of Thoracic Surgery, St. Louis

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- Surgeon Approach for Incision and Drainage of Suppurative and Purulent Tuberculous Abscesses J. K. Daffin, Little Rock, Ark.—p. 209
- Management of Pulmonary Tuberculosis Complicated by Pleural Tuberculosis with Special Reference to Use of Artificial Pneumothorax J. N. Kaye and D. O. S. Smith, Nashville, Mich.—p. 215
- Arterial Tuberculosis of the Heart and Lung J. J. S. Smith, Little Rock, Ark.—p. 221
- Primary Nocardiosis of the Lung A. D. Schaeffer, Kent, Ohio, S. S. C. Smith, L. P. Smith, H. E. Taylor, Hattiesburg, Miss.—p. 225
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Pulmonary Tuberculosis Complicated by Bronchial Tuberculosis—Examination of complications arising in the course of administration of pneumothorax in pulmonary tuberculosis complicated by bronchial tuberculosis reveals, according to Kohnert and Shields, that atelectasis, amicrobial infection, progressive tuberculosis, tuberculous empyema and unexpandable lung occur frequently. These complications are so serious that every effort should be made to diagnose bronchial tuberculosis before pneumothorax is instituted for parenchymal disease. Prognosis in general depends more on the severity of the bronchial disease (and particularly its management) than on the stage of the pulmonary disease. Therefore the maintenance of an efficient bronchial drainage is of primary importance. Serious complications are encountered most often with extensive bronchial disease and especially when the inflammation is acute. Pneumothorax is contraindicated with extensive ulceration or stenosis and with moderate progressive or stationary ulceration, particularly if secretions are retained. It is relatively safe with moderate or slight ulceration which tends to heal. As the serious complications which follow pneumothorax often do not do so after thoracoplasty, it is therefore the treatment of choice when collapse therapy is indicated but pneumothorax is contraindicated.

Kentucky Medical Journal, Bowling Green

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- Fluorograph in Pulmonary Lesions E. R. Gerneit, Louisville—p. 35
- Acute Cholecystitis F. M. Massie, Lexington—p. 39
- Kenny Method of Treatment of Infantile Paralysis R. L. Hudson, Louisville—p. 44
- Kenny Treatment of Poliomyelitis M. J. Wilder, Louisville—p. 45
- Demonstration of Sister Kenny Treatment J. J. Untereker, Louisville—p. 47
- Muscular Dystrophies or Myopathies I. Kimbell, Lakeland—p. 49
- War-time Problems of Industrial Health C. D. Selby, Detroit—p. 53
- Military Roentgenology R. E. Downing, Bowman Field—p. 57

Maine Medical Association Journal, Portland

34 25-44 (Feb) 1943

- State Responsibility for Tuberculosis Control A. S. Pope, Boston—p. 25
- Use of Outpatient Department in Control of Tuberculosis D. Daniels, Greenwood Mountain—p. 29

Medicine, Baltimore

22 1-86 (Feb) 1943

- Thymus in Relation to Myasthenia Gravis D. McEachern, Montreal, Canada—p. 1
- Present Status of Nonobstructive Jaundice Due to Infectious and Chemical Agents C. W. Davis, Pathogenesis, Interrelationships, Clinical Characteristics R. Ottenberg, and Rose Spiegel, New York—p. 27
- Intravenous Alimentation with Amino Acids G. J. Martin and M. R. Thompson, New York—p. 73

Thymus in Relation to Myasthenia Gravis—McEachern states that the general character of myasthenia gravis suggests an endocrine disorder. Tumor or hyperplasia of the thymus is found at necropsy in more than half the cases. Microscopic search for aberrant or exceptionally small nodules might increase the percentage. The tumors are almost invariably benign encapsulated adenomas. Hyperthyroidism, adrenal cortex deficiency and castration each have muscular asthenia, crumpling and hypertrophy of the thymus in common. The symptoms of myasthenia gravis are almost identical with those of prolonged curare poisoning, and the underlying neuromuscular disturbance is in both instances a peripheral phenomenon. The beneficial effects of prostigmine and the aggravation of symptoms by curariform drugs suggest faulty chemical transmission at the myoneurial junction. Evidence favors the action of some curare-like substance. There is no convincing experimental evidence of an endocrine function for the thymus, although a number of observations are suggestive. Under clinical and experimental conditions the thymus undergoes hypertrophy during states of hyperthyroidism or hypofunction of the adrenal cortex or sex glands. Reverse conditions cause its involution. Since the thymus is largest at about the time of puberty and its weight in proportion to total body weight is greatest during the last months of fetal life and at birth, it might conceivably produce some substance which acts as a chemical brake to muscular activity, especially during fetal development. Roentgen evidence of thymic enlargement or tumor is rare in myasthenia gravis, although experience at necropsy leads to the anticipation of an abnormality of the organ in about half of the cases. Roentgen therapy directed to the thymus has yielded inconclusive results, although some patients seem to have benefited. Remissions and exacerbations of the disease in relation to pregnancy and to the alteration of the function of the thyroid are of great interest. The 13 patients with myasthenia gravis who had their thymus or thymic tumor removed and who survived appeared improved, the improvement in a few amounted to cure. Complete disappearance of myasthenic symptoms did not result in all cases despite apparently complete thymectomy. Experiments aimed to demonstrate a curare-like substance in the blood and urine of myasthenic patients and in extracts of thymic tumors removed at operation or necropsy revealed no such substance.

New England Journal of Medicine, Boston

228 113-144 (Jan 28) 1943

- Occurrence of Cor Pulmonale in Cases of Bronchial Asthma I. W. Schuller, A. Colmes and D. Davis, Boston—p. 113
- Dietary Study of Subjects from Upper Income Groups H. T. Kelley and Myrtle Sheppard, Philadelphia—p. 118
- Treatment of Common Skin Diseases Beatrice Maher Kesten, New York—p. 124
- Abdominal Surgery A. W. Allen, Boston—p. 127

228 145-176 (Feb 4) 1943

- Pyogenic Liver Abscesses Due to Klebsiella Pneumoniae (Friedlander's Bacillus) T. D. Kinney and H. S. Ginsberg, Boston—p. 145
- Failure of Cobra Venom to Relieve Pain in Rheumatoid Arthritis R. H. Talkov and W. Bauer, Boston—p. 152
- Methyl Salicylate Poisoning Report of 5 Cases R. A. MacCready, Boston—p. 155
- Hematology W. Dameshek, Boston—p. 157

New Jersey Medical Society Journal, Trenton

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- Diagnosis and Treatment of Shock R H Hill Newark —p 31
- Syphilis in Relation to Iris and Uveal Tract (Part of Symposium on Syphilis and Its Relation to Eye Ear Nose and Throat) G P Meyer Philadelphia —p 3
- Development of and Responsibility for Local Health Work R C Williams New York —p 58

North Carolina Medical Journal, Winston-Salem

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- Modern Concept of Hypertension A Grollman Winston-Salem —p 41
- Röntgen Therapy in Treatment of Certain Inflammatory Conditions R J Reeves Durham —p 44
- Rorschach Test Important Aid in the Personality Diagnosis O Billig Asheville —p 46
- *Nicotinic Acid (Niacin) in Treatment of Vincent's Infection W M John on Winston-Salem —p 51
- Asheville-Buncombe County Gonorrheal Clinic for Women Margery J Lord Asheville —p 51
- Significance of the Nasopharynx M B Leath High Point —p 53
- Cerebral Palsy and the Pediatrician Grizzelle M Norfolk and J M Arena Durham —p 55
- History of Chinese Medicine C P Bunch Sturgill —p 55

Niacin in Vincent's Infection—Johnson gave 25 to 50 mg of niacin three times a day to adults and 10 mg or more to children with Vincent's angina. The most spectacular results were obtained in the acute cases. A typical case is that of a 17 year old girl with ulcers of the pharynx, enlarged cervical lymph nodes and a temperature of 103 F. A smear showed numerous Vincent's organisms. Niacin in 25 mg doses three times daily resulted within forty eight hours in normal temperature and disappearance of ulcers. A smear taken on the fifth day was negative. The substance was found useful in the acute cases of gum involvement and helpful in chronic cases in conjunction with local treatment. Its use keeps the mouth cleaner and apparently greatly retards the formation of tartar. It has been of decided value in pyorrhea even when Vincent's organisms were not present.

Northwest Medicine, Seattle

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- Gynecologic Aspects of Adolescence G C Schaffler Portland Ore —p 35
- Physiology of Aging A J Carlson Chicago —p 46
- Surgical Management of Acute Cholecystitis R G Andres Spokane Wash —p 48
- Neurologic Manifestations of Cardiovascular Disease of Sudden Onset W B Dublin Fort Steilacoom, Wash —p 52

Ohio State Medical Journal, Columbus

39 97-200 (Feb) 1943

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- Cryptogenic Pneumococemia I M Rueggsegger Fort Bragg, N C —p 117
- Blood Urea Nitrogen Elevation Associated with Sulfonamide Therapy W E Molle and E Wolver Cincinnati —p 119
- Otic Complications and Sulfonamides H G Rubin W W Sanger and J B McBean Fort Sill Okla —p 125
- Active Chemical Components of Crude Ragweed Extract G E Rockwell Cincinnati —p 128
- Calcific Aortic Stenosis S D Simon Cincinnati —p 133
- Treatment of Seborrheic Dermatitis H N Cole Cleveland —p 135
- Suggestions for Interns About to Become Medical Officers of the Army of the United States W L Furste 2d Camp Maxey Texas —p 137
- McBurney Incision in Appendicitis Cleveland Appendicitis Survey J D Brett and R M Watkins Cleveland —p 140
- Postpartum Myocarditis Case Record Presenting Clinical Problems R W Vilter and E E McKee Cincinnati —p 142
- Importance of Zinc in Nutrition J Forman Columbus —p 145
- Current Research in Allergy J H Mitchell Columbus —p 147

Oklahoma State Medical Assn Jour, Oklahoma City

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- Tuberculous Tracheobronchitis K M Burke Oklahoma City —p 53
- The Irritable Bowel T Bynum Chickasha —p 56
- Diagnosis and Treatment of Chladder Disease D D Paulus Oklahoma City —p 61

Pennsylvania Medical Journal, Harrisburg

46 401-528 (Feb) 1943

- Survey of Income Limits for Subscribers to Nonprofit Medical Service Plans R W Davies —p 447
- B Vitamins and Certain Problems They Present to the Practicing Physician L E Holt Jr Baltimore —p 451
- Adaptation of the Civilian Doctor to Army Practice G W Wells Fort Devens, Mass —p 459
- Psychoneuroses in Military Medicine D Whitehead Fort Devens Mass —p 463
- Question and Answer Period of Symposium on War Medicine C J Kastlin chairman —p 468
- Comparison of Different Complementary Feedings During First Two Weeks of Life J R Noon Jr Philadelphia —p 470
- Nutritional Condition of Philadelphia School Children W S Cornell Philadelphia —p 474
- Five Years of Pneumonia Control in Cambria County Pa B J McCloskey Johnstown —p 478

Psychosomatic Medicine, Baltimore

5 1-114 (Jan) 1943

- Psychosomaticity in Schizophrenia Some Endocrine Considerations R G Hoekins Boston —p 3
- Non Neoplastic Hypergenitalism Analysis of 17 Cases N Taylor and R L Schacter —p 10
- Mental State Associated with Cerebral Lesions L B Alford St Louis —p 15
- Evidences Concerning Neural Groundwork Underlying Certain Behavior Patterns K M Brickner A A Roemer and H Yakin New York —p 20
- Dynamics of Selective Inhibition of Specific Functions in Neurosis Preliminary Report A Wolf Columbus Ohio —p 27
- Bronchial Asthma in Functional Psychoses H C Leavitt Kankakee Ill —p 39
- Psychiatric Observations in a Well Baby Clinic Mabel Huschka and W K McKnight New York —p 42
- Hypnotic Investigation of Psychosomatic Phenomena I Psychosomatic Interrelationships Studied by Experimental Hypnosis M H Erickson Eloise Mich —p 51
- Id II Development of Aphasia like Reactions from Hypnotically Induced Amnesias Experimental Observations and Detailed Case Report M H Erickson Eloise Mich and R M Brickner New York —p 59
- Id III Controlled Experimental Use of Hypnotic Regression in Therapy of Acquired Food Intolerance M H Erickson Eloise Mich —p 67

Public Health Reports, Washington, D C

58 297-336 (Feb 19) 1943

- Self Help Solution of State Personnel Problems J W Mountain —p 297
- Toxicity and Histopathology of Some Azo Compounds as Influenced by Dietary Protein M I Smith R D Lillie and E F Stohlman —p 304
- Outbreak of Microsporion Lanosum Infection from Kitten I Botvinnik S M Peck and L Schwartz —p 317

58 337-376 (Feb 26) 1943

- *Practical Plan for Treatment of Superficial Fungous Infection S M Peck and L Schwartz —p 337
- Status of Full Time Local Health Organization at End of Fiscal Year 1941-1942 F W Kratz —p 345
- Experimental Rocky Mountain Spotted Fever Results of Treatment with Certain Drugs E A Steinhaus and R R Parker —p 351
- Triatoma Sanguisuga (LeConte) and Triatoma Ambigua Neiva as Natural Carriers of Trypanosoma Cruzi in Texas D J Davis T McGregor and Thelma deShazo —p 353

Treatment of Superficial Fungous Infections—Peck and Schwartz differentiate fungous infections from the so called allergic manifestations to them. The infected organism may become sensitized to the fungi or their products. Blood stream dissemination gives rise to manifestations known as dermatophytids. Secondary manifestations or dermatophytosis cannot be properly treated unless the primary infection is eradicated. Hypersensitivity to the fungi may be so great that only a small focus between the toes or under a toenail may result in generalized infections that is dermatophytids. In the treatment of direct dermatophytosis ointments should be used in the groin or other areas where there may be maceration. A typical formula for such an ointment approximates about half strength Whitfield's ointment with the addition of thymol. Tinctures may be found more practical. Trichophyton rubrum infections are extremely resistant to treatment. A conservative method for fungous infections of nails consists in daily scraping of the nail with a file or with sandpaper and the application of an antiseptic ointment or tincture. In some instances x-ray treatment has proved beneficial. Methylene blue solution boracic acid

and Binow's solution in the form of wet dressings are helpful in deep dermatophytosis of hairy areas. Trichophyton metaglyphic, the most common cause of dermatophytosis of the feet has a high sensitizing power. The most common form of dermatophytids associated with this fungous infection is manifested by vesicles along the sides of the toes. These have been called dyshidrotic epidermophytids. In addition to the local treatment desensitization by injection of trichophytin must be attempted. The spread of fungous infections in shower rooms may be controlled by wearing individual slippers with wooden soles to and from and in the showers. These slippers can be sterilized once a week by placing them in 1 per cent sodinated solution of cresol or by steam sterilization. In the acute stage of dermatophytosis of the feet with vesicles, swelling, erythema and pustules and a great deal of weeping wet dressings are indicated. Foot baths with diluted sodinated solution of cresol, about 0.5 per cent solution taken two or three times a day for fifteen minutes are beneficial. Immersion in potassium permanganate 1:8000 hot, for fifteen minutes two or three times a day is also helpful. Foot powder can be used between the baths. In the presence of a high degree of sensitivity and in eruption which has spread to the rest of the body it is not advisable to treat the primary lesion too vigorously because the rapid killing of fungi and dissemination of their toxins may cause intensification of the allergic manifestations. In the treatment of the subacute form a keratolytic and an antiseptic are needed. In some cases x-ray or trichophytin injections may have to be used. Infected socks should be boiled or treated by placing them in 1 per cent sodinated solution of cresol allowed to soak overnight and washed in cold water. Dusting powders may be used in the shoes. The infected socks and shoes may be placed in a closed receptacle and exposed to the vapors of formaldehyde.

Review of Gastroenterology, New York

10 1-76 (Jan-Feb) 1943

- *K. I. Fox: Ultraviolet Blood Irradiation as Control of Infection in Peritonitis. G. P. Mile, Philadelphia, and E. W. Rebbek: Pittsburg—p. 1.
- *Relation of Atrophic Gastric Mucosa to Carcinoma of Stomach. I. R. Jankels and C. W. McClure: Boston, and H. Freedberg: Salem, Mass.—p. 20.
- Benign Tumors of Stomach. G. S. Dudley, I. Miscall and S. I. Morse: New York—p. 31.
- Peptic Ulcer. G. McVoy: Chicout Hill, Mass.—p. 44.
- Pruritus Ani. L. L. Neurotomy. A. J. Cantor: Hushung, N. Y.—p. 46.
- The Development of a Doctor. W. Walters, Rochester, Minn.—p. 49.
- Gallbladder Problem. M. L. Rehruss: Philadelphia—p. 53.
- Postsurgical Biliary Syndrome. J. W. Means, G. Y. Shinowara and C. J. DeCor, Columbus, Ohio—p. 62.

Knott Technic of Ultraviolet Blood Irradiation in Peritonitis.—In the last four years Mile and Rebbek irradiated the blood with ultraviolet to control the infection of 72 consecutive persons critically ill with peritonitis, 40 had generalized peritonitis, 20 appendical abscess with localized peritonitis and 12 multiple pelvic abscesses with severe pelvic peritonitis. In 43 the only therapy was the ultraviolet blood irradiation, and 29 were previously unsuccessfully treated with chemotherapy. The authors' technic of irradiating blood is that devised by Knott. The procedure consists in withdrawing and citrating a carefully predetermined amount of a patient's blood and immediately passing it through a hemoradiator, a machine that properly irradiates the citrated blood and returns it intravenously to the patient. The end result of ultraviolet blood irradiation in the 40 patients with generalized peritonitis was that 32 recovered, 100 per cent of the moderately advanced and 53 per cent of the apparently moribund. Seventeen of the 20 with localized peritonitis with appendical abscess recovered, 100 per cent of the moderately advanced and 57 per cent of the apparently moribund. Nine of the 12 with pelvic peritonitis and multiple pelvic abscesses recovered, 100 per cent of the moderately advanced and 67 per cent of the apparently moribund. The paralytic ileus, which had been present as long as four days in some, disappeared within twelve to ninety-six hours after ultraviolet blood radiation therapy. This disappearance and the reappearance of normal intestinal smooth muscle

tone was characterized by the expulsion of large amounts of flatus, a definite reduction in abdominal distention, normal abdominal auscultation and subsidence of other toxic symptoms. The optimal time for ultraviolet blood irradiation in all cases of peritonitis appears to be before operation, the sooner instituted the better.

Relation of Atrophic Gastric Mucosa to Gastric Carcinoma.—Jankelson and his associates found an incidence of 1 per cent of gastric cancer among 100 patients with pernicious anemia and an anticipated incidence of 4.4 per cent among 18 patients with atrophic gastritis. The actual or anticipated incidence of gastric cancer in the two groups was so high as to justify a conclusion that atrophy of the gastric mucosa predisposes to cancer. In the presence or absence of pernicious anemia, patients with atrophy of the gastric mucosa should be carefully observed lest an unsuspected gastric carcinoma develop. Repeated x-ray examination, gastroscopy and examination of the stool for occult blood should permit an early diagnosis of gastric polyps and carcinoma.

Tennessee State Medical Assn Journal, Nashville

36 47-88 (Feb) 1943

- *Diagnosis and Treatment of Carcinoma of Colon. H. Wilson, Memphis—p. 17.
- Not All Men Think Alike. L. T. Buckman—p. 57.
- An Interpretation of Drait Rejection Figures. W. W. Bauer, Chicago—p. 61.

Diagnosis and Treatment of Carcinoma of Colon.—The symptomatology of carcinoma of the right and left colon differs because of the anatomic and physiologic differences of the two sides of this organ. Wilson points out that mild digestive disturbances, changes in bowel habits, weakness and anemia should prompt an investigation of the right side of the colon. Chemical analysis is usually necessary to demonstrate blood from tumors on this side. Symptoms of acute, subacute or chronic obstruction are often the first evidences of a tumor of the left side of the colon. Progressive constipation occasionally replaced by an intermittent diarrhea is of common occurrence. Blood in the stool is apt to be present on gross examination. The diagnostic procedures in both instances should include history, digital examination of the rectum, stool analysis, proctoscopic examination and barium sulfate studies of the colon. A great deal of individualization of treatment is necessary in each case. The general physiology of the patient must be studied to ensure adequate levels of erythrocytes, plasma proteins, chlorides, water and protective vitamins. If obstruction exists it must be relieved by proximal decompression before the tumor is extirpated.

Virginia Medical Monthly, Richmond

70 67-120 (Feb) 1943

- Amebic Dysentery. Its Recognition and Treatment—Clinical Discussion. J. M. Ruffin, Durham, N. C.—p. 69.
- Relationship of Hypertension to Surgical Diseases of Urinary Tract. A. I. Dodson, Richmond—p. 72.
- Our Duty as Physicians in Present Emergency—from a Patriotic Standpoint. W. C. Caudill, Pearisburg—p. 78.
- Care of the Mentally Ill in General Hospital. R. F. Gayle Jr., Richmond—p. 80.
- Roentgen Therapy of Brain and Spinal Cord Tumors in Children. F. B. Mandeville, Richmond—p. 86.
- Battle Casualties on the Home Front. P. Davis, Roanoke—p. 90.
- Subcortical Intracranial Hemorrhage of Surgical Significance. Report of Eight Cases. J. M. Meredith, Richmond—p. 92.
- Some Recent Advances in Diagnosis and Treatment of Cutaneous Fungous Infections. A. Pepple and R. W. Fowlkes, Richmond—p. 101.
- Eyes as Portal of Entry for Certain Air Borne Infections. L. D. Graves, Roanoke—p. 104.
- Treatment of Burns. M. K. King, Norfolk—p. 106.
- Keratitis Marginalis Superficialis—Acute Case. N. H. Turner, Richmond—p. 109.

West Virginia Medical Journal, Charleston

39 69-104 (March) 1943

- Proptosis as Diagnostic Problem. R. I. Lloyd, Brooklyn—p. 69.
- Spinal Anesthesia. E. M. Peck, Charleston—p. 77.
- Physiologic Approach to Water Balance of Surgical Patients. T. L. Harris and R. Jones Jr., Parkersburg—p. 80.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1 151-178 (Feb 6) 1943

- *Treatment of Cerebral Contusion L Rogers—p 151
- *Nature of the Rheumatic Child D Hubble—p 154
- Macrocytic Anemia of Pregnancy and Puerperium H W Fullerton—p 158
- Economy in Fats and Oils in Treatment of Skin Diseases G H Percival—p 160
- Bread Factor in Wartime Human Diet M R Richards—p 161

Treatment of Cerebral Contusion—Rogers presents evidence which indicates that the brain reacts to cerebral contusion by attempting to increase its volume. No two head injuries are exactly comparable. Remarkable and complete recoveries often follow extensive injuries to the skull and brain. The absence of sequelae following the consistent application of any particular therapy may be urged in its favor. Dehydration is a method which permits cerebral swelling to take place after injury. It should be effected by rectal administration of magnesium sulfate and not by intravenous methods, which probably cause undesirable reactions. A smooth convalescence and no sequelae have followed treatment of a large series of cases by continued gentle dehydration. Often the postconcussional state may result from the failure to introduce effective treatment in the early stages and it may represent a condition of unresolved contusion. It is believed that a resolution takes place readily and completely if the requisite condition for reparation is provided. This is the provision of space so that cerebral swelling can occur and is not restricted by the cerebrospinal envelops, with consequent impairment of the cerebral blood supply. Provision for such swelling is made by sustained dehydration which reduces the incompressible water content of the skull.

The Rheumatic Child—According to Hubble the rheumatic state in childhood has two main components—nervous excitability and infection. These are present in varying degree so that it may be impossible in one child to distinguish any nervous instability or in another to detect any evidence of infection. In one, the profound motor and emotional instability may be predominant and infection be either absent or a late invader while in another infection dominates the picture at the onset and throughout its subsequent course. Growing pains usually result because of some difficulty attending the growth of the personality, not of stature, and it is easier to find evidence of nervous instability than of infection in the subacute rheumatic state. The nervous instability of the rheumatic child has no relation to neurosis; it is a quantitative increase in emotion and kinesis. The relationship between nervous excitability and infection is difficult to determine. It has been generally assumed that such nervous instability in a rheumatic child is the direct result of the rheumatic infection or toxemia. This view is supported by the fact that chorea may develop for the first time during an attack of acute rheumatism. There is more evidence to support the contrary view that this nervous excitability commonly precedes infection and probably even prepares the ground for the rheumatic invader. The various etiologic factors in the rheumatic state are potent as far as they predispose to nervous excitability and infection. The heritable factor cannot be of great importance as there are many facts that declare it primarily as an environmental disorder. The health of the rheumatic child is improved and stabilized by treating its nervous instability. This is done by the removal of the grosser environmental stresses if possible by the adjustment of the child's reaction to its environment and, most important, by continuous sedation with phenobarbital.

Edinburgh Medical Journal

50 65 128 (Feb) 1943

- Acute Aplastic Anemia Following Antisypilitic Treatment J Grech A J Rhodes and A Grunberg—p 63
- Wound Hormone J A Davidson—p 70
- Vitamins in Relation to Hemorrhage H Scarborough—p 80

Journal Obst & Gynaec of Brit Empire, Manchester

50 1-80 (Feb) 1943

- Study of Craniolacunia J B Hartley and C W F Burnett—p 1
- Maternal Birth Palsy Due to Trauma H H F Barnes—p 13
- Lessons and Virtues of Salpingography Improved Technique V B Green Armistage—p 23
- Simmonds's Disease Due to Postpartum Necrosis of Anterior Pituitary H L Sheehan and V G B McLetchie—p 27
- Accurate Pelvimetry C Nicholson—p 37
- Cangrene Occurring During Puerperium G B Mair—p 44
- Observations on Shute's Test for Antiproteolytic Properties of Human Blood Serum in Cases of Abortion Premature Labor Accidental Hemorrhage and Normal Pregnancy Vera I Krieger—p 48
- Chlorionepithelioma (Some Observations) H E Murray and H Ahmed—p 55
- *Multiple Primary Cancers of Uterus R G Maliphant—p 59
- Pregnancy and Labor Complicated by Ascending Malignant and Bedsores of Unusual Size J B Dawson—p 63

Multiple Primary Cancers of Uterus—The instance of multiple primary cancer of the uterus that Maliphant cites fulfilled the criteria for such a diagnosis: the cancers possessed distinct microscopic characters, different sites of involvement and complete independence. The entire corporeal endometrium of the author's patient was involved in a diffuse type of adenocarcinoma, while in the cervical canal there was an exophytic squamous cell carcinoma growing from its anterior wall. The demarcation of the tumors was clear, and any suggestion of transition from one to the other could not be detected.

Lancet, London

1 163-192 (Feb 6) 1943

- Diagnosis and the Patient L Cole—p 163
- Orchiectomy in Cancer of Prostate T J D Lane—p 166
- Social Effects of Neurosis A Lewis—p 167
- *Erythropoiesis in Scurvy M C G Israels—p 170
- Bone and Joint Injuries R Watson Jones—p 172
- Secondary Agranulocytic Angina C McGibbon and F Glyn Hughes—p 173
- Cannon Shell Injuries R Smith—p 175

1 193-224 (Feb 13) 1943

- Chronic Parkinsonism Its Progress and Treatment A Hall—p 193
- Further Observations on Acute Staphylococcal Infection E C B Butler and F C O Valentine—p 194
- Rehabilitation After Meniscectomy Experience at an Army Convalescent Depot J J R Duthie and J G Macleod—p 197
- Chronic Meliodosis Case Diagnosed in England A Grant and C Barwell—p 199
- Hemolytic Anemia Due to Sulfapyridine E I Jones—p 201
- Phosphorus Burns E Obermer—p 202
- Preparation of Grouping Serum R A Shooter—p 202
- Group Psychotherapy for War Neuroses D Blair—p 204

Orchiectomy in Cancer of Prostate—Lane reports that, following orchiectomy, 23 patients with carcinoma of the prostate obtained almost immediate and complete relief from severe pain due to metastasis. His observations extend over six months. In many instances the consistency and mobility of the prostate were apparently restored to normal or much improved. The general health was commonly benefited. Estimations of the blood acid phosphatase ranged from 23 to 77.5 units per hundred cubic centimeters in cases in which there was x-ray evidence of bone metastasis. In all cases there was urinary retention which was relieved by a Thompson punch resection. Postorchiectomy estimation of the blood phosphatase is likely to prove useful in the management of these cases. Huggins and his colleagues suggest that if the acid phosphatase of the serum does not reach a low level after castration androgens are presumably being produced outside the testis; this is an indication for estrogen therapy.

Erythropoiesis in Scurvy—Israels describes the changes in the bone marrow in 3 cases of scurvy and anemia before and after treatment with ascorbic acid. In 2 there was evidence of diminished erythropoiesis and in 1 erythropoiesis was not significantly abnormal. After treatment with a corbic acid erythropoiesis of the bone marrow was increased in all cases. The anemia also improved rapidly without any specific anti-anemic treatment. Ascorbic acid deficiency seems to be more a depression of erythropoiesis than a failure of maturation. The present shortage of a corbic acid in the diet may eventually lead

to depression of erythropoiesis and consequent anemia should be borne in mind especially under present conditions of dietary restriction. The increased incidence of anemia particularly among pregnant women because of an inadequacy of iron in the diet has been suggested as the cause. Also a diet deficient in ascorbic acid may well be a contributory cause of this anemia. Ascorbic acid should be given to any patient whose anemia does not respond satisfactorily to iron.

Gastroenterologia, Basel

66 249-360 (Nos. 5 and 6) 1942

- Edematous Change of Blood Vessels of Small Intestine—Functional Structure of Intestinal Wall—G. Wolf-Hendel—p. 249
Sphere of Activity of Hemopoietic Substance in Pernicious Anemia—C. De Lamen—p. 255
Gastroscopic Studies Following Abdominal Operation—Late Gastroscopic Picture After Perforation of Gastroduodenal Ulcers—F. von Friedrich—p. 258
Treatment of Ulcerative Colitis by Salicylazosulfapyridine—Anna Svartz—p. 317
Clinical Observation on Lambliasis—P. R. Dreyfus—p. 322
Therapy of Peptic Ulcer with Sex Hormones—C. Adams—p. 324

Salicylazosulfapyridine in Ulcerative Colitis—Svartz experimented with a new sulfonamide compound, salicylazosulfapyridine, which had been found effective in polyarthritis. She reports the effects of salicylazosulfapyridine in 5 cases of ulcerative colitis. Salicylazosulfapyridine appears to be the best available medication against ulcerative colitis. Two tablets of 0.5 Gm. each were given from four to six times daily. After the symptoms of ulcerative colitis subsided the treatment was continued in gradually decreasing doses for approximately a month. Administration of the drug is rarely frequently accompanied by fever and rashes while other complications are rare. Investigations revealed that the sulfapyridine constituent is the cause of skin eruptions. Skin tests are of no value in the detection of hypersensitivity to either salicylazosulfapyridine or sulfapyridine. Patients who have given negative cutaneous reactions exhibited signs of hypersensitivity. Aminopyridine, a substance which probably forms in the organism as the result of the cleavage of sulfapyridine gives a positive cutaneous reaction in patients who have had an exanthem after medication with salicylazosulfapyridine.

Clinical Observation on Lambliasis—Dreyfus reviews the symptomatology of lambliasis on the basis of 16 cases observed at the medical clinic of Iusimne. The condition was formerly regarded as rare and harmless. The use of the duodenal tube has demonstrated that it is comparatively frequent. The effects of lambliasis are not limited to the intestine and the biliary system; the toxins of lamblia organisms may act on the nervous system and may cause grave changes in the general condition. In the presence of clinical pictures with obscure etiology, lamblia should be systematically searched for. Acridine dye preparations, such as atabine or acranil, permit a "therapia sterilisans magna."

Schweizerische medizinische Wochenschrift, Basel

72 1025-1052 (Sept. 19) 1942 Partial Index

- Epidemiology of Poliomyelitis—G. Tanconi and H. Zellweger—p. 1025
Dietetic Therapy in Rheumatic Diseases and Its Use in Military Hospitals—O. Gsell—p. 1029
Sulfonamide Therapy in Acute Streptococcal Nephritis and Typhoid and Paratyphoid—M. P. Marcel—p. 1032
Combined Cranial, Cerebral and Ventricular Volumetry—R. de Montmollin—p. 1038
Hepatogenic Osteodystrophies—G. Mayor—p. 1042

Hepatogenic Osteodystrophies—Lenke and Jung called attention to the faulty union of fractures in subjects with hepatic lesions, particularly with biliary fistulas. Systematic study of hepatic disorders, such as cirrhoses and hepatic or biliary cancer, and of severe hepatic disorders secondary to acute yellow atrophy or to a hemorrhagic cholangitis demonstrated that these disorders are constantly accompanied by osseous lesions. Mayor confirmed these observations in experiments on rats and dogs. The polymorphism of bony alterations in persons with grave

hepatic disorders does not permit the conclusion that the skeletal defects are secondary to loss of bile. Serologic analyses demonstrate that disease of the liver brings about a complex disturbance of the metabolism, of a number of elements essential to the development of the organism. Taken individually, these manifestations do not explain the bony disturbances, their combination, however, seems sufficient to explain those which the author classifies as hepatogenous osteodystrophies. Disturbance in the fat metabolism in the case of insufficient biliary excretion is at the base of poor calcium assimilation, the fats being eliminated by the intestine in the form of calcareous soaps. A pathologic fat excretion leads to a loss of calcium. Biliary salts play the role of a co-ferment with regard to the pancreatic lipase and increase the hydrolytic power of the pancreatic juice toward neutral fats. Bile contains substances indispensable to the breaking down of soaps and fatty acids. Insufficiency of biliary excretion leads to faulty fat absorption. Steatorrhea and faulty calcium absorption which it involves have been known for a long time. The author discusses disturbances in the vitamin D and A metabolisms and the involvement of the parathyroids, and the hypophysis in hepatic disorders. Hepatogenic bone lesions should be classified with the endogenous types of osteodystrophies of visceral character similar to the renal and pancreatic osteodystrophies.

Archivos Argentinos De Pediatría, Buenos Aires

18 327-420 (Oct.) 1942

- Hemorrhagic Pichymeningitis—R. P. Berauger and L. M. Codeglia—p. 327
Acute Aseptic Puriform Meningitis—R. Cihis Aguirre, Sara de Alzaga and D. Aguilar Giraldes—p. 333
Cerebral Hemorrhages in the Newborn—E. Halac and J. J. Halac—p. 342
Normal Values of Alkali Reserve in Nursing—M. J. del Carril, A. E. Farquhar, M. Gori and J. C. Vidal—p. 360
Sudden Death in Early Infancy—J. M. Albores—p. 365

Cerebral Hemorrhages in the Newborn—The Halacs collected cases of cerebral hemorrhage in the newborn in the institute of maternity in Cordoba during the last four years from a total number of 5,812 deliveries. They found that children of primiparas die of cerebral hemorrhage more often than do those of multiparas, the percentages being 1.27 and 0.83 respectively. Abnormal presentations and obstetric manipulations are likely to cause cerebral hemorrhage. The authors observed the following mortality rates in the different presentations: vertex 0.59 per cent, brow 3.33 per cent, face 7.4 per cent, pelvic 6.6 per cent. This suggests that an abnormal presentation is to be converted into a less dangerous one. Narrow pelvis and other obstacles to delivery involve dangers for the fetus if they are not discovered until after delivery has begun. Efforts should therefore be made to diagnose them early. Dystocia caused by abnormal uterine dynamics may have a traumatizing effect on the fetus. Use of substances capable of counteracting these dystocias will remove factors likely to elicit cerebral hemorrhage in the fetus. Correct selection of the obstetric intervention and the careful execution are of great importance, cerebral hemorrhages were present in 5.86 per cent of the children delivered with forceps, in 11.22 per cent of those delivered by internal rotation and extraction and in 7.68 per cent of those delivered by cesarean section. Syphilis and toxemia of pregnancy may cause changes in the tissues of the fetus. Their early detection and treatment will reduce the percentage of infants with cerebral hemorrhage. Women with menstrual disturbances have a high rate of artificial deliveries of infants who die of cerebral hemorrhage. If a child is born with any of the aforementioned antecedents and manifest asphyxia, resuscitation measures should be carried out cautiously and cerebral hemorrhage should be thought of. Immediate and prolonged immobilization (fifteen to twenty days) is indicated. Ice should be applied to the head, vitamins C and K and coagulating substances should be administered. At the author's clinic in Cordoba vitamin K is injected routinely into all parturient women in whom prolonged labor or obstetric manipulation seem likely.

Book Notices

Fractures of the Jaws and Other Facial Bones By Glenn Major D.D.S. M.D. F.A.C.S. With chapters on Radiographic Technique by Lester M. J. Friedman B.S. M.D. Acting Director Department of Radiation Therapy the Western Pennsylvania Hospital Pittsburgh and War Aspects of Jaw Fractures by Arthur Dick D.D.S. M.D. Major Medical Corps Army of the United States Cloth Price \$7.50 Pp 446 with 225 illustrations St Louis C.V. Mosby Company 1943

This textbook is of interest and value to the physician the surgeon and the dental surgeon. This is particularly true now that large numbers of civilian doctors are joining military and naval services. They must be acquainted with the pathology and basic surgical principles involved in the management of these fractures. The text is easily readable by the general practitioner. It presents the essential basic facts pertinent to the subject which make it valuable to the surgeon and to the dentist who has not enjoyed a special training in oral surgery.

Chapters on diagnosis the mechanics of displacement of the fragments emergency collateral treatment and the general principles of the reduction and fixation of fractured segments cover the subjects adequately and simply. The various types of reduction and fixation generally employed in fractures of the mandible and maxilla are clearly and adequately described and well illustrated with drawings by the author. These principles and methods are applied to special fractures in the following chapters. These present the fundamentals essential to the management of the variously located sites of fracture and the numerous combinations of circumstances presented in both dentulous and edentulous jaws. Fractures of the malar compound are discussed similarly. The management of nasal fractures is discussed too generally and too briefly. This type of fracture is not well handled in civilian practice as a rule and thus occasions much subsequent surgery which could be avoided. The mechanical devices described are rarely essential to a good result. Postoperative care diet and complications are sufficiently discussed. Chapters on radiographic technique and the war aspects of fracture casualties will be helpful to the military surgeon.

A good index and generous subheadings throughout the text make the subject matter readily accessible. The volume should be in the hands of every practitioner.

Speaking of Man A Biologist Looks at Man By Michael F. Guyer Professor of Zoology University of Wisconsin Madison Cloth Price \$3.50 Pp 321 New York & London Harper & Brothers 1942

This book is a rather uneven combination of scientific facts for the layman biologic interpretations of human behavior common sense observations about everything and poetry. Professor Guyer is at his best in his exposition of the value of science and in his lucid and interesting presentation of the findings of astronomy chemistry biology and psychology. The book would have gained in consistency and power if it had been confined to the definition of scientific method and to a summary of scientific knowledge. The biologic interpretations of behavior are inadequate and one-sided since the author does not integrate them with the points of view of social psychology and anthropology of which he shows little or no knowledge. His observations on human conduct are wise and witty but are often unrelated to his scientific facts and biologic point of view. They seem frequently to arise more out of his experiences as a person in our American culture than out of his experiments in the laboratory. This is almost inevitable when a specialist attempts to apply his knowledge gained in one small field to the whole area of human behavior including sex education democracy and international relations. Many readers will be uplifted by the quoted poetry and Professor Guyer's own prose poetry.

Obstrucción del colédoco y decompresión del sistema biliar obstruido. Estudio de cirugía experimental consideraciones clínico quirúrgicas. Por el Dr. Abel N. Canonico. Tesis de doctorado Universidad Nacional de Buenos Aires Facultad de ciencias médicas Escuela de medicina Paper 1p 149 with 66 illustrations Buenos Aires 1935

A good experimental study of the lesions induced by bile duct obstruction. The black and white and colored illustrations are as good as those seen in first class textbooks if not better. Since comprehensive summaries in English French and German are appended and the publication is available for exchange we can dispense with an analysis of the author's conclusions.

Clinical Laboratory Diagnosis By Samuel A. Levinson M.S. M.D. Director of Laboratories and Pathologist, Research and Educational Hospitals Chicago and Robert P. MacFate Ch.E. M.S. Ph.D. Assistant Director of Laboratories Research and Educational Hospitals Second edition Cloth Price \$10 Pp 980 with 171 illustrations Philadelphia Lea & Febiger 1943

The second edition of this excellent book has been thoroughly revised and brought up to date. New methods have been added where experience has shown them to be of value. Old methods which have proved of little worth in the light of recent investigations have been deleted. The latest interpretations of clinical laboratory findings and many new items have been included. There are sufficient illustrations, including several colored plates of skin reactions. The first edition proved its general usefulness. As a textbook for students in clinical pathology it served as a guide for general laboratory technique and as the basis for well recognized interpretations of laboratory findings. Detailed discussions were limited to matters not previously covered in the general medical curriculum. Reference was made to a few pertinent items from previous studies to serve as a reminder of all the work that had gone before. Most of the controversial points were reserved for the lecture room. The intern and the practicing physician have found the book of value in the interpretation of laboratory findings and as an aid in the study of cases requiring laboratory work. In the clinical laboratories or the average hospital it serves as a quick ready aid. The method of presenting the various laboratory techniques in simple and concise terms has served to meet the needs of the laboratory technician from the inexperienced beginner to the highly trained medical technologist and clinical pathologist.

Additions to the second edition include discussions of water metabolism acid base balance bone marrow findings, blood volume the Rh factor, prothrombin and many other items which have become more important in the past few years. The chapter on blood chemical methods has been brought up to date and methods for the photometer have been added. This section should prove of great value to the clinical laboratory, because methods have been modified so that the same reagents are used whether the product is to be read in the colorimeter or in the photometer. At all times but especially in the present emergency clinical laboratories are faced with the problem of performing tests when the apparatus used needs repair. The colorimetric determinations here presented may be converted from the photometer to the colorimeter or the reverse with but slight changes in technique and with no loss of time for the preparation of new reagents. Thus continuation of the normal routine may be effected when either the photometer or the colorimeter requires repair. Among the new blood chemical methods described are ascorbic acid, acid and alkaline phosphatase amylase bromine and sulfonamide compounds. The comprehensive tables of normal and abnormal findings have been revised. The latest approved changes in the Kolmer complement fixation test the Kahn test and other serodiagnostics tests have been added. The chapter on general bacteriology has been completely revised with the addition of detailed technique for the initial isolation and final identification of all the common bacteria. The comprehensive tables of the characteristics of the more common bacteria have been revised. Two excellent color plates of bacteria have been added. Bergey's latest nomenclature and classification have been followed throughout. Extensive revisions have also been made in the chapters on sputum pediatric procedures histologic technique and legal medicine.

The systematic arrangement of the book follows that of the first edition. Extensive use has been made of charts and tables which are especially valuable. The outline of the course in clinical pathology which appeared in the first edition has been deleted to allow more room for recent important tests. Aided from this deletion more than a hundred and sixty pages of text have been added. The book is unique in its comprehensiveness without any sacrifice in clarity or subject matter. Its usefulness has been proved and it has been accepted as a standard work on clinical laboratory diagnosis. The book is unqualifiably recommended to technicians students clinical pathologists and physicians.

The Sight Saver By C. J. Gerling. Cloth. Price \$2. Pp 202. New York: Harvest House, 1941.

The author is not a physician and is known to the reviewer as author of this book and another, "The Complete Weight Reducer." This book is written to acquaint laymen with the essential facts about the eyes and to warn them against the methods employed by quacks. It seems admirably conceived for this purpose. The facts about the eye and its functions are given in concise paragraphs, arranged alphabetically, with cross references to other related sections. It is debatable whether this arrangement is conducive to pleasant reading, but it does allow a reader to find easily the information available on any subject. The information was obtained from a number of books and pamphlets both medical and popular, which are listed and seem to have been well selected. Being written by a layman the language is such as to be easily understood by laymen.

The author represents consistently the views held by most ophthalmologists. One might point to instances of undue optimism concerning the effects of treatment in certain diseases and to an unduly pessimistic attitude toward the result of surgery in strabismus. On the whole, however, the information is such as any ophthalmologist would be glad to place in the hands of his patients.

At this time, when popular enthusiasm has been rained by Huxley's book on the Bates method of correcting eye defects by exercise, it is worth quoting part of what the author has to say about Dr. Bates and his methods. Though a graduate of a recognized medical school Bates enjoys the dubious honor of being the patron saint of the multitude of charlatans who prey upon persons whose vanity or convenience brought them to seek to escape the need for wearing glasses. Under Quackery and Fraud, the author goes further into this matter and into other forms of deception which have such a strong appeal to those with weaker ailments. Various well advertised eye drops are described with advice that boric acid solution or isotonic solution of sodium chloride is as good when a cleansing solution is required. Patients are cautioned against self medication and against a number of beauty aids for use about the eyes.

The functions of the eye physician, optometrist and optician are well defined, and the advantages of examination by the physician are stressed. The section on the price of glasses is a fair discussion of this touchy subject.

The Mind and Its Disorders By James N. Brawner, M.D., Medical Superintendent, Brawner's Sanitarium, Smyrna, Georgia. Cloth. Price \$3.50. Pp 224 with 7 illustrations. Atlanta: Walter W. Brown Publishing Company, 1942.

The author, superintendent of a sanatorium, purports to describe briefly and in simple language the neuroses, psychoneuroses and psychoses, writing especially for the general practitioner. Part I is a brief account of the mind as related to cerebral structures and functions. Included here are such subjects as feelings and emotions, intelligence, memory, excitation and inhibition, and the electroencephalogram. No attempt is made to give an adequate account of these fundamental subjects, and the psychologic approach is essentially that of the old "faculty" school. The diagrams illustrating cerebral structures are poorly labeled and give a confused impression of brain centers and their function. Part II is an account of the etiology, symptoms and treatment of the psychoses. Here the psychoses are defined as "disordered intellectual or emotional reactions due to defective heredity, acquired diseases, environmental experiences" or their combinations. Obviously this definition makes no distinction between defects, such as simple schizophrenia, dementia, which may occur without psychosis, psychoneuroses, in which the stress is between the patient and his environment, and the psychoses, in which the stress is primarily within the body. This section of the book is quite complete topically, and the author is to be commended for stressing the view that the subject matter of psychiatry is closely related to internal medicine. The modern shock treatments are described and recommended. Part III is a description of the neuroses and psychoneuroses, the former being regarded as an "abnormal nervous reaction, involving principally the vegetative and lower cerebrospinal mechanisms, while the psychoneuroses involve to a limited extent the mental processes." Suggested treatment is essentially that of diet, hydrotherapy and recreation. Little

attention is given to the need for analysis of the highly important psychologic factors in many of these disturbances. Part IV includes a number of related subjects. The book gives a rapid review of mental disorders, and, despite shortcomings which limit its interest to the trained psychiatrist, it should prove of value to the general practitioner as an aid to his understanding of mental disorders.

Pancreatic Function and Pancreatic Disease Studied by Means of Secretin By Henrik O. Lagerlof, M.D. Translated by Helen D. Frey. With a foreword by Joseph H. Pratt, M.D. Cloth. Price, \$3.50. Pp 289 with 10 illustrations. New York: Macmillan Company, 1942.

In his foreword to this monograph, Dr. Pratt summarizes its import by saying that the work reported by Lagerlof has lifted pancreatic analysis to the level gastric analysis has occupied for many years. Almost half of the volume is concerned with a historical survey of research on the physiology of the pancreas and a description and critique of methods for the analysis of the pancreatic enzymes. There follows a relatively brief section on the secretin test as used by the author and his collaborators, and the results obtained with it on normal individuals and on patients suffering from pancreatic disease. The remaining approximately one third of the book is devoted to summarized case histories of 37 patients with proved diseases of the pancreas and of 26 patients with suspected pancreatic disease. An appendix contains tabular data illustrating the author's experimental work and summarizing control tests on normal subjects. A bibliography of 358 references is also included. This book is a useful reference work for physiologists and for students of gastroenterology. The practical considerations of immediate interest and use to the general practitioner might well have been set forth in a pamphlet only a fraction of its size.

Noxious Gases and the Principles of Respiration Influencing Their Action By Vandell Henderson and Howard W. Haggard. American Chemical Society Monograph Series. Second edition. Cloth. Price \$3.50. Pp 291 with 12 illustrations. New York: Reinhold Publishing Corporation, 1943.

This book is another in the American Chemical Society's Series of Scientific and Technologic Monographs. According to the authors it is written for the practical use and information of chemists, engineers and others engaged in industry. As far as the medical profession is concerned, the book will be of value to industrial physicians and lecturers on industrial medicine. It does not seem suitable for students except as a reference source. Included in the contents are chapters covering a general survey of the field, elements of respiration, the respiratory functions of the blood and their laws and practical applications of the laws of gases and vapors. Of special interest are the chapters offering discussions on the principles determining absorption, distribution and elimination of volatile substances and classification and descriptions of noxious gases and vapors. Supplementing this information are practical statements on methods of resuscitation, first aid and prevention of poisoning by noxious gases.

Técnica e indicaciones de la transfusión en el niño pequeño Por Guillerio Federico Thomas. Tesis, Universidad nacional de Buenos Aires. Facultad de ciencias médicas. Escuela de medicina. Paper. Pp 68, with 20 illustrations. Buenos Aires, 1942.

In this study the author advises the use of peripheral veins for blood transfusions in little children and infants and gives useful data concerning the indications of the method.

Big Little Things in Conquering Pulmonary Tuberculosis By Samuel H. Watson, M.D., and W. R. Hewitt, M.D. Second edition. Paper. Price 10 cents. Pp 28. Tucson, Ariz.: Tucson Clinic, 1943.

This pamphlet is devised for patients with pulmonary tuberculosis who must become adjusted to an entirely new routine of life. It answers the common questions of patients in a straightforward and common sense manner. It can be safely recommended to all patients who have learned of their tuberculosis for the first time.

El nistagmus postoperatorio en neurocirugía Por el Dr. Fermín J. Barella. Tesis de doctorado, Universidad nacional de Buenos Aires. Facultad de ciencias médicas. Paper. Pp 68. Buenos Aires: Aniceto Lopez, 1942.

A study of nystagmus developing after craniectomy, of which the etiology is unknown but the disappearance of which seems to parallel the disappearance of cerebral edema.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TESTING AND RECORDING VISUAL ACUITY

To the Editor—What is considered standard in testing distant and near vision is 20 feet standard for distant vision? Is 14 inches standard for near vision? If a photometer when placed in the same position as the examinee's eyes reads 25 foot candles is that considered standard? If you are unable to answer this in terms of standard, how would you answer it in terms of recommendations? MD New Jersey

ANSWER—It is impossible to apply the term standard to the testing and recording of visual acuity. It is not the distance between the patient and the test chart that is the deciding factor, but the angle that letters of a given size produce on the retina. Snellen, who introduced the present method of recording, utilized 20 feet because that was the most feasible under his working conditions. Ophthalmologists refract at 20, 30 or 40 feet or at 6 or 10 meters according to the available space. Test charts are graded accordingly and the results are recorded by a ratio, of which the working distance is the numerator. Thus 20/20 corresponds to 30/30, 40/40, 6/6 or 10/10. Thus the available working distance is the determining factor, and, when that has been decided on, test charts should vary so that the angular size of the letters corresponds or the ratio of the charts used should be transposed.

Fourteen inches was adopted as the average reading distance by the Committee on Compensation for Visual Injury, and the near chart was so constructed that the letters on that chart subtended an angle of 5 minutes on the retina. The reader is referred to the report of this committee, which appeared in THE JOURNAL, July 11, 1925, page 113.

The photometer reading should be at the test chart and not at the patient's eye. At that point the intensity of illumination must be not less than 10 foot candles nor more than 25.

PAINFUL RECURRENT ULCERS OF MOUTH

To the Editor—A white woman aged 60 complains of recurrent ulcers of the mouth first beginning with the menopause. They are flat irregular shallow ulcers with a purulent base and are associated with excruciating pain recurring from two to four times a year. They are slow to heal. She has been thoroughly studied by a number of competent physicians with no significant positive findings. Her general condition is excellent. Do similar conditions occur as a result of endocrine dysfunction? Kindly suggest methods of treatment or prevention. MD District of Columbia

ANSWER—The ulcerative stomatitis which has been briefly described fits with the diagnosis of peridontitis mucosa necrotica recurrens. This is a familial condition said to be endocrine in origin, occurring in older women. The description of the ulcers with pain is typical and their tendency to recur is noted in the name. None of the treatments proposed have proved consistently successful.

Local treatment with alum, and the use of solution of potassium arsenite internally have been recommended. A trial of ovarian substance (theelin) by injection or orally would be worth while.

Simple ulcerative stomatitis in general is rare in good health and may suggest an early dietary deficiency, especially if the oral hygiene and condition of the teeth are good.

Potassium chlorate 0.65 Gm three times a day is said to be effective.

Fusospirochetal ulcers may be recurrent and may offer little in the way of definite bacterial flora except on repeated examination. The use of neosphenamine in glycerin (10 per cent) alternating with sodium perborate packs would be worth a trial if this condition seems probable.

TREATMENT OF INTERNAL HEMORRHOIDS

To the Editor—Will you please inform me as to the status of electrocoagulation in the treatment of internal hemorrhoids? Is it an accepted procedure? Louis B. Sternberg MD Shelbyville Ky

ANSWER—As far as is known electrocoagulation is not used extensively in the treatment of internal hemorrhoids. Doctors who treat internal hemorrhoids are more likely to use an injection of carbolic acid solution or quinine and urea hydrochloride. The technique for these injections and the strength of the solution

can be found in any textbook of surgery. Either of the methods, electrocoagulation or injection of irritating solutions, causes thromboses in the veins of the internal hemorrhoids which later result in fibrosis and some shrinking of the hemorrhoids. The difficulty with the whole procedure is that any other lesion such as polyps, fissures or external hemorrhoids covered by skin are not amenable to treatment. Therefore only a limited number of patients should be treated in this manner and those with careful selection. If these precautions are neglected, patients frequently are made worse by injections or electrocoagulation and suffer from ulceration, hemorrhage or abscess formation. In addition, most dilated veins causing hemorrhoids are present under the skin as well as under the mucosa, and the veins under both areas anastomose freely with one another. If only one group is treated leaving the other, recurrence is almost inevitable. This means that the treatment of internal hemorrhoids by electrocoagulation or injection treatment is probably but a palliative measure in most instances.

GONOCOCCI AND OTHER ORGANISMS GIVING POSITIVE OXIDASE REACTION

To the Editor—With regard to culturing gonococci on chocolate blood agar medium I should appreciate information on organisms other than gonococci that give oxidase reactions that would be likely to be normal inhabitants of the vaginal tract. Also may I have information concerning the gram staining properties as well as the general morphology of these organisms if any? I am also interested as to the sugar fermentation reactions of any organisms that might be confused with gonococci when using the oxidase method of detection of gonococcus colonies by culture method. Albert R. Cameron MD Wilmington N C

ANSWER—When J. W. McLeod (*J Path & Bact* 31:185, 1928) introduced the use of the oxidase test for rapid identification of the gonococcus, he gave a list of other organisms which were oxidase positive. Those which have been encountered occasionally in the genitourinary tract are other *Neisseria* (*catarrhalis* flava and sicca), *Hemophilus* certain yeasts, some varieties of the coliform bacillus and *Bacillus subtilis* and *Streptothrix* which occasionally occur as contaminants. Organisms which have not been completely identified have also been reported. McLeod (*ibid* 39:221 [July] 1934) and Price (*Brit M J* 1:199 [Feb 2] 1929) small gram-negative diplococci, Luther Thompson (*J Bact* 31:82 [Jan] 1936) a gram-negative diplobacillus Weiss and Calvin (*South M J* 34:1102 [Nov] 1941) a gram-positive bacillus.

Less than 2 per cent of the positive reactions are due to these organisms and many of them can be differentiated on the basis of morphology alone. The others can be ruled out by fermentation reactions.

McLeod (*J Path & Bact* 39:221 [July] 1934) and certain other workers Thompson (*J Infect Dis* 61:129 [Sept-Oct] 1937) Spahr and Landy (*J Lab & Clin Med* 21:650 [March] 1936), Hac Hesseltine Adair and Hibbs (*Am J Obst & Gynec* 41:98 [Jan] 1941) have found the tetramethyl p-phenylene diamine hydrochloride preferable to the dimethyl compound for differentiation.

It must also be remembered that an occasional strain of gonococcus will fail to give a positive reaction to the oxidase test at least on primary isolation (Pitts A C *Am J Syph Gonorr & Ven Dis* 24:184 [March] 1940).

Additional references

- Leahy A D and Carpenter C M *Am J Syph Gonorr & Ven Dis* 20:347 (July pt 1) 1936
Sullivan S E and Gotthieb Eleonore *ibid* 25:22 (Jan) 1941
Jacobsen Frances Mason H C and Arnold Lloyd *J Lab & Clin Med* 23:729 (April) 1938

SNAKEBITE AND INTELLIGENCE

To the Editor—The bushmaster snake with neurotoxic venom is found in the jungles of eastern Peru. At a mission on the Perene River I saw a normal Indian who had recovered from the bite and who was said to be more intelligent than previously. This is the usual result. How does this compare with the use of snake venom in the treatment of insanity?

Roland Young MD Casapalca Peru

ANSWER—Record has not been found in the scientific medical literature concerning the treatment of insanity with snake venom. One snake dealer has been treated for five different bites and his wife for seven bites. Since they continue to handle snakes after being bitten five and seven times respectively, this seems to offer conclusive proof that this venom has not given them any excess of intelligence. There is no evidence that the snake handlers in carnivals appear to possess superior mentality and horses which are used to make antivenum do not form an especially happy looking lot.

PELVIC MASS AND ABDOMINAL FISTULAS

To the Editor—A woman aged 27 was taken acutely ill about five months ago and had to be hospitalized at that time. A right lower quadrant incision was made and a pelvic mass found. Small intestinal loops which adhered to the mass were peeled off and the mass was drained. About three weeks after the first operation an incision on the left side was made for drainage of the mass. About three months after the first operation the pelvic mass was removed. A biopsy after the second operation indicated some kind of fungous disease. A culture of the pus taken out of the mass at the time of the third operation yielded *Leptothrix*. About one month after the third operation a foreign body 2.5 cm long at one end and 3 mm wide tapering to a point at the other end was expelled through a fistula. At present the patient is anemic. There are three fistula openings on the abdomen. There is a small mass in the left lower quadrant that causes pain. The general condition is poor. What should be done for the *Leptothrix* infection? Do you think that the expulsion of the foreign body which seemed to be wood, on Jan. 16, 1943 may still result in healing without further medication or intervention?

Alexander Strehlinger, M.D., Elizabeth, N. J.

Answer—Because of the poor condition of the patient all aids must be employed to build up her resistance by prescribing a properly balanced diet and extra vitamin B complex and perhaps also by giving one or more blood transfusions. Roentgenograms both anteroposterior and lateral should be taken and a search made for additional foreign bodies. If none are found the treatment should be conservative because it is possible that after a while the fistulas may close spontaneously. If a foreign body is found in operation will most likely be necessary, but this should not be performed until the patient's condition is considerably improved. This may require many months. In some instances a foreign body becomes walled off by adhesions and no harm results from leaving it. Therefore every effort should be made to persist in conservative treatment but the patient's physical and mental condition must be bolstered up constantly.

FAT DEFICIENT DIETS

To the Editor—What are the first noticeable symptoms of fat deficiency in human beings? I have never seen any in this country, but if rationing becomes more strict we may see it here. While in Vienna I heard remarks that in World War I no fat was obtainable in Austria (and Germany?) and that that was the main reason why the armistice was signed in November 1918. I heard (in Vienna) that people at work or on the street would fall over exhausted and could not be revived unless given fat, this was given in the form of cream or butter in the early part of the war. Later on no fats were available and so nothing could be done for such people. The doctors there attributed this sudden exhaustion to starvation in general but primarily to lack of fats. I have never read anything along the line of fat deficiency in our medical literature, but of late I have been recalling what I heard in Vienna. Can you give me something authentic on this subject? Fats are needed for making glycerin, which is needed in making explosives so in the event of a long war we may have to face fat deficiency.

M.D., Wisconsin

Answer—The principal difficulty with the diet of people in Europe during the first world war was a lack of calories, resulting in severe loss of fat. The older people suffered from deficiency of thiamine and ascorbic acid and the children suffered from numerous vitamin and mineral deficiencies. Both children and adults had protein deficiency, as indicated by the development of "war edema." It is true that fats were low, but nobody as far as is known has produced a condition of fat deficiency in the human being. In general the diet ought to contain not less than 25 per cent of its calories in the form of fat and it is desirable that this fat contain some of the unsaturated fatty acids, such as linoleic acid, which is found in lard and many other common fats. There is some experimental evidence which indicates that there may be a need on the part of the human being for unsaturated fatty acids, but this need is supplied by the fats that are present in ordinary foods.

INSPISSATED MUCUS ON NASAL SEPTUM

To the Editor—A man aged 70 has a perforation of his nasal septum anteriorly, with the formation of a thin layer of jelly-like material in the area immediately behind. The material is removed with difficulty and recurs in one to two days. He has had tuberculosis, but it is quiescent, the Kahn reaction is negative. All specialists consulted have prescribed ointments which have proved ineffective. Have you any suggestions as to the cause and treatment?

M.D., Michigan

Answer—Since no mention is made of the presence of lesions on the turbinates or septum or of the presence or absence of an atrophic rhinitis one can only infer from the question that the condition described is simply one of inspissated mucus. No doubt there is a tendency to atrophy of the mucous membrane with consequent changes in the mucous glands. Tenacious secretion is quite common in such cases and will tend to accumulate and dry on the posterior margin of a perforation and the area just posterior. The treatment should be directed toward the

loosening of the "jelly-like material," which can be accomplished by douching with a warm solution of sodium bicarbonate and the application of a bland nonirritating ointment such as boric acid in equal parts of petrolatum and hydrous wool fat.

ACNE, FALLING HAIR AND MENSTRUAL IRREGULARITY IN YOUNG WOMAN

To the Editor—An unmarried woman aged 22 is the only child of a widow who shows her daughter more attention than is necessary. This girl has not worked to help support the home in the past four years, she spends a great deal of her time in bed and complains bitterly about her facial eruptions, a few acneiform pustules on the chin. She has few friends and seldom goes anywhere. She recently began to menstruate twice monthly, the flow lasting three to five days with dysmenorrhea throughout the flow. There are no clots and the flow is moderate. Menses began at 14 every twenty-eight days and were always normal. There is nothing abnormal in her past history either mentally or physically. The basal metabolic rate is minus 5. The blood pressure is 118/70, the pulse 100 and regular. The heart is essentially normal. Eyes, ears, nose and throat are all grossly normal. Knees kickers are slightly exaggerated and other superficial reflexes rather normal. The abdomen is tender on deep pressure in both lower quadrants. There is no rigidity and no palpable mass. The body weight fluctuates between 127 and 133 pounds (57.6-60 Kg). The body temperature is within normal limits. The height is 5 feet 2 inches (157 cm). Vaginal examination reveals no discharge. The hymen is intact. Rectal examination of the pelvic organs does not reveal more than tenderness in the area of each ovary. The breasts are of normal size and consistency. The areolae are normal except for a few enlarged Montgomery follicles. The patient complains that for the past few months her hair has been falling out and that her eyes are becoming smaller. I could agree with the first, but I am not sure about the second complaint.

M.D., New York

Answer—The only recorded objective disturbances in this case are slight acne, perhaps some loss of hair and too frequent and painful menstruation. Undoubtedly there is a large psychic factor which makes the patient emphasize unduly the few acneiform pustules, the falling out of the hair and the complaint about the eyes. Even though the treatment of all this patient's symptoms is generally unsatisfactory, an effort should be made to treat them. The treatment of the menstrual disorders is the most difficult. If the menses occur regularly every two weeks there need be no concern. It may be that real menstruation occurs every four weeks and that in the intervals between these menstrual flows the bleeding is associated with ovulation. This disturbance can be checked with endocrine therapy but the treatment is usually expensive and of only temporary benefit.

The patient is overweight, and thyroid medication may help some of her symptoms. In addition some form of suggestive therapy is definitely indicated. An effort should be made to have the patient get out and secure employment. Above all, some way should be found to bring her in contact with young men and women so that she may have a few close friends, especially among men. The situation should be explained to the patient's mother and her aid enlisted.

BENIGN EOSINOPHILIA OF UNKNOWN ORIGIN

To the Editor—A man aged 55, who was born in Spain, came to me with regard to a report of a 46 per cent eosinophilia in his blood for a great many years. This finding was accidental. There is no trace of physical impairment or loss of vigor and health. Blood Wassermann and Kahn reactions have been repeatedly negative. X-ray examinations of the chest and heart have given normal results. The urinalysis gave normal results. The skin and muscles are free from deep tumors. He has been hospitalized for further study of his condition, and all tests have been negative. There has never been any illness directly attributed to the eosinophilia. There has been no local swelling or swelling of extremities. Chyluria has never been observed. Special examination of the blood day and night for microfilaria has been negative. Could you give me a possible diagnosis of a case of this kind and also the prognosis? His last hemogram was hemoglobin 101 per cent (14.7 Gm), erythrocytes 5,090,000, leukocytes 19,150, color index 1. The differential was lymphocytes 22 per cent, eosinophils 46 per cent, basophils 0 per cent, mononuclears 1 per cent, polymorphonuclear neutrophils 31 per cent.

E. N. Bocanegra-Lopez, M.D., San Juan, Puerto Rico

Answer—There seem to be no clues in this case that would enable one to classify it among the known causes of eosinophilia. In some cases of trichinosis, eosinophilia has been reported to persist for years. A rather pronounced degree of benign eosinophilia has been observed in several members of a family (Stewart, S. G. Familial Eosinophilia, *Am J M Sc* 185:21 [Jan] 1933). A study of the patient's relatives would therefore be of interest. Even after painstaking study of some patients with eosinophilia, it may not be possible to determine the cause.

As long as the patient has no complaints or abnormal physical findings and the eosinophilia is of long standing, there is no reason why this condition should give him any trouble in the future. A yearly check-up on the blood count and differential is indicated.

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ENDOMETRIOSIS

A STUDY OF ONE HUNDRED AND SEVENTEEN CASES
WITH SPECIAL REFERENCE TO CONSTRICTING
LESIONS OF THE RECTUM AND
SIGMOID COLON

E L JENKINSON, MD
AND
W H BROWN, MD
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Medical literature of the past two decades is replete with studies of most of the fundamental characteristics of endometriosis. The importance of this disease as a cause of constricting lesions of the rectum and sigmoid colon, however, has not been sufficiently stressed, nor is adequate roentgenologic information available. Correct preoperative diagnoses of this condition cannot be minimized. Constricting endometrial lesions of the rectum and sigmoid colon often are confused with carcinoma, and patients sometimes are subjected to radical resection of the bowel,¹ whereas castration usually will suffice. Many constricting endometrial lesions of the rectum and sigmoid often may be regarded as some other inflammatory or infectious condition and receive medical management with little or no improvement.

PATHOLOGIC CHARACTERISTICS

The term "endometriosis" in this discussion designates islands of ectopic adenomatous tissue with histologic and functional characteristics similar to that of normal endometrium and located in the female pelvis outside the uterine wall and cavity. Implants on the peritoneal surface of the uterus have been included in this study. The term "adenoma" refers to islands of endometrial tissue within the myometrium.

Endometriosis of the sigmoid colon or rectum resembles endometrial lesions elsewhere. Implants usually occur on the serosal surface with subsequent involvement of the muscular coats. The mucosa only occasionally is invaded. An associated intense inflammatory reaction is always present. Endometriosis of the rectum and sigmoid colon usually is considered a benign lesion. Josefsson² and the Pattons³ were unable to find in medical literature an unquestionable case with development of carcinoma from endometriosis of the sigmoid colon. Braine⁴ reports a case of rectal carcinoma con-

comitant with stenosing rectosigmoidal endometrioma in the rectal wall. Jose and Hanson⁵ found a carcinoma of the sigmoid with endometrioma in the pelvic pouch and vaginal fornix simulating metastatic carcinomatous lesions of the regional lymphatic nodes. Nylander⁶ reports a spindle cell sarcoma of the rectum containing endometrial tissue. Schofield and Bacon⁷ cite cases reported by Seitz⁸ and Thomson⁹ in which a malignant condition had developed from endometriosis in the rectovaginal septum, and 1 reported by Lockyer¹⁰ presenting metastatic endometrial tissue in the lung.

The frequency of associated pelvic disorders is noteworthy. Of 118 cases of endometriosis Keene and Kimbrough¹¹ found that 93 had complicating pelvic disorders and more than half had uterine myomas. The combined series of Counseller¹² and Masson¹³ reveal associated pelvic disorders in 54.5 per cent of 884 cases of adenomyosis of the uterus and pelvic endometriosis.

INCIDENCE OF ENDOMETRIOSIS

The incidence of pelvic endometriosis has been demonstrated by Green-Armytage,¹⁴ who found endometriomas in 89 per cent of one thousand consecutive abdominal operations. Ten per cent of 342 cases presented microscopic evidence of endometriosis. Sampson¹⁵ found endometriosis in sixty-four of two hundred and ninety-six laparotomies (21.6 per cent). From several series¹⁶ he concluded that pelvic endometriosis occurs in 10 to 20 per cent of all women between 30 years of age and the menopause. Jones¹⁷ stated that about 5 per cent of women 40 years of age have fibroids.

5 Jose I B and Hanson B S. Carcinoma of Sigmoid and Endometrioma in Pelvic Pouch and Vaginal Fornix. *M J Australia* 2:422 (Oct. 1) 1932.

6 Nylander P E A. Spindle Celled Sarcoma of Rectum Containing Endometrial Tissue. *Case Zentralbl f Chir* 65:74 (Jan 8) 1938.

7 Schofield J D and Bacon H E. Endometriosis of Rectum and Sigmoid. Review of Literature and Case Report. *Ann Surg* 107:1022 (June) 1938.

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9 Thomson A P. Malignant Endometriosis with Metastasis to the Lungs. *Proc Roy Soc Med* 19:16 1926 (cited from Schofield and Bacon).

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complicated by endometriosis. Patients with endometriosis in the absence of fibroids are not included. The foregoing surveys indicate that endometriosis develops in approximately 15 per cent of all women during their active menstrual life.

DISTRIBUTION OF ENDOMETRIOSIS

The relative frequency of endometriosis involving the sigmoid colon and rectum found in a study of the clinical and operative records of 117 patients at St. Luke's Hospital from 1939 to 1941 inclusive is listed in table 1. In this table and throughout the discussion "endometriosis of the rectosigmoid" designates any endometrial lesion of the sigmoid colon, rectum or rectovaginal septum which by reason of its location, by various degrees of extension or because of the associated inflammatory reaction could encroach on the lumen of the bowel or constrict this portion of the colon or rectum.

Endometriosis of the rectosigmoid was found in 47 of 117 cases. Allen¹⁸ found endometriosis of the bowel and rectovaginal septum in 41 of his 112 patients.

Table 1—Relative Frequency of Endometrial Lesions in One Hundred and Seventeen Cases

Ovary	83
Rectosigmoid	47
Extension of surface of fallopian tubes and broad ligaments	42
Peritoneum of cul-de-sac (not involving other structures)	41
Uterus and ligament	40
Peritoneal surface of uterus	1
Peritoneal surface of urinary bladder	16
Intraperitoneal round ligament	0
Umbilicus	0
Laparotomy scar	0
Appendix	2

Table 2—Relative Frequency of Rectosigmoid Endometriosis (Including Lesions of the Sigmoid, Rectum and Rectovaginal Septum)

	Series Total	Rectosigmoid	Per Cent
Allen ¹⁸	112	41	37.0
Cattell ¹⁹	104	17	16.0
Counseller ²⁰ and Masson ¹⁴	162	51	31.0
Keene and Kimbrough ¹¹	118	6	5.0
Present series ⁴	117	47	40.0
Total	613	162	26.0

Cattell's¹⁹ series of 104 cases of endometriosis included 17 in which there was involvement of the sigmoid, rectum or rectovaginal septum. The combined series of Counseller¹⁹ and Masson¹⁴ include 884 cases of uterine adenomyosis and pelvic endometriosis, of which 162 showed pelvic endometriosis—exclusive of uterine adenomyosis. They found 120 ovarian lesions and 51 lesions of the sigmoid, rectum and rectovaginal septum. Keene and Kimbrough¹¹ in 118 cases list only 6 presenting involvement of the rectovaginal septum, a figure much lower than in most series reported. The relative frequency of rectosigmoid lesions in pelvic endometriosis is summarized in table 2.

About 25 per cent of all women with pelvic endometriosis have lesions of the rectosigmoid. By combining this figure with the previous estimate that approximately 15 per cent of all women develop endometriosis, it may be concluded that from 2 to 4 per cent of all women at some time during their active menstrual life may develop endometriosis of the sigmoid, rectum or rectovaginal septum. At this site it is a potential

factor in causing a constricting or obstructing lesion of the colon and rectum. Endometriosis of the rectosigmoid is important, therefore, in the etiology of constricting lesions of the rectosigmoid, especially in women during their active menstrual life.

INCIDENCE OF OBSTRUCTING ENDOMETRIOSIS OF THE RECTOSIGMOID

An accurate determination of the incidence of obstructing endometriosis of the rectosigmoid is difficult. Many lesions of the rectosigmoid have insufficient involvement of the bowel to produce constriction. The degree of obstruction is probably roughly proportional to the duration of the lesion while under active hormonal influence of the ovaries. Some patients reach the menopause before a constricting lesion can develop. Others are castrated because of an associated pelvic disorder.

A review of the medical literature since 1931 reveals numerous reports of partial or complete obstruction of the rectum or sigmoid colon caused by endometriosis.¹ Other reports—discuss variable degrees of rectosigmoid involvement. Only a few series giving the incidence of obstructing endometriosis of the rectosigmoid were found. Cattell¹⁹ found that 12 of 17 patients with lesions of the sigmoid or rectum had some degree of obstruction. Of Mayo and Miller's²³ 38 patients with involvement of the rectum and sigmoid colon 18 had a proctoscopic examination and 15 showed a narrowed bowel lumen. Of the 47 patients with rectosigmoid endometriosis found in the present series, 21 had symptoms indicating some degree of obstruction. Table 3 represents a summary of these series.

Almost half of all endometrial lesions of the rectum or sigmoid colon cause a degree of constriction sufficient to produce symptoms at some time during active menstrual life. This estimate, of course, is subject to the inaccuracies of pyramided statistics. That these lesions are more frequent than usually considered may be explained by the fact that rectosigmoid lesions and bowel symptoms so often are subordinate to the other symptoms of endometriosis and associated pelvic disorders. When the true diagnosis is overlooked, relief may be obtained by the menopause.

CLINICAL CHARACTERISTICS OF CONSTRICTING ENDOMETRIOSIS OF THE RECTOSIGMOID

Endometriosis of the rectosigmoid is characterized by symptoms similar to other forms of pelvic endometriosis and by gastrointestinal complaints which

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18 Allen, E. A Clinical and Experimental Study of Endometriosis, Am. J. Obst. & Gynec. 26 803 (Dec.) 1933.

19 Cattell, R. B. Endometriosis of Colon and Rectum with Intestinal Obstruction, New England J. Med. 217 9 (July 1) 1937.

20 Counseller, V. S. Personal communication to the authors.

depend on the duration of the lesion and the presence or absence of a constriction.

In the reported series of 117 patients with pelvic endometriosis the youngest was 18 years of age at the time of operation, the oldest was 67 and 30 were 30 years old or less. The age distribution at the time of onset of symptoms is demonstrated in table 4. The age distribution of patients with lesions of the rectosigmoid resembled that of the group. Of 21 patients with symptoms of an obstructing lesion only 3 were more than 40 years of age, none were over 45 at the onset of symptoms. One patient was 24, 5 of the 21 patients were 30 or younger at the time of operation.

Most patients with endometriosis have a relatively long duration of symptoms. The average duration in the present series was 28 years in the group of 21 patients with obstructing lesions of the rectosigmoid 33 years, in the group of 26 patients with rectosigmoid lesions but without evidence of obstruction 23 years, the lesions here being of more recent origin.

A high incidence of sterility usually is considered a characteristic of endometriosis and associated pelvic disease. In the present series 40 patients (34 per cent) complained of absolute sterility, 48 (41 per cent) had been pregnant all pregnancies having been prior to the onset of symptoms of endometriosis, and 29 (25 per cent) were unmarried or without established sterility. Keene and Kimbrough¹¹ found absolute sterility in 40.9 per cent of 118 cases of endometriosis and in the remaining patients an average interval of 9.5 years elapsed since the birth of the last child. Allen¹⁸ was impressed by the prevalence of relative sterility in his study of 112 patients with endometriosis.

A high incidence of menstrual abnormalities was found in the present series. Ninety-five (81 per cent) complained of dysmenorrhea of the acquired type, metrorrhagia or menorrhagia. Allen¹⁸ reported a high incidence of menstrual irregularities. Counseller¹² and Masson¹³ found menstrual abnormalities in 80 per cent of 884 cases of adenomyosis of the uterus and pelvic endometriosis.

The symptoms of patients with constricting endometriosis of the rectosigmoid include presenting complaints of menstrual abnormalities, absolute or relative sterility and a long history of bowel symptoms suggesting an obstruction. Weight loss or other evidence of ill health is seldom present. The most frequent complaint of the 21 patients with obstructive symptoms in the present series was severe progressive constipation usually associated with pain in the low abdomen, which was worse at menstruation. Four patients complained of pain with bowel movements, two had cramps and diarrhea during menstruation, one patient had small ribbon-like stools associated with cramps. Other symptoms included flatulence, abdominal distention, bloating and abdominal discomfort. Fourteen of the 21 patients (67 per cent) had exacerbations of bowel symptoms just before or during menstrual periods.

Endometriosis of the rectosigmoid may have few significant physical manifestations, depending on the location and extent of the lesion. Sigmoidoscopic examination may reveal narrowing of the lumen of the bowel with intact but puckered, red and congested mucosa. The mucosa is rarely sufficiently involved or ulcerated to make biopsies feasible. Biopsy then establishes a positive diagnosis and excludes carcinoma. The intact mucosa explains the low incidence of gross or occult blood which would not be accounted for by other anorectal disease. Endometriosis of the rectosigmoid

rarely causes loss of weight or cachexia. The concentration of hemoglobin in the blood may be decreased significantly, depending on the severity and duration of associated menorrhagia.

ROENTGENOLOGIC CHARACTERISTICS OF CONSTRICTING ENDOMETRIOSIS OF THE RECTOSIGMOID

The barium contrast enema has been considered of little value in the diagnosis of constricting endometrial lesions of the rectum and sigmoid colon. Mayo and Miller²³ state that roentgenograms may reveal constricting lesions which have no diagnostic characteristics. Maclean²⁴ believes that a barium enema contributes little to the diagnosis except to demonstrate an obvious filling defect. The Pattons³ believe that a barium enema may reveal a filling defect with normal mucosal pattern. Medical literature since 1931 includes the report by Joesitsson² of 1 case in which characteristic roentgenologic signs were present. He states that the characteristic roentgenologic findings are a well circumscribed stenosis of the intestinal lumen with an

TABLE 3—Obstructing Endometriosis of the Rectosigmoid

	Number of Patients with Some Degree of Obstruction	Total Number of Patients with Rectosigmoid Lesions
Cattell ²⁰	12	17
Mayo and Miller ²³	15	28
Present series	21	47
Total	48 = 47% of	102

TABLE 4—Age in Years at Onset of Symptoms Referable to Pelvic Endometriosis

	Number	Per Cent
16 to 20	5	
21 to 25	18	
26 to 30	19	
	42	36
31 to 35	22	
36 to 40	25	
	47	40
41 to 45	26	
46 to 50	2	
	28	24
Total	117	

intact mucous membrane. The intestinal portions close to the constricted region present only a picture of mild colitis. The folds of the mucous membrane at the site of the stenosis are prickly and irregular but not ragged and stiff as in carcinoma. He stresses the importance of roentgenologic examinations during menstruation and in the intervals to demonstrate changes in the constricting lesion.

The presence of positive roentgenologic signs of endometriosis of the rectosigmoid depends on the extent of bowel involvement and on the location of the lesion. Implants on portions of the bowel which are freely suspended by a mesentery are less likely to have constricting lesions than are portions of the bowel which are partially extraperitoneal and more firmly attached such as the rectum and lower portion of the sigmoid colon. Two factors probably produce obstructing lesions: first, the endometrial tumor which may involve the bowel wall sufficiently to compromise the lumen, although the mucosa rarely is invaded; second, the intense inflammatory reaction, which is the principal

²⁴ Maclean, N. J. Endometriosis of Large Bowel. *Canad. M. A. J.* 31: 553 (March) 1936.

basis for the roentgenologic findings. This inflammatory reaction may result in fibrosis and cicatricial contracture of the bowel wall when lesions have been present for a considerable time, although patients with definite constricting lesions examined in this department by barium enemas after surgical castration had almost complete restoration of the lumen of the bowel.

Four of the 21 patients with constricting lesions of the rectosigmoid in the present study had barium enemas (figs. 1 and 2) which demonstrated certain roentgenologic signs: 1. A filling defect of considerable length involved approximately 4 to 7 inches of the lumen of the bowel. 2. A sharp demarcation of the filling defect was similar to carcinoma. 3. Other portions of the colon showed little evidence of disease. 4. The fluoroscopic examination and the barium-air contrast films revealed an essentially intact mucous membrane. 5. The involved portions of the bowel were relatively fixed and exquisitely tender to palpation during the fluoroscopic examination.

Endometriosis of the rectosigmoid should be differentiated most frequently from primary carcinomas of the rectum and sigmoid colon or other infectious or inflammatory lesions. It usually can be differentiated clinically from carcinomas by the younger age group, associated sterility and menstrual abnormalities, absence of loss of weight and anemia and the relatively long duration of symptoms. Exacerbation of symptoms coinciding with the menstrual period is confirmatory.



Fig. 1 (E. M., aged 32) —Preoperative barium contrast roentgenogram demonstrating filling defect of sigmoid colon caused by endometriosis.

evidence of endometriosis. Endometriosis of the rectosigmoid is characterized roentgenologically by a long filling defect with sharp regular borders, intact mucosa, inconstancy of the filling defect and fixation of the bowel, which is exquisitely tender to palpation. Carcinoma, in contrast, is characterized by a short filling defect, sharp irregular margins, ragged, moth eaten

mucosa, constant filling defect and usually absence of fixation or exquisite tenderness on palpation. Infectious lesions usually may be differentiated clinically on the basis of fever, leukocytosis, loss of weight, anemia, stool examinations and bacteriologic or serologic tests.



Fig. 2 (E. M., aged 32) —Spot film during fluoroscopic examination to show intact mucosa.

These lesions are characterized roentgenologically by a relatively long filling defect with ill defined irregular borders, distorted mucosal pattern, an indefinite line of demarcation between normal and pathologic portions, variable filling defect influenced by medical treatment and considerable fixation and tenderness on palpation.

TREATMENT OF ENDOMETRIOSIS OF THE RECTOSIGMOID

The treatment of endometriosis of the rectosigmoid is summarized by Cattell,¹⁰ who emphasizes the importance of conservative treatment in patients under 35 years of age whenever possible. He states that radical treatment is necessary in most cases in which there is involvement of the colon and rectum. Such cases, irrespective of age, require removal of both ovaries. It is rarely necessary to resect the bowel. Pemberton¹¹ restricts roentgen therapy to patients of whom conservative treatment to preserve the childbearing function has failed.

Roentgen examination of the colon by barium enemas is important following sterilization. All patients in the present series with constricting lesions of the rectosigmoid caused by endometriosis, when examined more than two months after surgical castration, had complete restoration of the lumen of the bowel (figs. 3 and 4). Palpation during the fluoroscopic examination

¹⁰ Pemberton, F. A. Endometrioma of the Female Genital Organs. *New England J. Med.* 217: 1 (July 1) 1937 in discussion of paper by Counseller.¹²

demonstrates a freely movable colon without tenderness. These findings differentiate endometriosis from constrictions caused by a malignant growth or inflammatory processes, in which little or no improvement follows sterilization.

COMMENT

The important role of endometriosis as a cause of constricting lesions of the rectosigmoid is demonstrated by the preceding statistics. Careful evaluation of the clinical history, physical examination and roentgenologic studies of the colon by means of barium enemas is of value in obtaining an accurate preoperative diagnosis of the more advanced cases of constricting endometriosis of the rectosigmoid when a differentiation from carcinoma or from certain nonoperable inflammatory lesions is essential. The differential diagnosis of any constricting lesion of the rectosigmoid in women during active menstrual life should include endometriosis as a prominent etiologic factor.

A correct preoperative diagnosis of endometrial implants on the rectosigmoid colon without compromise of the lumen of the bowel was made in several patients examined in this department. In the less advanced lesions there was a well demarcated, localized, irritable segment, usually 3 to 5 inches long and quite tender on palpation, especially before or during menstruation. Other portions of the colon were relatively free from



Fig 3 (W. S. aged 25)—Preoperative barium contrast roentgenogram demonstrating filling defect of sigmoid colon caused by endometriosis.

spasm, irritability or demonstrable disease. The clinical history was important in making the correct diagnosis in less advanced lesions.

SUMMARY

1 Endometriosis is common in women during their active menstrual life.

2 Endometrial implants on the rectosigmoid occur frequently in patients with pelvic endometriosis in 40 per cent of 117 patients in the present series and in 15 to 40 per cent of the series found in the medical literature.

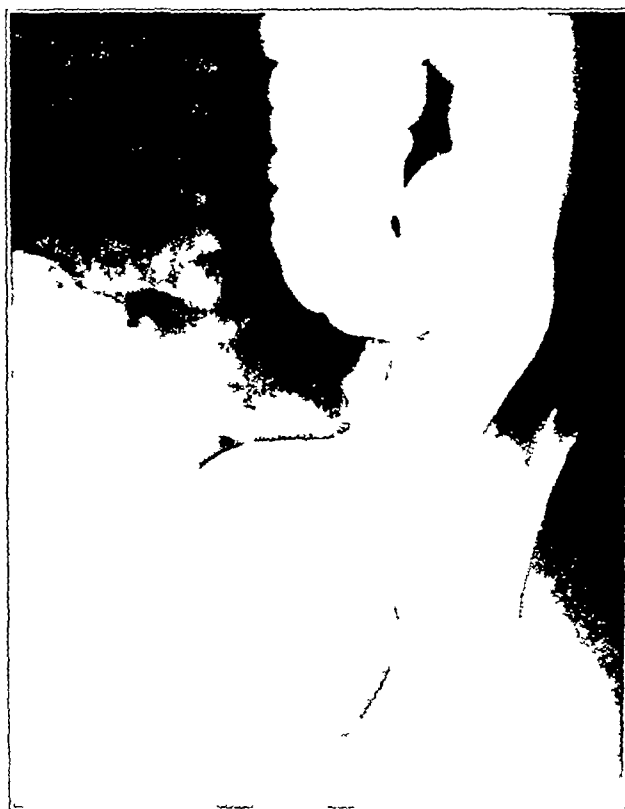


Fig 4 (W. S. aged 25)—Postoperative barium contrast roentgenogram three months after surgical castration demonstrating complete restoration of lumen of the bowel.

3 An accurate preoperative diagnosis of constricting endometriosis of the rectosigmoid can be made from clinical characteristics and roentgenologic findings by means of barium enemas.

4 The more common clinical characteristics of constricting endometriosis of the rectosigmoid include (1) age range, usually between 25 and 45 years, (2) high incidence of menstrual abnormalities, (3) absolute or relative sterility, (4) long history of bowel symptoms suggesting progressive obstruction with frequent exacerbations at menstruation, (5) absence of cachexia or loss of weight, (6) infrequent gross or occult blood in the stool in the absence of other anorectal disorders, (7) high incidence of associated benign uterine tumors, and (8) demonstration of narrowed lumen of the bowel with intact mucosa when the lesion can be reached with the sigmoidoscope.

5 The roentgenologic findings of constricting endometriosis of the rectosigmoid includes (1) a filling defect approximately 4 to 7 inches, (2) a sharp demarcation of this filling defect similar to carcinoma, (3) little evidence of disorders in other portions of the colon, (4) an essentially intact mucous membrane and (5) fixation and tenderness to palpation during fluoroscopic examination.

6 Castration without resection of the colon resulted in complete restoration of the lumen of the bowel in patients examined preoperatively and postoperatively by barium enemas.

7 The differential diagnosis of a constricting lesion of the rectosigmoid in a woman during her active menstrual life should include endometriosis as a prominent etiologic possibility.

8 Constricting lesions of the rectosigmoid are of sufficient frequency to warrant careful consideration before extensive resection of the colon or rectum is attempted.

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SOLITARY DIVERTICULITIS OF THE CECUM

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AND

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SEATTLE

The right lower quadrant of the abdomen is the site of the most common inflammatory lesions of the peritoneal cavity. Because of the frequency of acute appendicitis and its complications and the frequency of surgical intervention it is worth while to report 2 cases of a relatively rare condition which is occasionally encountered when the diagnosis of appendicitis has been made.

Thirty-seven cases of solitary diverticulitis of the cecum have been found in the American and British literature. Those cases were excluded in which other diverticula were found either at operation or on subsequent x-ray examination of the colon. In a considerable number of cases (24 of 39) no information was available concerning the presence or absence of other diverticula. However, the essential pathologic process in each case was in a solitary diverticulum that was demonstrated to be acutely inflamed at operation. One of Satterlee's¹ cases described as an intussusception of the cecum and appendix into a large diverticulum of the cecum, was not included because the essential pathologic condition was not a diverticulitis. Similarly a case observed by Hartzell² was not included because other diverticula were present, although the primary pathologic condition was located in an isolated diverticulum of the cecum. The diverticulum was acutely inflamed and was surrounded by an inflammatory mass. When the colon was examined with barium it was found that the opaque medium entered the peritoneal cavity through a perforation in the diverticulum. General peritonitis caused death.

The report of 2 cases follows.

CASE 1—V. M., a white man aged 34, was diagnosed at the Mason Clinic in August 1918 as having duodenal ulcer. He responded satisfactorily to medical management. There had been a tendency to constipation.

The patient returned in September 1922. On the day previous, after an automobile ride, he noticed a dull, steady abdominal pain, which was worse on the right side. On the day of admission the pain settled definitely in the right lower quadrant. There was no nausea or vomiting. The patient noticed a lump in his right side. There was no history of a previous similar attack.

On examination the pulse rate was 108 and the temperature 99.4 F. There was point tenderness just medial to the right anterior superior spine and a palpable tender mass the size of a hen's egg. The rectal examination was negative. The leukocyte count was 20,800, the differential count showed 90

per cent neutrophils and 10 per cent lymphocytes. Examination of the urine disclosed no abnormality. The serologic reaction of the blood was negative. A diagnosis of appendicitis was made.

At operation there was found generalized peritonitis with free pus. The left side of the cecum was "black and gangrenous." There was a diverticulum containing a fecalith the size of a lemon. The cecum was resected and an anastomosis between the ileum and the ascending colon was made. Recovery was uneventful. A pathologic report was not contained in the record. No subsequent x-ray studies were made.

CASE 2—*History*—D. B., a white man aged 59 was first seen at the Mason Clinic in April 1940, when a diagnosis of chronic pulmonary fibrosis was made. Repeated examinations of the sputum for tubercle bacilli were made and were reported as negative.

In May 1941 he was seen at home with a moderately severe respiratory infection. Slight tenderness of the lower part of the abdomen was noted. After being under observation for

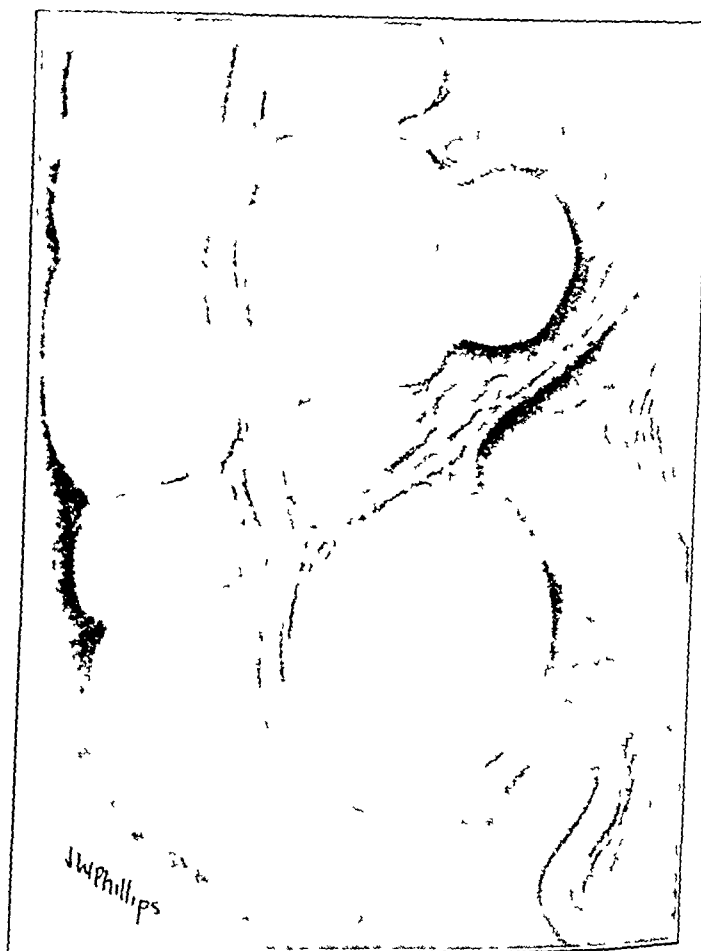


Fig 1 (case 1)—Solitary diverticulum above ileocecal valve

three days he was admitted to the Virginia Mason Hospital on the fourth day because of an increase in abdominal tenderness. The respiratory infection was subsiding. Moderate constipation and anorexia were present but neither nausea nor vomiting. A history of earlier attacks of pain in the right lower quadrant of the abdomen was not secured. For a number of years, he said, he had had periodic attacks of a dull ache in the epigastrium. These occasionally came on at night and were relieved by the taking of food or sodium bicarbonate. Fluoroscopic and x-ray examination of the stomach and duodenum had been done elsewhere and were reported as negative. These earlier symptoms had subsided spontaneously two years before the present illness came on. The history of the gastrointestinal tract otherwise was negative.

Physical Examination—The temperature was 101.4 F and the pulse rate 108 a minute. Tenderness was present over the lower part of the abdomen, particularly in the midline. There was no spasm nor rigidity. No mass was palpated. Rectal examination was negative. Rales were heard throughout both lung fields, as they had been on all previous examinations during the past year. The leukocyte count was reported as

¹ Satterlee, G. R. *Disease Conditions of the Cecum: Etiology, Pathology and Treatment*. New York: M. J. 100: 851, 1914.
² Hartzell, H. V. Personal communication to the authors.

22,950 per cubic millimeter, 88 per cent were neutrophils and 12 per cent were lymphocytes. A diagnosis of acute appendicitis was made.

At operation the appendix appeared obliterated at the appendiceal junction. There was peritonitis of the distal half. A mass in the center of the abdomen proved to be omentum

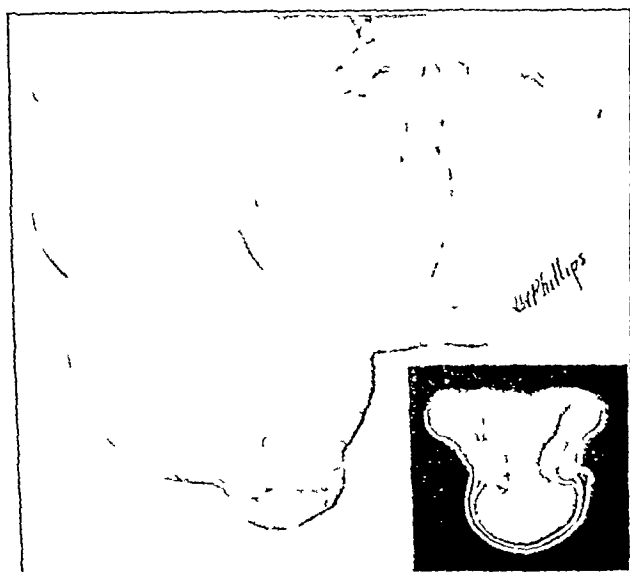


Fig 2 (case 2)—Solitary diverticulum at base of cecum

wrapped around the cecum. The omentum was lifted and an ounce of pus with an odor of colon bacillus was evacuated. This abscess was caused by perforation of the solitary diverticulum of the cecum 2.5 cm laterally across to the base of the appendix. The diverticulum was 2.5 cm in diameter. Its serosa was necrotic but intact, it was puffed out like a hammock. The diverticulum was resected and the opening in the cecum closed. The appendix was removed. A small Penrose drain was placed in the lateral gutter and the incision was closed in layers.

The postoperative course was uneventful. A Mantoux test on the fourteenth postoperative day was positive. Fluoroscopic and x-ray examinations of the barium filled colon with stereoscopic air injection films three months postoperatively showed

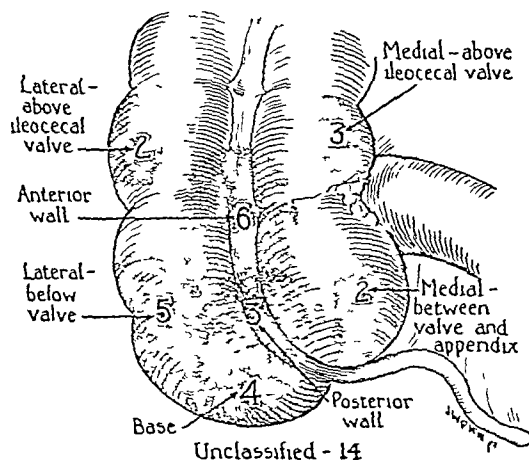


Fig 3—Location of solitary diverticula in 39 cases

a normal cecum with no other diverticula in the cecum or in the remainder of the colon.

Pathologic Examination—Gross. The specimen consisted of a cylindric piece of tissue measuring 2.5 cm at one end and 2 cm at the other. The base was 1.5 cm thick and opened through a 0.5 cm aperture into a sac having two layers. The layers were discrete in the fixed specimen.

Microscopic. At one end of the section was normal mucosa of the colon. This gradually became involved in an inflammatory process which destroyed the mucosa at the junction with a thin walled structure. This structure was lined on one surface with mucosa showing a definite inflammatory change which extended into the submucosa. A thin layer of circular muscle was present which was approximately one eighth as thick as the muscularis of the normal colon. The other surface consisted of serosa lying next to a zone of intensely inflamed areolar tissue. One atypical giant cell was seen.

The diagnosis was acute and chronic inflammation of a true diverticulum of the colon.

SUMMARY OF CASES FOUND IN THE AMERICAN AND BRITISH LITERATURE FOR THE PAST TWENTY YEARS

In all, 37 cases were found in the literature, the 2 cases here reported making 39. These have been analyzed from the available data in an effort to find common features. The ages of the patients ranged from 10 to 69 years. There were 2 patients in the second decade, 7 in the third decade, 8 in the fourth, 7 in the fifth, 10 in the sixth and 5 in the seventh. There were 21 females and 18 males. In 18 cases, previous attacks

TABLE 1—Preoperative Diagnoses

Preoperative Diagnosis	Cases
Acute, subacute or chronic appendicitis	22
Appendiceal abscess	5
Cancer or true tumor	3
Stump appendicitis	1
Abscess of undetermined origin	1
Diagnosis deferred	2
Not recorded	6

TABLE 2—Types of Operation Performed

Type of Operation	Cases
Diverticulectomy	15
Resection of the cecum and/or ascending colon	15 (1 death)
Inversion of the diverticulum	3
Cut adhesion	1
Closed opening	2
Anastomosis or drainage	2
Extraperitonealization of abscess	1

The mortality was 1 case out of 39.

of pain in the lower part of the abdomen were reported. In 7 cases there was a history of constipation. Constipation was denied in 10 and not mentioned in 22 cases. Vomiting occurred in only 5 cases of the series. In 13 cases it was neither recorded nor denied. The temperatures ranged from 97.4 to 102 F, in 20 cases the temperature was between 99 and 100 F. The pulse rate ranged from 50 to 140 a minute, the majority of reports gave the rate as between 80 and 89. The leukocyte count ranged from 6,000 to 23,000 per cubic millimeter. A mass was found in 16 cases and the suggestion of a mass in 3 cases. In 7 instances it was stated that there was no mass. The presence or absence of a mass was not recorded in 13 cases. Tenderness in the right lower quadrant was present in 36 cases, absent in 1 case and not reported in 2 cases.

At operation the following conditions were encountered. In 4 cases fluid was present. In 16 cases there was local peritonitis. In 1 case general peritonitis was present. In 3 cases the appendix had been removed previously. The appendix was normal in 22 cases, slightly inflamed in 9 cases and acutely inflamed in 2 cases, its condition was not recorded in 3 cases. In 20

cases a fecalith was found in the diverticulum, in 11 cases the presence or absence of a fecalith was not recorded

In 3 reports it was mentioned that exploration for other diverticula was negative. In 12 cases x-ray examinations of the colon were negative for diverticula. In 11 cases the diverticula were classified as true diverticula. In 10 cases they were classified as false diverticula. In 18 reports the presence or absence of muscular fibers was not recorded.

In 2 cases there was evidence of local tuberculosis, and 1 patient had active pulmonary tuberculosis at the time of operation but no local manifestations. In 1 of the cases herein reported, one atypical giant cell was noted.

COMMENT

Diverticula may be classified as either congenital or acquired. Congenital, or true, diverticula consist of all the layers of the bowel wall, acquired diverticula may be subdivided into primary and secondary. Primary acquired diverticula are due to deficiency in the circular muscle of the wall with herniation of the mucosa through the deficiency, secondary diverticula are due to previous operative intervention or adhesions.

Greenstelder and Hiller,³ in reporting 2 operative and 2 autopsy cases of such diverticula of the cecum, list

TABLE 1—Location of the Diverticula

Location of Diverticulum	Cases
By of cecum	1
Medial above the ileocecal valve	1
Between the valve and the appendix	2
Lateral below the level of the valve	5
Lateral above the level of the valve	2
Anterior wall	6
Posterior wall	1
Undescribed	11

the following mechanisms: (1) eversion of the cecal wall between two constricting bands, (2) traction by adhesions, (3) eversion of a weak spot in the cecal wall caused by migration of a purse-string suture into the lumen of the intestine and (4) eversion of the weakened area in the cecal wall resulting from the rupturing into the cecum of an abscess of the appendical stump.

Wilson⁴ states that there are three primary factors entering into the formation of a diverticulum: (1) inherent weakness in the wall of the bowel due to age, congenital weakness, obesity or atrophy of the fat along vessels which penetrate the wall, (2) intracolonic pressure and (3) traction on appendices epiploicae, mesentery or omentum with or without adhesions.

The differential diagnosis of solitary diverticulitis of the cecum is almost impossible to make preoperatively. In a majority of the cases in this series a preoperative diagnosis of appendicitis was made. The abdomen was opened in the belief that the condition could be remedied easily by one with a minimum of surgical training. On the discovery that the appendix is normal or not primarily involved (this occurred in 29 of 31 cases), two questions arise: What is the nature of the lesion? and What shall be done about it? In addition to appendicitis there are a number of other lesions of the cecum

which require different types of surgical intervention, varying from simple closure to partial colectomy.

The differential diagnosis and choice of procedure at operation are of utmost importance in minimizing the risk to the patient. The presence of a mass (found in 13 of the 23 cases in which such a finding was noted or denied) further complicates the picture.

Aside from appendicitis, cancer is the most frequent lesion of the cecum. In differentiating cancer from diverticulitis the problem is facilitated if one keeps in mind the three types of malignant tumors of the bowel. The first type grows by cauliflower-like projection into the lumen of the bowel and is very slow to metastasize, the second type grows by direct extension through or along the various coats of the bowel and is a little more apt to show glandular metastases, the third type ulcerates rapidly through the bowel wall and, at operation shows many glandular metastases.

Tuberculosis is the next most frequently encountered lesion of the cecum. As a rule the ileum also is involved. Small tubercles can occasionally be seen on the serosa. The peritoneum is usually thickened. The lymph glands are large and caseous, and adhesions are frequently present. Both ulcerative and hyperplastic forms exist.

Actinomycosis of the bowel usually starts in the cecum or the appendix. The wall may be greatly thickened, and in later stages small abscesses are formed which may open through sinuses in the abdominal wall, discharging the characteristic sulfur granules.

Nonspecific ulcers of the cecum are encountered with approximately the same frequency as diverticula. They may be single or multiple. It has been pointed out by several authors (Harrison,⁵ Cameron,⁶ Wilkie⁷) that the usual location is on the medial aspect of the cecum above the ileocecal valve. Of the 23 cases of diverticulitis herein reported in which there was information sufficient to localize the diverticulum, 2 were reported to have the diverticulum in this region. The problem encountered is the same as that in diverticulitis. There should be minimal surgery rather than wide resection. All the complications of peptic ulcer have been seen in ulcers of the cecum: acute and subacute perforation, hemorrhage and obstruction.

Simple inflammatory tumors of the cecum in which there was no definite etiology have been reported by Bryan,⁸ Rhodes, in discussing Bryan's cases, adds the report of a case which he terms "carbuncle of the cecum" in which there were multiple abscesses of the cecum and ascending colon.

In 14 cases in this series, resection of the cecum and/or ascending colon was considered advisable, either because of the extent of the lesion or because the lesion was thought to be malignant or tuberculous.

CONCLUSIONS

Solitary diverticulitis of the cecum cannot be differentiated from appendicitis. The operative differential diagnosis is of utmost importance in determining the type of procedure to be followed. The outlook is favorable for complete recovery.

3 Greenstelder, L. A., and Hiller, R. I. Cecal Diverticulosis, with Special Reference to Traumatic Diverticula, Surg., Gynec. & Obst. 78:6 (June) 1929.
4 Wilson, Frank C. Diverticulitis of the Cecum, J. M. A. Alabama 1: 282 (Jan.) 1932.

5 Harrison, Hartwell. Importance of Simple Ulcer of the Right Side of the Colon in Diagnosis of Abdominal Disease, Arch. Surg. 40: 959 (May) 1940.
6 Cameron, J. R. Simple Nonspecific Ulcer of the Cecum, Brit. J. Surg. 26: 526 (Jan.) 1939.
7 Wilkie, David. Simple Ulcer of the Ascending Colon and Its Complications, Surgery 1: 655 (May) 1937.
8 Bryan, W. A. Simple Inflammatory Lesions of the Cecum, South. S. Tr. 43: 320 1930.

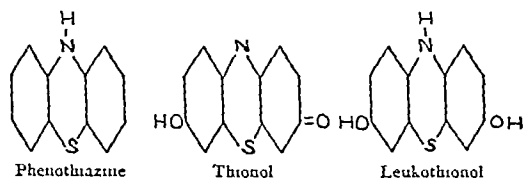
EFFECT OF PHENOTHIAZINE ON
INTESTINAL PARASITES

WILFRED N SISK MD

ASHEVILLE, N C

Cases of intestinal parasitism have been coming to the attention of the Buncombe County Health Department for a long time. In one group of children whose feces were examined, because of their particularly undernourished appearance, 80 per cent (approximately) had some form of intestinal parasite. The great majority of these children were infected with *Ascaris*. These children were treated with reasonable success with several different drugs. But the few cases of *Oxyuris vermicularis* (pinworm) infection which showed up with the feces examination were much more difficult to treat, and at that time no satisfactory treatment was found. In October 1941 the Parke-Davis representative called to my attention the work of Manson-Bahr¹ in London in treating with phenothiazine 9 patients who were infected with pinworms. The Parke-Davis company has furnished me with a supply of phenothiazine (under the trade name of nemazene) for use in treating the patients found infected with pinworms. This paper contains the result of my experience with phenothiazine in the treatment of various parasitic infections.

Phenothiazine is a new preparation which is being used experimentally in human beings at the present time. It is distantly related to sulfanilamide. It is the parent substance of a large number of dyes, one of which is methylene blue. It is being used as an insecticide spray for fruits and vegetables. Phenothiazine has been found of value in the treatment of worm infections of cattle, sheep, swine and horses, and the control of mosquito larvae in ponds. It has recently been found effective in the treatment of certain cases of urinary tract infections. It is prepared by fusing diphenylamine with sulfur in the presence of iodine as a catalyst. Phenothiazine thionol and leukothionol (two excretion products) have the following structural formulas respectively:

METHOD OF DIAGNOSIS—*OXYURIS VERMICULARIS*

The feces specimen is inadequate for the finding of the ova of the pinworm (also known as threadworm, seat worm, *Oxyuris vermicularis* and *Enterobius vermicularis*). The female migrates from the rectum² during the early hours of sleep and deposits its eggs in the moist folds of skin as far forward as the scrotum. In the morning the only vestige of the female worm left is a dried carcass. This accounts for the difficulty in getting specimens of live worms.

A number of studies have been made within recent years using some variation of the NIH swab.⁴ This is a swab composed of a piece of cellophane attached to a glass rod by a rubber band. In my own study a modification of this swab was found most effective with rural children. This modified swab consists of a piece of cellophane of medium thickness about 1½ inches long and 1 inch wide glued to an ordinary wooden applicator about 4 inches in length. The ordinary 6 cc test tube, such as is used for taking blood for Wassermann tests, serves as a container. A gummed label and cotton stopper complete the equipment.

The cellophane swab is placed over the index finger and rubbed about the anus. It is preferable to take the specimen in the morning before bathing or going to the toilet. In the laboratory the cellophane is cut off and placed on a microscopic slide with two drops of water, and a cover slip is placed over it. Diagnosis is made by finding the typical ova.

RESULTS OF SURVEY

Three groups were surveyed. All groups consisted entirely of white people.

1 The children of the first six grades of a rural consolidated school were examined. The school is located at Barnardsville and serves a rural population of 2,881 in Ivy Township, 22 miles northeast of Asheville, N C. Specimens were obtained from 274 boys and girls ranging in age from 6 to 13 years, with a few children as old as 16 years. The specimens were taken by a physician and nurse between the hours of 10 and 11 a m. Only 1 specimen was taken on each child. Of the 274 examined 45, or 16 per cent, were found positive. The work of several investigators⁵ shows that from 4 to 7 specimens are necessary before a person can be judged to be uninfected with pinworms. Therefore the 16 per cent found must be considered the absolute minimum of pinworm infection in this school group.

2 One hundred and fifteen boys from the National Youth Administration resident center at Newbridge, N C, were examined. These boys ranged in age from 16 to 24 years. They are a selection of high school graduates from western North Carolina and surrounding area. Of these 115 examinations only 4, or less than 4 per cent, showed the presence of *Oxyuris vermicularis*.

3 The children at Mountain Orphanage (15 miles west of Asheville, N C) were examined. These children sleep in large wards with the beds placed close together. Of 62 children examined by two swabs 24, or 38 per cent, were found to be infected with pinworms.

FAMILIAL INCIDENCE OF *OXYURIS*

There were 26 families rechecked carefully with cellophane swab specimens. The cooperation was not entirely satisfactory in the older children of the family. The young adults between the ages of 16 and 25 particularly seemed to be embarrassed and did not cooperate particularly well in giving good specimens. For this reason the familial incidence appears lower than the true incidence. In the family study 96 members were found positive and 46 members negative. In 5

1. Man on Bahr Philip. Phenothiazine as an Anthelmintic in Thread worm and Roundworm Infections. *Lancet* 2: 805 (Dec. 28) 1940.

2. Phenothiazine. Preliminary Report of the Council on Pharmacy and Chemistry. *J. A. M. A.* 115: 1721 (Nov. 16) 1942.

3. Bozicevich John and Brady F J. Studies on *Oxyuriasis*. *M. Ann. District of Columbia* 7: 137 (June) 1933.

4. Folan John P. The Preparation and Clearing of the NIH Anal Swab Used in the Diagnosis of *Oxyuriasis*. *Pub. Health Rep.* 54: 1322 (July 25) 1939.

5. Cram Elsie B. and Readern Lucy. Studies on *Oxyuriasis*. *Am. J. Hyg.* Sec. D 29: 1724 (Jan) 1939.

families all members were positive. In 7 families only 1 member in each family was negative. At the other extreme, in 5 families only 1 member in each family was found positive. In the latter group of 5 families, cooperation in preparing specimens was so poor that no treatment was attempted.

TABLE 1—Frequency of Symptoms

Total Number of Patients 106			
Symptoms	No. of Patients	Percentage	
1 Restlessness in sleep	81	78	
2 Poor appetite	4	4	
3 Nightmares	6	6	
4 Itching about rectum	5	5	
5 Nervousness	17	16	
6 Sleepwalking	14	13	
7 Indigestion	12	11	
8 Bedwetting	3	3	
9 No symptoms	1	1	

COMMENTS

Pinworm infection was thought until recently to be most prevalent in urban areas where crowding is a definite feature. A study was made by Sawitz⁶ in which he showed that there was a much higher percentage of infection in children sleeping in wards than in children sleeping in individual rooms. The incidence he found in orphanages ranged from 15 to 96 per cent. This finding suggests that the crowding of sleeping quarters is the factor of importance. Work of Cram and her co-workers makes the same point. Cram found an incidence of 57 per cent among boys of low economic status in Washington, D. C. She also found an incidence of 35 per cent among 628 persons from the same economic group of the general population of Washington. Brown⁷ found an incidence of 32 per cent from a similar group of boys at Charlotte, N. C. He also found no infection in a group of 118 University of North Carolina students. Infection rates of from 15 to over 90 per cent have been found in as widely scattered areas as Toronto, Iampu, Manila and Georgia.⁸ These have all been white people in the lower economic groups.

It would seem that an infection of 16 per cent of children from the lower economic groups of rural families is consistent with the findings in more urban areas. The homes in the Barnardsville area are predominantly crowded. Several people usually sleep in one room—sometimes the entire family.

Family incidence was studied by Cram.⁷ Her results correspond closely to those found in Buncombe County. Clinical observation leads me to believe that family incidence is practically 100 per cent. The inadequacies of even the improved cellophane swab methods of diagnosis make it imperative to consider all members of any household where infection is found to be infected.

⁶ Sawitz, Willi, D'Antoni, Joseph S. Rhude, Kenneth, and Lob, Sydney. Studies of the Epidemiology of Oxyuriasis, South M. J. 33 913-921 (Sept.) 1940.

⁷ Cram, Eloise B. Studies on Oxyuriasis. IX. The Familial Nature of Pinworm Infestation, M. Ann. District of Columbia 10 39 (Feb.) 1941. Cram, Eloise B., Jones, Myrna F., and Readorn, Lucy. The Incidence of Pinworms (Enterobius Vermicularis) in Various Population Groups, Rev. de med. trop. y parasitol., bacteriol., clin. y lab. 7 4 (Jan-April) 1941.

⁸ Brown, H. W. Sheldon, A. J., and Thurston, T. The Incidence of Pinworm (Enterobius Vermicularis) Infection in North Carolina, South M. J. 33 922-925 (Sept.) 1940.

⁹ Miller, Max J., Choquette, Laurent, Audet, Wilfred, Kelso, R. F., and Guenette, J. A. Studies on Pinworm Infection. II. Tests with Gentian Violet in the Treatment of Pinworm Infection, Canadian M. A. J. 43 455-459 (Nov.) 1940. Kuitunen Ekbaum, E. Intestinal Parasites in Children in Toronto, Am. J. Dis. Child. 60 518-525 (Sept.) 1940. A Survey of Entozoa in Adults in a Toronto Hospital, Canad. M. A. J. 43 451 (Nov.) 1940. Cram, Jones and Readorn.⁷

SYMPTOMS OF OXYURIS INFECTION

The chief symptoms caused by infection with Oxyuris are (1) restlessness at night, (2) poor appetite, (3) nightmares, (4) itching about the rectum, (5) bedwetting, (6) sleepwalking, (7) nervousness and (8) indigestion. These symptoms are given roughly in the order of their frequency. The patients may vary in their symptom complex from practically no symptoms to all those enumerated. Particularly in the younger children did I find the symptoms worse. Several children were very much underweight, had circles under their eyes and showed moderate degrees of anemia.

Symptoms shown by 106 patients were tabulated to determine the frequency of their occurrence. A few patients exhibited only one of the symptoms while some patients gave a history of almost the entire symptom complex. A striking example of the latter is case 16.

CASE 16—A white girl aged 8 years was brought to the clinic because of extreme nervousness and loss of appetite. The patient was particularly bothered by insomnia. She jumped frequently in her sleep and cried out as though frightened. Her appetite was poor. She would eat a small breakfast, then carry only two sandwiches to school for lunch. She would seldom eat more than half of one sandwich for lunch. The patient was underweight and pale and had dark circles under her eyes.

She was given 3 Gm of phenothiazine a day for five days. Within a week after this treatment she had a large breakfast every morning and was not satisfied with less than four sandwiches for her lunch. She gained 12 pounds (5.4 Kg.) within the following three months and her nervousness disappeared. Her sleep has been restful and undisturbed.

RESULTS OF TREATMENT

The work of Manson-Bahr¹ suggested that 40 Gm of phenothiazine would be needed to remove Ascaris and pinworms from adult patients. This dose was divided into five daily doses of 8 Gm each.

In the first series of patients I tried to follow the dosage schedule suggested by Manson-Bahr. For convenience I shall refer to this as schedule 1. Eight adult patients were selected who had both Oxyuris and Ascaris infection. They were given 8 Gm of phenothiazine a day. Four of the patients completed the treatment and 4 had to reduce the dosage. All the patients complained of nausea. Four patients vomited

TABLE 2—Schedule 2

	Dosage Gm	
	Per Day	Total
Adults	4	20
Children		
8 to 12 years	3	15
4 to 8 years	2	10
2 to 4 years	1.5	7.5
Under 2 years	1	5

several times and 2 patients became quite dizzy. Five children were treated with comparable dosages ranging from 4 Gm a day for a 4 year child to 7 Gm a day for a child of 12 years. All complained of severe nausea and vomiting.

All of the 12 patients were followed for a minimum of ten weeks, and six cellophane swabs, or more, were obtained from all patients. All swabs were negative and the symptoms of pinworms disappeared promptly after treatment. Five of the patients were seen eight

months after treatment and were still symptom free. The results as to the removal of *Ascaris* was not very encouraging.

In view of the discouraging results with *Ascaris* and the constant complaint of nausea and vomiting, no further attempts were made with this large dosage of

TABLE 3—Sixty-Five Patients Rechecked

	Number of Patients	Percentage
Cured on first treatment	56	74
Not cured until second treatment	7	9
Not cured by 1 treatment but refused second treatment	12	17

40 Gm (8 Gm a day for five days). A dosage schedule was worked out (table 2). In all 89 patients have received phenothiazine according to this schedule. There were 68 who had no toxic symptoms during treatment. Of the 20 who showed some reaction, the only symptom noted by 11 patients was nausea for two or more days. One patient became so nauseated that she could not take the full dose. One patient became dizzy. One patient said the treatment made her left leg and side hurt. Five patients vomited several times between the second and fifth days of treatment. One of the latter four became quite pale. One patient had a very severe toxic reaction to treatment. An abstract of her case history is given.

CASE 84—A white girl aged 14 had a poor appetite. She was restless in her sleep. She was pale and nervous. Her family had a diet in which there was practically no animal protein. They ate no eggs, milk or meat.

She was given 4 Gm of phenothiazine a day for five days (total 20 Gm). On the fourth day of treatment she became nauseated and vomited. On the sixth day she became pale and noticed blood in her urine, and she complained of headache. She vomited daily from the fourth to the ninth day. On the ninth day she was admitted to St. Joseph's Hospital. Physical examination revealed that the mucous membranes were pale, there were no petechiae or jaundice and the heart was slightly enlarged with pulmonary and aortic systolic soft blowing murmurs transmitted to the axilla. The temperature was 99.6 F. The blood count was 1,450,000 red blood cells, 31,500 white blood cells and hemoglobin 30 per cent. The differential count showed 69 per cent neutrophils with 4 per cent juvenile cells. There was irregularity in size, shape and staining of the red cells. Many nucleated red cells were seen.

The child was given supportive therapy including a small transfusion of 75 cc of whole blood. She was given vitamin liver and iron concentrates daily. On the twenty-third day after beginning treatment with phenothiazine, the red blood cell count had risen to 3,500,000 and the white cells reduced to 7,800. The hemoglobin rose to 63 per cent. The urine showed no more red cells after the sixteenth day. She was ambulant and has continued well since.

Two of the patient's sisters had a similar, but milder reaction. This child's mother has had toxemia of pregnancy twice.

The clinical picture of this case was similar to 1 reported from Queen Elizabeth Hospital, Birmingham, England.¹⁰ The English child died twelve hours after a transfusion. Autopsy revealed a slight jaundice, multiple small hemorrhages in the brain and watery dark rib marrow. The liver, heart and kidney showed no microscopic damage.

RESULTS

Of the 89 patients treated according to the schedule 75 were sufficiently cooperative to take recheck specimens. The results are given in table 3. The 14 remain-

ing patients symptomatically were greatly improved but refused to give sufficient recheck specimens to determine the outcome. Most of the 26 patients who refused further treatment or rechecks did so because they were symptomatically cured and did not want to bother about further checks. The exception is the family of the girl who had the severe reaction (case 84).

After these severe reactions occurred, it was decided that a smaller dosage would be preferable if it would produce the desired results. With this in mind, a different schedule was tried with the Mountain Orphanage children (table 4).

The children were watched closely by the matrons, who were instructed to call me if any untoward symptoms developed. No toxic symptoms occurred.

RESULT OF TREATMENT

All 62 children and the 4 adults at the Mountain Orphanage were given the treatment as outlined under schedule 3. Post-treatment cellophane swabs were taken on the entire group. Four children were found to be positive on this examination. Three were children who had been heavily positive on the first examination, and 1 was a child who was negative on the original examination. There were no toxic symptoms of any sort noted in the entire group.

This schedule of dosage appears to be almost as effective as schedule 2. The largest amount of drug given with this dosage is 12 Gm. The smallest dose of phenothiazine causing serious reactions is 20 Gm. This dosage seems adequate and safe and is recommended for routine treatment. The larger dosage of schedule 2 would probably be more effective provided the patient is in good physical condition and care is taken to watch for possible adverse symptoms.

COMMENT

The nature of the pinworm infection makes it imperative to treat and cure all members of a household at one time. I have counted the eggs found in 2 female worms and found 9,860 in 1 and 10,240 in the other. Counts by other workers run from 4,600 to 20,000 eggs per female worm.¹¹ Pinworm eggs are found in the air and dust of homes where an infected person lives.¹² They are found at all layers, even to the molding near the ceiling of the room. Thus a previously uninfected individual may swallow pinworm eggs while other members of the family are being treated.

TABLE 4—Schedule 3

Adults and children over 6 years
(a) 1 Gm a day for 6 days
(b) Rest 3 days
(c) 1 Gm a day for 6 days
Children under 1 year 0.25 Gm a day for the same period
Children 1 to 6 years 0.5 Gm a day for the same period

Family W, consisting of 7 children and 2 adults, illustrates what may happen when members are left untreated. All children were found infected with *Oxyuris*. The mother and father were negative after 4 specimens had been taken on each. The parents were left untreated. The post-treatment swabs on the

11 Reardon, Lucy. Studies on *Oxyuriasis*. VI. The number of eggs produced by the pinworm *Enterobius vermicularis* and its bearing on infection. *Pub. Health Rep.* 53: 975-983 (June 17) 1933.
12 Nolan, M. O. and Reardon, Lucy. Studies on *Oxyuriasis*. V. Distribution of Ova of *Enterobius vermicularis* in Household Dust. *J. Parasitol.* 23: 173 (April) 1939.

children were negative at first. Then after three months 2 of the children were positive.

Family T illustrates a similar situation. A married daughter, known to have pinworms, became ill from other causes and was unable to take treatment at the same time as the rest of the family. After her return from the hospital, other members of the family became reinfected.

Family B illustrates another situation which must be considered. One very large family living in 3 households consisted of a great grandmother, 2 sets of grandparents, 11 grandchildren and 1 great-grandchild. All 3 households were heavily infected but only 2 households were treated. The result was that, from constant visiting, the 2 treated households became reinfected.

Sawitz¹⁰ and others have shown that once a pinworm infection has entered a household no amount of cleanliness will remove the infection without medical treatment. The problem of treatment of this intestinal parasite then places a heavy burden on the physician who would treat it and on the drug he uses. He must cure not only his patients but also all of the patient's household contacts as well. Treatment of 1 individual will give remarkable temporary relief but absolutely no permanent cure unless his close family associates also are cured.

Because of the inevitable reinfestation of the patient from pinworm eggs about the house, it is desirable to have a drug which can be given conveniently over a comparatively long period of time and one which will be sufficiently effective to obviate frequent retreatment. Phenothiazine given according to schedule 3 answers these requirements at least as effectively as gentian violet and far better than any other drug mentioned in the literature.

HOOKWORM AND TRICHURIS

Four patients were found to be infected with hookworm. They were treated with phenothiazine as follows. Two adults were given 4 Gm of phenothiazine a day for five days. All 5 patients were still found infected with *Trichuris* after the treatment. It would seem that phenothiazine is not sufficiently effective to be worth using in hookworm and trichuris infections.

ASCARIS

Of the patients found infected with *Oxyuris*, 26 were also found infected with *Ascaris*. All these patients were treated with the relatively large dose of phenothiazine shown in schedules 1 and 2. All except 2 of the 26 patients treated passed ascarids in the stool. In most cases the largest number of ascarids were passed between the second and fifth days of treatment, but ascarids continued to be passed up to three weeks following treatment. The largest number passed from any one individual was 46. Even though large numbers of ascarids were at times passed, only 5 patients were completely negative after treatment with phenothiazine. All the ascarids were colored pink through and through.

An interesting case was 10. A white girl aged 3 years took 10 Gm of phenothiazine between February 15 and February 20. She had no symptoms other than pink urine during the time she was taking the phenothiazine. Three weeks later, on March 8, she passed 1 ascarid. Her bowels became loose and on March 12 and 13 she had a definite diarrhea. On March 11 she broke out with a red papular rash over the entire body. On March 12 she passed 26 ascarids. They were all colored pink from the phenothiazine. The child had no

other medication during this entire period. Her feces specimen was still positive for *Ascaris* on April 18.

Phenothiazine is effective in removing a portion of the ascarids, but a comparatively large dosage must be used. No ascarids were passed by patients treated with the small dosage under schedule 3. A quicker acting drug would certainly be more desirable for the treatment of ascaris infections. I do, however, find a usefulness for phenothiazine for small children who cannot swallow a capsule whole. Phenothiazine will remove ascarids from small children reasonably effectively and with less toxic symptoms than *santonin*.

SUMMARY AND CONCLUSIONS

1. A simple modification of the NIH swab for the diagnosis of *Oxyuris vermicularis* infection consists of a piece of cellophane glued to the end of a wooden applicator. This may be put into a glass test tube for easy transportation.

2. A survey, with a single cellophane swab, was made in the first six grades of a rural elementary school. A minimum infection rate of 16 per cent was found. These children were largely from homes which were crowded and from families in the lower economic levels.

3. A group of high school graduates from the NYA resident center were found to have less than 4 per cent infection with *Oxyuris vermicularis*.

4. The children at the Mountain Orphanage were found to have an infection rate of 38 per cent with *Oxyuris vermicularis*.

5. Approximately two thirds of the members of all families in which *Oxyuris* was found gave swabs positive for *Oxyuris*. In 5 families all members were positive.

6. The chief symptoms caused by infection with *Oxyuris* were found to be restlessness at night, poor appetite, nightmares and itching about the rectum. These symptoms are given in the order of their frequency.

7. Treatment for *Oxyuris* was tried with three different schedules of dosage. Phenothiazine was used in all cases.

(a) Schedule 1, which consisted of a total dose of 40 Gm of phenothiazine for adults, was found too toxic. It was quite effective in the removal of the *oxyuris* infection in those patients who were able to take this large dosage.

(b) Schedule 2 consisted of a total dose of 20 Gm of phenothiazine for adults, which was given over a period of five days. Of 89 patients who received this dose, 79 had either no toxic symptoms or only mild nausea. Two patients in the same family had very severe reactions. They showed anemia, high white cell count, nucleated red cells and blood in the urine. These findings were in addition to severe nausea, vomiting, pallor and headache.

(c) Schedule 3, with a total dose of only 12 Gm of phenothiazine for adults, was tried. This schedule gave results not quite as good as the higher dosage but still satisfactory results. No toxic symptoms occurred in this group.

8. It is necessary to treat all the members of any family or household where infection is found.

9. Phenothiazine was of no appreciable value in the treatment of hookworm or trichuris infection.

10. Phenothiazine was found of some value in the treatment of ascaris infection, but only in large doses.

PRETIBIAL FEVER

AN OBSCURE DISEASE

LIEUTENANT COLONEL WORTH B DANIELS
MEDICAL CORPS, ARMY OF THE UNITED STATES

AND

CAPTAIN H ARTHUR GRENNAN
MEDICAL CORPS, ARMY OF THE UNITED STATES

Late in July and early in August 1942 there appeared in the wards of the Station Hospital at Fort Bragg, North Carolina, a group of soldiers who exhibited an unusual febrile illness. It shortly became apparent not only that these men had identical symptoms but that they all came from a few military organizations quartered near one another in a limited area of the reservation. Between July 29 and September 11, 40 such patients with this illness were admitted to the wards. The usual history was one of relatively sudden onset characterized by malaise, mild general aching, lumbar pain, severe frontal headache and postorbital pain. On the first or second day of symptoms mild respiratory manifestations consisting of corvza, sore throat, chest pain and soreness and cough were complained of by 30 per cent of the patients. The respiratory symptoms were not persistent and were never suggestive of primary respiratory involvement such as is seen in influenza. In about one fourth of the cases nausea and vomiting occurred rarely accompanied by abdominal pain. Shaking chills or chilliness and fever developed. The fever was consistently spiking and frequently showed two or more peaks each day. Often with the elevations there were recurrent chills. During the periods of temperature elevation there was an extreme accentuation of the frontal and postorbital aching while during the periods of lower temperature the patients felt

there was a transient elevation of temperature, sometimes as high as 101.4 F, occurring from two to seven days after the original febrile period. Stiffness of the neck accompanied headache in 3 cases, and in these lumbar puncture was done. All showed normal spinal fluid. There was no noticeable relief of headache following puncture. Adenopathy was not remarkable. A firm spleen was palpable early in the disease in 95 per cent of the cases. Splenomegaly persisted in some for as little



Fig. 2—Cutaneous eruption on the legs in case 20

as five days, while in others there was noticeable enlargement after two weeks.

The most distinctive feature of the disease was the appearance of an unusual rash on or about the fourth day of illness. In 60 per cent of the cases this was bilaterally symmetrical and limited in distribution to the pretibial areas. In an additional 20 per cent the pretibial areas were the primary site of the rash, while a few lesions were scattered elsewhere. Two patients had splotchy, generalized cutaneous manifestations including the anterior surface of both legs. One had a single lesion on the hand. In 5 cases, otherwise typical, no rash was observed. Individual lesions consisted of an erythematous localized blush of irregular outline with ill defined borders fading into the surrounding skin. These were often from 2 to 5 cm in their largest diameter, gradually coalescing with adjacent lesions. The lesions were raised, warmer than the surrounding skin and sometimes slightly tender to touch. In some cases the lesions vaguely resembled erythema nodosum. In 2 cases the rash became diffusely distributed over the entire body. In a few cases it appeared urticarial. Following the generalized type there was a residual pigmentation which persisted for about two weeks. None of the lesions were purpuric. In most instances the duration of the cutaneous manifestations was two days but in a few they persisted longer. Figures 2 and 3 illustrate the pretibial and the generalized forms of the rash.

Biopsies of cutaneous lesions were performed in 6 typical cases. They showed diffuse edema and a slight to moderate perivascular infiltration with small round cells and macrophages. It is clear that drugs played no part in the development of this rash. Only 1 patient had received sulfonamide therapy. No other patient received any drug other than acetylsalicylic acid and codeine. Leukopenia was noted sufficiently often to constitute a typical feature. It was present in all except

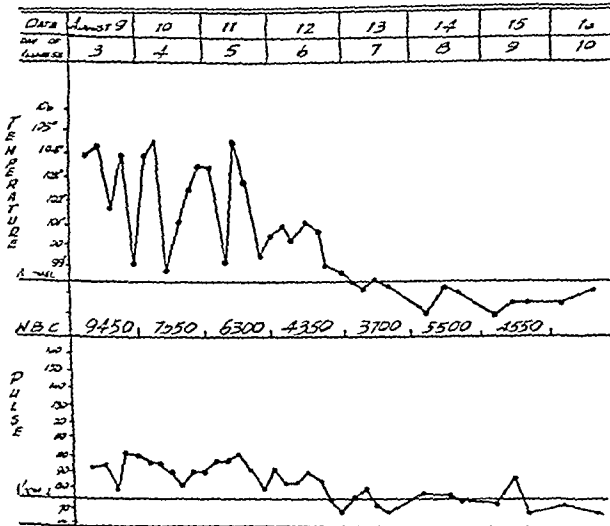


Fig. 1—Temperature, pulse and leukocyte count in case 2

relatively well. The fever persisted for from two to eight days but averaged 5.4 days with maximum elevations varying from 99.8 to 105.6 F (fig. 1). In 5 cases

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Dr. John R. Paul, Norman Topping, U. S. Public Health Service and Major Cornelius Philip, San C. U. S. Army, of the Surgeon General's Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, gave permission to use portions of their preliminary report.

5 cases at some time during the acute illness. It developed most commonly between the third and the fifth day of the illness. At the termination of the febrile period the leukocyte count again rose to normal, and in 14 cases there was a slight terminal leukocytosis. The white blood cell count range was from 2,800 to

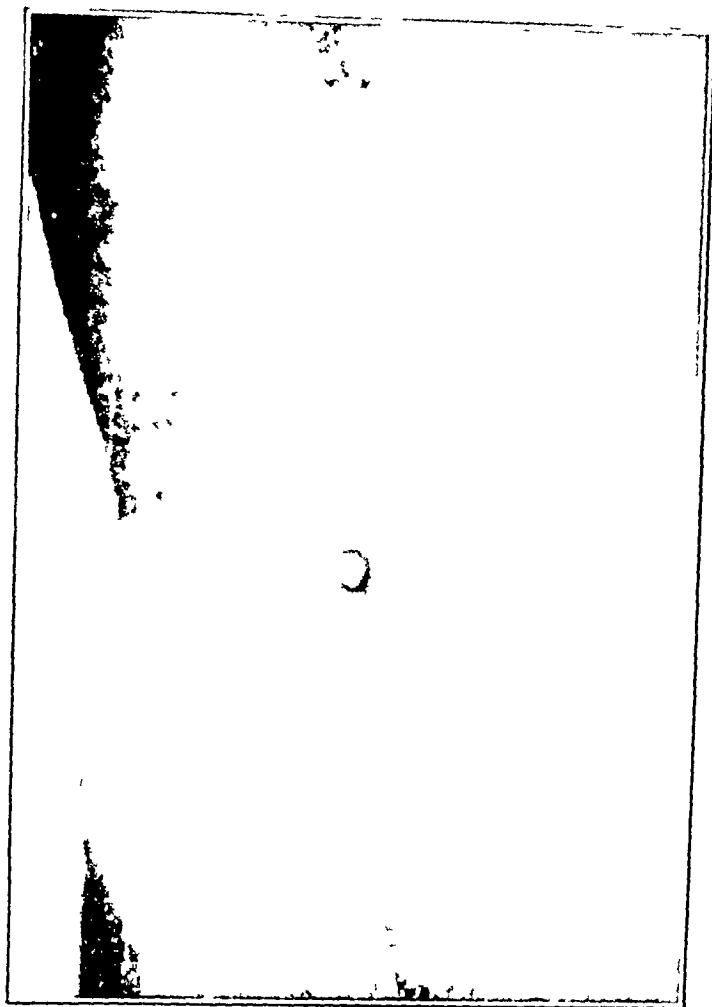


Fig. 3—Generalized cutaneous eruption in case 9

14,000 cells per cubic millimeter. Differential counts showed little deviation from normal, although in a few cases a moderate relative lymphocytosis was present. Figure 4 is a graphic representation of composite leukocyte counts.

Blood cultures were done in all cases but showed no growth. Agglutinations for proteus OX 19, melitensis, the typhoid-paratyphoid group and heterophil antibodies were consistently negative. Malarial parasites and the spirillum of relapsing fever were searched for but never found.

At the termination of the fever the patients rapidly returned to their original healthy state. There was no postfebrile depletion or depression. There were no complications. Figure 5 shows the incidence of symptoms.

REPORT OF CASES

CASE 4—E. R. D., a white soldier aged 25 of military organization A, admitted to the hospital on Aug 7, 1942, complained of fever and headache. He had been well until two days previously, when he felt feverish and chilly. Severe frontal headache, postorbital pain and severe backache developed. The next day he felt slightly better but on the day of admission the symptoms were all accentuated. The temperature was 101 F, the pulse rate 90 and the respiratory rate 20, the white blood cell count was 8,150 per cubic millimeter. Nothing unusual was found on physical examination. On the fifth day of the illness the spleen was firm and easily palpable. Over the pretibial surfaces of both legs irregular erythematous lesions were noted. These were faintly tender, warm to touch and very slightly raised. His temperature was swinging in

character and ranged from 99.8 to 104.4 F without a corresponding rapidity of pulse. The leukocyte count on this day was 1,900 per cubic millimeter with 65 per cent polymorphonuclear neutrophils, 31 per cent lymphocytes, 1 per cent basophils and 3 per cent eosinophils. On the seventh day of the illness the rash had entirely disappeared, the temperature was normal and he felt well. On discharge the spleen was still palpable.

CASE 2—R. G. C., a white soldier aged 21 of military organization A, admitted to the hospital on Aug 9, 1942 on the third day of his illness, had as initial symptoms frontal headache and pain in the feet and legs which later involved various joints. At the onset there was nausea without vomiting. Shaking chills had occurred on two occasions in the thirty-six hours prior to admission. On examination there were nasal congestion, pharyngitis, signs of generalized bronchitis, a temperature of 104 F, a pulse rate of 92, a respiratory rate of 20 (fig 1) and a leukocyte count of 9,450 per cubic millimeter. His temperature ranged from 99 to 104.6 F with very little acceleration of the pulse. Two hours after admission a rash appeared on the trunk, neck and extremities. This consisted of discrete, brilliantly erythematous, slightly raised warm plaques varying in size from 1 to 8 cm in their largest diameter. The rash was generalized, as in the other cases, the anterior aspects of both legs were involved. The rash remained erythematous for three days, faded gradually and left definite purplish pigmentation, which faded during the succeeding two weeks. The spleen was palpable. On the sixth day the leukocyte count had fallen to 4,350 and on the seventh day to 3,700 per cubic millimeter with no abnormality in the differential count. Convalescence was uneventful.

A summary of 40 cases is shown in table 1.

Toward the latter part of this outbreak a commission consisting of Dr. John R. Paul, Dr. Norman H. Topping and Major Cornelius Philip was assigned by the Surgeon General of the United States Army to investigate the epidemiology and etiology of the disease. Through their courtesy we have been able to use epidemiologic and other data which they have assembled.

EPIDEMIOLOGY

The organizations from which these soldiers came were all quartered in the northern third of the populated area of the reservation near a small stream and

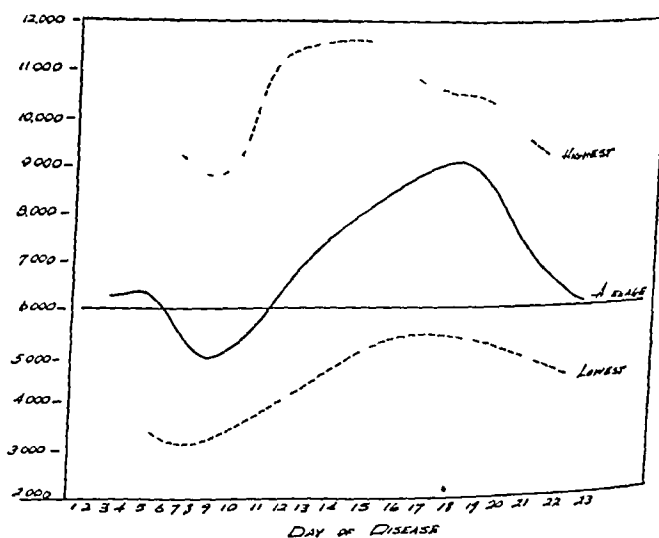


Fig. 4—Composite leukocyte counts in 40 cases

its tributaries. The other areas of the post furnished no patients ill with this disease. For this reason local environmental factors were thought to be of etiologic importance. There was no single locality off the reservation to which all these men went during the month previous to illness. They had no common meeting place. Some of the men had done no swimming, while

TABLE 1—Summary of Forty Cases

Patient	Unit	Date of Onset	Symptoms	Rash		Pretibial and Low Scatund Lesions	Generalized	Leukocyte Count Lowest and Highest	Spleen	Maximal Fever	Days of Fever
				Day of Appearance	Day of Disappearance	Pre-tibial Only					
1 A W F	D	7/29	Faint fever malaise backache frontal and postorbital aching, chills	8/1	8/5	Yes		4450 to 8900	+	104.8	7
2 R G C	A	8/5	Chills frontal and postorbital aching chest pain nausea, backache joint pains	8/9	8/14		Yes	3700 to 9500	+	104.6	8
3 C A B	B	8/5	Chest pain cold and sore throat generalized aching cough chill headache lumbar pain	8/10	8/12	Yes		5700 to 10100	+	104.4	7
4 E R D	B	8/5	Frontal headache chills fever cough backache	8/9	8/12	Yes		4900 to 12300	+	104.4	5
5 J H	C	8/6	General aching chills fever, cough frontal headache retro orbital pain	No rash				4650 to 9550	+	104.2	6
6 L F W	H	8/7	Chills fever nausea slight chest pain generalized aching dizziness anorexia frontal headache and retro orbital pain	8/11	8/17	Yes		4100 to 8650	+	104	6
7 M A F	B	8/8	General aching chills malaise chest soreness slight cough frontal headache retro orbital pain	8/11	8/15	Yes		5600 to 10400	+	104	5
8 F W G	B	8/8	Frontal and occipital headache chills nausea vomiting backache malaise	8/10	8/15	Yes		3900 to 11650	+	103.5	5
9 J V	B	8/8	Chills fever malaise frontal headache dizziness generalized aching, lumbar pain	8/13	8/16		Yes	4700 to 9500	+	105	7
10 I H F	A	8/9	General aching frontal headache retro orbital pain vomiting chills and fever	8/10	8/12	Yes		3000 to 10700	+	100.8	2
11 G H C	B	8/9	Chills fever cough generalized aching backache frontal headache and retro orbital pain	8/12	8/14	Yes		3650 to 8500	+	104	3
12 W P H	D	8/9	Frontal headache retro orbital pain malaise generalized aching fever dizziness	8/13	8/15	Yes		4600 to 10200	+	104.3	6
13 E R H	B	8/10	Head cold frontal headache cough generalized aching lumbar pain nausea fever	8/12		Yes		4150 to 10200	+	104.2	4
14 M F D	B	8/11	Sore throat slight cough fever frontal headache retro-orbital pain chills and aching	8/18	8/20	Yes		4550 to 10400	+	105	5
15 R H L	I	8/19	Grip fever frontal headache malaise general aching chills vomiting, and backache	8/22		Yes		4400 to 9500	+	105	6
16 S E T	A	8/19	General aching chills slight sore throat frontal headache backache	No rash				4300 to 10950	+	104	5
17 J E W	A	8/20	Frontal headache malaise fever generalized aching backache	No rash				4200 to 10000	+	104	4
18 M W S	F	8/21	Frontal headache retro orbital pain muscular aching generalized chills fever photophobia	8/26	8/28	Yes		5850 to 7450	+	104.2	5
19 A L V	A	8/21	Cough fever sore throat generalized aching backache frontal headache	8/27	9/5	Yes		7300 to 11700	+	102	5
20 W L B	A	8/22	Frontal headache chills fever generalized aching lumbar pain	8/24	9/5	Yes		5000 to 9000	+	104	8
21 R C S	A	8/22	Frontal headache general aching chills moderate cough slight chest pain nausea and vomiting malaise	No rash				5000 to 9800	+	103.5	5
22 H A M	A	8/22	Malaise severe chill fever general aching headache	8/26	8/31	Yes		7000 to 9950	+	102.6	4
23 R F B	A	8/23	Frontal headache retro orbital pain malaise weakness chills cough low backache general aching anorexia	8/29	9/2	Yes		4400 to 9100	+	104.3	6
24 C P	C	8/23	Malaise generalized aching fever head colds frontal headache dizziness anorexia	8/29	8/31	Yes		5450 to 9150	+	104.4	4
25 J B A	A	8/24	Generalized aching severe lumbar pain fever and chills chest pain frontal headache nausea	8/27	9/5	Yes		2850 to 8100	—	102.1	3
26 P H	C	8/24	Generalized pains chills fever frontal headache vomiting backache	8/28	9/5	Yes		5450 to 14500	?	105.5	6
27 D C L	A	8/24	Postorbital headache malaise chest pain backache fever cough mild pharyngitis stiff neck	8/27	9/3	Yes		5750 to 12400	+	104	8
28 O K B	A	8/26	Frontal headache retro orbital pain severe lumbar backache shaking chills cough malaise fever mild aching of arms and legs	8/29	9/5	Yes		4550 to 12500	+	104	5
29 C J L	B	8/27	Frontal headache heavy feeling in chest dizziness vomiting backache fever	8/31	9/5	Yes		2650 to 7950	+	105.4	6
30 B B	A	8/27	Frontal headache cough fever sore throat generalized aching backache	8/31	9/4	Yes		7850 to 19500	+	103.2	4
31 M C	C	8/27	Frontal headache fever malaise shaking chills nasal discharge backache general aching	9/1	9/4	Yes		5050 to 8350	+	102.8	4
32 W E F	E	8/28	Malaise frontal headache chills fever head cold backache	9/1	9/4	Yes		5200 to 8500	+	104.1	7
33 J E M C	A	8/28	Muscular aching chilliness fever malaise nausea and vomiting sore throat chest pain photophobia frontal headache	8/30	9/5	Yes		4000 to 6550	+	105.5	5
34 R J G	G	8/29	Occipital and frontal headache chilliness fever malaise anorexia head cold backache	9/2	9/5	Yes		3850 to 4500	+	104.2	5
35 E J H	C	8/29	Frontal headache malaise anorexia nausea backache fever faint	9/1	9/5	Yes		4550 to 10100	+	104.4	7
36 C J M	B	9/1	Frontal headache nausea chilliness fever malaise dizziness and backache	9/4	9/3	Yes		6350 to 6750	+	105.4	5
37 J D G	A	9/6	Frontal headache retro orbital pain fever malaise anorexia nausea lumbar aching dizziness			Yes		5550 to 6550	+	102.6	4
38 A J D	A	9/7	Frontal headache generalized aching malaise anorexia nausea and vomiting, lumbar pain fever	9/9	9/11	Yes		6700 to 8500	+	99.3	4
39 M	A	9/11	Gradual onset frontal headache retro orbital pain generalized muscular aching lumbar aching chill fever and malaise	9/13	9/16	Yes		5500 to 6500	+	104.3	5
40 J J S.	B	9/11	Frontal headache retro orbital pain chills malaise anorexia cough conjunctival injection fever backache		9/14	Yes		4700 to 5500	—	105	5

others swam in several different ponds. There was no common swimming place. Several men had gone on maneuvers in Chesapeake Bay, others on the coast of North Carolina, while a large number had not left the post area. We have been unable to calculate the exact incubation period. Five men developed their

be suspected. Sand flies, biting midges and black flies were not found. Bedbugs, stable flies, chiggers, ticks and horseflies were found but for various reasons were considered unlikely vectors.

During the early period of this outbreak the mosquito population on the post was very low, not only because of good control but because of a continued period of low rainfall. Because of the sandy soil in this area, absorption is rapid and standing water is unusual. Various members of the *Culex* species were found. The most frequent of these was *Culex quinquefasciatus*. This mosquito has been disproved as a carrier of dengue. No representative of the dengue vector, *Aedes aegypti*, was found, and there are only a few records of this species being taken during the entire season by the mosquito control officer. *Aedes atlanticus*, *Aedes canadensis* and *Aedes vexans* were found. Their presence is of doubtful importance.

ETIOLOGY

The cause of this disease remains obscure. Extensive studies by the commission are in progress in an attempt to establish the etiology and mode of transmission. Blood and nasopharyngeal washings have been inoculated into rhesus, green African and mona monkeys. A variety of small laboratory animals including guinea pigs, rabbits, mice and rats have also been inoculated with these materials. The yolk sacs of fertile eggs have been inoculated. Emulsions of the stable fly (*Stomoxys calcitrans*) have been inoculated into fertile eggs. Two lots of *A. aegypti* mosquitoes were fed on 2 men during the early phase of their illness. An attempt will be made to transmit this disease by these mosquitoes to human volunteers.

DIFFERENTIAL DIAGNOSIS

A number of different disease entities were considered as possible diagnoses in these cases. In the early cases influenza was suspected, but the transient character and mildness of the respiratory symptoms, persistence of fever, presence of a firm palpable spleen and the unusual rash eliminated this possibility. Endemic typhus seems excluded by the short duration of the illness, the entirely different type of rash and consistently negative Weil-Felix reactions with OX 19 at different periods of the illness. Rocky Mountain spotted fever can be similarly dismissed. In no cases did adenopathy, the characteristic blood changes or the positive heterophil antibodies usually demonstrated in infectious mononucleosis develop. The duration of the disease, negative blood and stool cultures and negative

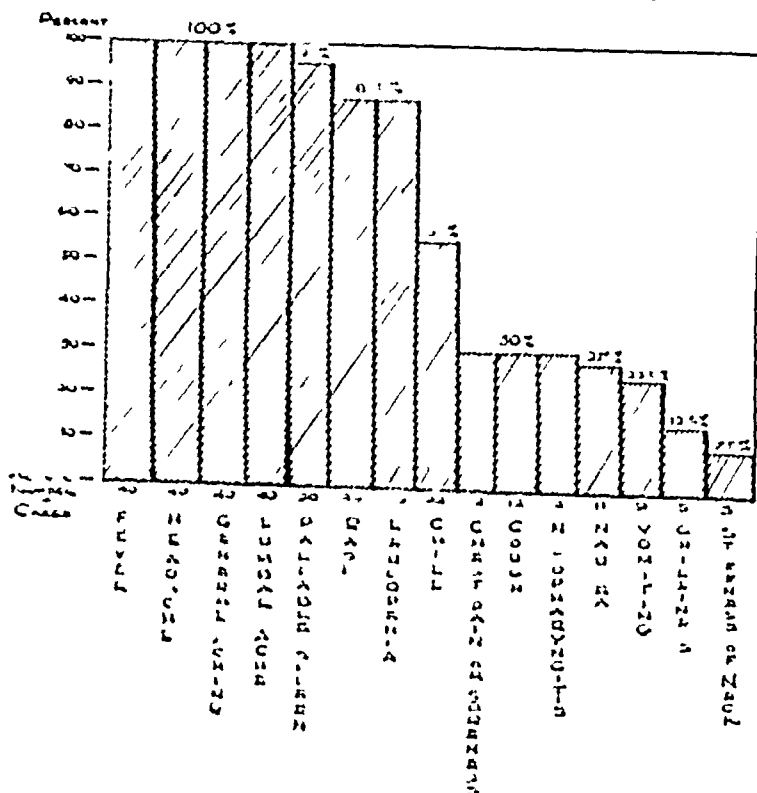


Fig. 5—Incidence of findings in 10 cases

illness away from the post. Several became ill a few days after returning to the post following ten days on maneuvers. Table 2 shows the onset of illness in 10 patients who were together on maneuvers between August 10 and August 21.

These men returned on August 21, hence 2 developed their disease away from the post, 2 on the day of return and 6 within three days after their return. If the disease is not spread by human contact it seems reasonable to assume that the incubation period is approximately ten to fifteen days or longer. One man left for his home in Pennsylvania on July 27. On August 5 he became ill with fever and headache. His local physician made excellent observations of this soldier's illness. From his records there can be little doubt that he had "pretibial fever." In this case an incubation period of ten or more days is again suggested.

Figure 6 shows the course of the epidemic. Each rectangle represents one case.

The incidence by organization is as follows: organization A 17 cases, B 10, C 5, D 3, E 1, F 1, G 1, H 1 and I 1. Because of the high incidence in organization B during the early period of the epidemic, the dispensary records of this outfit were later examined. It was found that during this period there was a decided increase in the number of cases diagnosed as "influenza," "nasopharyngitis" and "fever of unexplained origin." Of 33 of these cases hospitalized, 9 were diagnosed "pretibial fever" after the rash appeared. In others the rash was either absent or not observed, and various diagnoses were made. It is probable that some of these were examples of this disease.

Factors responsible for the outbreak have not been determined. The commission and the medical inspector of the post made a search for insect vectors that might

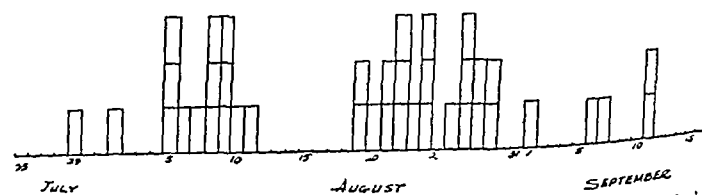


Fig. 6—Course of the epidemic on a basis of the date of onset. Each rectangle represents 1 case.

agglutination reactions eliminate the typhoid-paratyphoid group. The parasites of malaria and relapsing fever were sought but not found in any case. Dengue was at first thought to be the probable diagnosis. However, as new cases were observed certain prominent features of that disease were conspicuously absent. No patient had a "camel back" type of fever curve or any postfebrile depletion or depression. The usual vector

of dengue, Aegypti, was not found in the vicinity. It would be unusual for an outbreak of dengue to be limited to such a small group. Its rapid spread to a large portion of the population would have been expected. The type and distribution of the rash is not similar to that seen in dengue. Other described denguelike diseases such as pruritic fever, five day fever of Panama and various similar entities were considered. However, the clinical features of pretibial fever showed definite dissimilarity to these in one or more important respects. Search of the available literature revealed no description of a clinical entity into which this group of cases would fit.

An outbreak of what may be the same disease was observed in August 1940 in Wrens, Ga., by Bowdoin.¹ Dr. Bowdoin² writes in part as follows: "Apparently about 35 cases occurred. All patients had a sudden onset within twenty-four hours complaining of severe frontal headache. A number of them complained of soreness behind the eyes. Some two thirds of the patients complained of backache, and about the same number of pains in the legs. Approximately one third of these patients complained of pains in the joints. Some two thirds of the patients complained of nausea, and some few of them vomited. A fleeting type of rash was seen in 6 or 7 cases, which occurred for the most part on the anterior aspects of the legs. One man is known to have had the rash also on his abdomen and

to study this disease." These materials were obtained from 5 patients between the second and fourth day of illness with this disease. Human beings, rhesus and green African monkeys, 1 marmoset monkey, 1 chimpanzee, incubating hens' eggs, guinea pigs, rats, mice and hamsters were inoculated. "All tests on this material proved negative as far as isolating or determining the nature of the infectious agent responsible for this disease was concerned."

Station Hospital, Fort Bragg, North Carolina

SYPHILIS IN THE UNITED STATES PRIMARILY A NEGRO PROBLEM

W. G. SMILLIE, M.D.

NEW YORK

The results of the serologic blood tests for syphilis that were secured from the first two million reports¹ of selectees for army service in 1940 to 1942 provided an excellent cross section of the prevalence of syphilis in the United States and changed many of our preconceived ideas concerning the epidemiology of the disease in this country.

Syphilis has been called an urban disease, a disease of large cities and seaports, but this is not true in the United States. The urban rate in these men was 4.6 per cent while the rural rate was 4.4 per cent.

Furthermore, syphilis is not a disease of seaports, nor does it have an unduly high prevalence in large cities. The largest cities, such as New York, Chicago, Boston and San Francisco, all have rates of less than 2.5 per cent, whereas the rate for the nation as a whole was 4.5 per cent. Industrial areas do not suffer to an unusual degree. Rhode Island and Connecticut, the two most completely industrialized states in the Union, have rates of 1.1 and 1.2 per cent respectively.

The extraordinary fact brought out by these data is the high prevalence of syphilis in the Negro. This rate permeates overwhelmingly all the other data. In all parts of the United States the rate in Negro men is at least ten times higher than that in white men.

The men examined for service were from 21 to 35 years of age. Table 1 illustrates the high incidence in the Negro and also the increasing prevalence with age in both the white and the Negro.

The geographic distribution of the disease bears a direct relationship to the distribution of the Negro population of the nation. States with a large proportion of Negroes have highest syphilis rates. In each of the forty large cities it will be found invariably that the syphilis rate is in direct proportion to the Negro population.

Furthermore, those states having the highest syphilis rates in Negroes concomitantly have a higher than average syphilis rate in white men.

Table 2 records the five states with the highest syphilis rates in Negroes. In every one of these states the rates in the young white men are above the mean, 2.3 per cent, for the white men of the country as a whole. On the other hand, states that have lowest syphilis rates in the white men also have lower than average rates in the Negro population. This is well illustrated by table 3 which gives the list of five states with the lowest rates in white men. It will be noted

TABLE 2—Onset of Illness in Ten Cases

Day of Leaving Fort Bragg	Date of Initial Symptoms						
	August 10	19th	20th	21st	22d	23d	24th 25th
Number of cases		1	1	2	2	1	3 0

chest. The rash lasted from twenty-four to forty-eight hours. All cases were characterized by very slow pulse, with a range of 55 to 90, varying with temperature range, which was from 100.6 to 104.5 F. All had characteristic dull facies with slight to moderate injection of the conjunctivas. The course was five to ten days with 80 per cent of them having a normal temperature on the seventh day and out of bed on the eighth." A laboratory technician who had done some of the stool cultures is reported to have developed the disease.

SUMMARY

An outbreak occurred of an unusual febrile illness of approximately five days' duration characterized by minimal respiratory manifestations, frontal postorbital and lumbar aching, leukopenia, palpable spleen and an erythematous rash over the pretibial regions.

Forty such cases occurred among soldiers in a localized area of a military reservation during the months of July, August and September 1942.

The etiology and mode of transmission are unknown. It is hoped that investigations now under way will throw some light on this problem.

ADDENDUM—Since this paper was submitted for publication the commission assigned by the Surgeon General of the Army to study the etiology and mode of transmission of this disease has completed its studies. Clinical material in the form of blood, nasal washings and urine from patients, engorged mosquitoes and locally collected flies have been tested in the various laboratories available to members of the group assigned

From the Department of Public Health and Preventive Medicine, Cornell University Medical College.

1. Vonderlehr, R. H., and Uslan, L. D. J. Syphilis Among Men of Draft Age in the United States. J. A. M. A. 120:1369 (Dec. 26) 1942.
2. The two exceptions are Arizona and New Mexico where the Indian and Mexican population changes the picture slightly.

1. Bowdoin, C. D. A New Disease Entity (?) J. M. A. Georgia 31:437-438 (Dec.) 1942.

2. Bowdoin, C. D. Public Health Department of Georgia. Personal communication to the authors.

that in every instance the rate for Negro men is much lower in these states than the mean, 27.2 per cent, for Negro men the country over.

These data are highly significant and to some degree encouraging. They show the blight that is cast on an area where syphilis is not controlled in the Negro

TABLE 1—Positive Serologic Tests for Syphilis

Age Group	White Men	Negro Men
20-30 years	10.0	12.0
31-40 years	11.0	21.0
41-50 years	12.0	27.0
Total for all ages	17.0	27.2

Negroes not only affects the Negroes but increases the rates in the white population as well.

The data indicate also that syphilis may be brought under some degree of control in the Negro as well as in the white. In Massachusetts and Rhode Island, for example, each with rates of 0.9 per cent for white men, one finds that the rates in the Negro population of young adult males are less than 12 per cent.

It was noted that the data show syphilis to be just as common in rural areas as in urban communities. These crude data do not tell the true story. The high prevalence of syphilis among rural Negroes distorts the picture. For example, Iowa and South Carolina are truly rural states—both have populations of about two million, with no large cities. But Iowa selects had a syphilis rate of 1.7 per cent, those from South Carolina 14.5 per cent. The reason for this is that Iowa has a Negro population of 0.7 per cent and South Carolina one of 43 per cent.

Thus the syphilis problem in the United States at the present time centers in the high prevalence of the disease in the Negro. This is true of all parts of the nation but is particularly true in those cities and states with preponderantly large Negro populations. All comparisons that are made concerning syphilis, comparisons of one city with another or one state with another or comparisons that are made of the United States with other nations, must take into account this high prevalence of syphilis in the Negro and proper statistical correction made on a race population basis.

For example, comparisons of syphilis prevalence in the United States with the Scandinavian countries, with Great Britain or with other European nations are not

TABLE 2—Five States with Highest Syphilis Prevalence in Negro Men as Indicated by Serologic Tests

State	White Men	Negro Men
1 Florida	5.3%	40.6%
2 Texas	5.3%	34.3%
3 Georgia	3.9%	32.8%
4 Maryland	2.8%	32.2%
5 Mississippi	3.5%	32.1%

valid unless the data that are presented are truly comparable. When so interpreted it becomes clear that, in our white population, we have a syphilis rate that compares favorably with any nation in the world.

These data show that most of the popular propaganda that has been used in promoting syphilis control in the United States has been highly misleading. "One person in ten will have syphilis" is a popular saying but

it is untrue. The incidence of syphilis among white men in the greater part of the nation is low and is limited for the most part, in the white race, to the lowest classes of society. Among the whites syphilis has become, in the great majority of cases, a disease of the ignorant, the careless, the criminal and the social outcast. It is truly a social disease.

From the point of view of the public health administrator, the issue is clean cut. He must attack the disease vigorously at the point of greatest prevalence. Since syphilis is more than ten times as prevalent in Negroes as in white persons, the administrator must make his plans to put at least ten times as much emphasis on control of the disease where it really exists in serious proportions and bend every effort toward control of the disease in the Negroes of his community. These efforts will result in a lower prevalence of the disease in the white people of the community as well.

There has been a tendency in official health circles to gloss over or to ignore the high prevalence of syphilis in the Negro. We now realize that this policy has been a short sighted one. The epidemiologic facts are before us. There is no gainsaying their truth or minimizing their importance. The sooner that this truth is

TABLE 3—Five States with Lowest Syphilis Prevalence in White Men as Indicated by Serologic Tests*

State	White Men	Negro Men
1 Wisconsin	0.6%	15.7%
2 Minnesota	0.8%	14.2%
3 Massachusetts	0.9%	11.6%
4 Connecticut	0.9%	20.7%
5 Rhode Island	0.9%	9.2%

* New Hampshire 0.6 per cent, North Dakota 0.7 per cent, Utah 0.7 per cent and South Dakota 0.9 per cent had very low rates in the white men but the number of Negroes in these states is too few for valid comparison.

recognized and appropriate steps are taken to control the existing situation, the better it will be for the Negro race and for the public health of the nation as a whole.

1300 York Avenue

Photosynthesis—Since sunlight furnishes the energy required for the synthesis of carbohydrates, this process is known as photosynthesis. Other factors involved are chlorophyll and numerous plant enzymes. Since oxygen is given off and energy is stored, photosynthesis is a reducing and endothermic (heat requiring) process. Much time has been spent by numerous investigators to determine the series of chemical changes involved in photosynthesis. Because of the general occurrence of free glucose, together with the fact that it constitutes an integral part of plant disaccharides and polysaccharides, this sugar has been assumed by many to be the first carbohydrate to make its appearance in the photosynthetic process. The validity of such an assumption now appears doubtful in the light of studies in which radioactive carbon, as carbon dioxide, has been furnished green plants for use in photosynthesis. These studies indicate that a large molecule is the first product of photosynthesis and suggest that, in some plants at least, starch may be the precursor of simpler carbohydrates such as glucose and sucrose, rather than a product resulting from condensation of numerous molecules of simple sugar—Peterson, William H., Skinner, John T., and Strong, Frank M. *Elements of Food Biochemistry*, New York, Prentice-Hall, Inc., 1943.

Clinical Notes, Suggestions and New Instruments

AN UNUSUAL COMPLICATION OF THE INTRA-SPINAL USE OF IODIZED OIL

PAUL C BUCY M.D. AND IRVING J SPEIGEL M.D.
CHICAGO

Iodized poppy seed oil has been injected intraspinally in thousands of instances for the localization of intraspinal lesions. Apart from obvious disadvantages in some medical situations and mild transitory symptoms for a few hours to a few days immediately after its injection in a small percentage of the cases, its use has been remarkably free from any untoward results. In our experience, the intraspinal use of iodized oil has been so innocuous that one of us (P. C. B.) has repeatedly expressed the opinion that its use was not associated with any permanent undesirable effects and that in those few instances in the literature in which the development of symptoms was attributed to the use of iodized oil the case against the oil had by no means been established. Furthermore the study made by Marcovich, Walker and Jessico¹ at the University of Chicago while the Division of Neurology and Neurological Surgery there was under the direction of one of us (P. C. B.) substantiated that opinion.

Accordingly when the present case came under our observation and when the operation and postoperative course seemed definitely to establish the relationship of the iodized poppy seed oil to the development of symptoms or dysfunction of the spinal cord, we thought it necessary to record the case in detail.

REPORT OF CASE

History—F. F., an American man aged 36 married, a grocery clerk, was referred to the Neuropsychiatric Institute at the University of Illinois by Dr. E. L. Compere of Chicago because of weakness, stiffness and numbness of both lower extremities. Past and family histories revealed nothing of note. His present illness began some time early in 1935. At that time, the patient noted the onset of pain in the lower part of the back which was aggravated by strenuous exercise. As time went on he began to notice an occasional pain radiating down into both hips and the posterolateral aspect of both thighs and both legs. The pain was not aggravated by coughing or sneezing. He remembers neither numbness nor muscular weakness. The low back pain finally became so severe that he sought aid at a medical clinic. There spondylolisthesis was discovered and, in April 1937, a spinal fusion was performed at the fourth and fifth lumbar and the first sacral vertebrae.

After this operation the patient felt quite well. However, by the beginning of 1938 he began to have severe pain in the left hip radiating down the left thigh posteriorly. Since the pain continued, he was examined in the neurologic service of the same clinic in March 1938. There were no neurologic abnormalities at that time. Iodized oil was injected intraspinally by the lumbar route and the patient examined on the tilting fluoroscopic table. At this examination no obstruction or filling defect of the spinal canal was seen, but two large globules of oil became caught and remained at the level of the eighth thoracic vertebra. These are clearly seen in roentgenograms made at that time. Nothing further was done. There was gradual improvement in the patient's symptoms and by the end of 1938 he was almost entirely well and able to resume work as a grocery clerk.

About six months before admission to the Illinois Neuropsychiatric Institute on Feb. 23, 1942 the patient began to notice that both his lower extremities were becoming weak and stiff. About four months before admission the weakness and stiffness had progressed to such an extent that it became difficult for him to get about without using the walls and furniture for support. About this time he noticed that his lower extremities were becoming "numb" and that he could move about much more successfully if he watched the floor and his extremities while he walked. About four weeks before admission, the patient noticed a burning pain along the medial aspect of the right foot which came and went for varying periods of time until two weeks before admission, when the pain became continuous.

Examination—General physical examination revealed no pertinent findings beyond the well healed scars over the lumbosacral area and over the tibia. The cranial nerves and upper extremities were normal. The actual muscular weakness in the lower extremities was not pronounced, but there was a severe extensor spasticity with hyperactive tendon reflexes. Babinski's sign was present bilaterally. There was a fairly well sustained ankle clonus on both sides. All the abdominal reflexes were present but weak. Vibratory sense was decreased from the iliac spines downward, and position sense was decreased in the toes, the ankles and the knees. There was hypesthesia to light touch in the tenth to the twelfth thoracic dermatomes on the left side. The patient's gait revealed a moderate degree of spasticity and of ataxia which was accentuated when his eyes were closed. His body swayed when his feet were together and his eyes closed.

Roentgen examination of the lumbosacral area revealed evidences of the known spondylolisthesis along with irregular shadows representing iodized oil in the spinal canal. At the level of the eighth thoracic vertebra were two large globules of iodized oil slightly to the right of the midline (fig. 1). The position of these globules of oil did not change regardless of whether the patient was recumbent standing upright or placed with his head downward. The blood count and smears were normal and gastric analysis revealed the presence of free hydrochloric acid. The Kahn reactions of the blood and the spinal fluid were negative. There was 25 mg. of protein per hundred cubic centimeters in the spinal fluid. At the first lumbar puncture the initial pressure was 130 mm. of fluid. A sphygmomanometer cuff was placed around the patient's neck and the pressure kept at 60 mm. of mercury (blood pressure 130/80) for thirty seconds. Twenty seconds after the onset of this compression a slow rise of the spinal fluid pressure to 190 mm. occurred. When the jugular compression was released there was a slow return of the intraspinal pressure to 130 mm. which required five seconds to complete. Abdominal compression caused a rapid rise and fall of the intraspinal pressure.

It was felt, however, that further substantiation of the subarachnoid block was desirable, so an amyl nitrite test was

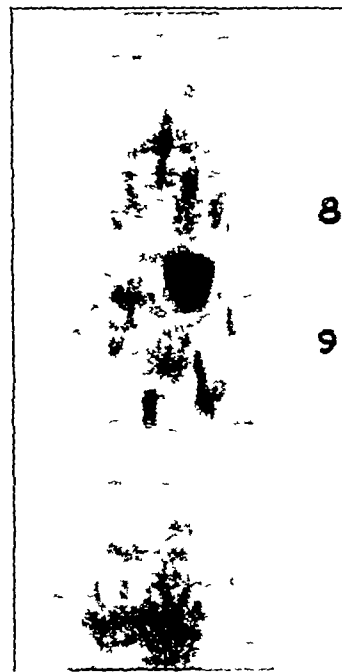


Fig. 1—Encysted iodized poppy seed oil at level of eighth and ninth thoracic vertebrae. Patient in the upright position.

Read before the Chicago Neurological Society Nov. 19, 1942.
From the Department of Neurology and Neurological Surgery, University of Illinois College of Medicine.
¹ Marcovich, A. W., Walker, A. E., and Jessico, C. M. The Immediate and Late Effects of the Intrathecal Injection of Iodized Oil. *J. A. M. A.* 10: 2247-2254 (May) 1941.

performed according to the method described in 1932 by Elsberg and Hare.² This caused the lumbar intraspinal pressure to rise from 58 to 90 mm of fluid (fig. 2).

Operation.—On March 10 the lower part of the seventh, all of the eighth and the upper part of the ninth thoracic vertebral laminae were removed. The dura mater appeared

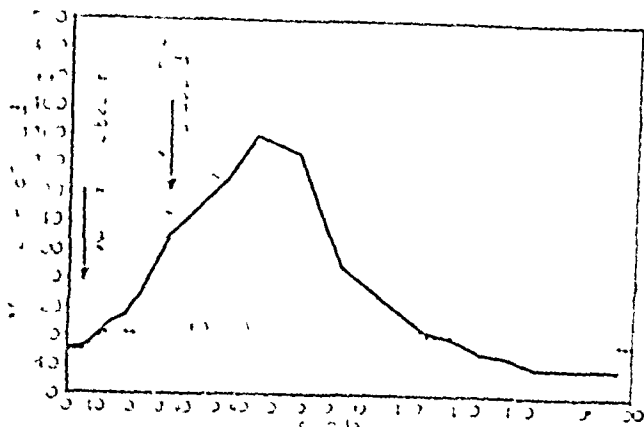


Fig. 2.—The response of the pressure of the spinal fluid to inhalation of amyl nitrate. The solid line represents the reaction in a normal subarachnoid space. The broken line is the reaction in the patient under discussion. The latter represents an almost complete spinal subarachnoid block.

to be normal but the arachnoid membrane at the level of the eighth and ninth thoracic vertebrae was opaque and white. Lying beneath the arachnoid membrane was a cyst measuring approximately 1.5 cm vertically, 1 cm horizontally and 1 cm anteroposteriorly (fig. 3). The posterior and lateral walls of this cyst were formed by the arachnoid membrane while the anterior wall was formed by the pia mater and the spinal cord. All but the anterior wall was removed. This cyst contained liquid iodized oil very similar in appearance to that material as obtained in glass ampules from the manufacturer. Below and a little to the right of this large cyst was a small firm yellowish nodule measuring 0.5 cm in diameter. It was removed intact. All of the thickened arachnoid membrane was also removed. After all these tissues were extirpated it was seen that the spinal cord was slightly enlarged posteriorly immediately beneath the large oil-filled cyst and that the vessels on the posterior surface of the spinal cord were enlarged and tortuous. The dura mater was closed tightly and the wound sutured in the usual manner.

Microscopic Examination.—The material removed at operation consisted of collagenous tissue. It was delicate and fibrillary and appeared to be edematous. The nuclei were narrow and elongated. The tissue in no place resembled normal arachnoid membrane.

Postoperative Course.—Following the operation, the patient made an uneventful recovery, and the wound healed by first intention. He left the hospital thirteen days after the operation. Examination at this time revealed no change in the clinical findings except that ankle clonus was no longer present. The patient stated that he was able to walk around with greater facility than before the operation.

He was seen again on April 4. His gait was no longer ataxic but was still slightly spastic. The Romberg test was still moderately positive. The knee jerks were only slightly hyperactive, the left being more active than the right. Ankle clonus was present at this examination. Babinski's sign was no longer present. Vibratory and position sense were intact in the right lower extremity but almost entirely absent in the left.

He was seen again on May 1. He stated that his walking had steadily improved since he left the hospital. Examination revealed a normal gait. There was no swaying in the Romberg

position and he walked tandem without difficulty. Tactile sensation was everywhere normal. Vibratory and position sense were both practically intact. The knee and ankle jerks were still hyperactive but much less so than previously. Ankle clonus and Babinski's sign were absent.

COMMENT

It is obvious that this is no ordinary case. Ordinarily iodized oil descends to the bottom of the meningeal sac in the sacral region and there either remains free and fluid or becomes encysted. In either event it produces no more than mild transitory symptoms. Even in those cases in which it has become lodged in the intracranial cavity, demonstrable effects have not resulted.³

That a considerable quantity of the iodized oil became lodged at the level of the eighth thoracic vertebra and remained there over a period of several years in spite of the patient's activity is definite evidence that there was some preexisting lesion at that level, probably an arachnoiditis. Such a likelihood immediately raises the question as to whether the arachnoiditis alone might not be responsible for the symptoms which developed in this case. That adhesive spinal arachnoiditis alone might so involve the spinal cord as to produce such symptoms cannot be denied. Yet the complete absence of any symptoms or involvement of the spinal cord at this level prior to the introduction of the iodized oil, the known tendency for iodized oil to stimulate fibroblastic proliferation in the leptomeninges,⁴ and the fact that the patient made such a rapid recovery once

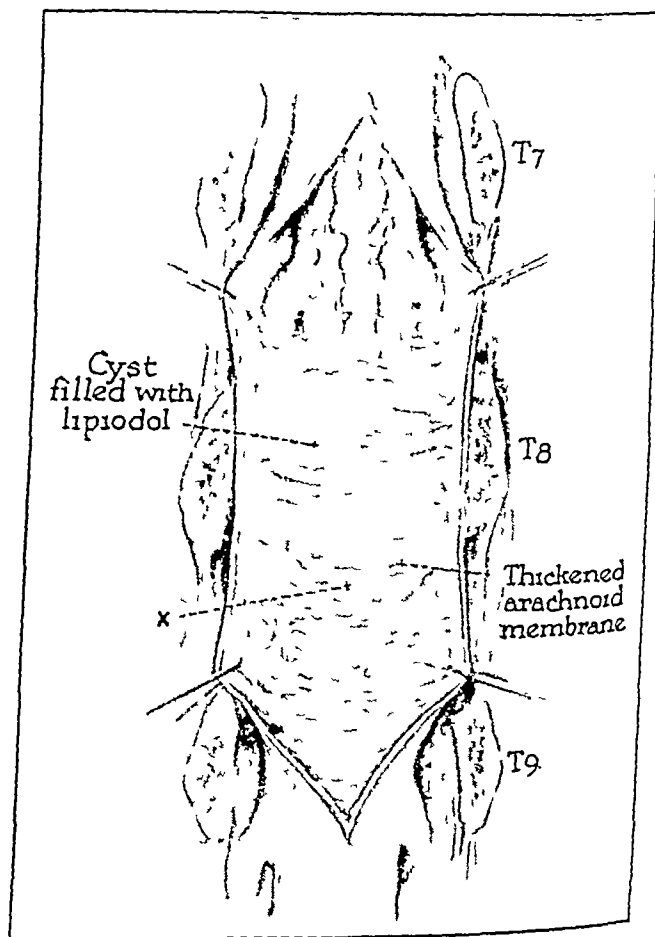


Fig. 3.—Drawing of the operative field with the dura mater open. A, the large cyst filled with iodized poppy seed oil and surrounded laterally and posteriorly by thickened arachnoid membrane. X, small yellow nodule containing iodized oil.

the encysted iodized oil was removed all point strongly toward the implication of the iodized oil as well as the preexisting arachnoiditis as causal factors in this case.

2 Elsberg, C. A., and Hare, C. C. A New and Simplified Test for the Determination of Spinal Subarachnoid Block by Means of the Inhalation of Nitrate of Amyl, *Bull. Neurol. Inst. New York* 2: 347-371 (Nov.) 1932.

3 Garland, P. H., and Morrissey, E. J. Intracranial Collections of Iodized Oil Following Lumbar Myelography. *Surg. Gynec. & Obst.* 70: 196-210 (Feb.) 1940. Marcovich Walker and Jessico.¹
4 Brown, H. A., and Carr, J. L. The Effect of Lipiodol in the Subarachnoid Space. *Surg., Gynec. & Obst.* 68: 945-951 (May) 1939. Marcovich Walker and Jessico.¹

In view of the recent thorough discussion by Marcovich, Walker and Jessic¹ of the effects of the intraspinal injection of iodized oil, there is no occasion for a repetition of that discussion here

SUMMARY

A man aged 30 suffered from spondylolisthesis for which the lumbosacral spine had been fused in April 1937. In March 1938, because of the development of left sciatica, iodized oil was injected intraspinally. Fluoroscopy revealed that some of the iodized oil lodged at the level of the eighth thoracic vertebra and remained there. Late in 1941 progressive symptoms of involvement of the spinal cord developed at that level. On lumbar puncture in February 1942 an almost complete spinal block was found. At operation on March 10 two collections of encysted iodized oil in the subarachnoid space, and a very much thickened arachnoid membrane were found and removed. Within a few weeks after the operation the patient had made a nearly complete recovery.

CONCLUSIONS

From a study of this case, it is concluded that

1 This patient suffered from a localized adhesive arachnoiditis at the level of the eighth thoracic vertebra prior to the injection of the iodized oil.

2 This arachnoiditis caught and held some of the iodized oil, which in turn stimulated fibroblastic proliferation in the leptomeninges, thus increasing the arachnoiditis and resulting in dysfunction of the spinal cord.

3 Although the intraspinal injection of iodized oil is ordinarily an innocuous procedure, the existence of a lesion which retains the iodized oil in contact with the spinal cord may ultimately result in undesirable changes in the spinal cord.

912 South Wood Street

COLD AGGLUTININS: A DIAGNOSTIC AID IN CERTAIN TYPES OF PRIMARY ATYPICAL PNEUMONIA

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The occurrence of autohemagglutinins or so-called cold agglutinins in high titer in the serum of patients with primary atypical pneumonia has been reported recently by Peterson, Ham and Finland.¹ These authors point out that the presence of true, reversible autohemagglutination may serve as a criterion for segregating some of the cases of primary atypical pneumonia. Although the test is not entirely specific, it would appear to have practical value in this part of the world since the only infectious disease in which the phenomenon has been described consistently is African trypanosomiasis.² Furthermore, autohemagglutination does not occur with any regularity in other clinical conditions, although it has been observed rarely in a few including lobar pneumonia.³

The present report is confirmatory of the observations made by Peterson, Ham and Finland and deals with the testing of the serums of 43 patients with primary atypical pneumonia for cold agglutinins.

Aided by a grant from the Fluid Research Fund Yale University School of Medicine.

From the Section of Preventive Medicine and the Department of Internal Medicine Yale University School of Medicine.

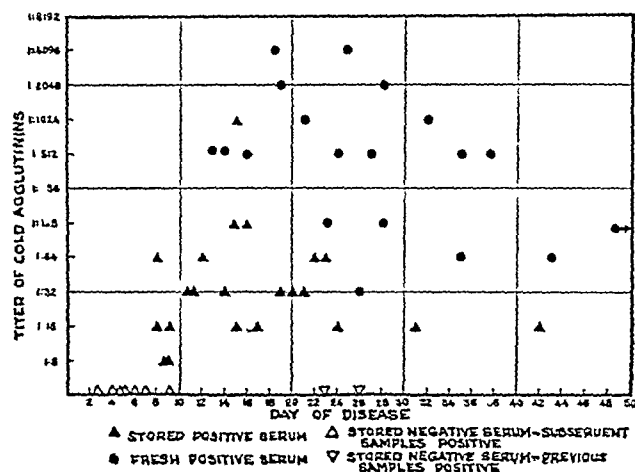
¹ Peterson O. L., Ham T. H. and Finland Maxwell Cold Agglutinins (Autohemagglutinins) in Primary Atypical Pneumonias. Science 97: 167 (Feb. 12) 1943.

² Yorke W. Autoagglutination of Red Blood Cells in Trypanosomiasis. Ann. Trop. Med. & Parasitol. 4: 529 1910.

³ McCombs R. P. and McElroy J. S. Reversible Autohemagglutination with Peripheral Vascular Symptom. Arch. Int. Med. 59: 107 (Jan.) 1937.

MATERIAL

The serums investigated were, for the most part, collected from patients in the New Haven vicinity during the winters of 1941-42 and 1942-43, a few samples (from 3 patients) were received from North Carolina in March 1943. All of the New Haven patients gave a characteristic history and exhibited



The titers of cold agglutinins in 27 cases of primary atypical pneumonia. Points represent 50 samples of blood taken on various days of the disease. The point with the arrow at the extreme right indicates a sample taken on the fifty-ninth day of the disease.

the usual physical and laboratory manifestations of primary atypical pneumonia.⁴ In every case there was positive x-ray evidence of pneumonitis. About half the patients had received sulfonamide therapy at some time during the illness. From 43 patients 84 blood specimens were collected at varying times in the course of the disease, 56 of these specimens had been stored in the ice box at 5 C for one to fourteen months. In addition there were 135 control serums representing normal persons, patients from the isolation unit of the New Haven Hospital and patients from the general medical and surgical wards.

METHOD

Agglutination tests were set up as follows. Dilutions of the patient's serum from 1:4 to 1:4,096 were made in 1 cc volumes. To each dilution 0.1 cc of a 2 per cent suspension of washed human red cells, group O, was added.⁵ The tubes were kept at 0 C overnight. Readings were made immediately after removal from the ice box and after the preparation had remained at room temperature for several hours. The second reading was made to ascertain whether the reaction was reversible at room temperature and therefore a true cold agglutination. Positive results were interpreted in graduations from 4 plus (a tight disk of red cells on inverting the tube three times) to 1 plus (a fine granular appearance on similar agitation).

RESULTS

All of the 135 control serums were negative for cold agglutinins, as were those from the 3 patients from North Carolina. In the 40 New Haven cases of primary atypical pneumonia positive reactions were found in 8 out of 9 patients whose serums were tested soon after bleeding and in only 19 of the remaining 31 patients whose serums had been stored before examination. The titers in the stored serums were strikingly lower than in the fresh specimens. This same difference was noted by Peterson, Ham and Finland who found negative reactions in a number of serums that had been kept for six months or longer; the discrepancy was thought to be related possibly to a loss of agglutinins on storage or to a difference in the disease.

⁴ Dingle J. H. and Finland Maxwell Medical Progress. Virus Pneumonias. II. Primary Atypical Pneumonia of Unknown Etiology. New England J. Med. 227: 378 (Dec. 3) 1942.

⁵ Human autohemagglutinins are known to act as isocagglutinins. Group O red cells were used to avoid the usual in vitro reactions.

The accompanying chart indicates the relationship between the titers and the day of the disease on which the blood was collected. On this chart have been recorded samples of serum from 27 patients who gave at least one positive reaction. Patients who gave only negative reactions have not been included.

In general, the results indicate that in many cases of primary atypical pneumonia the rise in titer of cold agglutinins occurs about one week after the onset of symptoms and may persist for several weeks after recovery. In no case of our series did the test become positive before the eighth day, and the majority were positive during the second to the fourth week of illness. However, it should be pointed out that most of our material was not collected with cold agglutinins in mind, and in many cases only a single specimen was available. The serums are therefore too scattered and irregular as to time to allow definite conclusions.

The fact that all 11 North Carolina patients gave negative reactions on three satisfactorily spaced specimens examined soon after collection is important. It indicates that further tests are in order to investigate the possibility of different types of primary atypical pneumonia existing in various regions of the country.

In our limited series there appeared to be no clear-cut correlation between the titer of cold agglutinins and the severity of the disease. However, among the few very high titers were 2 severe cases in which hemolytic crises developed. In 1 of these recovery occurred, but the other terminated fatally. The latter case is of special interest.

REPORT OF CASE

M. L., a housewife aged 47 whose symptoms began Oct. 1, 1942, was treated for several days with sulfadiazine without effect and was admitted to the New Haven Hospital on October 8 with a temperature of 103.6 F and x-ray evidence of pneumonia in the left upper, the left lower and probably the right upper lobe. Her blood count on admission showed 10,000 white blood cells, of which 80 per cent were polymorphonuclear leukocytes, the hemoglobin was 12.5 Gm and the red blood cells numbered 4,400,000. During the eight days after admission her temperature varied between 102 and 105 F, and there was increasing respiratory embarrassment. On the sixteenth day of her illness there was a sudden hemolytic crisis in which the hemoglobin fell rapidly to 4.1 Gm and the white blood cells rose to 100,000. At the same time extreme autohemagglutination was noted even at room temperature, the clumping of red blood cells in the counting chamber made it impossible to make an accurate red cell count. The serum taken on the first day of hemolysis had a titer of 1:1,024 for cold agglutinins when tested after four months storage. There was definite hemoglobinemia and hemoglobinuria. The patient rapidly became moribund and died without response to emergency splenectomy. Autopsy revealed a diffuse bilateral interstitial pneumonitis with round cell infiltration and interalveolar exudate also composed largely of mononuclear cells. There was some reticuloendothelial and bone marrow hyperplasia and hemosiderosis of the abdominal organs, but no explanation of the hemolytic episode was found.

COMMENT

Although this patient had received sulfadiazine prior to admission to the hospital, none had been given for the nine days before hemolysis occurred. It is not known what part the drug played in the development of her anemia, but as far as the autoagglutination is concerned our series shows that this phenomenon occurs in high titer in patients with primary atypical pneumonia who have not received sulfonamide therapy.

SUMMARY

The presence of cold agglutinins has been noted in a group of New England patients suffering from primary atypical pneumonia. These results confirm those reported by Peterson, Ham and Finland and further suggest that this simple test may be a valuable diagnostic measure in some forms of this disease.

Council on Industrial Health

THE COUNCIL ON INDUSTRIAL HEALTH HAS RECEIVED THE FOLLOWING RECOMMENDATIONS FROM THE COMMITTEE ON OCCUPATIONAL DERMATOSES SECTION OF DERMATOLOGY AND SYPHILOLOGY, AMERICAN MEDICAL ASSOCIATION:
C. M. PETERSON, M.D., Secretary

RECOGNITION AND PREVENTION OF INDUSTRIAL DERMATITIS

WITH ADDITIONAL REFERENCE TO OIL DERMATITIS AND FOLLICULITIS

A REPORT OF THE COMMITTEE ON OCCUPATIONAL DERMATOSES, AMERICAN MEDICAL ASSOCIATION

HARRY R. FORSTER, M.D., *Chairman*

CHARLES C. DENNIS, M.D.	HIRSH E. MILLER, M.D.
JOHN G. DOWNING, M.D.	EDWARD A. OLIVER, M.D.
JAMES R. DRIVER, M.D.	EARL OSBORNE, M.D.
JOSEPH KLAUDER, M.D.	LOUIS SCHWARTZ, M.D.
C. GUY LANE, M.D.	MARION SULZBERGER, M.D.

The incidence of occupational dermatitis in our country has never been so great as at the present time, and the need for adequate prevention and control has never been more important. New industries, particularly those concerned with the war effort, have contributed many causative agents to industrial dermatitis. In old industries, where dermatitis was commonly observed, the step-up in industrial activities and the enrolment of new employees have resulted in a definite increase in dermatitis, particularly among men and women above and below the usual employment ages. In the accelerated program of the heavy industries, inflammation of the skin caused by cutting oils, lubricating oils and related compounds has been particularly prevalent and troublesome.

The Council on Industrial Health functions as a liaison between the various lay and medical groups concerned with the industrial dermatoses problem, and the practicing and consulting dermatologists, as represented by this committee. It is the intent of this committee to serve all groups in an advisory capacity and to act as pacemaker for individual dermatologists and industrial physicians by crystallizing dermatologic opinion on certain issues and by establishing basic formulas for the correct diagnosis and adequate management of occupational dermatoses. It seems pertinent, therefore, to review this subject at this time, even at the risk of some repetition, and to make certain pronouncements, even though they may appear dogmatic.

RECOGNITION

The recognition of an occupational origin may be quite obvious in some cases of dermatitis but very difficult to establish in others. The importance of establishing a correct diagnosis early in the course of dermatitis cannot be overemphasized, since it involves correct and adequate treatment and also determines questions of liability, disability and changes of work. The diagnosis and treatment of industrial dermatitis require adequate dermatologic knowledge and preferably the services of a dermatologist. Too frequently the latter is called too late, therefore, when dermatologic service is readily available it should be sought promptly.

The patch test is an important aid in the diagnosis of dermatitis but it is responsible for many errors, especially when relied on for diagnosis and when testing with primary irritants. Its chief value is in the investigation of dermatitis resulting from hypersensitivity to allergenic substances. Some pitfalls of "patch test diagnosis" may be avoided by careful and thorough history taking. To cite a simple example, a painter may present a dermatitis venenata and react positively to a patch test with turpentine, which is a primary irritant, yet his dermatitis may have resulted from exposure to poison ivy while rabbit hunting. It has been Osborne and Hallett's¹ clinical experience that persons presenting a state of hypersensitivity to a specific chemical substance which in full strength is a primary irritant will always give a positive patch test to a 10 to 1 dilution. Sulzberger and Rostenberg² have observed positive patch test reactions in 1/10,000 and even 1/100,000 dilutions and they state that the vehicle has an important bearing on reactions, depending on whether water, oil, alcohol, ether or acetone is used.

This committee is accumulating information on chemicals used in industry to determine their "thresholds of irritability" on normal skin and has specified that "the concentration which should be recorded as the primary irritating one of a chemical studied is that which produces a cutaneous reaction in the majority of persons tested." Information will be published on this important subject from time to time.

Because of their importance to the industrial physician and dermatologists we repeat here the definitions of primary irritants and sensitizing agents, and the criteria for diagnosis, as previously published by this committee.³ Familiarity with them is a basic requirement for a proper understanding of industrial dermatology but it implies likewise the need for an adequate knowledge of nonindustrial dermatology for proper evaluation and interpretation.

DEFINITION OF A PRIMARY SKIN IRRITANT

1 When a substance in a given concentration, in a given vehicle and after a given manner and length of exposure produces a clinically manifested irritation on the skin or a majority of persons not previously sensitized to that substance, then that substance is a primary irritant under the specified conditions.

2 The irritation may be redness, papulation, vesiculation, ulceration or other sign of damage at the site to which the irritant has been applied.

3 By contrast, substances which produce reactions only on the skin of persons who are hypersensitive to that substance are not primary irritants.

4 A sensitizing agent is one that increases the tissue capacity to react to subsequent exposure.

5 Hypersensitivity means having a greater capacity to react than the normal.

Limitations to such a definition are recognized because of numerous and complicated circumstances operating in determining the irritant action of a given substance. The following may be mentioned. The region of the skin surface exposed and the size of the area exposed

to the irritant. The physiologic state of the skin with reference to dryness, oiliness, perspiration, the degree of pigmentation. The general state of health, the emotional background and the influence of season, diet and actinic rays. The action of two substances in combination each of which alone does not exert an irritant action.

The fundamentals for the differentiation of occupational from nonoccupational dermatitis are clearly defined in the following "criteria for diagnosis," which were adopted by the committee³ from material previously published by Sulzberger, Lane and others.

1 The dermatologic diagnosis is a dermatosis in which the role of an occupational causal factor (major or contributory) has at some previous time been established beyond reasonable doubt.

2 The individual has been working in contact with an agent known to have produced similar changes in the skin.

3 The time relationship between exposure to the agent and the onset of the dermatitis is correct for that particular agent and that particular abnormality of the skin.

4 The site of the onset of the skin disease is the site of maximum exposure.

5 The lesions present are consistent with those known to have followed the reputed exposure or trauma.

6 The individual is employed in an occupation in which similar cases have previously occurred.

7 Some of the individual's fellow workers using the same agent are known by the examiner to have similar manifestations due to the same cause.

8 So far as the examiner can ascertain there has been no exposure outside occupation which could be implicated.

9 If the diagnosis is dermatitis, the following items are important:

(a) The evidence of previous attacks coming after exposure to an agent followed by improvement and clearing after cessation of exposure constitutes most convincing evidence of the occupational factor as a cause.

(b) The results of patch tests performed and interpreted by competent dermatologists corroborate the findings of the history and examination in the majority of cases.

It is realized that these criteria are difficult of application in certain groups of cases such as:

1 Sensitization cases.

2 Cases in which there is accentuation of existing skin disease by occupational factors.

3 Cases in which there are supervening complications of other dermatoses and occupational dermatoses.

4 Cases in which much time has elapsed between the development of the dermatoses and the examination.

5 Cases which have been overtreated.

A knowledge of sensitization dermatitis and of sensitizing or allergenic substances is of utmost importance and necessitates familiarity with the fundamental concepts of cutaneous allergy. Cases of occupational dermatitis due to an allergic type or acquired sensitiveness are less frequent than dermatitis resulting from exposure to primary irritants but they are likely to be more severe and more protracted and also prone to recurrence and prolonged disability. The investigation and treatment of such cases should be carried out by the dermatologist.

1 Osborne E D and Hallett J J New York State J Med 42: 1529 (Aug 15) 1942.

2 Rostenberg Adolph Jr and Sulzberger M B J Invest. Dermat ~ 93 (June) 1939.

3 Industrial Dermatoses. A Report by the Committee on Industrial Dermatoses of the Section on Dermatology and Syphilology of the American Medical Association J A M A 115: 613-615 (Feb 21) 1942.

removal of dirt when washing after work. Stearic acid 20, sodium carbonate 2, glycerin 6, water 78.

2. Ointments, emulsions or solutions of 'invisible glove' type, either water soluble or water insoluble, that leave a thin protective film of resin or wax on the skin. Because of the tendency of perspiration to loosen or remove the water soluble type, fats or oils may be added. The water insoluble resins or waxes require a volatile solvent for application and a special cleanser for removal, either of which may irritate the skin after frequent use. Possible irritant effect may be minimized by the application of a hydrous wool fat cream after work. This type of protection may be used on the face, especially when masks or respirators are worn. A: Acacia 5, tragacanth 5, borax 2, water 88 (water soluble glove). B: Gum benzoin 5, beeswax 2, anhydrous wool fat 5, ethyl alcohol 88 (water insoluble glove).

3. Ointments that fill the pores with a harmless fat protect against water soluble irritants and petroleum oils and to some extent against greases. Anhydrous wool fat 70, castor oil 30, with sufficient perfume. To facilitate the removal of this type of protective ointment, wetting agents may be added.

4. Protective ointments containing nonirritant chemicals to neutralize industrial irritants. Boric and benzoic acid are recommended to neutralize industrial alkali, soaps and magnesium hydroxide to neutralized industrial acids, and nonirritant oxidizers such as dichloramine 1 to detoxify vesicant gases, magnesium carbonate 5, talc 5, soap 30, hydrous wool fat 50, castor oil 28, duponol 2, with sufficient perfume.

5. Protective ointments which permit inert powders to adhere to the skin and thus form a protective covering. This type of protection is recommended for exposures to allergenic substances such as the chemicals used in the manufacture of explosives and for protection against mechanical irritation of abrasives, particles of steel and glass and so on. Zinc oxide 5, talc 5, iron oxide 1, Irish moss 2, gum benzoin 2, water 10, alcohol 15, vanishing cream 60.

6. Protective applications against photosensitizing agents, such as the heavy coal tar and oil distillates. Hydrous wool fat 58, castor oil 30, titanium dioxide 5, menthyl salicylate 5, duponol 2, with sufficient perfume.

CLEANSING AGENTS

The need of adequate and proper cleansing of the skin to prevent dermatitis may seem too obvious to require discussion. It is important, however, and is ignored or not understood by many workers. Sometimes more cases of dermatitis result from improper cleansing than from the industrial exposure. The common practice of workmen to use the materials employed in their trade for cleansing purposes may provoke dermatitis. Painters use turpentine, machinists gasoline, printers kerosene, others alkaline wash powders.

The best cleanser is a mild toilet soap and plenty of warm water. Employers should insist on thorough washing of the hands, forearms and face at the end of the work day and at noon where chemical irritants are handled or disseminated as dust. Frequent changes of work clothes is a necessary corollary. The use of abrasive soaps and cheap bulk soaps is to be discouraged, and appropriate creams should be applied after washing when there has been exposure to solvents. Contaminated waste and rags used for wiping hands and fore-

arms are a source of dermatitis and skin infections. Soaps act as cleansing agents chiefly by emulsifying and dissolving the fats, oils and greases on the skin surface, and these and the dirt and chemicals adhering to them are then flushed off with water. Klauder stated that soap is not sufficiently soluble as customarily used to permit the alkaline salts to act as skin irritants, except after prolonged contacts, whereas soap powders, especially when containing sodium carbonate, may readily act as irritants. Coconut oil is a common ingredient of soap and may sometimes be a source of skin irritation and sensitization.

Schwartz⁷ states that "a normal industrial cleanser for general use should consist of a superfatted neutral toilet soap, containing a wetting agent or synthetic detergent. It should contain a minimum of free alkali and have a pH of 10 or less in a 1 per cent solution. It should not contain silica, quartz, pumice, feldspar, rosin fillers or organic solvents." The following formula is recommended: neutral toilet soap 30, bentonite 30, santomerse 10, hydrous wool fat 5, perfume 1.

Wetting agents lower the surface tension of cleansing liquids and thus increase their effectiveness as cleansers by facilitating their spread over the skin surface and by penetration of the pores. Wetting agents facilitate the removal of both oil soluble and water soluble skin contaminants. Sulfonated oils are important cleansers in industry for workers who have developed dermatitis or who may not tolerate soaps. Osborne prefers alkyl sulfonates to sulfonated oils as soap substitutes because of repeated observation of dermatitis resulting from the use of sulfonated oils. On the other hand, C. G. Lane observed less than 1 per cent positive patch tests to sulfonated oils in 350 patients and found this oil particularly helpful as a skin cleanser in eczematous cases and for workers intolerant to soap. Klauder and his associates selected formulas 10 to 13 for sulfonated oil cleansers.

FORMULA 10

	Per Cent
Sulfonated olive oil	50.60
Light liquid petrolatum	40.50
Gelatin, 25 per cent aqueous solution	10

FORMULA 11

	Per Cent
Sulfonated olive oil (55 per cent)	70
Light liquid petrolatum (45 per cent)	70
Sulfonated neat's foot oil	20
Gelatin, 25 per cent aqueous solution	10

FORMULA 12

	Per Cent
Sulfonated neat's foot oil	45
Light liquid petrolatum	45
Gelatin, 25 per cent aqueous solution	10

FORMULA 13

	2 parts	1 part
Formula 12		
Sodium lauryl sulfate, 20 per cent solution		

OIL FOLLICULITIS AND DERMATITIS⁸

In our accelerated war program among the most prevalent and troublesome dermatoses are those caused by cutting oils, cutting compounds and lubricants. It is impossible for metal workers and machinists to operate without cutting oils and compounds, because these products are necessary to lubricate moving parts, to keep

⁷ O. Connell, W. J. Pub. Health Rep. 37:1773 (July 21) 1921.
Schwartz, Louis, *ibid.* 56:1947 (Oct 3) 1941.

the cutting edges cool and to prevent rust. The lubricating oils and greases are usually petroleum derivatives. The cutting oils may be of animal, vegetable or mineral composition or may be combinations of such oils. Animal oils, such as lard oil, are more satisfactory for this purpose than petroleum oils but they are much more expensive, while both animal and vegetable oils break down at high temperatures. Mineral oils also have less viscosity, mixtures of these oils are therefore most commonly used. Cutting oils are further subdivided into the straight or insoluble oils and the soluble oils or cutting compounds. The latter are sulfonated oils, soap oils and phenolated oils diluted with water in variable proportions. The sulfonated oils are produced by treating petroleum oils, castor oil, cottonseed oil or olive oil with sulfuric acid and neutralizing the excess acid with sodium carbonate, sodium hydroxide or an alkali. The soluble cutting oils are mixtures of sulfonated mineral oil and saponifiable vegetable or animal oils, which, when mixed with water, form creamy emulsions. Phenolic compounds and alcohol may be added to vegetable or animal oils to prevent them from becoming rancid and for sterilization. Sometimes the oils are sterilized by heat. The addition of sulfur or chlorine to vegetable or animal oils is thought by some to increase film strength and thus to increase lubrication of the cutting edges. Used oil may be reclaimed by sterilization and filtration, straining or centrifugation.

This brief description of cutting oils and mixtures will serve to indicate the potentialities for dermatitis and the desirability of information regarding the kind of oil being used when attempting to combat dermatitis. The opinion has been expressed that dermatitis of the venenata type may be caused by the sulfur or chlorine content, which may be as high as 5 to 10 per cent in some cutting compounds, or by the alleged defatting effect of some mineral oils. Klauder states that pure mineral oil, free of volatile distillates, does not have a "defatting" action. The fatty oils, which may total 30 per cent of a mixture may consist of oleic acid, lard, fish or vegetable oils. Dermatitis venenata from such sources is, however, comparatively infrequent as contrasted with follicular dermatitis, papules, pustules, furuncles and comedones.

Phenols, cresols and phenolic amines present in small quantities as inhibitors, and the animal or vegetable oil components, may be the cause of sensitization dermatitis. The cleansers used after work with cutting oils may likewise be the cause of dermatitis, instead of the oil or one of its ingredients. The drying and cracking of the skin resulting from the defatting action of the mineral oil content may predispose to dermatitis from sources other than the oil. Cutting oil dermatitis of the allergic variety is usually a diffuse erythematous process associated with edema and later with desquamation, but it may exhibit fine vesiculation and at times papulation.

As already stated, the commonest type of skin disorder in this field is the folliculitis that follows plugging of hair follicles with oil or grease and dirt. This occurs particularly on the extensor surfaces of the hands and forearms and also quite frequently on the anterior surfaces of the thighs and knees. These skin surfaces are studded with little black dots, indicating the plugged follicles, and among them are scattered inflammatory papules and pustulopapules and occasional furuncles. Ordinary nonindustrial folliculitis and furunculosis do

not exhibit this profuse follicular plugging or the characteristic localization of folliculitis observed in the industrial cases.

Schwartz and Barlow⁹ have investigated and described an acneform dermatitis similar to previously reported chloracne and attributed by them to chlorinated cutting oils. These lesions are chiefly on the face and neck of workers exposed to a fine oily mist produced in heavy cutting and grinding operations. In a single large motor factory with 20,000 employees, 100 cases of dermatitis a month were observed over a six month period shortly after a change had been made in the gear cutting oils used for certain operations. Most of the cases were instances of oil folliculitis and furunculosis of the extremities but they included numerous instances of acne-like facial eruptions, exhibiting the straw colored cystic lesions observed in chloracne. Microscopic examination showed follicular hyperkeratosis and pseudocystic dilatation of follicular openings. Similar cases were observed in several other factories using the same gear cutting oils at similar operations. The offending oils were petroleum oils containing fatty animal oils in combination with 5 per cent chlorine and 6 per cent sulfur, which is a higher percentage of chlorine than in most chlorinated oils. Investigation disclosed also that about 25 per cent of the chlorine was given off in the grinding operations. A return to the oils previously used resulted in a prompt subsidence in the incidence of these eruptions.

Some oils stimulate keratinization and cause the formation of horny plugs, keratoses and papillomas. Epithelioma formations may occur but are rare. Fine metal particles in used oil and in cotton waste and rags may scratch and abrade the skin, predisposing to both dermatitis and infection. The infection, which is staphylococcal or streptococcal, is usually acquired from shop dirt and cleansing rags and clothing or by auto-inoculation and is less frequently attributable to the oils and cutting mixtures.

The prevention of cutting oil dermatitis and folliculitis is chiefly a matter of personal cleanliness of skin and clothing, and this can be facilitated by the provision at work of adequate washing facilities, showers and clothes lockers and by instruction of employees in the importance of their use. At certain types of work sleeves and aprons of material impervious to oil may be worn. If individuals with abnormally dry skin must be kept at such work a protective application of a hydrous wool fat and castor oil mixture may be applied before work. Schwartz, Warren and Goldman¹⁰ recommend aprons and sleeves treated with oil resistant synthetic resins and the use of a skin cleanser of neutral sulfonated castor oil containing 2 per cent fatty alcohol sulfate. Two per cent trisodium phosphate and sodium hexametaphosphate may be added to this mixture for additional cleansing and water softening properties. If protective ointment or creams are desired it is best to use preparations made with vegetable or animal fats that will not act as "degreasers" and containing wetting agents to render them more easily removable by soap and water.

208 East Wisconsin Avenue, Milwaukee

9 Schwartz and Barlow. Chloracne from Cutting Oils. *Dermatol. Invest.* Section Division of Industrial Hygiene, National Institute of Health U. S. Public Health Service.

10 Schwartz, Louis, Warren L. H. and Goldman F. H. *Pub. Health Rep.* 55: 1155 (June 28) 1941. *Skin & Sex* 56: 173 (Sept. 5) 1941.

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THE MENACE OF TYPHUS IN EUROPE

Of the communicable diseases that may become epidemic in wartime, typhus is of most concern. In his comprehensive summary of the typhus situation in Europe and North Africa, Biraud¹ of the Epidemiological Intelligence Service Health Section of the League of Nations points out that typhus is on the increase in the countries of eastern Europe in which the disease usually is endemic, in Spain and in North Africa, and that it has appeared in sporadic forms in regions of central and western Europe hitherto free from the disease. In eastern Europe typhus is not as widespread as at the end of the first world war. In the West Biraud does not regard the danger of typhus serious "so long as the population continues on the whole to be free from lice," but increasing economic disorder and destitution may result in spread of the disease.

The spread of European typhus, which is the only form of typhus now considered, depends on the presence of the virus and its vector, the body louse, in a receptive population. The special means to prevent the invasion and extension of typhus are delousing and vaccination. In delousing, the people who are most exposed to the infestation come first—vagrants, refugees, the poor—but under certain conditions delousing of military as well as civilian communities may be required.

Biraud has made a valuable study of the respective advantages and indications of antityphus vaccines, killed and live. Generally speaking, killed vaccines, which are given in three injections a week or so apart and which act rather slowly, are best suited for the protection of medical and sanitary personnel and in limited outbreaks in regions where the population in general

is stable and free from lice, in other words, when rapid protection is not required. But in outbreaks in shifting and lousy populations, in troops and refugees, live vaccines are best because protection is quickly induced by a single injection. In endemic regions preference should be given, if possible, to vaccines of multiple local strains of the virus, in countries free from typhus but threatened, it would be best to use vaccines of virus from the regions whence the invasion may be anticipated. Biraud states that as regards live vaccines "the new method of Blanc (biliated flea virus) and that of Langret-Durand (mouse brain virus) are the only ones that can be considered in the preparation of vaccines intended for Europeans." With both these methods quantities needed for mass vaccination can be produced and both have given good results in the suppression of epidemics in North Africa. Mass vaccination broke the typhus waves in Morocco in 1937-38 and in Tunis in 1939-40. In Tunis, where 200,188 vaccinations were made with the mouse virus, not a single case of vaccinal typhus was observed. Biraud concludes that modern antityphus vaccination coupled with delousing can protect Europe against the present menace of epidemic typhus. From reports at hand it appears that so far American military forces in North Africa have escaped typhus, which is still a menace to the civilian population.

SULFONAMIDE FASTNESS

Three years ago Woods² suggested that acquired resistance of pathogenic micro-organisms to sulfanilamide is due to their acquired power to synthesize unusually large amounts of p-aminobenzoic acid, a metabolic product known to inhibit sulfanilamide activity. This theory could not be verified experimentally at the time because of the lack of a reliable quantitative test for the minute quantities of p-aminobenzoic acid formed by pathogenic bacteria. Since then Landy and his colleagues³ at the Army Medical School, Washington, D. C., have developed a microbiologic technique for such determination. They have applied the new technique to a study of p-aminobenzoic acid synthesis by sulfonamide resistant micro-organisms³.

Two different strains of *Staphylococcus aureus* were made resistant to sulfonamides by exposure to increasing concentrations of sulfathiazole. The adapted strains, together with the nonresistant parent cultures, were

² American Soldiers Escape Typhus, J. A. M. A. 122: 236 (May 22) 1943.

¹ Woods, D. D. Brit. J. Exper. Path. 21: 74 (April) 1940.

³ Landy, Maurice, and Dicken, Dorothy M. J. Biol. Chem. 110: 109 (Nov.) 1942.

³ Landy, Maurice, Larkum, N. W., Oswald, Elizabeth J., and Straightoff, Frank. Science 97: 265 (March 19) 1943.

¹ Biraud, Yves. The Present Menace of Typhus Fever in Europe and the Means of Combating It. Bull. Health Organ., League of Nations 10: 3, 1943.

then transferred serially to a p-aminobenzoic acid free culture medium.⁴ Plate cultures revealed an equal proliferation of the adapted and parent strains in this medium. Equal inoculums of the four cultures were then transferred to 50 cc volumes of p-aminobenzoic acid free medium. The subcultures were then incubated for twenty-four hours and afterward passed through a Seitz filter. After autoclaving, the resulting filtrates were titrated for p-aminobenzoic acid by the Landy technic with parallel crude assays by routine colorimetric methods, crystalline p-aminobenzoic acid being used to prepare the color scale. The average p-aminobenzoic acid formed by the two sulfonamide susceptible parent strains was 0.049 microgram per cubic centimeter. The sulfonamide resistant strains synthesized an average of 3.61 micrograms per cubic centimeter, a seventyfold increase over the p-aminobenzoic acid synthesis by the susceptible parent cultures. The quantity of p-aminobenzoic acid synthesized by the adapted cultures is thus considerably in excess of the minimum amount required to suppress the inhibitory action of the quantity of sulfonamide to which these organisms are resistant.

Sulfonamide adapted staphylococci continue to synthesize this seventyfold excess of p-aminobenzoic acid for many generations after transfer to usual culture mediums. The seventyfold synthesis occurs both in the absence and in the presence of sulfonamides. The acquired sulfonamide fastness is thus a stable hereditary character in these adapted micro-organisms.

Landy and his colleagues believe that development of ability to synthesize excessive amounts of p-aminobenzoic acid fully explains the acquired sulfonamide fastness of staphylococci. With other bacterial species, however, acquired sulfonamide resistance is not associated with such increase. Nonresistant parent strains of *Escherichia coli*, *Vibrio cholerae*, *Bacterium dysenteriae* and *Klebsiella pneumoniae*, for example, secrete on an average only 0.033 microgram per cubic centimeter, the same average being shown by sulfonamide resistant variants of the same species. The latter result is of particular clinical interest, since it shows that a successful method of overcoming the sulfonamide fastness of staphylococci would not necessarily be effective with other pathogenic bacteria. The method of "resensitizing" or overcoming sulfonamide resistance in staphylococci by the use of urea, for example, which was recently proposed by Tsuchiya and his colleagues⁵ at the University of Minnesota, would not necessarily be effective with other bacterial species.

Current Comment

COLOR BLINDNESS

In THE JOURNAL for March 20 reference was made to an alleged cure for color blindness said to have been devised by one J. H. Lepper, optometrist, of Mason City, Iowa. Subsequent to the publication of that statement, Lepper sent to THE JOURNAL a communication in which he insisted that he does control color blindness in from fifteen to twenty days so that boys who followed his methods passed government tests. He submitted complete instructions as to the technic that he uses, some special lenses which are used as a part of the procedure, and a list of men now in the Navy and in the Air Force who had previously been rejected but were accepted after having followed his technic. The material concerned was referred to appropriate agencies in Washington, which verified the information supplied by Lepper as to the men who had been rejected and later accepted following his attention. Investigators then visited certain optometrists in the eastern part of the United States who follow the Lepper technic and studied their results. These investigators believe that Lepper is conducting an educational rather than a therapeutic process. In his technic the subjects are instructed to get some one with normal color vision to assist them and to trace the shapes of the figures carefully even in those charts in which they can see the figures fairly well. They are instructed to continue working on harder and harder charts and to keep daily records of the charts which they can read and those which they cannot read. Thus the person concerned builds a learning curve and with sufficient time masters the color manual thoroughly. It seems quite likely that those with disturbances of color vision do fix in their minds appearances which are associated with certain colors when viewing objects that have for them some familiarity. No doubt reexamination of these individuals at a later date, using a different technic, would reveal that the persons concerned are still color deficient, although they did learn enough about the test ordinarily used to pass that test and thus enable them to enter military service. Obviously it is for the services themselves to determine whether or not the tests for color blindness now used are sufficient, in view of the possibilities of learning, to screen out enough persons who are color deficient or whether or not the young man who is willing to put in the necessary time in an educational process to learn enough about the tests to enable him to pass them would not qualify because of superior learning ability or intelligence to meet the needs of the armed forces. The optometrists who are now specializing in the Lepper technic might limit their promotion of the method to the statement that they teach men to pass the tests for color vision and avoid carefully the use of the word 'cure' in any relation to color blindness.

⁴ Landy, Maurice and Dicken, Dorothy M. J. Lab. & Clin. Med. 27: 1086 (May) 1942.

⁵ Resensitization of Sulfonamide Fast Bacteria editorial J. A. M. A. 121: 680 (Feb. 27) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession

ARMY SPECIALIZED TRAINING PROGRAM FOR MEDICAL AND PREMEDICAL STUDENTS

At present it is contemplated that training in medicine, dentistry and veterinary medicine will be initiated in all approved schools by July 14. The dates correspond as far as possible to the beginning of a new term except in the schools in which an academic period starts after July 15 in these cases it is asked that the program be initiated at the first of the month.

Baylor University School of Medicine is being omitted until further notice, as is the Harvard School of Dental Medicine (in contradistinction to the Harvard Dental School).

Students in these schools who are called to active duty or are inducted through Selective Service will be assigned with the least possible delay to the unit at the school in which currently enrolled. Preprofessional students who have completed their preparatory training and who have been accepted for matriculation by approved schools are considered as professional students. They will not be required to accomplish their basic military training at the expense of their professional training.

Other preprofessional students however with the exception of those in the Enlisted Reserve Corps and those who enter the Enlisted Reserve Corps through induction prior to the end of their current term which ends prior to June 30 1943 must receive their basic military training prior to assignment to the Army Specialized Training Program if they are inducted later. Since this three months interruption of preprofessional training may mean incomplete preparation for the vacancy for which accepted by an approved school full advantage in these cases should be taken of eligibility for deferment under Selective Service. If at the completion of their academic preparation they are inducted either before or after entering medical school they will be assigned to the unit at the school by which accepted.

Instructions have been issued which will place the responsibility of getting the soldier who requires no more premedical training to the unit at the school by which he has been accepted on the service command commander and the dean of the accepting school. Complete information regarding accepted matriculants will enable the local service command to issue the necessary orders to effect timely assignment of enlisted men residing or stationed in his command to the appropriate unit. He will also request the transfer to the unit in his command from other service commands if necessary.

Medical schools have not yet been asked to mortgage vacancies in the freshman classes to the Army Specialized Training Program. It is hoped, however to negotiate such assurances for late 1944 if premedical training of enlisted men other than those already accepted is to be undertaken. The Army will want 55 per cent of freshman vacancies the Navy 25 per cent.

The decision of the Navy that all its medical and dental trainees will receive commutation of quarters and rations complicates the situation as does the fact that Navy trainees will wear double breasted blue sack suits while the medical student in the Army is clothed in khaki. No one complains that the Navy will not permit its bachelors to acquire a dependent.

The question of quarters and rations is causing great distress among many deans. The present ruling is that Army Specialized Training Program trainees at schools of dentistry medi-

cine and veterinary medicine will be placed on commutation of rations and quarters when it is manifestly impossible for each institution concerned to provide from its own resources or by lease or contract adequate housing and messing facilities. This puts the entire local problem in the hands of the service command and the dean.

There is a wide variation in textbooks and instruments required. The Army will purchase them through the institution for reissue as required. Tuition is being considered on the basis of nonresident tuition. Various fees such as matriculation and graduation will not be covered. The soldier must pay for his own diploma. Breakage is a government responsibility and, if due to neglect or misconduct will be deducted from the soldier's pay.

Questions and Answers

Q How may medical or dental students who are now deterred by Selective Service get into the Army Specialized Training Program? **A** Students in good standing in accredited medical or dental schools who are now deterred by Selective Service may request reclassification and voluntary induction by their local boards for the purpose of induction and assignment to the Army Specialized Training Program. At the time of induction, such students should have in their possession letters from the deans or their colleges certifying that they are medical or dental students in good standing. If they are inducted in this manner before the end of the current term they will be transferred to the inactive reserve and not ordered to active duty until the end of the current school year at which time it is expected that the Army Specialized Training Program will be operative.

Q How may premedical or predental students who have been accepted for admission to accredited medical or dental schools and who are now deterred by Selective Service get into the Army Specialized Training Program? **A** Prior to the end of the current term not later than July 1 1943 the procedure will be the same as outlined for medical or dental students. Those who enter the Army through Selective Service after July 1 will be required to take thirteen weeks of basic military training before they are eligible for assignment to the Army Specialized Training Program.

Q What will be the status of premedical or predental students who are not enlisted reserves by July 1? **A** Students not in any Army or Navy Reserve by July 1 may (1) be inducted by Selective Service as just suggested in which case they must be prepared to interrupt their college work for basic military training or (2) be continued under deferment by Selective Service until they are medical students at which time they may be inducted and assigned to an Army Specialized Training Program unit to continue their professional training without the necessity of interruption for basic military training.

Q Will resignations of Medical Administrative Corps commissions for purposes of induction and assignment to the Army Specialized Training Program be accepted after May 1? **A** No time limit has been set for such resignations or enlistments. They will be accepted at any time.

Q When, where, and how will students who resign Medical Administrative Corps commissions enlist? A Instructions regarding enlistment are being made by the respective service commands. If such instructions have not been received by the doctors inquiry concerning them should be made without delay.

Q Will recommissions of Medical Administrative Corps commissions be approved for the purpose of enlistment in the Navy College Program? A No.

Q Will subsistence allowances be made to medical students on active duty on the Army Specialized Training Program? A Only in situations in which it is impossible or impractical to provide group housing and/or necessity. No blanket authorization has been issued for the provisions of subsistence allowances. Each request by a medical or dental school for subsistence allowances for its students will be considered as a special case.

ALLIED PAPUAN MEDICAL SOCIETY

(The society met at 8 o'clock on Wednesday)

With principal discussions centering around medicine as it is applied and practiced in connection with war, members of the Allied Papuan Medical Society held their regular monthly meeting here recently. The society, now in its fifth month, includes in its membership all doctors of this area. Hosts for the meeting were flight surgeons of the various Air Force units. Special guests included commanding officers of all Allied Air Force units and nurses from the states of the Australian and American hospitals.

Speakers were introduced by Lieut. Col. Reynolds D. Smith, president of the society, and topics with speakers included 'Aviation Medicine in Combat' by Col. Pascom I. Wilson, 'Moral Fiber' by [censored] Keith Harrison, 'Fear by [censored] C. P. Mink', 'The Fighter Pilot' by [censored] J. H. Grammer and 'Medical Air Service' by [censored] B. A. Donnelly.

The speaker's rostrum was flanked by exhibits which covered almost every phase of aviation medicine assembled and displayed for the occasion by the medical departments of the Air Corps units represented. Of particular interest was a malaria exhibit which graphically presented the life cycle of mosquitoes common to this area. Microscopes were set up for study of the minute details and live fish of the genus Gambusia were on exhibition devouring larvae.

Striking a comparison between Japanese and Allied equipment was a complete display of Japanese surgical instruments and appliances with many of their drugs and much of the first aid equipment used in combat zones. All items were displayed on the brightly colored and highly decorated cloth used by the Japanese to barter with the natives. A portable x-ray machine, complete which can be disassembled, placed in small packing cases and transported in a medium sized plane, was demonstrated. Included in the display was a complete flight surgeon's examining unit. Group and squadron aid stations were shown, plus latest type crash trucks and rescue paraphernalia. Conveniently placed for inspection near the "auditorium" was a C-47 transport converted into a hospital ship. Also shown were various types of oxygen tanks and masks, field oxygen equipment, jungle parachutes, back packs and seats containing one man collapsible boats. Lending realism to a display of the different types and sizes of bombs were actual photographs of their destructive powers.

The March monthly meeting had as its topic "Scrub Typhus." The subject for May will be "War Surgery."

To the doctors in the United States we extend a cordial welcome.

FIVE PHILIPPINE OFFICERS GRADUATE AT CARLISLE BARRACKS

Among 408 medical department officers who graduated from the Medical Field Service School at Carlisle Barracks, Pennsylvania, on April 8, 5 were from the Philippine Islands. Major Emigdio C. Cruz, a member of President Quezon's staff, and First Lieuts. Gregorio P. Chua, Francisco J. Roman, Irineo E. Pantangco and Jose Willic, the first 3 of whom served with the American Red Cross in the Philippines and helped bring out from Manila on a Red Cross hospital ship 246 wounded, when these officers arrived in California they were commissioned in the U. S. Army Medical Corps.

ARMY

GENERAL SIMMONS TO LECTURE ON PUBLIC HEALTH AT YALE

Brig. Gen. James S. Simmons, chief of the Division of Preventive Medicine in the Office of the Surgeon General, has been appointed visiting lecturer in public health by Yale University School of Medicine, New Haven, Conn., for the coming year, the War Department announced on May 22. This will be in addition to his Army duties. General Simmons is also visiting lecturer in preventive medicine at the Johns Hopkins University Medical School, Baltimore. Known principally for his work in bacteriology and preventive medicine, he has conducted laboratory and field investigations on malaria, yellow fever, typhus meningitis, typhoid, encephalitis and other diseases. General Simmons received his doctor of philosophy degree from the George Washington School of Medicine in 1934 and his doctorate in public health in 1939 from Harvard University. He is a member of the National Malaria Committee, the Medical Division of the National Research Council, the Committee on Medical Research of the Office of Scientific Research and Development, the Advisory Council to the Health and Sanitation Division of the Institute of Inter-American Affairs and the Health Committee of the Office of Foreign Relief and Rehabilitation.

NURSES' AIDES FOR ARMY HOSPITALS

Volunteer nurses' aides trained under the joint program of the Office of Civilian Defense and the American Red Cross may now be used in army hospitals. The Surgeon General of the Army has requested this service, and the sponsoring agencies have recommended that Nurses' Aides be assigned to army general or station hospitals on request of the commanding officer of the hospital. The aides must receive their training in civilian hospitals as heretofore, however, and service in army hospitals must not interfere with supplying aides to civilian hospitals and health agencies both now and in the event of enemy action, according to Medical Circular No. 28, issued by Dr. George Bachr, Chief Medical Officer, Office of Civilian Defense. This proposed extension of the services of nurses' aides emphasizes the need for increased effort in recruitment in localities which have not yet participated in the program.

RATINGS OF ENLISTED MEN

The following War Department radiograms are quoted in part:

"All enlisted men finally selected for assignment to advanced courses Army Specialized Training Program will be assigned thereto in grade. Enlisted men finally selected for assignment to basic courses, Army Specialized Training Program, will be assigned thereto in grade 7."

"All students accepted from civil life, under the present plans, will be enlisted men (privates) while participating in the Army Specialized Training Program. Enlisted men holding ratings and accepted for advanced courses at Army Specialized Training Units must accept a reduction to qualify for the training. Those who accepted a reduction in grade will be restored immediately to the grade held at the time of selection without loss of seniority. Restoration to grade is not retroactive for pay purposes."

NAVY

CIRCULATING LIBRARY OF
MOTION PICTURES

A circulating library of medical motion pictures has been established by the Section of Audio-Visual Education, Division of Preventive Medicine. Bumed in cooperation with Training Film Unit of Buac is sponsoring the production and procurement from outside sources of motion pictures and film strips of interest to naval medical personnel. Since it is impossible to furnish copies of these films to all naval activities for their film libraries, prints of films are being forwarded to the commandant of each naval district. District medical officers are required to arrange for routing and scheduling the films in their district. Fleet medical personnel temporarily ashore will be afforded an opportunity to see the films, as no method of distribution to the fleet seems feasible at present. A list of medical films now available may be obtained on request to Comdr J S Barr of the Section of Audio-Visual Education, Bureau of Medicine and Surgery, U S Navy Washington D C

SHORTEN NAVY TRAINING COURSES

A new educational program for the Navy Hospital Corps, designed to standardize and shorten all training courses, has been prepared by the Bureau of Medicine and Surgery. The increasing tempo of the war has greatly expanded the demand for members of the Hospital Corps, who serve aboard ships at sea, in continental and overseas hospitals and with Marine units. The new training program will enable the Corps to provide fully qualified men more rapidly.

Training for members of the Hospital Corps is divided into two classifications: basic training for men with no previous professional training and advanced courses for men of professional experience. The basic training period has been cut from a normal peacetime length of four months to a course of five weeks. The advanced course for officers has been reduced from one year to six months while advanced courses for enlisted personnel have been shortened from one to three months depending on the subject.

While the revised training courses will require less time in the class rooms, thus permitting men to join the fighting units more quickly, they have been designed so that no essential training is omitted.

NAVAL MEDICAL CORPS NEWS

Edward A Strecker, M.D., professor of psychiatry at the University of Pennsylvania School of Medicine Philadelphia, and president of the American Psychiatric Association and James E Paullin M.D., professor of clinical medicine at Emory University School of Medicine Atlanta president of the American College of Physicians and President-Elect of the American Medical Association have been appointed members of the Board of Honorary Consultants to the Surgeon General of the Navy.

Lieut (jg) Chester L Guthrie USNR has reported to the Bureau of Medicine and Surgery and been assigned to the Office of Special Assistant to the Surgeon General. He will continue with the current conversion of files and other work on record administration problems in the Medical Records Section.

Capt Robert F Sledge MC USN reported to the Naval Medical School Washington May 7 as executive officer.

Ens Dorothy G Miller WV (S) USNR reported to the Bureau of Medicine and Surgery and has been assigned to the section of Legal Medicine in Division of P Q & M R.

Lieut Lawrence E Schuster MC USNR reported to the Bureau of Medicine and Surgery and has been assigned to P Q & M R.

Lieut (jg) Hazel M Grainger W-V (S) USNR, reported to the Bureau of Medicine and Surgery and has been assigned to the dispensary.

During the month of April 239 appointments of medical officers and officers in class H V(S) and W-V(S) coming under the cognizance of the Bureau of Medicine and Surgery were accomplished.

Over 100 lieutenants (jg), MC V(G), USNR who have completed nine months of intern training in civilian hospitals

have been assigned to duty in naval hospitals for an additional period of three months of intern training prior to becoming available for general assignment.

The Hahnemann Medical College and Hospital of Philadelphia has been designated as an institution to which medical officers will be assigned for training in anesthesia. This is in addition to the facilities offered medical officers for training in this specialty at the Mayo Clinic, Rochester, Minn., and at the Lacey Clinic, Boston.

There are at this time 56 medical officers under training in psychiatry and neuropsychiatry at the Naval Hospital, Bethesda, Md., and at the Naval Hospital, Philadelphia.

The next basic indoctrination course of instruction at the Naval Medical School, Bethesda, Md. will be convened in the latter part of June for 40 lieutenants (jg), Medical Corps, U S Navy and U S Naval Reserve.

A large number of medical officers of the regular Navy and of the Naval Reserve have been placed under orders for the next classes being assembled at the Naval Air Station, Pensacola, Fla. for training in flight surgery and the course leading to the designation aviation medical examiner.

Medical officers who are interested in training in psychiatry, neuropsychiatry, pathology and laboratory procedures are urged to apply for such training.

LIFE INSURANCE FOR NAVAL
PERSONNEL

It is now possible for all naval personnel regardless of date of entry into active service to apply for National Service Life Insurance without a physical examination. This opportunity will be available up to Aug 12 1943. Personnel of the Navy as a whole are insured only to the extent of about 85 per cent with a policy average of \$7,500. As this form of insurance coverage is for the benefit of each member of the naval service it is the desire of the Secretary of the Navy that every person be covered by the maximum amount of this insurance provided for them by act of Congress.

AUSTRALIA BUILDS HOSPITAL FOR CARE
OF AMERICAN SERVICEMEN

According to the New York Times the Office of War Information reported that the government of Australia under its program of reciprocal lend-lease has built a ten story hospital for the use of American soldiers sailors and marines recuperating from wounds or illnesses suffered in the Pacific. The hospital was built at a cost of about \$3,000,000 but its transfer to the American forces entails no payment. The exact location of the center has not been revealed.

LIEUTENANT BERLEY A JAPANESE
PRISONER

Mr and Mrs Guy Berley 4153 Congress Street, Chicago have been informed by the navy department that their son Lieut. Ferdinand Victory Berley, 30 years old a navy doctor is a prisoner in the Philippines. Lieutenant Berley had been reported missing since the fall of Corregidor. Earlier he had been stationed at Shanghai China and Cavite in the Philippines being transferred from a Cavite hospital only a day before Japanese bombs destroyed it. Lieutenant Berley graduated from Northwestern University Medical School in 1939.

THE NAVAL HOSPITAL FUND

Legislation has been proposed to abolish the time honored Naval Hospital Fund. The bill establishing the Naval Hospital Fund was signed by President John Adams on July 16 1798 the provisions of which authorized the familiar deduction of \$0.20 per month from the pay of officers and men of the Navy and Merchant Marine Service. Hearings before the Senate and House Committees on Naval Affairs have been held and both committees have acted favorably.

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

The series of wartime graduate medical meetings under the auspices of the American Medical Association, the American College of Physicians and the American College of Surgeons has been previously discussed in *THE JOURNAL* (April 24, p. 159; May 1, p. 45). A series of tentative programs has already been prepared, each of them to consist of a six hour schedule of three two hour sessions.

The program on orthopedic surgery is under the direction of Dr. George J. Bennett and Dr. Frank D. Dickson who will serve as national consultants. The program will present the orthopedic features of diseases and injuries of the spine, deformities of the joints, shoulder lesions, the feet, knees and fractures.

The program on human nutrition and Nutritional Deficiency Diseases is under the direction of Dr. John B. Youmans. The program is to include the functions of various nutritive principles, the sources of nutritive principles and factors affecting intake and storage, and diagnosis and treatment of nutritional deficiency diseases.

The national consultant for tuberculosis is Lieut. Col. Esmond R. Tom. The program includes discussions of tuberculosis as a wartime problem, methods of examination, diagnosis and case finding, and evaluation of treatment and prognosis.

Allergy will be given under the direction of Dr. Robert A. Cooke. It is to include fundamentals of allergy, problems in diagnosis and treatment of bronchial allergy, asthma, miscellaneous allergies and nasal allergy including hay fever and perennial allergy.

The national consultant for malaria is Dr. Henry F. McInery. The program involves a review of the importance of malaria in world health and economy and in war, malarial parasites of man, clinical malaria and the epidemiology, prevention and control of malaria.

Gastrointestinal disease is to be given under the direction of Dr. Walter I. Palmer. The tentative first day two hours' program is to be devoted to peptic ulcer, its incidence, symptomatology, x-ray diagnosis, gastroscopy and treatment. The second day's program is to review the complications of ulcer and acute and chronic gastritis. The final two hours are to be devoted to functional digestive disorders and to diets for gastrointestinal patients in a military hospital.

The national consultants on clinical psychiatry are Dr. Edward A. Strecker and Dr. Arthur H. Ruggles. The tentative program will include selection of personnel at induction, neuropsychiatric problems during the training period and combat neuropsychiatric problems.

Cardiovascular problems will be under the direction of Dr. William D. Stroud. This tentative program emphasizes the desirability of each local committee arranging its own program according to the talent available, and the use of lantern slides and moving picture films when possible. A discussion of borderline physical findings in normal cardiovascular systems is suggested as desirable. Other suggestions include a discussion of neurocirculatory asthenia, the diagnosis, treatment and prognosis in coronary artery disease and peripheral vascular disease.

Rheumatism and arthritis have Dr. Ralph Pemberton as national consultant. The program is to include general orientation, clinical aspects of the principal varieties and discussions of treatment.

The national consultant for anesthesia is Dr. John S. Lundy. Consideration is to be given to fundamentals of anesthesia, inhalation anesthesia, including preliminary medication and intravenous, rectal, local, regional and spinal anesthesia.

Neurology is under the direction of Dr. Tracy J. Putnam. The subjects selected for discussion are neurologic examinations and principles of localization, laboratory aids in neurologic diagnosis and neurosyphilis, epilepsy and related conditions, multiple sclerosis and the encephalitides, the neuritides and tropical and exotic disorders of the nervous system.

General surgery has Dr. Irvin Abell as national consultant. The suggestions for discussion include appendicitis with its complications, hernias, peptic ulcer, intestinal obstruction, neurovascular lesions of the extremities, gas gangrene, skin grafting and the present status of sulfonamide drugs in the treatment of surgical lesions.

The national consultant for diagnostic roentgenology is Dr. Byrl Kirklin. The subjects suggested from which programs could be chosen include the chest, the gastrointestinal tract, the gallbladder, the osseous system and the nervous system.

Plastic and maxillofacial surgery is under the direction of Dr. Robert H. Ivy. The tentative program includes the definition and scope of plastic surgery, maxillofacial surgery, including a general plan of treatment of war injuries of the face and jaws, and fractures of the mandible, maxilla and other facial bones, involving methods of fixation by interdental wiring, splints, skeletal fixation, treatment of complications, such as nonunion by bone grafting, and the repair of contour defects.

Through arrangements by the headquarters of Wartime Graduate Medical Meetings, under the directorship of Dr. Edward J. Bortz, chairman, arrangements were made for Drs. Edwin L. Osgood of the University of Oregon Medical School and Dr. Lowell F. Coggeshall of the University of Michigan School of Public Health to speak for the graduate medical meetings for medical officers of the Canadian Army and Air Force and the United States Army held in the University of Alberta, Edmonton, Alberta, Canada, May 3 to 7. Dr. Osgood spoke on chemotherapy and Dr. Coggeshall on tropical diseases. Arrangements were made also for addresses at the meeting of the Georgia State Medical Association, May 13 and 14. The speakers included Dr. Everett I. Evans of the Medical College of Virginia, who spoke on general surgery, Dr. James H. Means of Harvard Medical School, who spoke on internal medicine, and Dr. Virgil P. Sydenstricker of the University of Georgia School of Medicine, who spoke on nutrition.

MATERNITY CARE FOR WIVES OF CERTAIN GRADES OF ENLISTED MEN

Under plans approved by the U. S. Children's Bureau and with funds already voted by Congress, maternity care for wives of men of certain grades in military service and medical and nursing care for their babies can now be provided without cost to the family. Under this plan a pregnant woman may receive antepartum care from a qualified physician either in the clinic or at his office, and at childbirth she and her baby may receive medical and nursing care whether she stays at home or goes to a hospital. Complete maternity care may be provided, including a final physical examination six weeks after the baby is born, and the baby may receive medical care during the first year of its life.

Twenty-three state health agencies are now authorized to provide maternity care for wives of men in the four lowest pay grades of the armed forces, and medical hospital and nursing care for their babies, both without cost to the family, the Children's Bureau of the U. S. Department of Labor announced on May 20.

States whose programs have been submitted and approved were listed by the bureau as Arizona, Arkansas, Connecticut, Delaware, Illinois, Indiana, Kentucky, Maine, Maryland, Michigan, Mississippi, Nevada, New Jersey, New Mexico, North Carolina, Oklahoma, Rhode Island, South Carolina, Utah, Vermont, West Virginia, Wisconsin and Wyoming.

In states providing these services, the wife and infant of any man serving in the fourth, fifth, sixth or seventh grade of the Army, Navy, Marine Corps or Coast Guard are eligible for care as long as similar services are not available through medical or hospital facilities of the Army or Navy or by or through official state or local health agencies. How much money the family has does not matter.

The forms for requesting such care are made available by the state health departments through local health and welfare agencies, local American Red Cross chapters, antepartum clinics, military posts and local practicing doctors of medicine. The wife fills out and signs her part of the application, including her husband's serial number, and her doctor completes the application and forwards it to the state director of maternal and child welfare or his authorized deputy. In an emergency, medical or hospital care may be given before an application is sent in. The state director of maternal and child health notifies the

patient and attending physician or clinic or the hospital whether or not the care is authorized

In the states providing these services, the maternity patients can expect complete medical service during the antepartum period, childbirth and six weeks after, health supervision for infants, nursing care in the home through the local health department, including bedside nursing care as necessary for the mother before, during and after childbirth, and for the baby during the first year of life, and hospital care in the wards or at lower rates for maternity patients and infants. The funds cannot be used in part payment for more expensive hospital accommodations. Hospital care may be authorized in any hospital, including Army and Navy hospitals where the maternity and pediatric services have been approved by the state health agency.

For further information about the program or in case there is no doctor within reach or it one does not know where to get an application form, write to your director of maternal and child health, state health department.

COMMITTEE TO STUDY FOOD NEEDS OF INVALIDS

A newly formed committee of physicians and specialists will assist in formulating broad policies for handling the special dietary needs of invalids and persons with specific diseases under the rationing program, the War Food Administration said on May 24. The committee was named by the National Research Council at the request of the Food Distribution Administration and Office of Price Administration. The special committee is studying (1) procedure for obtaining certification by physicians of invalids and persons with specific diseases requiring extra quantities of rationed foods, (2) qualifications of those who may certify as to these needs for extra foods, (3) the procedure of certification which will place a minimum burden on physicians and (4) diseases justifying extra allowances of rationed foods with specific determination of what foods and what quantities are necessary.

The committee which is the Subcommittee on Medical Food Requirements of the Committee on Drugs and Medical Supplies of the National Research Council also will advise the Office of Price Administration with respect to appeals from decisions of local rationing boards.

Members of the committee are Dr. William D. Stroud, professor of cardiology, Graduate School of Medicine, University of Pennsylvania; School of Medicine chairman, Dr. Clark W. Finnerud, assistant professor of dermatology, University of Illinois College of Medicine, Dr. Gilbert J. Levy, associate professor of pediatrics, University of Tennessee College of Medicine, Dr. Alton Ochsner, professor of surgery, Tulane University School of Medicine, Dr. Cecil Striker, secretary, American Diabetic Society, Dr. C. W. Munger, director, St. Luke's Hospital, New York, Dr. Philip S. Owen, former research assistant, Harvard Medical School, who will serve as technical aide, and Dr. Fred L. Adair, recently professor of obstetrics, University of Chicago Department of Medicine, who will serve as a liaison member representing the Medical Needs Division of the Food Distribution Administration. Dr. W. W. Palmer, professor of medicine, Columbia University College of Physicians and Surgeons, and chairman of the National Research Council's Committee on Drugs and Medical Supplies is ex officio a member of the Subcommittee on Medical Food Requirements.

SUPPLEMENTAL GASOLINE RATIONS FOR VICTORY GARDENERS

The Office of Price Administration has amended its mileage rationing regulations to provide up to 300 miles for victory garden travel if the car owner is regularly cultivating a tract of 1,500 square feet or more devoted to the production of vegetables and if he cannot get to his garden any other way, his labor being necessary for the cultivation of the garden and provided that he arranges if possible to share his car with other gardeners to reduce the amount of additional mileage that will be necessary. When making application for a supplemental rationing of this type, gardeners should refer to Amendment 44 to Ration Order 50 effective April 30.

EFFECT ON GRADUATE NURSES OF THE "HOLD THE LINE" EXECUTIVE ORDER 9328 OF APRIL 8 AND THE REGULATIONS OF THE WAR MANPOWER COMMISSION OF APRIL 18

The War Manpower Commission, Washington, D. C., on May 18 stated that graduate nurses are subject to the terms of the executive order and the War Manpower Commission regulations in exactly the same way as other workers. Nursing is an essential activity. This means that in all War Manpower Commission areas:

1 Nurses may move as freely as before within the nursing profession, so long as the job transfer does not bring a higher salary or wage rate.

2 A nurse who is now employed in an activity other than an essential activity may accept a job in the nursing field at any salary or wage rate.

3 Nurses can transfer to new positions which bring a higher salary or wage rate only if they secure statements of availability from their present employers or from the United States Employment Service.

There is no prohibition in the order or regulation that would prevent any nurses from becoming members of the armed forces.

This is not a complete interpretation of the implications for nurses but simply highlights some of the main points. For information regarding any specific local situation, one should consult the local United States Employment Service office.

PUBLIC HEALTH UNDER HITLER

Das Spital, Bucharest, No. 62, 1942, contained an article by Dr. Musat and Dr. Rosu on the aspects and possibilities of surgery in field hospitals, stating inter alia that in the first six months of the war the authors, working in a field hospital in the front line, cared for 14,000 wounded, 4,000 of whom were operated on. The majority of the wounds were due to incendiary shell (bomb?) splinters (Brandgranatsplitter). Wounds caused by air bomb splinters and heavy air machine-gun bullets were very serious. Bullet wounds of the stomach were especially dangerous, the mortality rate being 65 to 70 per cent.

There is a "pressing shortage of insulin in France, and the strictest controls have been applied to the remaining supplies of this valuable drug, according to an article in the Nazi controlled French newspaper *Action française*. The newspaper article as reported to the Office of War Information declared that there were shortages not only of raw drugs but also in phials and bottles. Lard, lanolin, petrolatum, cocoa butter and other materials used in the manufacture of hair pomade are so scarce that substitutes must take their place, the article said.

The *Pester Lloyd*, Hungary, of February 18 stated that the Luftwaffe medical service delegation under Hippke, which was to arrive in Budapest on February 21 and stay a week, included Surgical Adviser Chief Surgeon Major E. Gohrbandt, Chief Surgeon-Major Wilhelm Tonnies, adviser on brain surgery to the Luftwaffe, Chief Surgeon-Major Heinz Kalk, adviser on internal diseases and medical adviser to the Fuehrer, Capt. A. Schulz, Propaganda and Pressereferent of the Luftwaffe Sanitary and Medical Service, was also a member of the delegation.

According to the *Novi List*, Sarajevo, Yugoslavia, of February 7, owing to the fear of infection by spotted fever and abdominal typhus, the inhabitants of Visoko are being vaccinated on the advice of two local physicians who however have so much work in this connection that they cannot deal with everybody.

According to the Rumanian *Timbal* of February 18, the Ministry of Public Health has decreed a number of preventive measures against measles, as more than half of all school children fall victim to it.

ORGANIZATION SECTION

OFFICIAL NOTES

RADIO PROGRAM AT ANNUAL SESSION OF HOUSE OF DELEGATES

Arrangements for radio broadcasts in connection with the annual session of the House of Delegates of the American Medical Association at Chicago have been partially scheduled.

The following programs have been scheduled for broadcasting by the National Broadcasting Company and Columbia Broadcasting System networks, the Blue Network, the Mutual Broadcasting System and local stations in Chicago:

WGN, 7 p. m. to 7:15 p. m. Central War Time. "Comte Florentin de la Motte" by Dr. Henry R. Victor, Boston.

WGN, 8 p. m. to 8:15 p. m. Central War Time. "The Doctor's Story" by Dr. C. W. Kowak, New York.

WHD, 8 p. m. to 8:15 p. m. Central War Time. "The Doctor's Story" by Dr. Henry R. Victor, Boston.

WHD, 8:15 p. m. to 8:30 p. m. Central War Time. "The Doctor's Story" by Dr. Henry R. Victor, Boston.

WHD, 8:30 p. m. to 8:45 p. m. Central War Time. "The Doctor's Story" by Dr. Henry R. Victor, Boston.

WHD, 8:45 p. m. to 9:00 p. m. Central War Time. "The Doctor's Story" by Dr. Henry R. Victor, Boston.

WHD, 9:00 p. m. to 9:15 p. m. Central War Time. "The Doctor's Story" by Dr. Henry R. Victor, Boston.

station WIS, Chicago, beginning on June 3 and closing on August 19.

Members of the headquarters staff of the American Medical Association will be interviewed by Mrs. June Merrill of the WIS staff. WIS broadcasts on a clear channel at 890 kilo cycles and has an effective service range covering a radius of approximately 500 miles from Chicago. The audience is predominantly rural and the programs are limited to simple, practical suggestions which can be carried out in daily practice.

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 5 p. m. Eastern War Time (4 p. m. Central War Time, 3 p. m. Mountain War Time, 2 p. m. Pacific War Time). An exception is the Chicago area, where the broadcasts are heard by transcription at 10:30 p. m. Saturdays over Station WMAQ.

The titles and guest speakers for the last two programs are:

June 12: "Doctors for Tomorrow." Speaker: Brig. Gen. Fred W. Rankin, M. C., A. U. S. President of the American Medical Association.

June 19: "Report to America."

On this program will appear two Army medical officers broadcasting by short wave from two foreign theaters of war, one Navy officer broadcasting from a foreign theater and one Navy officer broadcasting from a home base. The names of these officers and their locations are not divulged in advance for military reasons. For the same reason, their subjects will not be announced.

"SUMMER HEALTH HINTS" ON THE AIR

With the completion of eighteen broadcasts under the title "Before the Doctor Comes" this series will terminate and will be replaced by a new series of broadcasts entitled "Summer Health Hints." Tentatively twelve broadcasts are scheduled for Thursday afternoon at 2:15 p. m. Central War Time over

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status—H. R. 149 has been reported to the House providing that for the purpose of the Federal Food, Drug and Cosmetic Act nonfat dry milk solids or defatted milk solids shall be considered to be the product resulting from the removal of fat and water from milk and containing the lactose, milk proteins and milk minerals in the same relative proportions as in the fresh milk from which made. Such solids must contain not over 5 per cent by weight of moisture and a fat content of not over 15 per cent by weight unless otherwise indicated. H. R. 2664 has been reported to the Senate, providing for the training of nurses through grants to institutions.

Bills Introduced—H. R. 2726, introduced by Representative Beckworth, Texas, proposes to authorize for each fiscal year a sum sufficient to enable each state to furnish financial assistance to needy incapacitated adult individuals. H. R. 2739, introduced by Representative Jenkins, Ohio, proposes to establish a Food Administration in the Department of Agriculture. H. R. 2820, introduced by Representative Rogers, Massachusetts, provides for the establishment of a permanent medical corps in the Veterans' Administration to constitute a component

part of the military forces of the United States. This corps, it is contemplated, will consist of the following members: (a) physicians and dentists: 1 surgeon general with the temporary rank of brigadier general, 132 officers with the rank of colonel, 201 with the rank of lieutenant colonel, 500 with the rank of major, 800 with the rank of captain and 1,200 with the rank of first lieutenant; (b) nurses and other personnel: 1 superintendent of nurses with the rank of lieutenant colonel, 15 officers with the rank of major, 125 officers with the rank of captain, 400 officers with the rank of first lieutenant, 5,000 officers with the rank of second lieutenant and such other commissioned, noncommissioned, enlisted personnel and civilian employees as may be deemed necessary by the Administrator of Veterans' Affairs. The Medical Corps, it is proposed, will include such female professional and other female technical personnel as the Surgeon General of the corps with the approval of the Administrator deems practical. The rates of pay and allowances, increases of pay, transportation of property, retirement benefits and other gratuities and privileges for commissioned and enlisted personnel of the corps will be identical with those provided for personnel of corresponding rank and status in the United States Army. The establishment of a Medical Reserve Corps is contemplated by this bill.

STATE MEDICAL LEGISLATION

Alabama

Bills Passed—S 35 passed the senate May 19. It proposes the creation and establishment of a four year school of medicine in the state to be under the sole management ownership and control of the Board of Trustees of the University of Alabama and to be known as 'The Medical College of Alabama'.

California

Bills Enacted—A 327 has become chapter 407 of the Laws of 1943. It amends the health and safety code relating to the licensing of clinics, dispensaries and maternity hospitals by exempting therefrom a hospital corporation organized and operated exclusively for charitable purposes and any teaching or educational institution exempt from income taxation under the federal revenue acts. A 1175 has become chapter 530 of the Laws of 1943. It amends the business and professions code by requiring an applicant for a license to practice medicine to prove that a diploma from an approved school has been issued him and if the application is for a reciprocity certificate that the granting of a diploma was a condition precedent to his admission to the examination for the license on which his application for reciprocity is based. A 1659 has become chapter 732 of the Laws of 1943. It amends the business and professions code by requiring vendors of prophylactics to renew their licenses annually.

Connecticut

Bills Passed—Substitute for S 484 passed the house and the senate May 19. It proposes to amend the law relating to the labeling and sale of drugs by, among other things, exempting from such regulations the sale of salves, ointments, lotions and powders and other preparations designed and intended solely for external use and containing sulfanilamide or any compound or derivative thereof. Substitute for H 312 passed the house May 14 and the senate May 19. It proposes that the commissioner of health shall, on request, furnish medical hospital, nursing, obstetric and pediatric care to wives and to infants under the age of 1 year of men serving in the armed forces of the United States, when such wives are unable to secure proper care for themselves or for such infants. Substitute for H 1026 passed the house May 14 and the senate May 18. It proposes to authorize a court in certain cases to order an examination of the accused to determine whether or not he is suffering from a venereal disease and if so to make such order with reference to the continuance of the case or the detention, treatment or other disposition of the person as the public health and welfare requires such examination to be conducted at the expense of the state. Substitute for H 1312 passed the house April 28 and the senate May 11. It amends the law relating to the practice of chiropractic by eliminating therefrom the existing requirement that chiropractors show satisfactory evidence at the time of the annual renewal of their licenses that they have attended at least one of the two day educational programs conducted by the Connecticut Chiropractic Association Inc. the subjects of such programs being under the supervision of the state board of chiropractic examiners.

Bills Enacted—S 259 has become chapter 243 of the Laws of 1943. It amends the law relating to the practice of natureopathy by authorizing the granting of certificates without examination to persons who have been in active and continuous practice of natureopathy in any other state in which he was licensed to practice natureopathy for three years immediately preceding the date of his application if he meets the educational and other requirements provided for in the existing law except that an applicant for such certificate after his discharge from the armed forces of the United States must show that he had engaged in the practice of natureopathy for three years immediately preceding the date of his induction into such armed forces. S 262 has become chapter 216 of the Laws of 1943. It authorizes persons formerly licensed to practice physiotherapy but now retired from active practice or living outside the state to resume practice in the state by merely notifying the state department of health and paying the required registration fee. S 264 has become chapter 213 of the Laws of 1943. It requires physiotherapists to renew their licenses annually. H 716 has

become chapter 234 of the Laws of 1943. It amends the law relating to physiotherapy technicians by repealing the existing section setting forth qualifications for registration of physiotherapists without examination.

Florida

Bills Introduced—S 301 proposes an appropriation of \$20,000 to provide for the vocational rehabilitation of disabled persons who are physically incapable of earning a livelihood but whose disabilities appear to be amenable to treatment or surgery and could be removed or materially diminished to the extent that such persons would then be physically able to engage in remunerative employment. S 540 proposes that it shall be unlawful for any person to act as operator, driver or attendant in any ambulance at the time said ambulance is rendering service to the public without first having procured a current first aid certificate showing that the said person has passed both a standard and an advanced course in first aid. Substitute for H 146 prohibits a physician or surgeon from disclosing information acquired by him in attending any of his patients except under certain designated circumstances, one of such circumstances being whenever it shall be ascertained and determined by an order made and entered in the cause pending by the judge or one of the judges of such court after such notice to the patient as may be directed by the said judge that such testimony is necessary for the determination of the issues made in the cause and cannot be obtained in any other manner and that in the absence of such testimony the ends of justice may be defeated. The proposal further provides that its terms should extend to all duly licensed physicians and surgeons no matter what school of medicine they may follow or under what statute or law they are permitted to practice in the state.

Bills Passed—S 239 passed the senate April 26. It proposes to require every physician attending a pregnant woman to take or cause to be taken, a sample of blood of such woman at the time of the first professional visit or within ten days thereafter such blood to be sent to a recognized laboratory for a serologic test for syphilis. H 480 passed the house May 10. It requires every person making application for a license to marry to furnish a certificate from a duly licensed physician stating that the applicant has been given such physical examination including a standard serologic test, as may be necessary for the discovery of syphilis and that the applicant is not infected with syphilis in a communicable stage. The proposal would exempt from the above requirement an applicant who is in the military service of the United States and would limit the fee of the physician making the examination and issuing the certificate to \$1.

Bills Enacted—S 41 was approved May 12. It amends the natureopathic act by, among other things, (1) increasing the course of study in an approved natureopathic school from three to four years eliminating the prior requirement that no two of such courses may be given in the same year, (2) requiring natureopaths at the time of the annual renewal of their license, to present satisfactory evidence that they have attended the two day educational program conducted by the Florida Naturopathic Physicians Association Inc. or its equivalent, (3) providing for the termination of a license to practice natureopathy in the event that the holder thereof fails to renew said license annually and (4) requiring the registration of natureopathic licenses with the state board of health. S 366 was approved May 19. It requires the payment of an annual license tax of \$10 by any person, firm or corporation engaged in the manufacture, processing and dispensing of lenses for the correction, relief or protection of the human eyes and their appendages, the manufacture, processing, fitting and dispensing of frames therefor without however engaging in the diagnosis of the human eyes and the determination of the refractive powers of the human eyes or prescribing of lenses or treatment for human eyes.

Illinois

Bills Introduced—S 402 to amend the dental practice act would authorize licensed dentists to employ or engage the services of other persons or corporations to construct or repair extraorally prosthetic dentures, bridges or other replacements for a part of a tooth but makes it unlawful for such person

so employed or engaged to advertise other than in trade journals or publications and then only in the prescribed manner. H 704 proposes to include within the duties of the department of public welfare the inspection, investigation and licensing of nursing homes for the care of persons suffering from physical diseases, the term "nursing homes" not to include hospitals. H 729, to amend the hospital lien law, proposes to extend the privileges thereof to hospitals maintained and operated entirely by a county.

Massachusetts

Bills Introduced—S 191 proposes to authorize the board of registration in nursing to examine and register as a registered nurse any applicant who is 20 years of age and examine and license as an attendant any applicant who is 19 years of age during the existing state of war. Such applicants, however, would be required to comply with the other pertinent provisions concerning the registration of nurses. H 1655 proposes to authorize expenses for medical, hospital and other services rendered to aged persons which remain unpaid at the time of such persons' commitment to an institution or of death to be paid directly to the person furnishing such service. H 1716 proposes to amend the premarital examination law by authorizing physicians registered or licensed to practice in any other state of the United States to execute the required certificate.

Missouri

Bills Introduced—S 165 proposes the enactment of an enabling law relating to and providing for the licensing, regulation, examination, supervision and dissolution of corporations engaged in the furnishing of medical expense indemnity or service or hospital expense indemnity. Among other things the proposal would provide that medical expense indemnity or service shall consist of reimbursement or indemnity for medical or surgical care or service or the furnishing of same by or through duly licensed physicians for nursing service and of furnishing necessary appliances, drugs, medicines and supplies. Hospital expense indemnity or service shall consist of reimbursement or indemnity for hospital care or the furnishing of same through a hos-

pital or group of hospitals organized, maintained or operated by governmental or private interests as regularly recognized or authorized by the laws of the state.

Ohio

Bill Enacted—H 145 was approved May 20. It provides that the holder of an expired license or certificate from the state of Ohio to practice any profession, which has not been renewed because of the service of the holder thereof in the armed forces of the United States, shall, on presentation of satisfactory evidence of honorable discharge within six months of such discharge be renewed by the issuing board without penalty and without reexamination.

Texas

Bills Enacted—S 67 was approved May 6. It amends the law relating to the sale of narcotic drugs by providing, among other things that any person may purchase at any time 1 ounce of paregoric without a doctor's prescription. H 343 was approved May 6. It amends the law relating to the operation of nonprofit hospital service corporations by a new section relating to the expenses of such corporations and the investment of the funds of such corporations. H 651 was approved May 17. It authorizes a county to erect, equip and operate a hospital for the care and treatment of the sick, infirm or injured and to levy and collect a tax for such purposes.

Wisconsin

Bills Introduced—S 380 proposes to provide treatment for any physical or mental disease or injury which is directly or indirectly traceable to military or naval service to any man or woman who performed active duty in the military or naval service of the United States and received an honorable discharge therefrom. A 665 proposes to authorize a licensed nurse in another state to be granted a certificate in Wisconsin without examination if her credentials of general and professional educational qualifications are equivalent to those required in Wisconsin.

MEDICAL ECONOMIC ABSTRACTS

DEATHS OF SCHOOL CHILDREN

The death rate during the school age (5-14) is less than at any other age period and has declined almost 75 per cent during the present century according to a special report of the Bureau of the Census, April 13, 1943. In 1900 the rate was 3.9 and in 1940 1.0 per thousand in the registration area, which was expanding during that period to include several states with a higher than average mortality.

The decline would have been far larger had it not been for the great increase in accidental deaths and especially those from motor vehicles, which were almost nonexistent in 1900 but which had become the most important cause of accidental mortality in 1940. There is, however, some reason for encouragement in the fact that since the national program for safety education in the schools was inaugurated in 1922 there has been a decline of 15 per cent in motor accidents to school children.

The leading causes of death in 1940 were

Accidents	28.8 per cent
Influenza and pneumonia	9.0 per cent
Disease of the heart	8.0 per cent
Appendicitis	8.0 per cent
Tuberculosis	5.5 per cent

The greatest reduction was in the diphtheria death rate, which ranked first in 1900 with a rate of 69.7 per hundred thousand but by 1940 had dropped in rank order to the twelfth place with a rate of 1.7 per hundred thousand. "This decrease of 97.5 per cent in the diphtheria rate," says the report, "may well be considered one of the greatest triumphs in the control of communicable diseases by the concerted application of preventive and therapeutic measures."

Rheumatic fever throws a growing shadow on the picture. It seems to be increasing in frequency and, while it "has a low

fatality rate at the first attack," it often "produces permanent handicaps and has a high fatality rate for its recurring attacks." However, life expectancy for the "school age child was about five or six years longer in the fourth decade of this century (1930-1939) than in the first decade."

HANDICAPPED WORKERS

An analysis of the active file of the United States Employment Service in Ohio on January 16 showed that 1 out of 12 of 89,177 applicants registered for employment was physically handicapped. Eighty-six per cent of these were men and one fifth were skilled workers. Fifteen per cent had limb impairments, with an additional 11 per cent who had lost some portion of their limbs through amputation. Over one half were 55 years of age or older and two thirds had no education beyond the grammar schools.

Employment service managers estimated that only 3 per cent of those handicapped "had excellent prospects of being placed locally within the next sixty days. Prospects were considered good for about one fifth and fair for somewhat more than one half." More than one fifth were considered virtually unemployable. As to rehabilitation, the report concludes that "Undoubtedly the employment prospects of many of these applicants would be enhanced by rehabilitation. The large number of hernias reported, for example, indicates that medical treatment would probably aid in improving their usefulness. For others, special training may be required. In this respect the handicapped have the same further disadvantage as many inexperienced workers currently entering the labor market. They may require different types of training, but the fact that they may lack experience on the job should not prove as formidable as in the past."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

ILLINOIS

"Cosmic Ray" Sold in Health Devices—Three Chicagoans and a Danville couple were named on May 21 in indictments charging conspiracy and operation of a confidence game by allegedly selling "cosmic ray" tubes for \$300, the Chicago *Tribune* reported, May 22. Those indicted by a Vermilion County grand jury were George Erickson and I B Haviland, who gave their address as 30 North La Salle Street, Chicago, Robert E Nelson, Chicago and Mr and Mrs George Brown operators of a Danville health institute. John Allen assistant state's attorney, said the defendants sold pencil-like tubes to the sick, claiming they were a 'radioactive' development in healing. Allen said the tubes were analyzed and found to contain nothing that would produce radioactivity.

Chicago

Course on the Rorschach Test—Michael Reese Hospital offers a course on the Rorschach test June 7-11 under the direction of Samuel J Beck Ph D. Emphasis will be placed on those less serious mental disturbances in which success in treatment is indicated. The course will be in session in two two hour periods daily for five days. Communications should be addressed to the department of neuropsychiatry, Michael Reese Hospital.

Dr Ole Nelson Named Medical Director of Cook County Hospital—Dr Ole C Nelson assistant warden at Cook County Hospital and a member of the staff for more than twenty years has been appointed medical director of the hospital. He succeeds Dr Charles Marshall Davison who resigned because of pressing personal duties. Dr Davison who will continue as chief of the surgical staff had held the position since December 1939. It was reported that Dr Nelson would probably consolidate the new position of medical director with his present position of assistant warden.

Five Pathologists Named to Coroner's Consulting Staff—The appointment of five pathologists to serve as 'dollar-a-year' members of the coroner's consulting staff was announced in the Chicago *Sun*, May 25. The new appointees are Drs Otto Saphir, professor of pathology at the University of Illinois College of Medicine, James P Simonds, head of the department of pathology at Northwestern University Medical School, Edwin F Hirsch, associate professor of pathology at the University of Chicago School of Medicine, Paul R Cannon chairman of the department and professor of pathology at Chicago, and John F Sheehan, chairman of the department of pathology at Loyola University School of Medicine. These physicians will serve with the group of four doctors headed by Dr Karl A Meyer who act as consultants with the nine full time physicians in the coroner's office in special cases.

The Koessler Fellowship—The Jessie Horton Koessler Fellowship of the Institute of Medicine of Chicago for the aid of research in biochemistry physiology, bacteriology or pathology will be available on September 1. The stipend is \$500 a year with the possibility of renewal for one or two years. Only such applications will be considered as are approved by the head of a department in the fields mentioned or by the director of a research institute or laboratory in Chicago and which stipulate that the recipient of the fellowship shall be given adequate facilities for carrying out the proposed research concerning which full information is required in the application. Applications will be received up to July 1 and should be sent to Dr Paul R Cannon, 950 East 59th Street. Dr Cannon on the recent death of Dr H Gideon Wells was appointed chairman of the Committee on the Jessie Horton Koessler Fund.

KANSAS

Members of State Board of Health—Gov Andrew P Schoepfel Topeka recently appointed Dr Clyde D Blake Hays past president of the Kansas Medical Society, as a member of the state board of health and reappointed the following members for additional terms: Drs Forrest L Loveland Topeka Harry L Aldrich Crary Gilbert A Leslie McDonald and George I Thatcher Waterville.

Institute on Industrial Health—A wartime institute on industrial health was held in Kansas City on June 3 and in Wichita on June 4 under the auspices of the state medical society and the state board of health. Among the speakers was A G Hewitt, general manager of the Visking Corporation, Chicago, Dr Floyd C Beelman, Topeka, and Dr Carl M Peterson, Chicago, secretary of the Council on Industrial Health, American Medical Association.

MASSACHUSETTS

Honorary Degrees—At the recent commencement of Tufts College Medical School, held jointly with the Tufts College Dental School, Boston, the honorary degree of doctor of laws was conferred on Dr Lewis H Weed, professor of anatomy at Johns Hopkins University School of Medicine, Baltimore, and chairman of the division of medical sciences, National Research Council who delivered the convocation address on 'War Research in Medicine and Dentistry'. Comdr Albert Warren Stearns, M C, U S Naval Reserve, dean of the medical school, who is now in active service, and Dr Frank R Ober, Boston, received the honorary degrees of doctor of science.

Journal Dedicated to Dr Lancaster—The *American Journal of Ophthalmology* for May was designated the Lancaster Testimonial Issue to mark the eightieth birthday of Dr Walter B Lancaster, Boston. Dr Lancaster is now in private practice after concluding two years as chief of staff of the Dartmouth Eye Institute and ophthalmic surgeon of the Mary Hitchcock Memorial Hospital at Hanover, N H. In 1889 Dr Lancaster graduated at Harvard Medical School Boston where he later served as a member of the faculty. He was chairman of the Section on Ophthalmology of the American Medical Association in 1928. He has been president three times of the New England Ophthalmological Society and in 1924 had the same office with the American Academy of Ophthalmology and Otolaryngology and in 1935 of the American Ophthalmological Society.

MICHIGAN

Institute on Public Health Economics—On May 10 a two week institute on public health economics started at the new School of Public Health of the University of Michigan, Ann Arbor and constituted a preview of the activities of the school of public health. The institute was devoted largely to a discussion of prepayment plans for hospital care and was provided for by a grant from the Rockefeller Foundation through the Committee on Research in Medical Economics, New York and the faculty and guest speakers of the School of Public Health. Nathan Sinai D P H, secretary of the faculty of the school was in charge of the institute and the guest lecturers included Dr Joseph W Mountin, Washington D C, George St J Perrott, Washington, Michael M Davis Ph D, New York, Clarence R Kulp, Ph D, Philadelphia, Dr Albert E Larsen, San Francisco, John R Mannix, Detroit, Dr Frederick D Mott, Washington, D C, Clarence Rufus Rorem, Ph D and Maurice J Norby, Chicago. Louis H Pink LL D, New York and Dr Henry E Sigerist Baltimore. The institute was attended by fifty-six students who came from all parts of the United States representing medical public health insurance and governmental agencies. The work of the institute was divided into general sessions for all students and special courses in the field of management of prepayment plans, appraisal of community facilities and needs statistics and accounting and personnel management. The new \$750,000 public health building is not ready for occupancy but is expected to be completed by July 1 (The *JOURNAL* June 27 1942 p 738). The building and its equipment cost \$750,000. \$400,000 being provided by the W K Kellogg Foundation \$300,000 by the Rockefeller Foundation and \$50,000 by the National Foundation for Infantile Paralysis. The site was offered by the university. The recent institute is part of the school's program for continued education in the field of public health practice and related services. According to Henry F Vaughan Dr P H dean of the school of public health it is the intent of the school to broaden the program of instruction in public health economics. The curriculum is already being offered at graduate level embracing work to the degree of master of public health.

NEW MEXICO

Indian Registration—To secure more complete registration of births and deaths in the Indian reservation, hospitals and pueblos the New Mexico Division of Vital Statistics initiated a program that will bring the importance of registra-

tion into the homes of as many Indian families as possible. The work is being carried on by Miss L. Anne Amison, New Mexico field agent of registration and the visiting nurse of the Indian Service. Talks are given in the schools of each pueblo and in each case leaflets explaining the importance of registration are given to the children to take home. The Indians give evidence of great interest and satisfaction, knowing that they are to be recorded with the state as well as with the Indian Service. According to the *Acquisition*, this is a significant step in the promotion of registration as heretofore the Indian certificates were sent to the offices of the Indian Service, and only a few were ever recorded in the state division of vital statistics.

NEW YORK

Prizes Awarded—The annual award of \$100 offered by the Taylor Instrument Companies for the best thesis on a medical subject was presented to Drs. Andrew Kerr Jr., Rochester General Hospital, and Robert F. Sevell, resident in surgery at St. Vincent's Hospital, Rochester. The title of Dr. Kerr's thesis is "Weight Gain in Pneumonia—Its Relation to Size of Intestine and Length of Labor." Dr. Sevell's subject dealt with a permanent use of the sulfonamide compounds and x-ray therapy in pyoderma. The two papers, although of different types, were of such equal merit that the judges felt that each deserved the full award but it was decided to divide the award equally.

New York City

Rehabilitation Service Center—The establishment of a rehabilitation center at Teachers College, Columbia University, under the direction of Herbert B. Palmer, Ph.D., has been announced. The program will start with the summer session and aims to rent the handicapped for active participation in industry. The center was established after nearly two years of intensive study and research into the problems of the disabled. The new program seeks to make available trained workers in the field of rehabilitation. It was pointed out that at present there were approximately only 500 workers in the United States properly qualified to do rehabilitation case work.

Leon Lascoff Dies—Leon Lascoff, Sc.D., pharmacist, holder of the Kensington Honor Medal and a former president of the American Pharmaceutical Association, died May 4, aged 75. According to the *New York Times*, Dr. Lascoff never sold anything but drugs in his store. For more than thirty years he was a member of the New York State Board of Pharmacy, serving as president in 1916, 1920 and 1930. He was a trustee of the Columbia University College of Pharmacy and a founder and past president of the New York County Pharmaceutical Society. He was a founder and treasurer of the New York Veterin Druggists Association and for years had been prescription editor of *Drug Topics*.

OHIO

Radio Program "Your Health" Reopens—On June 19 Station WLW will reopen a second edition of the program "Your Health" which has been conducted for years by Dr. Carl A. Witzbach, health commissioner of Cincinnati, in cooperation with the Academy of Medicine of Cincinnati, the Public Health Federation and the Cincinnati Board of Health. The new series will be a revised presentation of the earlier presentations and will utilize Dr. Witzbach as a narrator interspersed with dramatic sequences.

Personal—Dr. John W. Wilce, Columbus, has been named to represent the Ohio State Medical Association on the state advisory committee on recreation and physical education, which is supervising the Ohio Physical Fitness Program for the state department of education. Mr. Richard A. Aszling, director of the bureau of public education of the state medical association since June 1939, has resigned to become director of public relations for the midwest region of the Borden Company with headquarters in Columbus. Dr. Chester W. Waggoner, Toledo, has been reappointed a member of the state medical board for a term ending March 18, 1950. Dr. Waggoner has just completed seven years on the board.

PENNSYLVANIA

Society News—Dr. Myron F. Metzenbaum, Cleveland, addressed the Western Pennsylvania Eye, Ear, Nose and Throat Society in Johnstown, May 20, on "Replacement of the Dislocated Lower End of the Cartilaginous Nasal Septum to Reestablish Normal Nasal Function and to Aid in the Normal Development of the Sinuses, Jaws and Teeth."

Philadelphia

Strittmatter Award and the Da Costa Oration—The twentieth annual Strittmatter Award of the Philadelphia County Medical Society was presented to Dr. Hubley R. Owen, director of public health of Philadelphia and chairman of the local defense council, at special ceremonies in the society's building May 19. Dr. Owen received the award, consisting of a scroll and gold medal for his achievements in both positions and in recognition of his former work as chief surgeon, medical division of the city department of public safety, which extended over a period of twenty-five years. On the same occasion Dr. Eldridge L. Hinson, John Rhea Barton professor of surgery at the University of Pennsylvania School of Medicine, delivered the twentieth annual J. Chalmers Da Costa Oration on "Sera of Fracture Therapy."

New Fluoroscopes Installed at Pennsylvania Hospital—Two new x-ray machines have been installed in the University of Pennsylvania Hospital through funds given by William H. Donner, founder of the International Cancer Foundation, in memory of his son William H. Donner Jr. One, called a biplane fluoroscope because it enables examinations to be made in two planes, horizontal and vertical, will be used to locate such foreign bodies in the lungs as coins and safety pins. A turntable on the machine makes it possible to position a patient so that x-ray pictures can be made from any angle, even vertical without lifting or turning him bodily. The fluoroscopic assembly suspended from the ceiling and the examination table, riding on miniature trolley tracks across the revolving turntable constitute the only visible portions of the apparatus. All other parts are concealed behind a wall panel and under the floor. The second installation is a multipane fluoroscope which will be used during the setting of broken bones. Designed to assure the perfect reattachment of fractures, the multipane fluoroscope is suspended from the ceiling of an overhead trolley and counterbalanced for ease of movement. The mechanism can be swung into any position desired, but the x-ray beam remains pointed toward the fluoroscopic screen, hooded to shut out light, on which the fracture image appears. The Pennsylvania hospital has also installed a dark room for processing x-ray films on a mass production basis. The installations were effected by Westinghouse Electric & Manufacturing Company.

RHODE ISLAND

State Society Creates Executive Office—Mr. John E. Farrell, executive secretary of the Providence Medical Association, Providence, has been chosen to fill the new office of executive secretary of the Rhode Island Medical Society. Mr. Farrell will continue as executive secretary of the Providence group.

Industrial Health Institute—A Rhode Island Industrial Health Institute was held at the Narragansett Hotel, Providence, May 19, under the auspices of the Pawtucket Business Chamber, Providence Chamber of Commerce, Providence Council of Social Agencies, Rhode Island Medical Society, Rhode Island State Council of Defense and the Rhode Island Department of Health. Among the speakers were

Mrs. Doris R. McGowan, field representative, division of women and children, state department of labor, *The Problem of Women in Industry*

Dr. Charles P. Fitzpatrick, *Howard Emotional Manifestations of Fatigue in Industry*

Dr. James P. Deery, Providence, *Health Services Available to Industry in Rhode Island*

Hugo F. Zambiarino, safety engineer, Travelers Insurance Company, Hartford, Conn., *Safety in Industry*

Thomas H. Bride Jr., state director, U. S. Employment Service, *Problems of Employing the Physically Handicapped and the Aged*

Comdr. Marion B. Sulzberger (MC), U. S. Naval Reserve, *Experiments on the Effects of Fiberglass on Animal and Human Skin*

Dr. Leroy U. Gardner and Thomas M. Durkan, chief chemist, *Tradeau Foundation* both of Saranac, N. Y., *Fiberglass Inhalation Tests*

Dr. John G. Downing, Boston, *Industrial Skin Diseases*

Dr. Ubaldo E. Zambiarino, Wallum Lake, *Tuberculosis in Industry*

Dr. Hilary J. Connot, Providence, *Venereal Disease Control in Industry*

Oswald F. Hedley, surgeon, U. S. Public Health Service, addressed the luncheon session on "What the Average Plant Can Do to Have an Industrial Health Program."

WEST VIRGINIA

State Medical Election—Dr. Robert J. Reed Jr., Wheeling, was chosen president-elect of the West Virginia State Medical Association at its annual meeting in Charleston, May 17-18, and Dr. Robert J. Wilkinson, Huntington, was inducted into the presidency. Other officers are Drs. Harry G. Stucke, Bluefield, and Thomas G. Reed, Charleston, vice presidents; and Thomas M. Barber, Charleston, treasurer. Dr. Reed Jr. is the son of Dr. Robert J. Reed, Wheeling, who served as president of the association in 1919. A resolution was adopted at the meeting recommending that any physician who is a

resident of the state when he has finished his medical training, whether it be internship or residency who is called into the service of the armed forces of the United States and who is licensed to practice by the Public Health Council of West Virginia or the National Board, shall be eligible for membership in the society of the county or which he is a resident without the probationary period of practice and shall be exempted from payment of dues as long as he remains in active military service

GENERAL

Meeting of Radiologists—The annual meeting of the American College of Radiology will be held at the Palmer House Chicago June 6 under the presidency of Dr Byrl R. Kirklin Rochester Minn. The Conference of Teachers of Clinical Radiologists sponsored by the college which will be held in conjunction with the meeting, offers the following program

Capt Charles F. Behrens (MC) U.S. War-time Radiology in the Navy
Col Henry C. Moehring M.C. U.S. Army University of Tennessee
Army School of Radiology War-time Radiology in the Army
Comdr Edward L. Bortz (MC) USNR Philadelphia War-time
Graduate Medical Meetings
Mr R. H. Myers Washington D.C. War Production Board Production and Allocation of X-Ray Equipment and Supplies

Knudsen Medal Goes to Dr Sawyer—The 1943 W.S. Knudsen Award of the American Association of Industrial Physicians and Surgeons was presented to Dr William A. Sawyer since 1919 medical director of Eastman Kodak Company Rochester, N.Y. for outstanding work in control of tuberculosis constructive contributions to a practical program of nutrition in industry and setting up a program of rehabilitation for handicapped workers in industry. The award established in 1938 by William S. Knudsen then president of General Motors Corporation for 'the most outstanding contribution of the year to industrial medicine' was given to Dr Sawyer at a dinner of the association in Rochester May 26. Dr Sawyer who was born in Iowa graduated at the University of Pennsylvania School of Medicine Philadelphia in 1913.

International College of Surgeons—The fourth international assembly of the International College of Surgeons will be held at the Waldorf-Astoria Hotel in New York June 14-16 in conjunction with the eighth national assembly. War surgery and rehabilitation will be the theme of the program which will include among other speakers the following

Col Raymond W. Bliss M.C. U.S. Army The Transportation and Care of the Sick and Wounded from the War Zones
Mr Rodney Mangot FRCS London Management of Wounds of the Abdomen
Mr Hamilton Baile FRCS London Crush Syndrome
Dr V. V. Lebedenko The Organization of Surgical Aid in the Soviet Army
Dr Fred H. Albee New York Reconstruction of Bones and Joints
Robert T. Merrill attorney Havre Mont A Layman's View of Rehabilitation
Dr Martial Bourard Port au Prince Haiti Autopsytherapy in General and War Surgery

Dr Herman de Las Casas dean of the Faculty of Medicine of the University of Caracas Venezuela will deliver the annual Manuel Corachan Memorial Oration in Surgery.

Cancer Fellowships Awarded—At a meeting of the board of directors of the Finney-Howell Research Foundation, Inc., Baltimore the following annual fellowships were awarded: Dr Rose I. Shukoff University of Petrograd to work at the Glasgow Royal Cancer Hospital Glasgow Scotland under Dr P. R. Peacock for the third year; Emilia Vicari A.M. Ohio State University Columbus, to work at the Roscoe B. Jackson Memorial Laboratory, Bar Harbor Maine under Clarence C. Little Sc.D. for the third year; Borroughs Reid Hill Ph.D. Tulane University New Orleans to work with Louis F. Fieser Ph.D. at Harvard University Cambridge Mass. for the second year; Dr Nelicia Maier Paris France to work at Yale University School of Medicine New Haven Conn. with Dr William T. Salter a new fellowship; and James Alexander Miller M.S. University of Wisconsin to work at the medical school University of Wisconsin also a new award. Fellowships carrying an annual stipend of \$2,000 are awarded for a period of one year and applications must be made on blanks furnished by Dr William A. Fisher secretary of the foundation 1211 Cathedral Street Baltimore before January 1 of each year. Fellowships are awarded only for research into the cause or causes and the treatment of cancer.

Koch Trial Ends in Jury Disagreement—In March 1942 the Federal Grand Jury sitting at Detroit indicted the Koch Laboratories, Inc. together with two of the officers Dr William Frederick Koch and his brother Louis Koch naming them responsible for the shipment in interstate commerce

of packages of allegedly misbranded drugs variously labeled as Glyoxylyde, Malonide and Benzoquinone. The indictment contained twelve counts covering twelve shipments of the products. Under the penalties of the Federal Food Drug and Cosmetic Act this offense would bear on conviction a total maximum penalty not to exceed twelve years' imprisonment together with a \$12,000 fine. The trial began on January 12 and the prosecution produced 49 witnesses who testified as experts and/or fact witnesses. The government rested its direct case on February 4 after presenting testimony that the products distributed by the defendants were misbranded in that they are not efficacious in the cure mitigation treatment or prevention of cancer allergies infections and their sequelae as claimed on the labels. Between February 5 and April 20 the defendants presented 104 witnesses including Dr William F. Koch together with 24 licensed practitioners of medicine osteopathy, dentistry and veterinary medicine. Ten of these witnesses did not appear in court but gave depositions from various parts of the United States from Brazil and from England. The doctors who took the witness stand in behalf of the defendants testified to having cured or at least having more or less successfully treated several hundred patients with the 'Koch Synthetic Antitoxins' the depositions recounted treatment of an additional 200 cases. 34 selected laymen testified before the jury that they had been cured by Dr Koch or by doctors using his drugs. The remedies were represented as being efficacious in the treatment of sixty-nine distinct diseases ranging from acute appendicitis to herpes zoster and special emphasis was placed on cancer tuberculosis coronary thrombosis and allergies. This was the longest trial in the history of the Food and Drugs Act the court transcript running well over 9,000 pages exclusive of the depositions which aggregated several thousand pages themselves. On May 19 (nineteenth week) the judge gave his charges to the jury which failed to reach an agreement after over eight days of deliberation and was dismissed on May 28. Following dismissal the jury was polled and it was learned that nine had voted for conviction and three for acquittal. It was reported that the three who had held out for acquittal had done so from the first ballot. No date has been set for the retrial of the case, but it is assumed that it may be reached sometime late in the fall.

LATIN AMERICA

Dr Baehr in Mexico—Dr George Baehr chief medical officer, Office of Civilian Defense Washington D.C. is in Mexico City to confer with Mexican civilian defense officials on their organizational problems. On June 3 Dr Baehr spoke in the National Theater on 'The Organization and Operation of the Emergency Medical Service' and showed a slide film entitled 'Operation of Emergency Medical Service'. The sound track of the film is in Spanish. The following day Dr Baehr discussed 'Rescue Service' and showed the motion picture on 'Work of the Rescue Service'.

First National Congress of Public Welfare—The department of Public Welfare of Mexico through its secretary Dr Gustavo Baz announces the first National Congress of Public Welfare to be held in Mexico City August 15-22. A presidential order calling the congress was issued in view of the growing importance of the problems of social welfare throughout the world intensified and multiplied by the present war the pressing need of unifying the criteria the administration and the public welfare methods throughout the country the urgency of stimulating private cooperation toward the solution of the great national welfare problems and the advantages that result from the interchange of ideas between institutions and specialists interested in public welfare.

Public Health Program in El Salvador—The republic of El Salvador has recently made additional appropriations to project a public health program which was launched last year supplementing by several methods initial funds amounting to half a million dollars received from the United States. San Salvador has authorized expenditures of \$80,000 for improvements to the water and sanitation systems and the construction of a new market a slaughterhouse and a public laundry. San Miguel is building a \$50,000 sewerage system and Santa Tecla has authorized expenditures of \$37,500 for a similar system. Other cities which have made appropriations for health and sanitation improvements in line with the program are Atiquizaya Zacateculuca and Tonacatepec. Similar action is being considered by Chalchuapa and Ahuachapán. The sums set aside by these towns for health work will be supplemented by funds from the Servicio Cooperativo Inter-Americano Salud Publica. This agency is carrying on the inter-American health and sanitation work in Salvador under the direction of the Sanidad Publica.

Foreign Letters

LONDON

(From Our London Correspondent)

April 21, 1943

The Projected National Medical Service

Speaking at the opening of a maternity and child welfare center Mr. Ernest Brown, minister of health, said that under the Beveridge scheme every one would be able to call to his aid the best medical services that modern science could provide. The government looked confidently to the local health authorities with their long experience and resilience in meeting the problems both of war and of peace, to undertake the new responsibility. The new task might involve adjustments of local government as the units must be large enough to allow scope for efficient planning. Another great principle was personal and professional freedom. Some were afraid of an organized national health service because they thought it would be a bureaucratic machine by which patients would be dragooned into health and doctors dragooned into mediocrity and servility. He would be the first to condemn such a service and would shrink from the task of preparing for it. But he did not believe this. Health was an intensely personal matter and any national service must be an intensely personal service. The family doctor, chosen by the family as the one in whom they had confidence and whom they often held in affection, must be the foundation stone.

Among doctors there was a real and intelligible fear that an organized national health service would bring strict control of the day to day professional work, the rule of forms and routine, the end of initiative and professional independence. He fully appreciated the danger, but it was one which could be avoided, and was not a defect inherent in every kind of national service. The medical service could be so organized as to confer on the average practitioner a freedom to exercise his professional talents in a measure enjoyed at present only by a fortunate minority. One other guiding principle must be the promotion of health. It was not enough to organize the treatment of sickness when it had arisen. The causes of ill health must be tracked down and removed, and individual fitness must be promoted and maintained. The national service must be designed to prevent rather than cure. The field the government had to survey was the whole of what Mr. Churchill called "the spacious domain of public health." Discussions with representatives of local government, the medical profession and the voluntary hospitals had already started. Later the government would put before the country a general statement of the plans to be submitted to Parliament.

Parachuted Medical Units to Attend Wounded in Forward Areas

The success of parachuted medical units to attend to the wounded in the fighting in Tunisia is an advance in army medical service which promises to be revolutionary. During the operations a medical unit consisting of ten men, including a surgeon lieutenant, was dropped by parachute in a forward area close to the scene of fighting and attended in one day to 162 wounded or injured men. Of these only 1 died and but for the medical aid brought immediately to the spot the death roll must have been heavier. Several of the wounded had to have amputation on the spot and many others required the services of the operating table. The success of bringing the surgeon to the wounded instead of these to the surgeon must lead to the adoption in the British army of air borne medical units on a large scale. At present only the air borne divisions can

land surgeons and ambulance units by parachute and glider. This particular parachuted unit in Tunisia took down with it in containers full dressing station equipment, operating apparatus and instruments, anesthetics, sterilizers, medicines and dressings. Normally an air borne medical unit is ready to operate on a seriously injured man within ten minutes of landing and is so self contained both for medical supplies and for food that it can carry on for several days without having additional supplies dropped for it. The abiding principle of the air borne divisions is that a man must always be physically fit, ready and alert. A high standard of personal smartness and cleanliness is demanded.

Complete Pasteurization of Milk Urged on the Government

The minister of food received a deputation representing the British Medical Association, the National Association for the Prevention of Tuberculosis, the Joint Tuberculosis Council, the British Pediatric Association, the People's League of Health and other bodies to urge the complete pasteurization of milk. The acting chairman of the council of the British Medical Association said that there was no serious difference in the medical profession on the question of pasteurization. Prof. L. P. Garrod said that tuberculosis was deplorably common among dairy cattle, the percentage of milk samples containing tubercle bacilli was between 5 and 10. One third of the deaths from tuberculosis in children under 5 were due to the bovine organism. This meant two thousand deaths annually, and there was a much larger percentage of invalidism and crippling. Another disease of the cow transmitted to man was contagious abortion. Ordinary infectious diseases might also be transmitted, usually from contamination of the milk by the milker. All bacteria concerned in these diseases could be destroyed by moderate heat for a short time. Pasteurization did not alter flavor. Admittedly it destroyed some vitamin C, but this could be made up for by fruit juice.

Dr. Alan Moncrieff said that pediatricians were anxious about the possibilities of infections of the alimentary tract traceable to dangerous milk. Only pasteurization gave the guaranty of safety. There was no scientific evidence that raw milk conferred any sort of immunity. Even if it did, the price to pay would be too high.

Dr. C. O. Hawthorne, representing the People's League of Health, said that the public was attracted and misled by such terms as "clean" or "pure" milk, and even "accredited milk," which had received some official countenance, did not escape reproach. He preferred the term "safe milk," meaning pasteurized, the only guaranty against infection.

Replying to the deputation, than which he could not imagine a more influential one, the minister of food recognized the obligation of the government to obtain a milk supply which can do no harm, or, if this was not possible, to issue instructions as to how people should obtain reasonable security in the drinking of milk. He was at present engaged in collecting all the necessary information regarding the available machinery and competent labor to undertake the work which would give the security desired.

Proposed Accident Service of the Future

At a meeting of the British Orthopedic Association Mr. Reginald Watson-Jones presented a report which was approved by the association, for a comprehensive accident service which should embrace the treatment of soft tissue injuries, infections of the hand, burns, tendon injuries, nerve injuries and indeed all injuries of the locomotor system. As these injuries are just as incapacitating as fractures, their importance to industry is just as great and they outnumber fractures greatly. It was held

that the problem would be solved better by reorganizing the accident departments of general hospitals than by forming special accident hospitals. The accident department must be reorganized, replanned and often rebuilt. There must be a separate organization and even a separate entrance for accident cases. The director of the accident service should be trained in every branch of surgery, experienced in orthopedic surgery and specially trained in the problems of trauma.

As the accident unit must provide a twenty-four hour service the director must be aided by two first assistants in addition to the usual resident surgical officers, house surgeons and house physicians. There must be full secretarial and clerical assistance and social service personnel. Close liaison must be established with industrial medical officers in the area served by the unit. The rehabilitation of sedentary and light industrial workers could usually be completed within the hospital itself by physical therapy, occupational therapy and recreational therapy. For the more seriously injured who must return to heavy industry there must be a special rehabilitation annex with playing fields, swimming pools and gymnasiums. In such special centers the treatment would be continued by the same team, and they must remain under the same administration and surgical control as the parent hospital.

Women to Be Paid the Same Compensation as Men for War Injuries

The demand that women should have the same rights as men has again been successful. In the House of Commons protest was made against women being paid lower compensation for war injuries than men. The government appointed a committee to investigate the subject. The reason for the difference is that compensation is related to earnings, which generally are lower for women than for men. The government has recognized that, as the Personal Injuries (Civilians) Scheme applies only to injuries associated with the war, there is an essential difference between it and any permanent scheme of compensation. It therefore has decided that the rates payable for disablement to gainfully occupied persons need not be related to earnings or to any other factor involving sex discrimination. Nongainfully occupied persons, including housewives, shall have their rates of injury allowance and disablement pension increased to those now paid to gainfully occupied men. The effect of the change is to raise the weekly compensation of gainfully occupied women from \$7 to \$9, which is that paid to men. This is paid while the injured person is unable to work, but if disablement continues after six months the compensation is replaced by a disablement pension graded according to the degree of disablement. The pension scale for this war is from \$2 for 20 per cent disablement to \$9.50 for total disablement. This is what the soldier receives. Hitherto among civilians only the civil defense man and the male earner had the benefit of this scale. The most that a woman could receive ranged from \$1.50 for 20 per cent disablement to \$7 for total disablement. Now all women will have the advantage of the men's scale.

Big Fall in German Birth Rate

The special correspondent of the *Times* reports from the German frontier that deep concern is felt in Germany at the latest official figures for births published in the *Wirtschaft und Statistik*. In 1942 the number of live births was about 1,240,000 or 290,000 fewer than in 1941. When Hitler came into power in 1933 the birth rate was 147 per thousand. Consequent on the moral pressure exerted by the Nazi government reinforced by social legislation the rate reached 184 in 1936 and 204 in 1939 and 1940 but fell to 188 in 1941 and to 152 in 1942. Thus almost the whole of the increase achieved by the pressure of the Hitler government has been lost.

AUSTRALIA

(From Our Regular Correspondent)

March 27, 1943

The Development of Drug Manufacture in Australia

The development of drug manufacture in this country constitutes a remarkable wartime achievement. On the entry of Japan into the war, the local manufacture of drugs became a matter of supreme importance. Two distinct problems had to be overcome before local production could commence on a sufficiently large scale—processes and methods of production had to be worked out in the laboratory and in the field by highly skilled scientific workers and the results of scientific work had to be applied to commercial production. To achieve this purpose the Medical Equipment Control Committee received the full cooperation of wholesale and manufacturing firms and of university and other scientific workers and such scientific bodies as the Council for Scientific and Industrial Research and the Australian Association of Scientific Workers. The results of their investigations have added a brilliant chapter to the story of Australian scientific research.

Drugs now being manufactured locally and from local materials in sufficient quantities for Australian needs include magnesium oxide, heavy magnesium oxide, magnesium trisilicate, sodium bicarbonate, chlorinated lime, phenol, proflavine, silver proteinate, zinc sulfate, alum, digitalis, caffeine, theobromine, sulfanilamide, sultaguanidine, atropine, barium sulfate, ascorbic acid, nicotinic acid, scopolamine, chloral hydrate and chlorobutanol. Drugs which will soon be available include acetophenetidin, colocynthis, phenolphthalein, kaolin, nikethamide, belladonna, ergot, gentian violet, salicylic acid, hexoestrol, dextrose, paraldehyde and phenobarbital.

The production of morphine direct from poppy hay is a triumph for Australian research workers. Under the new method the tedious process of obtaining opium from incised poppy capsules has been eliminated. As a result of the wartime shortage of cod liver oil a search for substitutes was made and vitamin rich oils are now being extracted from certain Australian sharks. Experiments have shown that oleum persicorum (peach kernel oil) forms a satisfactory substitute for olive oil.

Included in the work at present being undertaken by the Australian Association of Scientific Workers are local production of general, local, intravenous and rectal anesthetics, mercurial diuretics, antimonial drugs, organic arsenicals for intravenous and oral use and a number of other chemicals used in pharmacy.

Manufacture of Surgical Instruments

At the outbreak of war there were only six skilled surgical instrument makers in Australia, and these were concerned mainly with the manufacture of highly specialized instruments and equipment. At that time the value of instruments produced in twelve months is estimated to have been less than £5,000. Today production has risen to an annual value of £300,000, and Australia is able to provide herself with practically all the essential equipment for use by surgeons. One of the most interesting achievements is the local manufacture of hypodermic syringes. An Australian firm is now producing more than a thousand syringes a week and is in a position to meet all demands likely to be encountered. The syringes are made from a special Australian heat resistant glass and Australian alloy metals. The finished product compares favorably with syringes previously imported from overseas. Parallel development is taking place in the field of laboratory apparatus and reagents. Australia in the near future should be independent of overseas supplies of most items of scientific glassware. Crucibles and other porcelain laboratory requisites are also being produced locally and such items as precision grade analytic weights and analytic balances are now in the course of production.

Deaths

Albert Hammond Hoge ★ Bluefield, W. Va., University College of Medicine, Richmond, 1908, in 1932 served as president of the West Virginia State Medical Association, elected president of the West Virginia Public Health Council in 1931, past president of the Mercer County Medical Society, served as a captain in the medical corps of the U. S. Army during World War I, fellow of the American College of Physicians, specialist certified by the American Board of Internal Medicine, a member of the staff and part owner of St. Luke's Hospital, served as president of the Rotary Club, aged 57, died April 8, of heart disease.

Herbert Bancroft Priest, Ayer, Mass., Harvard Medical School, Boston, 1901, member of the Massachusetts Medical Society, served during World War I, lieutenant colonel in the medical reserve corps of the U. S. Army not on active duty, served as chairman of the school committee, trustee of the library and member of the board of health, on the staff of the Community Memorial Hospital, formerly a contract surgeon for the Civilian Conservation Corps at Fort Devens, recently a recruit examiner, aged 68, died March 12, of coronary thrombosis.

Vivian Lionel Benson, Warwick, Neck, R. I., Baltimore University School of Medicine, 1897, aged 49, died March 19, of hypertensive heart disease.

John William Blackett, Fort Covington, N. Y., McGill University Faculty of Medicine, Montreal, Que., Canada, 1898, member of the Medical Society of the State of New York, member of the attending staff of the Alice Hyde Memorial Hospital, Malden, served as coroner of Franklin County, since 1918, health officer of the town of Westville, school physician, aged 69, died March 22, of cerebral thrombosis and arteriosclerosis.

Alexander Dunlap Blume, Dry Ridge, Ky., Kentucky School of Medicine, Louisville, 1890, member of the Kentucky State Medical Association, aged 76, died March 26, of nephritis.

Elmer Francis Blank ★ Bridgeport, Conn., Stirling Medical College, Columbus, 1897, served as president of the city board of health, on the staff of St. Vincent's Hospital, aged 72, died March 21, of peritonitis.

Wyntie Clinton Boylston, Charlotte, N. C., Medical College of the State of South Carolina, Charleston, 1913, aged 53, died March 30, in the Mercy Hospital, of coronary occlusion.

Herman A. Brennecke ★ Aurora, Ill., Rush Medical College, Chicago, 1896, past president of the Kane County Medical Society, a member of the Chicago Pathological Society, for many years a member of the board of education, founder and head of the Brennecke Clinic, surgeon for the Chicago Burlington and Quincy, the Chicago and Northwestern, the Chicago Milwaukee and St. Paul, the Elgin Joliet and Eastern and the Chicago Aurora and Elgin railroads, aged 71, died, March 20, of carcinoma.

George Stewart Brown ★ New Orleans, Medical Department of Tulane University of Louisiana, New Orleans, 1904, also a pharmacist, formerly associate professor of pharmacy at his alma mater, treasurer of the Louisiana State Pharmaceutical Association from 1897 to 1921, aged 76, died, March 20, in the Southern Baptist Hospital of arthritis of the spinal column.

Arthur Conklin Brush ★ New York, College of Physicians and Surgeons, New York, 1884, an Affiliate Fellow of the American Medical Association, fellow of the American College of Physicians, consultant to the Kings County, Coney Island and Brooklyn Eye and Ear hospitals and the House of St. Giles the Cripple, Brooklyn, aged 80, died, March 17, in the Methodist Hospital, Brooklyn, of bronchopneumonia.

Charles Evans Buchanan, Claremont, N. H., University of Vermont College of Medicine, Burlington, 1906, member of the New Hampshire Medical Society, past president and vice president of the Sullivan County Medical Society, school physician, on the staff of the Claremont General Hospital, aged 61, died, March 23, in Reading, Vt., of cerebral thrombosis due to arteriosclerosis.

William Thomas Burleigh, Pittsburgh, Bellevue Hospital Medical College, New York, 1884, member of the Medical Society of the State of Pennsylvania, served in the medical corps of the U. S. Army during World War I, councilor of the Academy of Science and Art, aged 80, formerly on the staff of the South Side Hospital, where he died, March 23, of arteriosclerosis.

William Meade Burwell ★ Chincoteague, Va., Medical College of Virginia, Richmond, 1895, acting assistant surgeon, U. S. Public Health Service, past president of the Accomac County Medical Society, bank president, member of the county school board, aged 76, died, April 2, in the U. S. Marine Hospital, Baltimore, of arteriosclerotic heart disease and bronchopneumonia.

Charles Bernard Busta, Cedar Rapids, Iowa, State University of Iowa College of Medicine, Iowa City, 1905, on the staff of the Mercy Hospital, aged 60, died, March 14, of nephritis.

Eugene Campbell, Los Angeles, New York Homeopathic Medical College, New York, 1878, aged 86, died, March 13, in Inglewood, of coronary thrombosis.

Saverio Cerullo, Waterbury, Conn., Tufts College Medical School, Boston, 1936, diplomate of the National Board of Medical Examiners, served on the staffs of the Waterbury and St. Mary's hospitals and Chase Clinic, aged 33, died, March 26, in the Trudeau (N. Y.) Sanitarium, of pulmonary tuberculosis.

Joseph Kelsey Chipp, Rose Hill, Kan., Central Medical College of St. Joseph, Mo., 1899, aged 67, died, March 21, of coronary occlusion.

George Clay Coates, Butler, N. J., University of the City of New York Medical Department, New York, 1888, for two years mayor of Butler and for six years served on the borough council, served as a captain in the medical corps of the U. S. Army during World War I, aged 77, died, March 26, of pneumonia.

Joseph Bernard Corley, Webster Groves, Mo., Missouri Medical College, St. Louis, 1888, aged 79, died, March 18, of heart disease.

Warren Fales Draper Jr. ★ Arlington, Va., George Washington University School of Medicine, Washington, D. C., 1939, assistant surgeon in the U. S. Public Health Service, served his internship at the U. S. Marine Hospital, San Francisco, for merly stationed at the U. S. Marine Hospital, Boston, and the U. S. Quarantine Station at Miami, Fla., organized the health unit in the Lamar County (Texas) military area, aged 30, died May 17, in Walter Reed General Hospital, Washington, D. C., of brain tumor.

James A. Duff, Dundee, Ky., Hospital College of Medicine, Louisville, 1904, member of the Kentucky House of Representatives, formerly a member of the county board of education, aged 67, died, March 20, of leukemia.

Philip Roche Dwyer ★ Salem, Mass., Harvard Medical School, Boston, 1920, visiting surgeon on the staffs of the Boston City Hospital, Salem Hospital, Josiah B. Thomas Hospital, Peabody, and the Drapers (Mass.) State Hospital, aged 49, died, February 28, of a ruptured diverticulum.

John Christopher Dyer, Penns Grove, N. J., George Washington University School of Medicine, Washington, D. C., 1912, aged 67, died, March 25, of coronary thrombosis and arteriosclerosis.

William H. Finn, Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897, aged 73, served on the staff of St. Anne's Hospital, where he died, April 22, of heart disease.

Stanley Edward Graham ★ St. Francisville, La., Memphis (Tenn.) Hospital Medical College, 1910, for many years mayor of Melville and coroner of St. Landry Parish, aged 54, died, March 25, of angina pectoris.

Charles J. Gremer, Long Branch, N. J., Baltimore Medical College, 1909, for fourteen years served as city physician, a member of the staff of the Dr. E. C. Hazard Hospital, aged 57, died, March 23, of cirrhosis of the liver.

William Cory Hand ★ Hartley, Iowa, Northwestern University Medical School, Chicago, 1906, veteran of the Spanish American War and World War I, city health officer, owner and medical director of a hospital bearing his name, aged 65, died, March 22, of coronary thrombosis.

Charles A. Heaton, McCutcheonville, Ohio, College of Physicians and Surgeons, Keokuk, Iowa, 1880, aged 87, died, March 22, in Tiffin, of carcinoma of the kidney.

Charles Russell Henderson, Reading, Mass., Boston University School of Medicine, 1889, member of the Massachusetts Medical Society, for many years school physician, member of the board of health of Reading, on the staffs of the Melrose (Mass.) and Winchester (Mass.) hospitals, aged 75, died, March 31, of coronary occlusion.

Hiram H. Hensley, Richmond, Ky., Louisville Medical College, 1906, aged 63, died, March 27, in Hollywood, Fla., of carcinoma of the lung.

John A Holland, Upper Montclair N J, New York University Medical College, New York 1898 served in the medical corps of the U S Army during World War I, aged 75, died, March 22, of heart disease

Oscar House, De Soto Ill St Louis College of Physicians and Surgeons, 1907, member of the Illinois State Medical Society served at one time as mayor of De Soto served during World War I aged 66, was killed, March 17, when his car was struck by a train

John Valentine Hughes, Los Angeles Cooper Medical College San Francisco 1896 formerly served on the staff of the Lane Hospital San Francisco, and as superintendent of the San Francisco Hospital, aged 70, died February 26, in the Queen of Angels Hospital of bronchopneumonia

Carl Haller III Newark, N J Columbia University College of Physicians and Surgeons, New York, 1918, fellow of the American College of Surgeons, attending obstetrician to the Essex County Hospital for Contagious Diseases Belleville and Hospital of St Barnabas and for Women and Children, member of the board of trustees of the Newark Museum secretary of the Maternal Welfare Board of New Jersey aged 50 died March 28, in Mantoloking of coronary thrombosis

Edward Ambrose Keyes Brooklyn Long Island College Hospital Brooklyn, 1911, on the staff of St Mary's Hospital aged 57 died, March 16 of carcinoma of the colon

Edward Francis King, Anderson Ind, University of Louisville (Ky) Medical Department, 1911 formerly on the staff of the Logansport (Ind) State Hospital and St John's Hickey Memorial Hospital, aged 55, died March 31, of hypertension

Benjamin G Long, Buffalo University of Buffalo School of Medicine 1883 member of the Medical Society of the State of New York, formerly clinical instructor in obstetrics at his alma mater, aged 84 died, March 8 of cerebral thrombosis

Milton McNeilan, Safety Harbor Fla, Kentucky School of Medicine Louisville 1889 formerly on the staff of St Joseph's Hospital Parkersburg W Va aged 78 died, March 18 in West Union Ohio, of cerebral hemorrhage

John William Melick, Columbus Ohio Ohio Medical University, Columbus 1896 aged 72, died March 1, in the Grant Hospital of carcinoma of the prostate

John Lee Meyers, Shepherdstown W Va Baltimore Medical College 1903 president of the Peoples Bank Charles Town and a director of the Jefferson Security Bank served on the staff of the City Hospital Martinsburg aged 68 died March 22, in the Charles Town (W Va) General Hospital of acute dilatation of the heart chronic nephritis and hypertension

John Baker Miller Long Beach Ind Marion-Sims College of Medicine St Louis 1893 Barnes Medical College St Louis 1896 member of the Illinois State Medical Society served as assistant physician to St Louis Female and City hospitals St Louis aged 86, died April 3 at his winter home in Lake Worth Fla

Carl E Moehle, Brooklyn Jenner Medical College Chicago 1902 aged 81 died March 24, in Hempstead N Y of pneumonia and arteriosclerosis

Francis Alden Moore, Yankton S D Minneapolis College of Physicians and Surgeons medical department of Hamline University 1898 mayor of Yankton served on the staff of the Sacred Heart Hospital aged 71 died March 24 of coronary thrombosis

Albert Johnson Newman Hammond La Memphis (Tenn) Hospital Medical College 1905 past president of the Tangipahoa Parish Medical Society health officer of Hammond aged 63, died March 27 in New Orleans of spinal meningitis

Thomas Jesse Oliver, Green Bay Wis Wisconsin college of Physicians and Surgeons Milwaukee 1898 past president of the Brown Kewaunee Counties Medical Society formerly city physician and health officer of Green Bay member of the staff of St Mary's Hospital aged 68 died March 13 of thrombosis

Sylvanus Purdy, White Plains N Y Bellevue Hospital Medical College New York 1897 member of the Medical Society of the State of New York and the American Urological Association served overseas during World War I lieutenant colonel and executive officer of the 50th Infantry Regiment of the New York Guard member of the staffs of the White Plains and St Agnes hospitals White Plains and the Grasslands Hospital Valhalla aged 69 died March 2 of heart disease

George Brackett Rice, Brookline Mass Boston University School of Medicine, 1886, member of the Massachusetts Medical Society, fellow of the American College of Surgeons, specialist certified by the American Board of Otolaryngology professor emeritus of laryngology and rhinology at his alma mater consulting surgeon, nose and throat department, Massachusetts Memorial Hospitals, formerly a member of the medical board of the Westboro (Mass) State Hospital, aged 83, died, March 28, of heart disease and parkinsonism

Robert Lee Richardson, Franklin Tenn, University of Tennessee Medical Department, Nashville, 1893, aged 75, died, March 20, of bronchopneumonia

Simon Richmond, Boston Harvard Medical School, Boston 1897 member of the Massachusetts Medical Society, aged 70 died February 5

Ruby Theodore Scott, Fort Lee N J Vanderbilt University School of Medicine Nashville, Tenn, 1917 formerly health officer of Fort Lee, aged 57, was found dead March 17, of coronary sclerosis and occlusion

Clarence A Smith Monte Vista Colo St Louis University School of Medicine, 1905 aged 58 died February 20

Flem D Smith Blytheville Ark Memphis (Tenn) Hospital Medical College 1911 for many years secretary of the Mississippi County Medical Society served as councilor of the First District of the Arkansas Medical Society formerly city and county health officer at one time local surgeon for the Frisco Railroad aged 62 died March 27, of cerebral hemorrhage

John Holmes Smith Jr, New Orleans University of Maryland School of Medicine, Baltimore 1905 member of the Louisiana State Medical Society formerly associated with the U S Public Health Service instructor in medicine at the Tulane University of Louisiana School of Medicine, medical examiner on the draft board conducted an outpatient clinic at the Charity Hospital on the staff of the Baptist Hospital where he died March 27 of glioma of the brain aged 60

William Ballance Smith, Atlanta, Ga Tulane University of Louisiana School of Medicine New Orleans 1936 surgical consultant the Aetna Casualty and Surety Company aged 37 died March 22 in Beaumont, Texas of coronary thrombosis

William Lewis Steen, New Castle Pa Western Pennsylvania Medical College Pittsburgh 1905, member of the Medical Society of the State of Pennsylvania for many years health officer of New Castle served during World War I aged 68 died March 18 in the Veterans Administration Facility Aspinwall of nephritis

Alexander Michael Steinfeld Columbus Ohio Starling Medical College Columbus 1897 member of the Clinical Orthopaedic Society and the American Academy of Orthopaedic Surgeons fellow of the American College of Surgeons served as a captain in the medical corps of the U S Army during World War I formerly assistant professor of surgery at the Ohio State University College of Medicine aged 70 on the staff of the Grant Hospital where he died, March 25 of coronary thrombosis

William Austin Tansey, South Orange N J University and Bellevue Hospital Medical College New York 1912 member of the Medical Society of New Jersey member of draft board number 34 on the courtesy staff of the Orange Memorial Hospital where he died April 4 of arteriosclerosis and coronary occlusion aged 61

Edwin Pratt Woolard, Philadelphia Hahnemann Medical College and Hospital of Philadelphia 1920 aged 48 died March 7 in the Hahnemann Hospital

MERCHANT MARINE CASUALTIES

Joseph Grabenstein Woodside N Y Baltimore University School of Medicine 1898 member of the National Gastroenterological Association formerly on the staff of the New York Polytechnic Medical School and Hospital New York ship surgeon in the U S Merchant Marine aged 65 was killed February 7 in the North Atlantic Ocean when his boat was torpedoed by a submarine

Charles Immanuel Loeb Brooklyn Albany (N Y) Medical College 1912 ship surgeon in the U S Merchant Marine aged 55 died in enemy action February 3 when the ship on which he was serving was torpedoed off Iceland.

Torso Herb Vitamin—John Walters, Baltimore Shipped Oct 11 1939
Composition essentially a fatty oil, an organic sulfur compound turpen-
tine oil, cade oil methyl salicylate, alcohol and water with extracts of
plant drugs including aloe and ginger Misbranded because falsely
represented on label as useful in treating nephritis, diabetes, dropsy, high
blood pressure and kidney, stomach and bladder disorders —[D D N J,
F D C 505 September 1942]

Correspondence

ABSENTEEISM

To the Editor—There is at present a great deal of justified comment on the widespread problem of absenteeism in war industry. A number of clear studies have demonstrated that the question is not simple and demands an attack from many different sides, a very important one being the rejuvenation of the workers' sense of pride and responsibility.

There is, however, one phase of this inquiry, relatively small yet important, which is generally overlooked and which can be handled, in large measure, by the family physician. Briefly stated, the real contribution he can make is to take a just, firm stand on requests for certification.

These requests fall roughly into three types, which I will describe in the order of their importance.

Request for leave of absence because of illness. The generous family physician too often recommends long holidays for minor disorders. A recent example comes to mind. A young woman came to the hospital with a note from her doctor asking that she be granted four to six weeks leave of absence for laryngitis. Careful examination by a certified specialist revealed trivial congestion of the vocal cords. The patient was informed that such a leave could not be granted and she stormed out of the hospital in a fit of anger. Numerous similar instances could be cited in which holidays ranging from two to four weeks have been requested for slight, easily corrected disorders. It is not only unpleasant but for various reasons, also quite imprudent to contradict the family physician yet this often has to be done. In this emergency it is the function of every physician to see to it that healthy workers are kept on the job as regularly as is humanly possible.

Request for change of shift, the second source of trouble. Most people do not care to work at night. They will think of every conceivable medical excuse and ask the busy family doctor to certify it. In one 'the night air is unhealthy' in another 'it strains his eyes' in another 'it aggravates constipation', in still another it is causing bronchitis. When such requests are denied by the industrial physician, discontent and a feeling of unfair treatment are created. As a result, workers are determined to 'get even' at the first opportunity and take unwarranted time off. A few sympathetic moments with a firm unprejudiced family doctor could eliminate this source of friction.

Request for change of job the last common trouble maker. It is astounding to note how readily the family doctor certifies that certain fumes, gases, vapors or dusts (about which the patient is poorly informed) are 'dangerous' and 'poisonous' to the patient, who must immediately be removed to another safer job. It is hardly necessary to point out that every possible precaution is taken in modern plants to safeguard the worker against hazardous exposure. By simply inquiring by telephone what material is used, what the hazard really is and what precautions are being taken the family doctor can avoid panic confusion and unnecessary layoff to 'clear the body' of these alleged poisons.

These special problems are aired with no critical or malevolent intent. The family physician is extremely busy these days and can hardly be expected to be aware always of the difficulties of wartime industry. My plea is simply this: Let there be more cooperation between the local and the plant physician. With more consultations there will be fewer conflicts and more man hours saved.

ANDREW M. BABBY, M.D., Brooklyn
Chief Medical Examiner Sperry Gyroscopic Company, Inc.

"CLAUDE BERNARD" BY IZQUIERDO

To the Editor—I am thankful for the notice of my book "Bernard, creador de la medicina cientifica," published in THE JOURNAL, January 2, page 90, a notice which, I am sorry to say, I did not know about till recently. May I ask you to excuse me for clarifying three assertions in the notice, which, although apparently inspired in the contents of the book, are not quite in accordance with them?

The three assertions are that (1) the first Spanish translation of Bernard's Introduction "appeared in Mexico in 1880," (2) the second translation by don Carlos Garcia, was a "more concise translation itself a classic," and (3) that such a translation was published in the somewhat obscure village of San Luis Potosi.

What I have to say in connection with these three assertions is that

1 On page xiii, line 6, of my book it is stated very plainly that the first Spanish translation was made in Spain in 1880.

2 What I asserted in connection with Garcia's translation, at the beginning of the second paragraph on page xi was that after revision of it I had discovered that it was vitiated by numerous and at times crude errors which I deemed due to Garcia's (who was a lawyer) lack of preparation in the biologic sciences. Thus I was far from declaring his version a classic.

3 As to San Luis Potosi, let me say that it is more than an obscure village: it is the capital of one of our states and for a number of years has been a center of culture in the central part of the country.

J. JOAQUIN IZQUIERDO, M.D.,
Colima Num 367,
Mexico D.F.

SMALLPOX VACCINATION REACTIONS

To the Editor—Every physician should be acquainted with the three types of reactions which follow smallpox vaccination. All reactions fall within one of the three groups, vaccinia, vaccinoid or immune reaction.

The vaccinia, or primary take is the reaction obtained when one who has no immunity is vaccinated with a potent cowpox virus. The site of vaccination should not be larger than $\frac{1}{8}$ inch. If the multiple puncture method is used practically nothing can be seen at the site of the vaccination for the first two to four days. After this period of incubation is passed changes are quite rapid. First one or several macules form followed promptly with papules. These papules may become confluent as the vesicle forms. By the ninth day a definite pustule usually surrounded by an areola is present. At the time of the pustule the patient may suffer from a little malaise and have some fever. Following the pustule a scab forms. If the original vaccination site was not more than $\frac{1}{8}$ inch and if no dressing was used on the vaccination a scar not more than $\frac{1}{8}$ inch remains.

The next type of reaction the vaccinoid (sometimes referred to as an accelerated take) is one which has much significance because it indicates a partial immunity to smallpox. This vaccinoid reaction occurs in one who either has previously had smallpox or has had a previous vaccinia or vaccinoid reaction. Over a period of years some people on revaccination about every five to seven years have a succession of vaccinoid reactions each one of which will leave a scar. These vaccinoid scars are usually smaller than the scar which followed the primary take.

The typical vaccinoid reaction goes through the stages that the primary vaccination does: i.e. the macule, papule, vesicle, pustule and scab. The reaction is more rapid reaching the

apex on about the sixth day. In addition to being more rapid the local reactions are much milder, and the patient very seldom experiences malaise and fever.

The third type is called the immune reaction (sometimes called the immediate reaction). This reaction is frequently overlooked but it is so definite it should not be. As Jenner himself recognized it, I propose that it be called the Jenner reaction. If we spoke frequently about having a Jenner test made to see if we had immunity to smallpox our attention would be called to this reaction and it would not be so frequently overlooked. This immune reaction is found in all persons who have an active immunity from either a previous case of smallpox, a vaccinia or a vaccinoid reaction. The reaction comes on about twelve hours after vaccination and it lasts for forty-eight to seventy-two hours. It consists of a macule or a papule—never a pustule. There is slight induration around the vaccination site caused by the inflammatory reaction of the body destroying the cowpox virus. If one rolls the vaccination site under the finger one gets a feeling of possibly a small pebble in the skin. If this Jenner reaction is present the person is immune to smallpox and no more vaccination of that individual is necessary at that time.

Smallpox vaccination—when reported as positive or negative leaves a lot of terms are inaccurate and usually meaningless. No greater mistake can be made in interpreting smallpox vaccinations than to say that vaccinia and possibly vaccinoid reactions are positive and other are negative. The word negative is usually considered to mean no reaction. If one does not get a reaction following a smallpox vaccination, something is wrong with the technique. I have never seen a person whose arm was properly prepared and on whom a potent virus was used that did not give a reaction of some kind.

If a reaction does not occur even after several attempts one should never infer that the person is immune because that may be far from the truth. Rather one should realize that the technique is at fault. I have seen at least 1 case of smallpox in a person who had been vaccinated five times and each vaccination reported negative. That person thought that he was immune to smallpox because he did not get a take. If his vaccination had been properly done and properly observed he would have realized that he did not have a Jenner reaction, that the technique was at fault and that he did not have immunity to smallpox.

The use of the Jenner reaction is of great help in determining the immunity of contacts to a given case of smallpox. If a contact has a Jenner reaction he can immediately be released from quarantine. He does not have to wait to see if his vaccination is going to take nor does he have to be kept in quarantine for another revaccination because the first attempt was unsuccessful.

There is one other type of reaction which one sometimes sees when doing vaccinations. It is mentioned so that it will not be confused with the Jenner reaction. That is the reaction of allergy—allergy either to trauma or to some substance in the cowpox virus. This allergy reaction comes on a few minutes after the vaccination and leaves quite promptly. It fades away before the Jenner reaction begins to appear.

Every doctor doing vaccinations should see those vaccinated on the second day. If at that time the person shows a Jenner reaction, further observation is not necessary. A beginning vaccinia and vaccinoid will not show at that time.

If a reaction is not present on the second day the patient is told to report on the fifth or sixth day. If a vaccinoid reaction

is present it will be at its height and the physician can so record the reaction and will not have to see the patient again.

If the vaccination is taking but has not reached its height on the fifth or sixth day, it is better to see the patient again on the ninth to eleventh day. Observe the vaccinia at its height. Check the patient to see that he is not using a celluloid shield or a bunion plaster on it. If the pustule is oozing and soiling the clothing, a piece of sterile gauze can be fastened to the clothing to protect the clothing. The process of vaccination is a septic one throughout. The skin must be kept in a normal healthy condition, so that secondary infection does not take place. Coverings which hold moisture cause a fungous growth around the vaccination. This in turn causes a maceration of the skin and produces a fertile field for secondary invaders. Large scars and extremely sore arms are usually caused by secondary infection and do not indicate any more immunity than a small scar with little reaction.

If a reaction is not found on the second or sixth day, the vaccination must be repeated, as either the virus was impotent or the technique was at fault.

L. B. GROVNE, M.D., Kansas City, Kan.

ALBINO RATS FOR PREGNANCY TESTS

To the Editor.—We have read with interest the communications in *THE JOURNAL* in regard to the use of rabbits in performing the urine pregnancy test. We are entirely in accord with the opinion that some substitute test should be developed so that a great saving in this important food animal may be made. We also agree that even though rabbits are used for this hormone test they are still edible if they are not infected by the injected urine. As they are killed forty-eight hours after injection of the urine there has been no long time interval for the rabbits to develop any serious infection, but still there is the possibility.

It has been known for some time that the female albino rat or allied strains can be used in place of the rabbit in the performance of this test. Several articles have already appeared in the medical literature in this regard and credit should be given to Dr. Udal J. Salmon and his co-workers from the laboratories of the Mount Sinai Hospital, New York, for development of a rational procedure (*A Six Hour Pregnancy Test*, *J. Clin. Endocrinol.* 2:167 [March] 1942). It must be stated, however, that other authors have previously reported the use of the rat in performing this test. Drs. H. M. Evans and M. E. Simpson used rats in 1930 (*California & West Med.* 32:145 [March] 1930). Drs. Frederick Ebersson and M. H. Silverberg obtained reliable results after thirty-six hours, using rats for injection of the urine (*Anterior Pituitary Hormone in Urine*, *THE JOURNAL*, June 27, 1931, p. 2176).

We have been studying this test for several years and have concluded that the rat is a suitable substitute for the rabbit and that there are several advantages in its use. We have just completed checking a series of 100 cases using the white rat and the rabbit in every instance. We are entirely satisfied with the results.

One word of caution, however, must be added. Experience in the reading of this test in rats is absolutely necessary, and care must be used in observation of the breeding and selecting of the rats for use.

T. L. RAMSEY, M.D.
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Toledo, Ohio

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL* May 29 page 333

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* August 24 *Part III* June and also at different times at various centers having 5 or more eligible applicants Sec Dr J S Rodman, 225 S 15th St Philadelphia

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written* Philadelphia Sept 27 *Oral* Philadelphia Nov 56 Final date for filing application is August 16 Sec Dr C Guy Lane 416 Marlboro St, Boston

AMERICAN BOARD OF INTERNAL MEDICINE *Oral* Chicago June 9 11 *Written* Oct 18 Final date for filing application is Sept 1 Asst Sec Dr William A Werrell 1301 University Ave Madison Wis

AMERICAN BOARD OF OPHTHALMOLOGY *Oral Parts I and II* New York City June 45 Chicago Oct 89 Sec Dr John Green 6830 Waterman Ave St Louis

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Chicago October Final date for filing application is July 1 Sec Dr Dean M Lierle 1500 Medical Arts Bldg Omaha Neb

AMERICAN BOARD OF PEDIATRICS *Written* Locally Oct 8 *Oral* New York City Nov 20 21 and Cincinnati Dec 11 Final date for filing applications is Aug 10 Starting July 1 1943 Group I will be abolished Sec Dr C A Aldrich 707 Fullerton Ave Chicago

AMERICAN BOARD OF SURGERY *Written Part I* Oct 7 Final date for filing application is Aug 1 Sec Dr J S Rodman 225 S 15th St Philadelphia

AMERICAN BOARD OF UROLOGY *Oral* Chicago February *Written* Various centers December Final date for filing application is Nov 1 Sec Dr Gilbert J Thomas 1409 Willow St Minneapolis Minn

Miscellany

SAMUEL BARD'S INOCULATION AGAINST SHEEP POX

Samuel Bard, the physician who directed the foundation of great medical centers in New York and who successfully treated George Washington for carbuncle paid much attention to the care and breeding of sheep particularly an imported Merino brand In 1811 he published a book¹ in which the diseases of Merino sheep mainly sheep pox (ovinia) occupy a large part By the similarity of sheep pox to smallpox he was led to experiment with inoculation against sheep pox but without success He found it difficult to inoculate the disease and when the sheep or lamb took the disease many died but then he was not certain that the disease had not been taken before the inoculation He concluded that a few took the disease from inoculation and went through the attack with safety but he does not state whether any prevention resulted He vaccinated 7 sheep with cowpox but was not sure that one took the cowpox He found the analogy between sheep pox and smallpox so close that if he should have the chance he would again attempt inoculation It should be noted that Bard did not attempt to obtain any specific vaccine against sheep pox Bard's experiment is a historically interesting early attempt to apply the principle of preventive inoculation, not vaccination, of smallpox to an animal disease

1 Bard Samuel A Guide for Young Shepherds or Facts and Observations on the Character and Value of Merino Sheep With Rules and Precepts for Their Management and the Treatment of Their Diseases as Well as of Sheep in General Collected from the Latest and Best Writers on These Subjects and Confirmed by the Experience of the Author and His Friends New York 1811 See also Langstaff John Brett Doctor Bard of Hyde Park The Famous Physician or Revolutionary Times the Man Who Saved Washington's Life New York E P Dutton & Co Inc 1942

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Charitable Hospitals Liability for the Negligence of Servants and Agents—The plaintiff, a special nurse, while caring for a pay patient in the defendant hospital, was injured through the negligence of a student nurse employee She brought suit against the hospital, which disclaimed all liability on the ground that it was a charitable corporation and as such was not liable for the negligence of its servants The trial court ruled apparently that, while a charitable corporation is not liable to a beneficiary of its charity for the negligence of its servants, the plaintiff was a stranger to the charity and hence could recover from the hospital for its servant's negligence The hospital appealed to the United States Court of Appeals for the District of Columbia

The courts of the several American states have held every possible way with respect to the liability of a so called charitable hospital for the negligence of its agents and servants but, in the opinion of the Court of Appeals on principle a charitable hospital should be subject to liability for the negligence of its servants and agents without regard to the persons injured by such negligence For negligent or tortious conduct, said the court, liability is the rule, immunity is the exception Generally charity is no defense to tort, and one who undertakes to aid another must do so with due care The court then adverted to the fact that in many American jurisdictions when a charitable enterprise is formally institutionalized, such as by incorporation or by creating a trust, owing to a misapprehension of the law presently to be referred to, the burden of the negligence of the servant of the institutionalized charity is cast not on the charity but on the persons whom the negligence injures But when an individual human being undertakes a habit or business of charity he does not acquire such an immunity for his negligent acts or for the negligent acts of his inferior functionaries Thus, said the court, indeed is a strange distinction The hospital may maim or kill the charity patient by negligence, yet the member of the medical staff operating or attending without pay or thought of it dare not lapse into a tired or hurried moment.

The court then discussed the historical background of the rule of immunity adopted in so many American jurisdictions In 1846 in an English case, *The Feoffees of Heriot's Hospital v Ross*, 1846 12 Clark & Fin 507 513, 8 Eng Reprint 1508, Lord Cottenham in passing on an action for damages for the wrongful exclusion from the benefits of the charity and not for any personal injury inflicted in the operation of the charity on a beneficiary or other person said by way of dictum

To give damages out of a trust fund would not be to apply it to those objects whom the author of the fund had in view but would be to divert it to a completely different purpose

Subsequent English cases however decided in 1866 and 1871 in effect overruled that dictum Nevertheless, when the first American case involving the liability of a charitable institution for the negligence of its servants was decided in 1876 (*McDonald v Massachusetts General Hospital*, 120 Mass 432, 21 Am Rep 529) the dictum of Lord Cottenham formed substantially the basis of the decision holding the charitable hospital immune from liability in apparent ignorance of the fact that the rule was already dead in England From the Massachusetts case the doctrine spread with modifications throughout the United States The court next considered the state of the law in this respect in the United States Five states (Delaware New Mexico North Dakota South Dakota and Vermont) appear to have no decisions on the subject Eleven states (Arkansas, Illinois Kansas Kentucky Maryland Massachusetts Missouri Oregon Pennsylvania, South Carolina and Wisconsin) apparently adhere to the rule of full immunity

1 Full immunity as used by the court is used in reference to a plaintiff's ability to maintain a suit rather than whether the charity may be liable under special circumstances as for administrative negligence or when there is insurance or satisfaction may be had from business property It means therefore that ordinarily neither business beneficiaries may recover through one or both may do so in exceptional situation as indicated above

from suits. Three states (Minnesota, New Hampshire and New York) and apparently a fourth (Oklahoma) have imposed unqualified liability on charitable hospitals for the negligence of their servants; the rule adhered to in England, Canada and New Zealand. In seven states (Alabama, California, Florida, Georgia, Idaho, Oklahoma and Utah) strangers to a charity and paying beneficiaries may recover, but the question has been reserved as to nonpaying ones. Colorado and Tennessee impose liability if the charity is protected by insurance, and Tennessee, Georgia and Mississippi, and possibly also Massachusetts and Pennsylvania, apply liability to the extent of property owned by the corporation and used not directly in carrying on the charitable enterprise but for business purposes to produce income for its support. In thirteen states (Connecticut, Indiana, Iowa, Louisiana, Michigan, Nebraska, New Jersey, North Carolina, Ohio, Rhode Island, Texas, Virginia and Washington) apparently strangers are allowed to recover but beneficiaries are denied relief. In the remaining seven states (Arizona, Maine, Mississippi, Montana, Nevada, West Virginia and Wyoming) there do not appear to be any cases involving strangers but there are decisions that accord immunity to the charity for injury to beneficiaries.

The court next discussed the policies supporting and the policies against immunity for charitable hospitals. In support of immunity, said the court, the following reasons are commonly advanced. Liability, it is contended, would (1) violate the corporate charter; (2) misappropriate the funds to unauthorized purposes and to persons not within the intended class of beneficiaries; (3) in effect, indemnify the trustees if the charity is organized as a trust, and the consequences of their own or their subordinates' misconduct; (4) dissipate the fund in damages and deprive the favored class or the public of the charity's benefit; and (5) deter donors from creating a charity or from adding to its funds by subsequent donations. When an attempt is made to modify the rule of immunity in some of the ways previously mentioned and to reconcile the modifications with the reasons advanced for immunity, the confusion comes to a climax. The modifications from full immunity tend to take into consideration that departure from the donor's intent, dissipation and deterrence also take place equally whether damages are paid to a stranger or to a patient. The fact that in modern days insurance is available to guard against dissipation of funds takes much away from the argument that liability would tend to dissipate the charity's funds if that argument ever were valid. However, said the court, we do not believe that holding a charity liable for the negligence of its servants would tend to dissipate its funds or to deter donations. No statistical evidence has been presented to show that the mortality or crippling of charities has been greater in states which impose full or partial liability than where complete or substantially full immunity is given. Nor is there evidence that deterrence of donation has been greater in the former. Charities seem to survive and increase in both, with little apparent heed as to whether or not they are liable for torts.

On the other hand, continued the court, we must weigh the cost of the charity's negligence to the victim, who must by himself bear the full burden of his injury. We must consider also that much of modern charity or philanthropy is big business in its field and has a capacity for absorption of loss which did not exist in the typical nineteenth century small hospital. Further, while the larger hospitals generally are not operated for profit, much of their revenue comes from paying patients. To that extent, at least, the institutions should not be regarded as charitable and the paying patient, if he is injured and cannot recover, pays twice that others may have healing where he has injury. Finally, in recent years the real deterrents to donation have been taxation and the fears of well informed persons concerning the future of large accumulations of property, which fears arise from economic trends much more fundamental than making charitable institutions liable for their torts. Among the factors calling for a policy of nonimmunity for hospitals are (1) the tendency of immunity to foster neglect and of liability to induce care and caution, (2) the departure in affording immunity from the general rule of liability, (3) the anomaly of exempting charitable corporations and trust funds when charity is not a defense to others, and (4) the

injustice of giving benefit to some at the cost of injury to others and of the injured individual's having to bear the loss wrongfully inflicted on him at a time when the direction of the law is toward social distribution of losses.

Finally, the court undertook to discuss the so-called "stranger-beneficiary" distinction which motivated the trial court as it does the courts of so many states. Such a distinction as applied by those courts renders the hospital immune with respect to injuries inflicted on a beneficiary of a charity but holds the hospital liable for injuries inflicted on a stranger to the charity. It, said the court, immunity is founded on some form of ultra vires premise, there is no room for treating strangers and beneficiaries differently. So, too, paying damages to either class constitutes violating the donor's intention and misappropriating the fund to unauthorized purposes. If the matter is regarded as diverting the fund to persons not within the class intended for aid, it is impossible to assume that the donor intends every one except the special object of his bounty to have reparation. In reason the departure, in this respect, would be the greater when a stranger recovers since the beneficiary is in the hospital as an object of help and not as one whose last state is to be made worse than his first. No more tenable foundation exists in considerations of preserving the charitable fund, preventing its dissipation, depriving the intended class or the public of its success, cutting off creative or sustaining donations and the like. The reasons already stated to show that these do not support unqualified immunity apply with equal force to a limited one whatever its form or extent. It damages dissipate the fund or deter donations, they do so equally whether paid to a stranger or to a beneficiary. When account is taken of the numbers in both classes and the probable burden of risk toward each the heavier risk perhaps is incurred in favor of strangers. The distinction contended for by the trial court favors at the expense of the only person the fund is created and maintained to aid. He alone is excluded. If preservation of the fund or encouragement of donation required immunity, neither could justify the distinction between stranger and beneficiary. If the charity can assume the risk as to all the rest of the world and survive it can do so for those it is designed to help. Finally, the idea of waiver is advanced, namely, that the beneficiary by accepting the tendered aid impliedly agrees that that is all he may accept and waives any right of recourse for wrong done, while strangers do not do so. The notion that there is any such agreement or waiver is entirely fictional. Usually the beneficiary is ill or hurt, he does not haggle about terms, he expects care, not carelessness. Few hospitals would announce a policy of requiring such a waiver as a condition of entrance, and few patients would enter under such a condition unless forced to do so by poverty. In that case there could be no real choice. The idea of waiver, therefore, as implied from reception of benefit, amounts merely to imposing immunity as a rule of law in the guise of assumed contract or renunciation of right when all other reasons are found insufficient to support the distinction.

The court accordingly concluded that an incorporated charity should be liable for the injuries inflicted by reason of the negligence of its servants and agents. The judgment in favor of the private nurse was accordingly affirmed.—*President and Directors of Georgetown College v Hughes*, 130 F (2d) 810 (1942)

Society Proceedings

COMING MEETINGS

HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION, CHICAGO, BEGINNING JUNE 7. DR. OLIV WEST, 535 NORTH DEARBORN ST., CHICAGO, SECRETARY.

American Academy of Tuberculosis Physicians, Chicago June 9-10. Dr. H. J. Corper, 3800 East Colfax Ave., Denver, Secretary.
American Association of Genito Urinary Surgeons, Stockbridge, Mass. June 10-12. Dr. Charles C. Higgins, 2020 East 93d St., Cleveland, Secretary.
American College of Radiology, Chicago June 6. Mr. Mac F. Cahal, 540 North Michigan Blvd., Chicago, Executive Secretary.
American Ophthalmological Society, Hot Springs, Va., June 10-12. Dr. Walter S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary.
Montana Medical Association of Billings, July 7-8. Dr. Thomas F. Walker, 206 Medical Arts Building, Great Falls, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, New York

33 113 200 (Feb) 1943

- Present Epidemiologic Basis of Environmental Sanitation G W Anderson Minneapolis—p 113
- A Physician Looks at School Dental Programs G M Wheatley New York—p 120
- Salmonella Typing in Public Health Laboratory E K Borman A M Wheeler D Evelyn West and F L Mickle Hartford Conn—p 127
- Isolation of *Neisseria Flava* from Genitourinary Tract of Patients C M Carpenter Rochester N Y—p 135
- Pyrex Suspensions in Turbidimetric and Colorimetric Determinations Standards of Comparison for Bacterial Suspensions and in Resazurin Test F J Hallinan Albany N Y—p 157
- Single Line Index as an Administrative Aid V A Van Volkenburgh Albany N Y—p 141
- Ways to Community Health Education M Gonzalez Rivera Mexico D F Mexico—p 146
- Methods of Transmitting Material to Laboratory for Gonococcus Cultural Studies O F Cox and Mary A McDermott Boston—p 149
- Action of Finely Divided Magnesium on Lungs L U Gardner and A B Delahant Saranac Lake N Y—p 153
- *Milk Borne Outbreaks Due to Serologically Typed Hemolytic Streptococci T D Dublin Evelyn F H Rogers J E Perkins and F W Graves Albany N Y—p 157
- Changes in Bacterial Cell Brought About by Action of Germicides and Antibacterial Substances as Demonstrated by Electron Microscope S Mudd Philadelphia—p 167
- Epidemiologic and Experimental Observations on Possible Significance of Rodents in Suburban Epidemic of Poliomyelitis C W Jungblut New York and G Daildorf Valhalla N Y—p 169

Milk Borne Outbreaks Due to Hemolytic Streptococci

—During April 1942 a small milk borne outbreak of infection of the throat due to the hemolytic streptococcus occurred in a relatively isolated rural community of approximately 275 inhabitants. Incriminating milk was secured from a large cheese plant handling milk from three hundred and fifty-six producers. The outbreak involved 44 or 18 per cent of 239 persons included in the study group. 77 per cent of the cases occurred in persons 15 or more years of age. 61 per cent of whom were males. All the cases occurred during three weeks. There were no deaths. Scarlatinal rashes were observed in 8 and since the causative organism was able to elaborate erythrogenic toxin, it appears illogical to distinguish between cases of septic sore throat and scarlet fever. Articular manifestations (pain and limitation of movement) were experienced by 16 patients but some also complained of severe polyarthritides with swelling, redness and tenderness about the joints. In 4 the migratory articular involvement clinically suggested active rheumatic fever, in these patients one to two weeks elapsed between throat symptoms and the articular manifestations. Throat cultures were secured at the time of or shortly after the acute episode from 35 of the 44 patients. The cultures of 23 yielded hemolytic streptococci; those of 17 were identified serologically as Lancefield group A, of 2 as group B, of 3 as group D and that of 1 could not be classified. Although the cheese plant handled milk from 6069 cows it is believed that the cow responsible for the outbreak was located by means of Breed smear examination of cans of milk received at the plant and subsequent veterinary and bacteriologic follow-up of suspected herds. On the involved farm, prior to the outbreak there had been 1 case each of scarlet fever, sore throat and so called grip. The suspected cow had suffered an injury to a leg followed by acute mastitis on manipulation of the injured part by the person with the sore throat. Hemolytic streptococci obtained from the throats of the people on the farm and from tissue from the udder of the cow

at necropsy were of type 3. To prevent any possibility of transmitting infection through the cheese, that produced during the outbreak was embargoed and released only after it was reprocessed by a method involving its being heated above 170 F for several minutes.

American Review of Tuberculosis, New York

47 113-230 (Feb) 1943

- *Army & Navy Examination for Tuberculosis Army Physical Examination Terms in Southern New York District Second Corps Area D E Ehrlich I A Schiller and H R Edwards New York—p 113
- Combating Tuberculosis in Union of Socialist Soviet Republics F Levin—p 121
- Seriousness of Minimal Pulmonary Tuberculosis S C Stein and H I Israel Philadelphia—p 125
- Unrecognized Tuberculosis in a General Hospital J E Farber and W T Clark New York—p 129
- The Heart in Pulmonary Tuberculosis Studies of Auricular Complex in Electrocardiogram T T Fox and H S Kremer New York—p 135
- *Pulmonary Manifestations in Extrapulmonary Tuberculosis Roentgenologic Study of 100 Cases L Tepper and G Jacobson Los Angeles—p 156
- Erythema of Extremities in Tuberculosis L S Trotter Albuquerque, N M—p 168
- Functional Capacity of Contralateral Lung W K Whitehead Northville Mich A Whitman and B Shacter Detroit—p 173
- Collapse Therapy Trends in Frequency and Type of Surgical Procedures in Treatment of Pulmonary Tuberculosis Statistical Review of Institutional Experience During Five Year Period 1937-1941 G J Drolet New York—p 184

Roentgen Examination for Tuberculosis—A review of the routine roentgen examination of 114,130 national guardsmen and selective service registrants in the Southern New York District of the Second Corps Area from Nov 25, 1940 to April 1, 1941, Ehrlich, Schiller and Edwards point out, discloses that 1,304, or 1.14 per cent, were rejected under MR 1-9. Of these 1,156, or 101 per cent, were classified as chronic pulmonary tuberculosis. 435 as clinically significant and 721 as arrested. A subsequent complete study of the rejected men by the New York City Health Department revealed that the percentage reclassified as acceptable for army service after previous rejection on the basis of the paper film was half that of those disqualified on the basis of the 4 by 5 inch film. This evidence suggests that the screening by the 4 by 5 inch photoroentgenogram required greater conservatism in interpretation than the 14 by 17 inch paper roentgenogram. The financial saving to the government in the elimination from service of those with known tuberculous lesions may be estimated at \$13,000,000. Because of the cooperation that the Southern New York Army Physical Examination Team has had from the Bureau of Tuberculosis of the New York City Department of Health in studying and following up the rejected registrants, it has been possible to reclaim subsequently a small but definite percentage of the men initially rejected because of suggestive shadows or of those who had bronchopneumonia which was only temporarily disqualifying.

Pulmonary Manifestations in Extrapulmonary Tuberculosis—To determine whether a characteristic roentgen picture can be formulated and recognized as of hematogenous origin and whether or not such knowledge can be of practical import to the clinician in his management of tuberculosis Tepper and Jacobson studied the roentgenograms of 100 patients with extrapulmonary tuberculosis who had had one or more chest films. They were seen in the wards or clinics from 1930 to 1941. Excluded from the study were patients less than 15 years of age and persons with tuberculous laryngitis, enteritis, meningitis and tuberculosis of the skin and eye. For comparison another 100 adults with pulmonary tuberculosis but with no clinical evidence of extrapulmonary tuberculosis were reviewed. In the first group 79 showed roentgen evidence of post-primary pulmonary involvement. The pulmonary lesions were fibrotic and calcific, apparently inactive with proliferative nodular and exudative manifestations decreasingly common in this order. The tendency of these lesions toward bilateral symmetrical, apical and subapical distribution in 74 of the 79 suggests a hematogenous origin and emphasizes the systemic nature of the disease. There was roentgen evidence of cavitation in 15. The cavities were mostly thin walled with bilateral symmetrical distribution. Although the putum of 12 was positive only, 1

showed evidence of bronchogenic spread. When multiple films were available, stability or regression of the pulmonary lesion and the absence of bronchogenic spread were the principal features. The chest films of the other 100 patients emphasized the acute exudative cavitary nature of adult pulmonary tuberculosis with its tendency to bronchogenic spread. A few of the patients in the control group exhibited a pulmonary picture similar to that in those with known extrapulmonary foci. The ability to recognize the chronic disseminated or hemitogenous form of pulmonary tuberculosis should be of value in prognosis and treatment to both the surgeon treating extrapulmonary tuberculosis and the tuberculosis specialist.

Archives of Internal Medicine, Chicago

71 157-300 (Feb.) 1941

- *Ventricular Tachycardia: Analysis of 36 Cases. C. Williams and F. H. Ellis. Boston—p. 117.
- Studies in Clinical Significance of Serum Protein. II. Relationship Between Serum Globulin Ratio, Albumin Globulin and Total Protein. B. M. Kagan. Richmond, Va.—p. 157.
- Sickle Cell Anemia in White Race. Report of Cases in Two Families. M. A. Oden. Peoria, N. J.—p. 161.
- Surgical Treatment for Carcinoma. Prognosis Subsequent to Omentopexy. H. B. Cates. Los Angeles—p. 183.
- Acute Stenotic Conduction in Syndrome of Short PR Interval and Prolonged QRS Complex. F. I. Fox, Janet Travell and I. M. Hays. New York—p. 206.
- Structure and Significance of Tissue Glycogen in Health and in Disease. S. S. Kohn. Chicago—p. 219.
- *Myeloid Leukemia of Erythrocytes and Leukemia. F. H. Reisner. St. Louis—p. 239.
- Syndrome of Metastatic Erythrocytosis. K. M. Lint. New York—p. 250.
- Pituitary in Internal Medicine. Review of Literature on Pituitary Gland (1930-1940). Alice G. Hildebrand and F. H. Reisner. New York—p. 251.

Ventricular Tachycardia—The 36 cases of paroxysmal ventricular tachycardia that Williams and Ellis report are believed by them to be the largest series from one hospital. The cases were found among approximately 61,000 electrocardiograms made during twenty years. The electrocardiogram of 24 of the 36 revealed the attack to be uninterrupted, while in 12 the attacks were short and the periods interposed in between showed normal supraventricular conduction. These two types have been arbitrarily designated as 'persistent' and 'intermittent' tachycardia. Organic heart disease was present in all but 1 patient. In 28 it was of the degenerative type. Digitalis intoxication was clearly associated with the attack of 8, and it was the probable precipitating factor in 9 others. One patient had received large doses of both digitalis and quinidine prior to the onset of the attack. Attacks occurred in association with myocardial infarction in 6 and myocardial infarction was probably present in 3. Twenty-one patients died in the hospital, 8 during the attack and 12 (all but 1 of the remainder) within a month of its cessation. The prognosis is serious, but it is essentially the prognosis of the associated heart disease. The prognosis of the "intermittent" type was somewhat better than that of the "persistent" type.

Erythrocytes in Fetal Erythroblastosis—Reisner tried to determine to what extent the blood picture in fetal erythroblastosis simulates the picture seen in experimental anemias due to autoantibodies. He made Price-Jones curves on the cord or peripheral blood of 12 cases of fetal hydrops and 12 of icterus gravis at the onset of illness. In 23 a characteristic biphasic curve, consisting of a normocytic and a macrocytic peak or two macrocytic peaks, was observed and in 1 a monophasic microcytic curve was observed. A blood smear in this last case revealed spherical microcytes, but three months later the smear was normal. The morphologic changes in the erythrocytes in fetal erythroblastosis resemble in some respects those observed in experimental hemolytic anemias due to antigen-antibody reactions. Examination of the blood smears of 6 cases of severe fetal erythroblastosis revealed varying numbers of megaloblasts, and postmortem examination of 4 cases revealed varying degrees of hepatic damage. The presence of megaloblasts and the macrocytosis, in part at least, may be the result of a deficient erythrocyte maturation factor due to hepatic damage. The blood destruction in the disease is believed to be best explained on the basis of an antigen-antibody reaction in the fetus. The hepatic damage may possibly be due to the same cause.

Archives of Otolaryngology, Chicago

37 303-462 (March) 1943

- *Facial Palsy of Otitic Origin with Special Regard to Its Prognosis Under Conservative Treatment and Possibilities of Improving Results by Active Surgical Intervention. Account of 264 Cases Subjected to Reexamination. K. Kettel. Copenhagen, Denmark—p. 303.
- Reported Recoveries from Staphylococcal Meningitis, 1893-1941. W. J. MacNeal. Frances C. Irisher and Anne Blevins, New York—p. 349.
- Treatment of Victims of Poison Gas, with Special Reference to Use of Bronchocope. H. L. Mitchell, Lakewood, Ohio—p. 371.
- Otitis Fibrosa Cystica. Differential Diagnosis, with Note on Repair of Maxillary Lesion by Cartilaginous Isograft. V. Fox and V. Taglia, Chicago—p. 377.
- Control of Head Noises. Their Illusions of Loudness and of Timbre. F. P. Fowler, New York—p. 391.
- Tuberculosis and the Otolaryngologist. W. F. Hulse. Cleveland—p. 399.
- Effect of Cigarette Smoke on pH of Throat. N. D. Fabricant, Chicago—p. 401.
- Abscess of Temporoparietal Lobe. Review, with Report of Case Complicated by Petrositis. M. D. Grant, New York—p. 411.
- Review of Allergy for 1941. F. I. MacQuiddy, Omaha—p. 440.

Facial Palsy of Otitic Origin—The material on which Kettel bases his report was compiled in the Municipal Hospital in Copenhagen, and the 264 records comprise all the patients with peripheral facial palsy caused by acute suppurative otitis media admitted between 1906 and January 1938. No patient was observed for less than one year. Of the 264 patients 169 were reexamined, the rate of only 20 was unknown. When the reexamined patients are divided into those whose paralysis disappeared completely, those whose paralysis had apparently disappeared (being in evidence only during movements of the facial muscles but not in repose) and those whose paralysis had left its distinct marks on the face even at rest, it is seen that the majority of the conservatively treated patients fell into the first two groups.

Bulletin of Johns Hopkins Hospital, Baltimore

72 65-126 (Feb.) 1943

- *Experimental Demonstration That Periarthritis Nodosa Is Manifestation of Hypersensitivity. A. R. Rich and J. E. Gregory, Baltimore—p. 67.
- *Epidemic of Acute Respiratory Disease Associated with Atypical Pneumonia. H. A. Iverson, Baltimore—p. 89.
- Skin Sensitivity to Mycobacterial Tuberculin in Sarcoidosis. W. S. Brooke and R. Day. Baltimore—p. 101.
- Minimal Maintenance Requirement of Enzymic Casein Hydrolyzate. A. J. Mueller, D. Fickas and W. M. Cox Jr., Evansville, Ind.—p. 110.

Periarthritis Nodosa and Hypersensitivity—Rich and Gregory produced periarthritis nodosa in all of its details in rabbits by creating conditions similar to those obtaining in serum sickness in the human being. The aural flush and the rise in body temperature that occurred in rabbits a week after the injection of foreign serum were believed to be analogous to serum sickness in man. The widespread destructive vascular lesions produced in the rabbits exhibited all the characteristics of periarthritis nodosa. Actual aneurysm formation was not encountered, but it is often absent in human periarthritis nodosa. In many vessels the condition necessary for aneurysm formation was demonstrated. Had hypertension been present, the totally necrotic segment of the wall would have given way. The other local complication of periarthritis nodosa which occurs in some human cases, i. e. infarction from vascular occlusion, was encountered only once among the animals. The experiments demonstrate that periarthritis nodosa is one manifestation of anaphylactic hypersensitivity. Clinical and pathologic evidence supported by the experiments shows that widely different types of sensitizing antigens can cause periarthritis nodosa in man and suggest the advisability of attempting to discover and to eliminate the responsible antigen in each case so diagnosed. Acute diffuse glomerulonephritis occurred in a few animals in which a hypersensitive reaction developed to the foreign serum. This supports the view that some cases of glomerulonephritis in man may be due to hypersensitivity.

Acute Respiratory Disease and Pneumonia—Iverson reports the occurrence of an epidemic of primary atypical pneumonia of unknown cause in a boys' camp in Maine between July 22 and Aug. 14, 1942. At the same time numerous cases of respiratory disease varying from a mild common cold without fever to the severe picture of atypical pneumonia, except that no pulmonary involvement was demonstrated, were observed. A common etiologic agent was believed to be operative in most

of both types of cases. Councilors estimated that 60 to 80 boys of the 100 of the camp group suffered with cough during eight weeks. 35 with respiratory disease and fever were confined to bed. In these 35 moist rales over the pulmonary fields developed in 15 and 7 showed definite x-ray evidence of atypical pneumonia. The 28 with respiratory disease with fever but without x-ray evidence of pneumonia were ill for as long as seventeen days. Although to a lesser degree, these patients had about the same symptoms as those with pneumonia: severe paroxysms of coughing in several, nausea, vomiting, dizziness and epistaxis; moist rales in 8, sibilant rales in 4, conjunctivitis and tympanic congestion in a few and easier breathing than in the pneumonia group. During the camp period of eight weeks 8 boys became ill with chickenpox. The epidemic had a higher rate of incidence among the younger boys and in the dormitory rooms of the younger boys. It cannot be determined whether age or housing played the greater part. Presumably the disease was spread by contact. There was no evidence that birds or insects were agents of transmission. A long incubation period (six to thirty days) for the disease is suggested by the close contact of 12 boys for four days, 6 of them became ill.

California and Western Medicine, San Francisco

58 1-54 (Jan) 1943

- Care and Management of the Volunteer Blood Donor J R Upton, San Francisco—p 7
Bronchocopy Its Role in Treatment of Asthma J L Gompertz Oakland—p 10
Leg Lengthening Operation Its Present Status Alvin Brockway Los Angeles—p 11
Classification of Myelitis W F Schaller San Francisco—p 13
Selective Anesthesia C J Betlach Santa Barbara—p 16

58 55-102 (Feb) 1943

- Sulfathiazole Reactions in Toxic and Nontoxic Individuals R C Green M L Steckel and J M Michener Camp Haan—p 62
Pneumomediastinum and Subcutaneous Emphysema Following Thoracocervical Trauma Recovery Following Conservative Treatment B Friedman and S D King Fort Ord—p 66
Fertility Studies in Barren Marriages L Michelson San Francisco—p 69
Carcinoma of Prostate Recent Advances in Its Treatment R T Bergman Los Angeles—p 71
Hypothyroidism—Latent Symptoms W A Reilly San Francisco—p 73

Canadian Medical Association Journal, Montreal

48 191-290 (March) 1943

- Medical Report on St. John's Conflagration A W Farmer, D R Webster F M Woolhouse and R I Harris Toronto and Adeline Evans Watford Ont.—p 191
Early Recognition and Treatment of Shock Subcommittee on Shock and Blood Substitutes of Associate Committee on Medical Research National Research Council of Canada—p 196
Significance of Intracranial Injury of Newborn with Accompanying Hemorrhage F G McGuinness Winnipeg Man—p 206
Problem of Sailor's Skin R Forsey—p 212
*Observations on Body Heat in Engine Room A L Chambers—p 214
Further Results in Uterosigmoid Anastomosis and Cystectomy R A McComb and R Pearce Toronto—p 215
Meningitis in Childhood N Silverthorne Toronto—p 218
Intravenous Anesthesia W S Johns Calgary Alta.—p 222
*Incidence of Enterobiasis in Toronto E Kuitunen Ekbaum Toronto—p 229
Estrogen Therapy in Testicular Hypofunction S Gold Montreal—p 231
Spontaneous Mediastinal Emphysema D S Munroe and G A C Webb Toronto—p 232

Observations on Body Heat in Engine Room—To determine how rapidly a man's temperature increases in a saturated atmosphere and whether heat, humidity and poor ventilation have a deleterious effect on the affected ratings. Chambers recorded the oral temperature and pulse rate of ratings employed in the hotter parts of a ship. The ship was in the vicinity of Trinidad and in Port of Spain when the readings were obtained. The only unusual occurrence the readings revealed was a slight increase in pulse rate. The heat and humidity with the present system of ventilation seemed to have no harmful effect on the robust and physically fit stoker or galley worker. The ventilation could be improved.

Incidence of Enterobiasis in Toronto—Of 300 children and 50 adults examined for enterobiasis Kuitunen Ekbaum found respectively 60 and 52 per cent to be infected. The highest incidence was among the age groups 6 to 11 years and

the incidence was higher in girls than in boys. In the youngest age group most of the infected children were 2 years of age. Only 1 child less than 1 year of age had the parasites. Of 34 families examined comprising 139 persons, all or most of the members of 29 families were infected. In 26 of the families every child was infected.

Cancer Research, Baltimore

3 145-216 (March) 1943

- Metabolism of 3,4-Benzpyrene in Mice and Rats I Isolation of Hydroxy and Quinone Derivative and Consideration of Their Biologic Significance I Berenblum and R Schoental Oxford England—p 145
Id II Identification of the Isolated Products as 8-Hydroxy-3,4-Benzpyrene and 3,4-Benzpyrene-8-Quinone I Berenblum D Crowfoot E R Holday and R Schoental Oxford England—p 151
Glycerophosphatases of Rat Liver Cancer Produced by Feeding p-Dimethylaminoazobenzene Helen Quincy Woodard New York—p 159
Metabolism of Yale Carcinoma I M Belkin, Charleston S C and R G Stern New York—p 164
Effect of 2,7-Dihydroxynaphthalene on Tumor Incidence and Growth of Mammary Gland in Mice of Line A Albino and C₃H Strains E Elizabeth Jones Wellesley Mass.—p 168
Effect of Sodium Pentobarbital Paradichlorobenzene Amyl Acetate and Soyabean Oil on Induced Resistance to Transplanted Leukemia of Rat. J B Murphy and E Sturm New York—p 173
Skin Tunnel Device for Keeping Substances in Contact with Skin A Plaut and Alice C Kohn Speyer New York—p 176
Metabolic Studies in Patients with Cancer of Gastrointestinal Tract VII Conjugation of Phenols J C Abels G T Pack and C P Rhoads New York—p 177
Estrogen and 17-Ketosteroid Excretion in Patients with Breast Carcinoma H C Taylor Jr Flora E Mecke and G H Twombly New York—p 180
Further Studies of Specific Precipitin Antisera for Protein of Cancer Tissue I L S Mann and W H Welker Chicago—p 195
Id II Application of In Vivo Absorption L S Mann and W H Welker Chicago—p 196
Heterotransplantation of Human Pseudomyxoma Peritonei into Mice and Rats B Zondek F Mandl F Sulman A Brezezinski and Hertha Gabriele Tietz Jerusalem Palestine—p 198

Journal of the Mount Sinai Hospital, New York

9 891-936 (Jan-Feb) 1943

- Newer Concepts of Infection and Immunity and Chemistry's Part in Their Development J M Heidelberger New York—p 893
Id II M Heidelberger New York—p 897
Serum Calcium Clinical and Biochemical Considerations H L Jaffe and A Bodansky New York—p 901

Journal of Nutrition, Philadelphia

25 103-206 (Feb) 1943 Partial Index

- Contingent Action of Calcium and Vitamin D G R Sharpless Marie Sabol E Kathleen Anthony and Helen L Argetsinger Detroit—p 119
Role Played by Gastrointestinal Tract in Absorption and Excretion of Riboflavin H Selye Montreal Canada—p 137
*Retention of Vitamins in Meat During Cooking J M McIntire B S Schweigert L M Henderson and C A Elvehjem Madison Wis.—p 143
Experiments on Significance of Liberal Levels of Intake of Riboflavin L N Ellis Garden City N Y Anna Zmachinsky and H C Sherman New York—p 153
Renal Threshold for Ascorbic Acid in 12 Normal Adults with Note on State of Tissue Reserves of Subjects on Intake of Ascorbic Acid Approximating Suggested Daily Allowance Jane Sanford Lewis Clara A Storvick and Hazel M Hauck with cooperation of I Abel Patterson Shizuko Higano and Betty Hawthorne—p 185
Fat Metabolism and Goiter R E Remington and P L Harris Charleston S C—p 203

Retention of Vitamins in Meat During Cooking—McIntire and his co-workers report on the retention of thiamine, riboflavin and nicotinic acid in samples of pork ham and loin cooked under standard conditions. The average retention of thiamine in the meat alone is 70 per cent after roasting and broiling and 50 per cent after braising. For nicotinic acid it is 85 per cent after roasting and broiling and 65 per cent after braising and for riboflavin it is 85 per cent after any of the cooking methods. The total retention in the meat and the drippings is about the same for all the methods an average of 70 per cent for thiamine and at least 90 per cent for riboflavin and nicotinic acid. An appreciable amount of each of the vitamins is found in the drippings particularly in drippings from braised loin cuts. There is a wide variation in the thiamine and riboflavin content of different pork carcasses. Nicotinic acid is more constant.

Journal of Urology, Baltimore

19 203-210 (Feb) 1943

- *Sterile Pyuria with Special Reference to True Infective Abacterial Pyuria. L. Moore, Manchester, England—p. 201
- Clinical Approach to Cortical Renal Neoplasm. R. M. LeComte, Washington, D. C.—p. 204
- Pyelonephritis in Successive Pregnancies. G. van Wieren and K. H. Fekken, New Haven, Conn.—p. 223
- Incidence of Pyelonephritis in Successive Pregnancies. J. I. MacLean and C. I. Deming, New Haven, Conn.—p. 236
- Burden of Grafts in the Ureter by Means of Free Tissue Transplant Over Straight Vascular Tube. Experimental Study. J. W. Ford Jr., P. J. Stetson and A. R. Steven, New York—p. 249
- Influence of Denervation Contractions of Ureter. D. R. Chumako and H. Bars, Albany, N. Y.—p. 252
- Experimental Bladder Catheteritis by Adenocarcinoma of Bladder and Renal Calculi. Report of Case and Review of Literature. B. S. M. M., Baltimore—p. 259
- Toxic Renal Reaction Following Use of Sulfadiazine. H. S. Jeck and L. Orkin, New York—p. 260
- Sulfadiazine Reactions. Their Frequency and Treatment in Urologic Cases. K. W. Satterthwaite, Baltimore—p. 302
- Alleviation of Kidney and Urethra Following Sulfadiazine Therapy. K. I. Smith and W. N. Biser, Denver—p. 316
- Effect of Infection on Contraction of Sulfonamide. Urinary Contractions. K. W. Ford and G. K. Kevan, Los Angeles—p. 323
- Effect of Infection on Activity and Solubility of Sulfonamides in Urine. Report of Case and Experimental. O. J. Jensen Jr. and C. I. Fox Jr., New York—p. 331

Sterile Pyuria—Moore studied the records of the clinical laboratory at the Manchester Royal Infirmary for a period of thirty months. He found that 78 patients had urines which contained pus cells but proved sterile on culture. In addition 2 from another hospital have been added as they are examples of true infective abacterial pyuria. The cases are divided on an etiologic basis into three groups: noninfective infective with organisms demonstrable on direct microscopic examination of the centrifuged urinary deposit with the urine sterile on culture, and infective cases in which no organisms can be demonstrated by any method. The recurring trauma of a calculus in the urinary tract would be expected to give rise to sterile pyuria. An inflammatory focus outside but adjacent to the urinary tract did not give rise to any instance of sterile pyuria. In such cases the inflammatory exudate at the periphery of the inflammatory lesion is due more to the toxins excreted by the causative bacterium than to the bacteria themselves. When the inflammation affects contiguous structures the exudate may be free from organisms. Such sterile pyuria may occur when an abscess is in contact with but outside the kidney, renal pelvis, ureter, bladder or urethra. In the infective group the organisms of the bacterial infection of the urinary tract during the later stages, present in the urine have been so altered either by the tissue reaction or by treatment that they may fail to grow. There were 24 cases of urinary tuberculosis in the series. This is the most common cause of sterile pyuria, and it has become almost axiomatic that sterile pyuria indicates urinary tuberculosis. In all these cases the bacilli were demonstrable on microscopic examination of the urinary deposit and by special methods. In the 9 cases of the last group the infection of the urinary tract had been overcome, but the inflammatory cells had not, at the time of the examination, disappeared from the urine. Within a short time the pyuria in these cases disappeared. The excretion of organisms may be intermittent. Autosterilization was found only when the lesion was resolving. In a study of acute cholecystitis Gray has found that in cases of long standing the pus in the gallbladder is often sterile. In cases of carcinoma of the bladder, in the absence of bacterial infection, hematuria is usual. However, organisms are likely in the necrotic neoplasm and this may lead to inflammatory changes with resultant pyuria. In 2 such cases there was no infection but the pyuria was understandable. Neoplastic invasion often leads to some inflammatory tissue reaction and, if it is growing so rapidly that necrosis occurs, the dead tissue is probably a more potent inflammatory stimulus. In 5 patients with subacute prostatitis it was possible for inflammatory changes at the periphery of the gland and the base of the bladder to be due more to their toxins than to the bacteria themselves, therefore sterile pyuria may be expected sometimes. The most important and more common than is usually recognized type of sterile pyuria is true infective abacterial pyuria.

Incidence of Pyelonephritis in Successive Pregnancies—The 68 cases of pyelonephritis associated with pregnancy, a portion of 1,000 cases of pyogenic infection of the urinary tract followed and treated in the Department of Urology of the New Haven Hospital during the last twenty years, were personally treated by MacLean and Deming, and for the larger group they acted solely as consultants without the privilege of directing the therapy. Among the 68 there were seventy-four infections, sixty-five infections developed during pregnancy and nine post partum. One third of the infections occurred in the fifth and sixth months of pregnancy and nearly two thirds in the first and second pregnancies. There were five complications: one unilateral double kidney and ureter, one bilateral double kidney and ureter, one renal calculus, one anterior poliomyelitis and one death. The colon type of bacillus was the most common infecting organism and staphylococci the next. The bacteriology of cultures agreed with that of stained smears in 72 per cent of the cases. Pyogenic infection of the urinary tract during pregnancy is not in the authors' opinion an indication by itself for abortion. There is no association between the month of pregnancy at which the infection occurs and the ability to reach term provided conservative treatment is used, 85 per cent of the patients were carried to term or until the fetus became viable by conservative therapy, and of these 90 per cent were delivered of living infants. It is established that pyelitis reduced phenolsulfonphthalein test confirms pyelonephritis. The incidence of hypertension in the group was 27 per cent, this was no higher than that which occurs in any other group of cases of pyelonephritis not complicated by pregnancy. An acute infection of the upper part of the respiratory tract often immediately preceded the onset of the urinary infection. Dilatation of the ureter also was common. Mandelic acid and the sulfonamides were most effective in combating the urinary infection. The range of organisms for which they were effective was greater than that of any other single drug used. Therapy was given until the patient was either "cured" or delivered, only 25 per cent were "cured" at term, but within two weeks of delivery 90 per cent were asymptomatic and free from infection.

Sulfadiazine Reactions in Urology—Among 500 consecutive patients in the urologic service (300 hospitalized and 200 outpatients) given sulfadiazine to combat infection, Satterthwaite encountered fifty-eight reactions to sulfadiazine. Thirty-two toxic reactions occurred among the hospitalized and twenty-six among the outpatients, all yielded promptly to treatment (withdrawal of the drug and the forcing of fluids) and there were no fatalities. The toxic reactions were usually multiple and consisted of conjunctivitis, arthritic pain, severe anorexia, itching, dizziness, severe disorientation, severe nausea, severe nausea and vomiting, headache, dermatitis, hematuria with or without urinary concentrations and renal colic, leukopenia and partial suppression of the urinary output. Leukopenia, the most severe reaction to sulfadiazine therapy, develops not earlier than the third day and usually in the second week of treatment. The use by outpatients of a printed set of precautions has reduced the incidence of toxic reactions.

Kansas Medical Society Journal, Topeka

44 37-72 (Feb) 1943

- Fundamentals of Psychiatry. V. Personality Environmental Struggle. W. C. Menninger, Topeka—p. 37
- Bladder Ulcer. H. W. Davis, Plains—p. 41
- Fecaliths and Gallstones as Cause of Intestinal Obstruction. A. L. Gardner, Wichita—p. 41

Kentucky Medical Journal, Bowling Green

41 69-102 (March) 1943

- Primary Carcinoma of Fallopian Tubes and Ovaries. D. Y. Keith, Louisville—p. 74
- Pathology of Coronary Disease. E. S. Maxwell, Lexington—p. 79
- Lesions of Tendons and Tendon Sheaths. C. Wood, Louisville—p. 83
- Sulfonal Drugs in General Medical Practice. R. T. Routt, Sonoma—p. 85
- Medical Trends in the United States. E. F. Horine, Louisville—p. 89
- Care of the Newborn. W. W. Nicholson, Louisville—p. 94

Laryngoscope, St Louis

53 75-148 (Feb) 1943

- Experimental Surgery of Frontal Sinus Role of Ostium and Naso-frontal Duct in Postoperative Healing T E Walsh, St Louis—p 75
Local Sulfonamide Therapy in Otolaryngology A C Furstenberg, Ann Arbor Mich—p 90
Papilloma of Larynx Report of 2 Unusual Cases L R Boies Minneapolis—p 101
Osteophytes of Maxillary Sinus L W Dean Jr and W H Diehl, St Louis—p 112
Neurology in Otolaryngology H Brunner Chicago—p 117

Maine Medical Association Journal, Portland

34 45-62 (March) 1943

- Epidemic Meningitis Cerebrospinal Fever Spotted Fever R L Mitchell Augusta—p 45
Meningococcal Meningitis (Simplified Plan for Diagnosis and Treatment in the Home) R Martin Portland—p 49
Eligibility of Patients for Various Cancer Services M Warren Portland and F B Ames Bangor and H R Hobbs Augusta—p 51

Michigan State Medical Society Journal, Lansing

42 81-160 (Feb) 1943

- Newer Treatment of Common Skin Diseases C S Wright Philadelphia—p 105
Regional Enterocolitis Report of 31 Cases L B Ashley S G Meyers and L Reynolds Detroit—p 109
Glossy Tumor or Glomangioma Case Report J C Scully Menominee—p 118
Evaluation of Rectal Examinations H C Guess Buffalo—p 121

Military Surgeon, Washington, D C

92 1-112 (Jan) 1943

- Some Contributions to Medicine and Surgery Which Have Helped to Make Possible the Present State of Medical Preparedness (Presidential Address) J A Mattison—p 4
Relation of Early Care to Final Outcome of Major Face Wounds in War Surgery V P Blair—p 12
Our Opportunity for Preventive Dental Medicine E T Fischer—p 17
Considerations for Evaluation of Physical Disabilities C H Bradford—p 25
Standardization of Blood Grouping Serum J P Crawford and L D Hertert—p 31
Obstruction of Small Intestine from Primary Calculus W F DeWitt P G Morrissey Jr and S D Failla—p 34
Electrocardiographic Changes Involving ST Segment and T Wave A H Clagett Jr—p 37
Studies on Pathogenesis of Acute Hematogenous Osteomyelitis D B Simpson—p 43
Juvenile Glaucoma Report of Case in a 19 Year Old Soldier T L McKee—p 50
Biologic False Positive Tests for Syphilis Associated with Routine Army Immunizations R D Arthur and J M Hale—p 53
Report of Case of Oral Myiasis R B Shura—p 57
Treatment of 56 Meningococcus Carriers with Chemotherapy P S Strong and J M Blumberg—p 59
Use of Local Anesthesia in Treatment of Sprains (or Local Tissue Injury Without Open Wounds) I Leinwand—p 60
Severe Anaphylactic Reaction to Bee or Wasp Sting S Helm—p 64
Clinical Abstracts of an Unusual Case of Skin Sensitivity to Metal Tags Worn by Troops in the Field P N Unger—p 67

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- An Appraisal of the Medical Department at War J C Magee—p 113
Basic Principles Involved in Plans and Arrangements of Our Naval Medical Service R T McIntire—p 120
Public Health Task in War T Parran—p 129
Medical and Hospital Service Experience with Disabled Veterans of World War II C M Griffith—p 135
Medical and Epidemiologic Management of Selective Service Men Rejected for Military Service C R Reynolds—p 140
Wartime Problems of Selective Service L G Rowntree—p 149
Army Nurse Corps in Time of War Julia O Flikke—p 174
Work of the Medical Field Service School A S Dabney—p 178
Medical Service in the Red Army I N Zavalishin—p 189
Perforated Peptic Ulcer in an Army General Hospital D T Chamberlin and W C Wallace—p 193
Need for Accuracy in Conducting Hearing Tests in the Military Service S Zwierling—p 202

Biologic False Positive Tests for Syphilis—According to Arthur and Hale, the Kahn test of 14 of 94 men who had been recently vaccinated against smallpox and who also had received typhoid vaccine and tetanus toxoid showed more or less temporary changes. The changes in 4 appeared in the baseline Kahn test done at the beginning of the experiment and 2 of the men even showed a positive Wassermann reaction. It is probable that these reactions were influenced by the injections

received previously. All the serologic changes were temporary and faded out to normal negative reactions within six to seven weeks (one eight weeks) of the last injection. Tests at another laboratory also were negative. Physical examination of each man revealed no clinical evidence of syphilis. One man whose Kahn test was persistently negative was hospitalized for jaundice. Another man, who had changes in his baseline Kahn and Wassermann tests was released from service because of physical disability. His serum had turned negative according to the Kahn test but no final Wassermann test could be obtained. It appears that the army routine immunizations were responsible in 14.8 per cent of the cases for a temporary change in the normal negative Kahn reaction. It is during this period that an unfortunate diagnosis of syphilis may be made.

Minnesota Medicine, St Paul

26 145-224 (Feb) 1943

- Tuberculosis of Eye F H Haessler Milwaukee—p 161
Modern Methods of Control for Measles Scarlet Fever and Diphtheria A L Hoyne Chicago—p 167
Toxemias of Pregnancy J A Haugen Minneapolis—p 171
Use of Sulfonamides in Pregnancy M B Sinykin Minneapolis—p 173
Obstetrics in the Home E S Palmerton Albert Lea—p 176
Management of Occipitoposterior Positions W C Keettel Madison, Wis—p 179
Ectopia Cordis H J Prendergast St Paul—p 182
Embryology and Genetics in Ectopia Cordis Abdominalis F C Schuldt, St Paul—p 184

New England Journal of Medicine, Boston

228 177-210 (Feb 11) 1943

- Government's Obligation in Industrial Health W F Draper Washington D C—p 177
Diagnosis of Sprue in Nontropical Areas F J Ingelfinger Boston—p 180
*Treatment of Angina Pectoris with Testosterone Propionate Further Observations M A Lesser Boston—p 185
Hematology (concluded) W Dameshek Boston—p 188

Treatment of Angina Pectoris with Testosterone Propionate—Lesser reports successful results with testosterone propionate in the treatment of 46 patients with angina pectoris. Four patients of the group were studied by means of exercise tolerance tests before and during the course of therapy to obtain quantitative measurements of their improvement. Each patient exercised until an attack of angina pectoris was precipitated. The amount of work done before the development of an anginal attack was increased under testosterone therapy, and the severity of attacks as measured by the duration of the pain, was correspondingly diminished. Subjective improvement was reported before quantitative changes could be demonstrated. Testosterone propionate does not give immediate relief from an anginal attack as does glyceryl trinitrate. Further, improvement as to time and degree varies with the individual patient. Some patients experienced improvement after the second or third injection of testosterone propionate others not until the eighth, ninth or even tenth injection and still others required as many as fifteen to twenty-five injections over a period of months before therapy could be discontinued. An average of twenty-eight days elapsed before quantitative improvement was observed, and forty-three days elapsed before this improvement became decided. Not enough time has as yet elapsed to determine the permanence of the beneficial effects of testosterone propionate therapy. In a previous study this varied with the individual patient two to eighteen months. Patients who returned for further treatment because of a recurrence of pain stated that their attacks were less severe than originally, also fewer injections were required to control them.

228 211 240 (Feb 18) 1943

- Vascular and Neurologic Lesions in Survivors of Shipwreck I Immerman Foot Syndrome Following Exposure to Cold J C White—p 211
Fiedler's Myocarditis Report of Case H F Erbehardt and F E Bruno New Orleans—p 222
Respiratory Failure in Acute Poliomyelitis C Weisselberg Boston—p 225

Vascular and Neurologic Lesions in Survivors of Shipwreck—White has seen in survivors of shipwrecks painful swelling of the lower extremities occur after exposure to the cold water of the North Atlantic in the winter as well as after

exposure to the warm water of the Gulf Stream in April and May. In the true immersion foot syndrome after relatively brief exposure of the lower extremities to cold water there exists actual thermal injury to the skin and subcutaneous tissue. This feature is not present after prolonged exposure in warm southern waters; the painful swelling of the dependent parts in these cases is caused by a systemic disturbance. The inflammatory hyperemia, which reaches its height on about the third day after exposure, gradually disappears in a fortnight. The complete cutaneous anesthesia below the ankles in mild cases clears rapidly on warming but in the severe cases the anesthesia of the toes persists at the end of a fortnight and sensation over the remainder of the foot is reduced. The speed at which sensory recovery takes place over the dorsum of the foot is too rapid for nerve regeneration and is evidence that the majority of nerve fibers never actually degenerate. The fact that patients continue to suffer after their circulation has become normal suggests that the pain is neuritic, especially in the late stages. During the acute phase this may not be the entire reason. Rescued victims state that they are comfortable when the temperature of their feet is kept below 50 F. The probable disparity between the supply of blood to the tissues and the demand for oxygen on the part of the tissue cells constitute strong arguments for therapeutic cooling of hyperemic painful feet during the early stage of the postimmersion reaction. The common denominator in all conditions that follows thermal injury is injury to the blood vessels and nerves. For prevention all ship officers and seamen should be acquainted with the dangers of exposure to cold air and cold or even warm water. Much can be accomplished by emptying boots periodically and putting on another pair of socks, even previously wet socks that have been wrung out and partially dried. Frostbite of the hands and feet may be prevented by greasing them. Movement of the cold benumbed and dependent extremities, even temporary elevation and avoidance of constricting pressure on the legs from clothing or boot laces are helpful preventive factors. The immediate local treatment is the same whether a person has suffered actual freezing or the less severe chilling or immersion foot. The extremity should be exposed, kept cool, elevated slightly above the level of the heart and cleaned surgically. The rationale of treatment is to reduce tissue metabolism. For the most intense stage of hot congested feet and when the neuritic pains are severe fanning or a cool atmosphere are not sufficient and ice packs are required. After the intense hyperemia has subsided exposure of the legs to room air or at most to the breeze from an electric fan assures comfort. At night the neuritic pains may increase and the reapplication of ice packs may be necessary. Buerger's exercises prior to getting the patients out of bed are advocated. A diet high in protein and vitamin B is often helpful. Crushing the peripheral nerves through small incisions above the ankle for the relief of intractable pain in severe cases of neuritic pain might be of value. This incapacitates the subject for duty for three months. The author fails to see how blocking the sympathetic outflow to the lower extremities by paravertebral injections of procaine hydrochloride and by lumbar sympathectomy in the acute stage can result in any possible improvement. Absence of sweating proves that the terminal vasoconstrictor fibers are already interrupted. Lumbar sympathectomy is likely to be of value only in the late stage when the circulation remains insufficient. The neuritic pain, which appears with partial recovery of the nerves, continues until nerve function is restored.

228 241-270 (Feb 25) 1943

- *Vascular and Neurologic Lesions in Survivors of Shipwreck II. Painful Swollen Feet Secondary to Prolonged Dehydration and Malnutrition J. C. White, Boston—p. 241
Clinical Biotin Deficiency R. H. Williams, Boston—p. 247
Endoscopy E. B. Benedict, Boston—p. 253

Survivors of Shipwreck—White discusses the painful swelling of the feet of the crews of two lifeboats adrift for long periods in the Gulf Stream. There were fundamental clinical and etiologic differences from the "immersion foot" syndrome which develops in survivors of vessels lost in waters of the North Atlantic. Edema of the feet due to prolonged dependency and immobility was present in both groups. In the case of survivors torpedoed in the North Atlantic, additional

swelling and neuritic pain were caused by direct thermal injury to the skin, cutaneous capillaries and nerves by immersion in cold water. Immersion in warm water by itself cannot account for either the edema or the pain. Therefore this syndrome should not be classified as immersion foot, as direct thermal injury can be excluded. Hypoproteinemia from starvation was an additional cause of swelling in these survivors. Such edema is not generally considered to be painful. It is postulated, but not proved, that the stomatitis, sensory disturbances in the hands and feet and plantar tenderness that developed in these patients were caused by a deficiency of the antineuritic factor and other components in the vitamin B complex. Such a deficiency may occur at a greatly accelerated rate in the rapid tissue oxidation reactions that take place in men doing hard physical work in a hot climate on an extremely inadequate intake of fluid. An added deficiency in vitamin K was suspected in 3 of the men in whom the prothrombin times were determined. Loss of blood in the stools was common. The possibility that a deficiency of vitamins B and K may develop as a complication of shipwreck in a brief period as two and a half weeks has not been suggested heretofore.

Rocky Mountain Medical Journal, Denver

10 73-144 (Feb) 1943

- Injuries to the Chest C. I. Hegner, Denver—p. 90
*Congenital Cystic Disease of Lung. Report of Four Cases Treated Surgically W. R. Rumel, Salt Lake City—p. 95
Gastrointestinal Complaints Based on Structural Abnormalities T. C. Bruerlein, Salt Lake City—p. 103
Study of Maternal and Infant Deaths and Stillbirths in Wyoming Margaret H. Jones, Cheyenne, Wyo.—p. 106

Congenital Cystic Disease of Lung—In view of the fact that congenital cystic disease of the lung is not common and that its surgical treatment is relatively new, Rumel cites 4 cases in which such intervention was successful. The pathologic and clinical picture in each instance was entirely different and therefore the surgical procedure varied. The unilocular cyst of 1 patient was incised, in 2 complete pneumonectomy was necessary and in 1 intrapleural poudrage was carried out. All the patients recovered and have been relieved of their symptoms.

Virginia Medical Monthly, Richmond

70 121-172 (March) 1943

- Care of the Tuberculous Rejected for the Armed Forces C. H. Marc, Pittsburgh—p. 123
Further Report on Use of Radium in Benign Conditions Causing Uterine Bleeding W. L. Peple, Richmond—p. 126
Epidemiologic Studies in Syphilis L. W. McIlhenny and D. C. Smith, Charlottesville—p. 130
Leukorrhea: New Classification and New Approach to Treatment W. Bickers, Richmond—p. 135
Report on Recovery of Tubercle Bacilli from Microscopically Negative Sputum Covering a Period of Eight Years J. B. Nicholls and A. W. Bengtson, Citawba Sanatorium—p. 141
Radium: Historical Aspect R. H. Hoge, Richmond—p. 143
American Pattern of Administrative Medicine H. Emerson, New York—p. 146
Impressions of Diet and Disease in Korea R. M. Wilson, Richmond—p. 149
Results of Kolmer Complement Fixation Tests on Spinal Fluids With and Without Addition of Egg Albumin to Complement E. P. Foxhall, Richmond—p. 153

Western J. Surg., Obst. & Gynecology, Portland, Ore

51 35-88 (Feb) 1943

- Maternal Welfare: Indication of the Progress of Civilization Presidential Address T. F. Bell, Oakland, Calif.—p. 35
Bleeding in Third Trimester of Pregnancy E. N. Ewer, Oakland, Calif.—p. 46
Influences of War on Obstetric Hospitalization E. J. Krahulik and W. B. Thompson, Los Angeles—p. 52
Obstetrics as Affected by the Problem of War Nursing Care D. G. Tollefson, Los Angeles—p. 56
Obstetrics as Affected by Problems of War with Particular Reference to Office Procedure H. A. Stephenson, San Francisco—p. 60
Maintenance of Standards of Maternity Nursing Service in Public Health Field During the Present Emergency Hope Newell and Margaret Reid, New York—p. 62
How the Small Hospital Can Extend Its Service to Community Through a Home Maternity Nursing Service Elizabeth Burnett, Detroit—p. 69
Pancreatic Disease: Report of 4 Cases R. E. McKechnie, 2d Vancouver B. C., Canada—p. 74
Shock W. L. Pedlow, Vancouver B. C., Canada—p. 81

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1 179-208 (Feb 13) 1943

- *Lung Tumors in Mice and Man J A Campbell—p 179
War Neuroses: Nature and Significance W R D Fairbairn—p 183
Abortus Febr D G Leys—p 187
Foot and Mouth Disease in Man H Dlugosz—p 189
Pregnancy and Labor in Case of Congenital Coarctation of Aorta C W Walker—p 190

Pulmonary Tumors in Mice and Man—Campbell has exposed mice once an hour for six hours five days a week for a year to a moderate cloud of the various substances (coal gas and tar, tobacco, metal dust, silica, chromate and pitchblende) that apparently increase man's susceptibility to pulmonary cancer. Of the many substances tested, the statistical evidence in favor of the particular dust increasing the incidence of pulmonary tumors is highly significant for tarred road dust, a similar dust with carbon monoxide and also for a dust mixture containing equal parts of silica, iron oxide, alumina and calcium carbonate. The increase in incidence of pulmonary tumors in the experimental mice also was definitely significant with iron oxide. Czechoslovakian pitchblende dust containing a small quantity of radium and arsenic tarred road dust from which the tar had been removed by benzene and tarred road dust. Experiments in which the increase in incidence was on the borderline of significance include a diluted 'nickel' dust mixture, a bituminous coal dust and Czechoslovakian pitchblende dust containing no arsenic and practically no radium. Experiments in which the increase might have been due to chance included those with exhaust soot steel grindings and silica and iron. No material difference in incidence was observed with an anthracite coal dust and coal soot from a chimney. This increase in incidence in mice by certain dusts directs that care should be taken to reduce the exposure of man to these dusts. Dusts produce a hypertrophy of lymph tissue in the lungs and in the tracheobronchial lymph nodes. There appears to be no fundamental reason why the results obtained in the experiments in mice should not apply to man.

1 209-242 (Feb 20) 1943

- Hemoglobinometry and Use of Hematocrit: Report to Traumatic Shock Committee of Medical Research Council—p 209
Cesarean Section in Dystocia L G Higgins—p 212
Social Aspects of Allergy E M Fraenkel—p 216
Meningeal Reaction in Case of Glandular Fever J Shafar and J C R Weir—p 218
Radiographic Posteromedial Border of Lung or Linear Thoracic Paraspiral Shadow J F Brailsford—p 219

1 243-276 (Feb 27) 1943 Partial Index

- *Vitamins and Physical Fitness A A Harper I F S Mackay H S Raper and G L Camm—p 243
Effects of Vitamins on Experimental Hyperthyroidism V Korenchevsky K Hall and B Clapham—p 245
Use of Amphetamine Sulfate in Facilitating Electrically Induced Convulsions K C Bailey—p 250
Acute Disseminated Lupus Erythematosus: Recovery with Sulfanilamide J E G Pearon—p 253

Vitamins and Physical Fitness—Harper and his associates investigated whether the fitness of university students has diminished since the beginning of the war as the result of a deficiency in the average student's diet. The effects of adding vitamin supplements to the diet of one group were studied. Certain anthropometric data, physical efficiency tests and the incidence of minor ailments were used as a basis of comparison with a control group. The experiment was performed on 69 cadets over a period of twenty-one weeks (April 18 to Sept 11, 1942). The authors found that the cadets receiving vitamin supplements were less susceptible to minor respiratory and gastrointestinal complaints than those receiving control tablets which contained no vitamins. The group receiving vitamins showed a greater increase in resting vital capacity and in breathholding and endurance times and had a faster resting pulse rate than the control group.

Amphetamine Sulfate and Electrically Induced Convulsions—Bailey raises the question of the cause of the heightened threshold in certain types of cases. Investigation showed that the threshold increased with age. Depression is more

commonly found in older age groups. Two possibilities exist (a) that certain forms of depression raised the threshold per se or (b) that age alone has this result. It is impossible to say definitely which factor operates the more strongly. Amphetamine sulfate, being a known cortical stimulant, was utilized in an attempt to lower the electrical convulsion threshold, it was effective, and smaller strengths of electricity could be used. The author thinks that it exerts its effect centrally rather than by peripheral changes, such as the heightened blood pressure. The possibility of the achievement of the central action by a process of 'substrate competition,' as suggested by Gaddum in the case of ephedrine, was advanced. In two cases there was some postconvulsion excitement. This was never very great and may not have been due to the drug, since such excitement has been present after the convulsion when the drug was not employed. No other undesirable effects were observed from the use of the drug, even the patient with a blood pressure of 210/120 appeared to suffer no harm from the doses given.

Journal of Mental Science, London

89 1-160 (Jan.) 1943 Partial Index

- Study on Symptomatology and Differential Diagnosis of Alzheimer's Disease and Pick's Disease E Stengel—p 1
Affect in Schizophrenic Reaction Types R T Collins—p 21
Torusion of Central Nervous System D Blair—p 42
Conscientious Objectors with Psychiatric States H Stalker—p 52
Shipley-Hartford Retreat Scale for Measuring Intellectual Impairment Preliminary Communication G W T H Fleming—p 64
Spinal Anesthesia in Electrical Convulsive Therapy H J Shorvon and L M Shorvon—p 69
Experiences in Treatment of Depressive States by Electrically Induced Convulsions O W S Fitzgerald—p 73
Some Complications Arising During Electrical Convulsive Therapy E Samuel—p 81
Suicidal Head Injuries E Guttmann—p 85
Measuring Abnormal Pattern on Revised Stanford-Binet Scale (Form L) C R Myers and Elizabeth V Gifford—p 92

Journal of Pathology and Bacteriology, Edinburgh

55 1-136 (Jan.) 1943 Partial Index

- Acute Paralytic Myohemoglobinuria in Man E G L Bwaters and J H Dible—p 7
Renal Lesions in Case of Excessive Vomiting V G B McLetchie—p 17
Occurrence of Siderocytes in Adult Human Blood I Doniach H Grunberg and J E G Pearson—p 23
*Atherosclerosis of Main Renal Arteries in Essential Hypertension G O Richardson—p 33
*Histologic Reactions to Oils and Sulfonamide Preparations F Hawking—p 41
Improved Unheated Blood Tellurite Medium for Diagnosis of Corynebacterium Diphtheriae K I Johnstone and K Zinnemann—p 53
Involution Forms or Genus Vibrio Produced by Glycine J Gordon and M Gordon—p 63
Failure of Aluminum to Prevent Experimental Silicosis T Belt and E J King—p 69
Hodgkin's Disease of Breast S Wray—p 75
Experiments with Pneumotropic Strain of Lymphogranuloma Venereum Virus M van den Ende and Dora Lush—p 81
Chlaidenectasis with Steatorrhea Dorothy M Vaux—p 93

Renal Atherosclerosis and Hypertension—Richardson attempted to determine the incidence of lesions which might cause narrowing of the main renal arteries and their relation to essential hypertension in 32 consecutive necropsies on patients with essential hypertension and 113 without hypertension. In 25 of the 32 there was apparent stenosis of one or both main renal arteries by atherosclerotic plaques. In 22 of them the plaques were confined to a short segment of each artery near the aorta. In 2 the plaque was confined to one renal artery immediately proximal to the bifurcation and one renal artery showed no narrowing in the main trunk but the inferior branch of the primary division was definitely stenotic. In 8 the plaques were associated with a generalized atherosclerosis in 12 an atheroma was limited to the aorta and in 5 no nodular atheroma was discovered. In the remaining 7 of the 32 there were no sclerosing lesions of the main renal arteries. In the 8 with unilateral stenosis microscopic examination failed to show any difference between the ischemic and the nonischemic kidney. Among them there were 3 with malignant hypertension, different arteriolar necrosis occurred with equal frequency in the 10 kidneys. In 105 of the 113 without a history of hypertension the main renal arteries exhibited no lesions and in 3 athero-

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sclerotic plaques were present, in 6 they were unilateral. The degree of occlusion was comparable to that seen in essential hypertension in only 3. Accessory renal arteries were present in 6. It is suggested that atheromatous plaques may be capable of producing renal ischemia and consequent hypertension analogous to experimental hypertension.

Histologic Reactions to Oils and Sulfonamides—According to the experimental evidence presented by Hawkins, application of oil to a wound is not recommended unless the oil will not become embedded in the tissues. This can be assured only by incorporating the oil in a packing or layer of gauze which is later removed *en masse*. Oils which become embedded eventually cause a reaction of the connective tissue. Any immediate advantage (nonsticking of dressings and improved drainage) to be gained from the presence of oil must be weighed against the danger of a delayed reaction. The least provocative of the oils tested was cottonseed oil, which excited only a thin covering of fibrous tissue without further overgrowth of the adjacent cells. Judging by the microscopic reaction provoked the preparation of choice would be a microcrystalline suspension of a sulfonamide. A suspension of sulfathiazole is the best sulfonamide available because of its greater stability and greater bacteriostatic activity. The disadvantage of the sulfathiazole preparation lies in its present limited supply. Its best substitute would be the aqueous preparation of sulfamonomide. For extensive wounds it would probably be advantageous to reduce the sulfamonomide concentration to 10 or 15 per cent to avoid toxic symptoms from too rapid absorption. Only preparations of the sulfonamides suffer from the same defects as the oils which compose them.

Archivos de Medicina Infantil, Havana

12 167 (Jan-Feb-March) 1943 Partial Index

- *Heart Block in Children—Pérez de los Reyes, A. D. Alvarez, H. de la Torre and J. U. C. —p. 2
- Suppurated Meningitis in Infants—G. García Montes, B. Sánchez Sarría and R. Vales Díaz—p. 16

Heart Block in Children—Pérez de los Reyes and his collaborators report a clinical and electrocardiographic study of 50 children between the ages of 1 and 12 years with heart block of various types such as sinoauricular, simple partial and complete auriculoventricular and bundle branch block. The patients were observed in a group of 1,200 children examined in a municipal department of cardiology in Havana. Heart block of these types was congenital in 14 cases and of infectious, nutritional or toxic origin in the remaining ones. Rheumatic fever was the causal factor of auriculoventricular block in 26 of 29 children with this type of block. In 3 cases the block appeared after typhoid, suppurative pericarditis and streptococcal infection respectively. Avitaminosis, sickle cell anemia and ancylostomiasis were predominant causes in 5. Digitalis intoxication was the causal factor in 2. The Adams-Stokes syndrome was observed in 3 cases with complete auriculoventricular block either congenital or rheumatic. One of the patients died during a convulsive crisis. No instances of arrhythmization block were observed. A prenatal diagnosis of partial or complete auriculoventricular block can be made when there is a diminution in the number of heart beats. The diagnosis is confirmed after birth. This possibility was established by American authors.

Revista Médica de Rosario, Rosario

32 819-919 (Oct.) 1942 Partial Index

- Recurrent Hyperthyroidism—W. T. Fotheringham—p. 819
- New Therapeutic Resources in Therapy of Prostatic Epithelioma—J. S. Dotti and T. Delporte—p. 835
- Auricular Flutter Caused by Intrabronchial Foreign Body—A. G. Vedove—p. 846
- *Cardiac Anoxemia Caused by Inhalation of Gaseous Mixtures—M. Sloer—p. 857

Cardiac Anoxemia—Sloer examined electrocardiograms of 30 persons, either normal or with heart disease, in the course of induced anoxemia. A mixture of 10 per cent oxygen and 90 per cent nitrogen was used. The electrocardiographic changes were as follows: There was a diminution of the T wave in the electrocardiograms of 4 out of 8 normal persons, in

8 out of 13 patients with moderate heart disease and in 7 out of 9 patients with subacute or grave heart disease. There was a deviation of the S1 segment in 2 out of 8 normal persons, in 3 out of 13 patients with doubtful heart disease and in 6 out of 9 with heart disease. Acute anginal pain developed during the induced anoxemia in 3 patients with a history of anginal pains, in 1 patient with bundle branch block and in 1 with syphilitic aortitis. The pain was controlled by administration of pure oxygen. The electrocardiographic changes caused by induced anoxemia could be controlled by inhalation of pure oxygen one minute after the induced anoxemia. The degree of the electrocardiographic change in cases of doubtful or grave heart disease corresponded to the acuteness of the disease. However, cardiac anoxemia cannot be used as a test of coronary insufficiency because alterations of the same type, although to a different degree, are to be seen in the electrocardiograms of normal persons as well as of those with doubtful or grave heart disease. Electrocardiographic alterations in the course of induced anoxemia are caused by a myocardial reaction to metabolic substances accumulated in the structure, whereas anginal pain is caused by irritation of the nerves of the coronary vessels.

Semana Medica, Buenos Aires

19 1509-1572 (Dec. 24) 1942 Partial Index

- Physical Therapy of Polymyositis—A. M. Marque—p. 1509
- Fittor Syndrome During War—G. Bermann—p. 1513
- *Trachoma: Its Prophylaxis in Argentina—J. A. Sena—p. 1520
- *Symphysiotomy in Contraction of Inferior Plane of Pelvis—D. E. Nolting and C. Peña Mendez—p. 1551
- Treatment of Secondary Meningitis—J. Opizzi and C. Crivellari—p. 1551

Trachoma: Its Prophylaxis in Argentina—According to Sena, about 15 per cent of the population of the world have trachoma. No country in the world is entirely free from it. It is a disease of poverty, promiscuity, unhygienic living conditions and poor food. The diagnosis of trachoma is difficult. Numerous diagnostic aids have been suggested, such as the complement deviation test, eosinophilia, the phytotoxin test of Micht, the lysozyme titer in the lacrimal fluid, Abderhalden's reaction and the Weil-Felix reaction, but none of these have fulfilled the hopes placed in them. The diagnosis is chiefly clinical and is based on the presence of follicles in the tarsal conjunctiva, the presence of pannus, the appearance of cicatrices and palpebral and tarsal alterations such as entropion and trichiasis. The treatment is local as well as general. Measures which aim at improvement in the general health should not be neglected. In the incipient forms of trachoma in children mild eye washes of zinc or copper sulfate are used. The therapeutic armamentarium against the more severe forms includes copper sulfate, silver nitrate, chaulmoogra oil and mercuric cyanide. Physical methods include cauterization and diathermic coagulation. Mechanical methods such as massage, brushing and curettage aim at the rapid destruction of the trachomatous follicles. Biologic methods occasionally used are autoserotherapy and vaccine treatment. Cicatricial trachoma requires surgical treatment. Opinions are divided as to the efficacy of the sulfonamides. They are of great value in the complicated forms. The disease is most prevalent and practically endemic in the northern and subtropical parts of Argentina, where it is favored by climatic, social, sanitary and economic conditions. It is not autochthonous for these regions but was brought in by immigrants, chiefly from the Mediterranean countries. Trachoma of children is best combated in the schools. This has been done in recent years with the aid of visiting nurses. Ophthalmologic dispensaries should provide free treatment for adults. Since 1936 the National Department of Health has provided anti-trachomatous drugs to the dispensaries and schools. Mobile medical ambulances would be helpful in bringing treatment to patients in the rural regions. Popular publications, illustrations and moving pictures are valuable in disseminating information regarding the prophylaxis of the disease.

Symphysiotomy for Contracted Inferior Plane of Pelvis—Nolting and Peña Mendez show that pelves contracted in the median and inferior planes are most benefited by symphysiotomy. They describe 6 cases in which dystocia was the result of transverse narrowing in the inferior planes of the pelvis and in which symphysiotomy solved the problem.

Book Notices

Chemotherapy of Gonococcal Infections By Russell D. Herrold, B.S. M.D. Associate Professor of Surgery (Urology) College of Medicine, University of Illinois, Chicago. Cloth Price \$3. Pp. 137. St. Louis: C. V. Mosby Company, 1943.

In this first edition of his monograph Herrold gives a timely presentation of the application of sulfonamide therapy to gonococcal infections. The advent of chemotherapy five years ago revolutionized the treatment of gonorrhea and removed it from the exclusive domain of the venereologist. This book now also has practical value to the internist, the general practitioner and the gynecologist as well as the urologist. The author suggests that if gonorrheal treatment is to remain in private practice physicians must become familiar with epidemiologic measures and cooperate with health authorities as is done in other infectious diseases.

The book is based on the author's experience in 800 cases treated with sulfathiazole and an additional thousand treated with azosulfamide, sulfanilamide, sulfacetamide, sulfapyridine, sulfadiazine, dimethyldisulfanilamide (Uliron), sulfanilyl sulfanilamide (Disulon) and sulfamethylthiazole. The author does not concern himself with the bacteriology, pathogenesis, pathology, endoscopic methods and obsolete or obsolescent antiseptics. He has stripped the management of gonococcal infections of all unnecessary accessories and has streamlined his treatment. Infections refractory to one sulfonamide were retreated with the same or a kindred drug or by fever therapy or older conventional methods. The scope of the book covers treatment of men, women and children.

Uliron, Disulon and sulfamethylthiazole were early withdrawn from clinical investigation because of their toxicity. And "at present there is no place for sulfanilamide in the treatment of gonococcal infections." Sulfapyridine has a higher incidence of toxic reactions both general and within the urinary tract than have sulfathiazole and sulfadiazine and therefore there is seldom any indication for its use. Sulfacetamide, though less toxic than the former drugs, is inferior to sulfathiazole and sulfadiazine. Herrold has had more experience with sulfathiazole than with sulfadiazine and at present recommends it more highly. The author discusses the relative values of five and ten day treatments. He feels that the maximum safe total dosage without a rest period is 20 to 25 Gm. Chemical prophylaxis is discussed. Sulfonamide resistant cases are subjected to fever therapy. The subclinical infective state carrier is discussed as one of the potential hazards. The author recommends a minimum period of three months' observation and repeated negative cultures as proof of cure. Chemotherapy has definitely decreased complications. The problem of diagnosis and determination of cure is exceedingly more difficult in the female because symptomless infections are more frequent. Epidemiology, prophylaxis, culture mediums and their method of transportation are considered. Sixty-two case histories are excellently presented. This book should be read by every one treating gonorrhea.

Diseases of the Liver, Gallbladder and Bile Ducts By S. S. Lichtman, M.D. F.A.C.P. Assistant in Postgraduate Medical Instruction, Liver City Extension, Columbia University, New York. Cloth Price \$11. Pp. 906 with 122 illustrations. Philadelphia: Lea & Febiger, 1942.

The author has done a good job of compilation of physiologic and clinical data. The book is especially valuable for reference because of the extensive bibliography for every chapter. One might take exception to several controversial statements on page 73. The lactic acid cycle is stressed as important while it comes into play only in certain phases of severe exercise when lactic acid is formed by muscle as the result of relative anoxemia. On the same page the author makes the statement that glycogen is converted by amylase. There is no amylase present in the normal liver cells. His discussion of liver function is well done. However in future editions he should correct the statement. Normally the plasma cholesterol is 45 to 75 per cent esterified. The work of Sperry and Schonheimer has shown normal esterification to be between 68 and 72 per cent. For the most part the physician will find the book useful for ready reference. The best sections are the histology, pathology and liver function tests and then the clinical sections.

The Sexual Cycle in Women: The Relation Between Ovarian Function and Psychodynamic Processes By Therese Benedek, M.D. and Boris B. Rubenstein, M.D. Ph.D. Psychosomatic Medicine Monographs Volume III Nos. I and II. Published with the sponsorship of the Committee on Problems of Neurotic Behavior, Division of Anthropology and Psychology, National Research Council, Washington, D.C. Paper Price \$3.50. Pp. 307. Washington, D.C.: National Research Council, 1942.

Observations in psychosomatic medicine formerly consisted of case reports in which an effort was made to show a relationship between symptom formation and life situation. In recent years the attempt has been made to investigate the possibility of a specific relationship between the illness and the personality of the patient. In this category are studies which attempt to define the psychologic characteristics of patients who are apt to fall ill with such medical disorders as asthma, peptic ulcer and hypertension.

The present monograph is one of a series designed to meet the needs in this field of publication for experimental data resulting from longer studies than can be published in the *Journal of Psychosomatic Medicine*. A research project of the Institute for Psychoanalysis, Chicago, the investigation represents a new and important departure in psychosomatic medicine. It combines histologic and psychologic methods in an effort to see whether a correlation exists between endocrine function and psychodynamic processes. The investigators, working independently, studied the vaginal smear and basal body temperature and made psychoanalytic observations of the emotional life on fifteen women of childbearing age. The findings were then compared. One hundred and fifty-two menstrual cycles were observed, embracing 2,261 days of observation.

As a result of the investigation the authors find that the sexual cycle is a psychosomatic unit. Psychologic material dominated by heterosexual interest (centritugal psychodynamic tendencies) are related to estrogen production while the psychologic material corresponding to the progesterone phase of the cycle shows passive and receptive features (centripetal psychodynamic tendencies). Desire for impregnation, the tendency to care for a child and the various reactions to these tendencies are reflected in the psychologic material. The pregnancy wish is one of the most characteristic psychodynamic expressions of progesterone function. Correct predictions of gonad hormone production based on psychoanalytic observations, were made in 2,128 of the 2,261 days of observation. Adequate tables present the correlation.

A chapter is devoted to a critical evaluation of both methods, the vaginal smear technique and psychoanalysis, as instruments of biologic research. The authors feel that the vaginal smear, basal body temperature technique affords a method for day by day investigation of the gonadal cycle and that psychoanalysis permits investigation of the day by day fluctuations in psychosexual tension. They demonstrate the exactness with which the psychic apparatus reacts to changes of gonad hormone production. In fact the psychologic changes appear to precede the vaginal smear changes, in other words, the psychic apparatus reacts first and the histologic changes of the vaginal mucosa develop later. Whether the patient whose sexual inhibition disappears as a result of psychologic treatment will produce more gonad hormones than previously cannot be answered at present. This as well as the investigation of additional symptoms are problems that must remain for this new psychosomatic technique. Concerning the even more intriguing problem of whether this kind of an investigation can be used for the purpose of combining endocrine therapy with psychoanalysis, the authors properly caution as follows:

We studied only how the individual reacts to her own hormones. It is not improbable that microscopic study of psychodynamic reactions to hormones might clarify indications for hormone therapy. But it is evident that the psychosomatic reactions to hormones are so complex that we should caution against medication with hormones rather than encourage it. There must be precise indication which necessarily includes an understanding of the psychodynamic reactions of the patient to her own hormones.

This investigation is the first in which daily material obtained by psychoanalytic technique is correlated with the result of endocrinologic assays. The authors are to be congratulated for the careful coordination of two methods which despite the differences in their fields of observation has provided a new tool for biologic research. The monograph is a milestone in the rapidly developing field of psychosomatic medicine.

Heilbrigðisskýrslur (Public Health in Iceland) 1939 Samdar af landlækni öflr skvæðum heilbrigðislaekna ok öðrum heilbrigðum. With an English summary. Paper. Pp. 196. Reykjavik. Bidsprentsmidjan Gutenberg, 1941.

This report of public health conditions in Iceland for 1939 is a government publication prepared by the Ministry of Public Health. It is a well organized and comprehensive record of public health activities and statistics for the year, being modeled in format after the records of Denmark and Norway. The statistical tabulation and analysis of births, deaths and morbidity seem to be good, and the tables showing the distribution of diseases, causes of death, births and deaths by province have English or Latin headings so that they are easily analyzed by one with knowledge only of the English language. There also is a summary in English containing a table of the common communicable diseases for the period 1930-1939 inclusive together with short paragraphs discussing the various diseases, school inspections, care of infants, general insurance, food and nutrition, hospitals and immunization programs. Comparison of the birth, death and infant mortality rates with those of the United States for the same period is of great interest.

Birth, Death and Infant Mortality Rates, Iceland and the United States 1939*

	Iceland	United States
Births (per 1,000 of population)	19.1	17.3
Infant deaths (per 1,000 live births)	37.3	28.0
Deaths (all causes) (per 1,000 of population)	9.7	10.6

* U. S. Bureau of the Census.

*Death Rates per Hundred Thousand of Population for Selected Causes, Iceland and the United States**

	Iceland	United States
Cancer	140.5	117.5
Pneumonia and influenza	131.0	75.7
Diseases of the heart	104.3	275.5
Tuberculosis	51.0	47.1
Accidents	47.4	70.8
Old age	147.4	7.3

* U. S. Bureau of the Census.

The consistently high rates for the acute respiratory diseases are to be expected. This group includes, in addition to the acute upper respiratory diseases "acute respiratory catarrh," bronchial pneumonia, lobar pneumonia and influenza. For the ten year period noted the morbidity rates for "acute intestinal catarrh" varying between 13.18 and 26.09 per thousand bear special note.

Among Iceland's greatest public health problems is tuberculosis. From 21 to 35 cases of leprosy were reported yearly for the period noted and 6 to 12 cases of hydatid disease with 3 to 11 deaths annually. The book is bound with paper, and the printing on good quality paper is excellent.

Autonomic Regulations. Their Significance for Physiology, Psychology and Neuropsychiatry. By Ernst Gellhorn, M.D., Ph.D. Professor of Physiology, College of Medicine, University of Illinois (Chicago). Cloth. Price \$5.50. Pp. 373, with 51 illustrations. New York: Interscience Publishers, Inc., 1943.

The subject matter is divided into five main parts: introduction—anatomic and physiologic foundation, adjustment reactions involving primarily the respiratory and circulatory system, autonomic-endocrine integration, autonomic-somatic integration and results and applications, physiologic and clinical. The discussion is based largely on work done in the author's own laboratory during the past six years. His chief interest is in the various organ reactions leading to a net result in the whole organism rather than in the physical and chemical basis of activity in any single organ. He tries to show that the autonomic nervous system is not only an efferent system carrying impulses from the somatic system to various visceral organs but also an afferent system whose impulses significantly alter the excitability of the somatic system. His studies also lead

him to a reconsideration of the validity of the principle of reciprocal innervation as applied to the sympathetico-adrenal and the vagosulm systems. An attempt is made to utilize these studies for the problems of neuropsychiatry. This volume is too highly specialized to be of interest to physicians in general. However, the bibliography of eleven hundred references and the subject and author indexes make it a valuable reference book, of particular use to physiologists and clinical specialists.

Acute Infections of the Mediastinum. By Harold Neuhof, M.D., D.S., F.A.C.S., Clinical Professor of Surgery, Columbia University, New York, and Edward F. Jencks, M.D., D.S., F.A.C.S., Associate Attending Surgeon, Sydenham Hospital, New York. Cloth. Price \$6. Pp. 407, with 157 illustrations. Baltimore: Williams & Wilkins Company, 1943.

The basis of this treatise is the experience gained with 100 cases of acute mediastinitis. These are divided into four groups: (1) mediastinitis secondary to esophageal trauma (of special importance is the fact that mediastinitis may result from instrumentation of the esophagus with nonpenetrating trauma of this passage); (2) those secondary to upper respiratory infections; (3) those secondary to pulmonary or pleural infections and (4) those of miscellaneous causation. The case presentations are rendered quite vivid by the publication of roentgenograms and accompanying line diagrams to emphasize the important features. There is a well written section on the surgical anatomy of the mediastinum, and the pathology and bacteriology of mediastinitis. The general clinical aspects are discussed in a separate section apart from the detailed case reports, with emphasis placed on roentgenologic diagnosis. Treatment is discussed in detail in the final section. The importance of correct surgical management is emphasized by the tables showing the comparative mortality among patients operated on and not operated on. Scant mention is made of the use of sulfonamides, but this undoubtedly is due to the fact that a large percentage of the patients were treated before the advent of these drugs. In the concluding remarks the authors state that "the chief purpose of this contribution is to call attention to the necessity of recognizing situations in which invasion of the mediastinum is likely to occur to the end that appropriate surgical measures are instituted which will prevent mediastinitis." The average practitioner or surgeon has limited experience and knowledge of the subject dealt with in this monograph. For this reason it constitutes an important contribution and should be in hospital libraries as a reference book. Needless to add, it should be available to all those specializing in diseases of the chest. Furthermore it will be of great value to those in military service, who will be faced with the problems of mediastinitis among casualties presenting wounds of the thorax or of those adjacent regions from which infection of the mediastinum may occur.

Flying Men and Medicine. The Effects of Flying upon the Human Body. By E. Osmun Barr, M.D. Cloth. Price \$2.50. Pp. 234, with 7 illustrations. New York & London: Funk & Wagnalls Company, 1943.

The author, a flight surgeon in the last war, attempts to give a readable presentation of problems of physiology and hygiene encountered by flying personnel. The book is divided into two parts, the first dealing with the nervous system and special senses, the second with other bodily systems including respiration, circulation and digestion. The language and presentation is elementary in the extreme, being pitched at the grade school rather than the high school or college level. Granted that basic training for flying personnel might advantageously begin with the 16 and 17 year olds, the present book will probably fall into the hands of men in their 20's. It is too elementary to be of real service and it can only suffer by comparison with other recent books in the same field, such as Grow and Armstrong's *Fit to Fly* and Gemmill's *Physiology in Aviation*.

Sorderas sifilíticas. Ensayo de interpretación audiométrica. Por el Dr. David Tieffenberg. Paper. Pp. 258, with illustrations. Buenos Aires, 1942.

The author, impressed by the large number of patients complaining of deafness showing positive serologic reactions despite absence of syphilitic antecedents, has selected 100 of them and has carried out a thorough clinical and serologic study. The variety of specific conditions studied precludes summarizing the conclusions reached, and the specialist will have to find them in the original thesis.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

EFFECTS OF ULTRAVIOLET IRRADIATION ON SCHOOL CHILDREN

To the Editor—I seek an opinion as to the therapeutic value to be had by exposing the naked bodies of school pupils, who are found on examination to be undernourished, to ultraviolet rays. At this special school for the malnourished pupils it is the practice to afford such lamp (Hanovia) treatment to pupils for a period each day. While it is not a residential school the pupils are furnished a warm light form of nourishment on arrival and a full meal at noon. Pupils are also afforded a rest period on cats, medical and nursing supervision and menus prepared by a nutritionist. The pupil time necessary for all that is furnished for improvement of health is looked on with jealousy by those who have the responsibility for instruction in the traditional elementary subjects so that they are asking for a cut in that now used for developing health which was the prime object of this special school. Education of those physically handicapped is our responsibility. Naturally I wish to cooperate but hesitate to advise discontinuance of the lamp treatment without more information.

George J. Holmes, M.D., Newark, N. J.

ANSWER—The most important and the most thoroughly demonstrated effects of ultraviolet irradiation of the exposed body are those relating to the phosphorus and calcium metabolism. Rickets and tetany in infancy and early childhood and the vitamin D deficiency type of osteoporosis in older children and adults can be prevented from developing or can be cured if already present by ultraviolet irradiation of the skin. Since vitamin D administration also has these particular effects it may be substituted for the light treatment.

Many claims and counterclaims have been made regarding the less specific effects of this form of irradiation on general nutrition. Exact experimental data on this aspect of the problem are almost entirely lacking although many conservative pediatricians and physical therapists believe from empirical experience that recovery from mild subacute pyogenic infections, nutritional anemia and slow or stationary weight gain is accelerated by ultraviolet treatments twice or thrice weekly. Final proof of its value in the treatment or prevention of these conditions is still wanting.

The third use of ultraviolet irradiation among children grouped together in homes, hospitals or school rooms is that of sterilizing the air. Proof that irradiation of the air by ultraviolet lamps tends to reduce the spread of certain infectious diseases has been furnished by carefully conducted experiments in several cities.

EXPOSURE TO GASES IN MUNITIONS PLANT

To the Editor—I should like an opinion on the damage that might occur from the inhalation of gases in a munitions plant. The various gases to which these workers are exposed are nitrous oxide, nitrous acid, phenol, ammonia, sulfuric acid and ammonium picrate. I am particularly interested in the effects of these gases first on the apparently normal individual and second on the individual having arrested or cured tuberculosis. Do you think that exposure to these gases might render a person exposed to them more susceptible to tuberculosis or cause a reactivation of the disease?

J. D. Riley, M.D., State Sanatorium, Ark.

ANSWER—In general, munition plant gases may cause irritation especially of the respiratory tract, the eyes and to some degree of the skin. Then following absorption the agents will produce various forms and degrees of systemic poisoning. The most important of all the gases mentioned and probably the chief ones to be considered if poisoning of munition workers is being produced are of course the nitrous fumes. The symptoms and method of control of these were discussed at the conference on nitrous fumes on Jan. 28, 1943 at Cincinnati. The results of the conferences are summarized in the *Industrial Hygiene U. S. Public Health Service* 36 (Feb.) 1943. In addition other data on the subject are available in the article by A. J. Fleming (*Indust. Med.* 12:131 [March] 1943). Phenol fumes in addition to their well known local irritations may cause systemic reactions in the form of lassitude, dizziness, headache, yellow skin and albuminuria. Ammonia of course, would have its first effect on the eyes and upper respiratory tract. The chronic form of poisoning would chiefly be of the catarrhal type. Sulfuric acid fumes would also affect the respiratory tract. Ammonium picrate would chiefly cause eczematous dermatitis of the skin but the fumes of this compound may dissociate into ammonia and picric acid and produce the characteristic reactions of each. Picric

acid causes discoloration of the hair, skin and hands and various types of gastritis. The general recommendation of the Cincinnati conference on nitrous fumes with regard to the prevention of pulmonary irritation and systemic poisoning could be followed for all these other agents. It has been demonstrated that pulmonary irritation especially as concerns the pulmonary irritants of chemical warfare does not predispose to the development of pulmonary tuberculosis. However, people with pulmonary tuberculosis should not work with any of the pulmonary irritants since aggravation of the tuberculosis may be produced. In most instances whenever possible it is preferred not to use people with a history of pulmonary tuberculosis healed, arrested or active lesions. The careful preplacement examination with its x-ray study will be of great help in determining the advisability of employing such a person.

PROBABLE PELVIC HEMATOMA AFTER CHILDBIRTH

To the Editor—A primipara aged 20 had an uneventful labor, delivering spontaneously a living male child weighing 7 pounds 11½ ounces (3,500 Gm.) cephalic presentation left occipitoanterior position with a moderately deep right mediolateral episiotomy which healed by first intention. The pelvic measurements are within normal limits. Early in pregnancy a glycosuria was discovered and the fasting blood sugar was 180 mg. per hundred cubic centimeters. (Her mother died of diabetes and diphtheria.) The elevated blood sugar was controlled by diet and insulin. At present she is taking 10 units daily of protamine zinc insulin and her fasting blood sugar is 100 mg. per hundred cubic centimeters. Otherwise her pregnancy was uncomplicated and the puerperium was uneventful. At the six weeks postpartum pelvic examination a tumor mass about 3 inches in diameter was found in the left side of the pelvis immediately within the vaginal introitus. This mass is bounded medially by the vagina and posteriorly by the rectum and it is attached to the descending ramus of the pubis, the spine of the ischium and contiguous ligamentous structures. Its superior border lies about 1 inch above the level of the ischial spine and ½ inch posterior to the pubic symphysis. Its inferior border is at the tuberosity of the ischium. On the superior and anterior aspects of the mass are two nodules firm and about ½ by ¼ inch in diameter. They seem to be closely attached to the mass. The mass itself is firm but fluctuant. The vaginal mucous membrane and the rectal wall are not attached to the mass, as determined by rectovaginal examination. The former and the vestibular glands appear normal. The uterus is freely movable. The left ovary could not be palpated, but other pelvic organs were normal and there was no unusual discharge. There is no history of venereal disease. Plain roentgenograms taken separately for soft and bony tissue fail to outline the tumor and there are no striations and no moth eaten appearance suggesting malignancy or densities associated with a dermoid. The blood Kahn reaction was reported negative. The red and white blood cell counts are within normal limits and the urinalysis is negative. The patient does not complain of symptoms and she was unaware of the presence of the mass. On second examination two weeks later the tumor was perhaps slightly smaller but was still firm and fluctuant and not tender. It does not seem that the mass could have been its present size at delivery as it now reaches the sagittal plane of the pelvic outlet. Please suggest differential diagnosis and any other lines of study and recommend treatment.

M. D. Washington

ANSWER—The mass described is most likely a hematoma which developed at the time of delivery as a result of the rupture of some blood vessel, probably a vein. Such hematomas can occur in the absence of major trauma. The patient should be observed periodically and the mass should slowly decrease in size, ultimately completely disappearing with residual induration.

The location of the mass described is not typical for a cyst that is the result of some embryologic vestige. Ovarian neoplasms are usually movable unless they are intraligamentous. A neoplasm of the ovary or uterus would probably have been recognized during pregnancy or delivery.

STENOSED URETHRAL MEATUS IN YOUNG BOY

To the Editor—I should like to inquire about the treatment of urethritis in a boy aged 2. Smears are negative for gonococci and there is no history of infection in the parents or those who have cared for the boy. The infection is of two weeks duration and is not responsive to sitz baths, 5 per cent sulfathiazole ointment and sulfadiazine orally. The infection is restricted to the area about the glans penis and the terminal urethra. The boy is unable to urinate because of crusting over the meatus. He can urinate after a bath. Only pus cells appear on the smear. The Wassermann reaction is negative. Kindly discuss and suggest treatment.

M. D. Kansas

ANSWER—The condition described almost certainly indicates the presence of a stenosed urethral meatus. While it may appear to be of normal caliber from the surface it almost always under the condition described produces retention of the secretions which make for local non-pyemic urethritis with secondary encrustations and obstruction to urination.

The treatment is meatotomy followed by local antiseptics. Perhaps urinary antiseptics by mouth should be employed also. This assumes that there is no gonorrhea or phallitic or characoidal infection.

SENSITIVITY TO MILK AND CHEESE—BUTTER AND OLEOMARGARINE

To the Editor—Will you tell me whether in the making of cheese the lactalbumin of milk is broken down enough so that patients who tolerate boiled or evaporated milk may also use cheese? At the present time is butter likely to be adulterated with vegetable fat when bought by the pound or is it only in restaurants that one might find this?

M D, Illinois

ANSWER—In the making of many varieties of cheese lactalbumin is either removed to a large extent in the processing or it appears to become denatured. Many persons who are sensitive to milk are able to tolerate cheese without difficulty. There are so many factors involved, however, that a therapeutic test is indicated.

In regard to adulteration of butter it is hardly likely that this would be done because the offense is easily detected and punishable by rather severe fines under both federal and state laws. It is the opinion of nutrition experts that oleomargarine can be substituted for butter in the usual diet without detriment, provided the oleomargarine has been suitably fortified with vitamin A in accordance with regulations of the Food and Drug Administration which require a minimum of 9000 U. S. P. unit of vitamin A to the pound. Of course under wartime conditions of scarcity there is apt to be substitution of colored oleomargarine for the white with intent to deceive by unprincipled persons but this is definitely in conflict with the law.

HYPEROPIA AND SPASTICITY OF CILIARY MUSCLE

To the Editor—A patient aged 32 complains of pain in the eyes and headache particularly after close work. Visual acuity is 20/15 in the right eye and 20/15 minus 2 in the left eye. With the bichrome test the patient sees the letters better on the red side with each eye and requires a minus 0.5 correction to make the letters on the two sides appear equally distinct. Manifest refraction shows that the patient accepts minus 0.5 in both eyes with a correction to 20/15 in both eyes and the bichrome check equal. Retina copy shows that the patient requires minus 1.2 diopter in each eye but on static refraction the patient accepts plus 0.25 in each eye with a visual acuity of 20/15 and bichrome check equal. This is a problem which I have encountered many times. Is it common for a person with a low myopia to accept a plus lens under mydriasis with homatropine? What is the proper treatment in such cases?

M D, West Virginia

ANSWER—The inquirer states that the patient has a low myopia but that under homatropine mydriasis it is a low hyperopia. It is a common phrase for a young person with a low degree of hyperopia to have a spastic condition of the ciliary muscle with the result that the manifest refraction indicates a low degree of myopia. That very spasm of the ciliary muscle is responsible for the pain in the eye and the headache that accompanies close use. The spasm of the ciliary muscle will be increased by the use of a myopic correcting glass, but it can be relieved either by the continuous use of the glass that is properly fitted under homatropine or by the use of a mydriatic for a period of several days to a week.

LATERAL NYSTAGMUS

To the Editor—Aside from congenital nystagmus, can a lateral nystagmus exist in apparently normal persons on extreme lateral gaze? Can a weakness of extraocular muscles give an illusion of a nystagmus and yet not be a true nystagmus? I have in mind a case wherein a neurologist claims nystagmus exists and a competent ophthalmologist says it does not.

M D, New York

ANSWER—Yes, lateral nystagmus can occur in some normal persons on extreme lateral gaze. This is known as pseudonystagmus. This type consists in transitory, irregular jerky ocular movements. In weakness of extraocular muscles due to alcoholic polyneuropathy, myasthenia gravis, quinine intoxications, nicotine poisoning and lead poisoning one may find nystagmus. This is a true nystagmus and is not an illusion. In ocular defects nystagmus occurs and consists in an inability to fix the gaze on an object.

BLOOD TESTS ON BLOOD DONORS

To the Editor—Can you inform me what blood tests are done on blood specimens taken from donors by the American Red Cross? I am particularly anxious to know what test is done to diagnose incipient tuberculosis or other tuberculosis by a blood test.

H H Holland, M D, Red Lion, Pa

ANSWER—The only blood tests done by the Red Cross at the present time are the hemoglobin determination and the Wassermann test. No attempt is made to diagnose tuberculosis by a blood test, the presence of this and other infections being excluded by the history and physical examination.

ESOPHAGEAL DIVERTICULUM

To the Editor—Recently there has come under my observation a man aged 50 who gives a typical history of an esophageal diverticulum, with symptoms of this having been present for at least the past five years. Examination of the lower pharynx with the laryngeal mirror reveals an internal opening which is visible just below the base of the epiglottis and to the left. X-ray films made following the ingestion of barium sulfate present a picture typical of an esophageal diverticulum with a capacity of at least 4 or 5 ounces and extending down to the level of the angle of Louis. The question arises, because of the high position of the internal opening, as to whether this might be related to the branchial cleft. I should like to know something of the incidence of this sort of diverticulum and where I might find suitable literature concerning it.

Robert B Morrison, M D, Colorado Springs, Colo

ANSWER—The case presented is that of a typical Zenker's diverticulum, and it is usually situated above the upper sphincter of the esophagus. These are amenable to surgical procedures in the hands of a good surgeon, and the physician is referred to diverticula of the esophagus, page 437, chapter by Porter P Vincent, M D, in *Diseases of the Digestive System*, edited by Sidney A Portis (Philadelphia, Lea & Febiger, 1941).

MUSCLE PAIN ASSOCIATED WITH THYROID ADMINISTRATION

To the Editor—Can you offer an explanation for the excruciating, twisting muscle pains which sometimes appear when a patient who has been taking thyroid discontinues the preparation and which disappear when the preparation is resumed? It is my impression that the patient in question has had some intoxication with thyroid, perhaps over a period of many years.

Louis J Bailey M D, Detroit

ANSWER—In a large experience with hypothyroidism, muscle pain of this type has never been seen to develop when thyroid administration is omitted but has been seen when thyroid is first given in a fairly large dose to a myxedematous person. Following the intravenous administration of 10 mg of thyroxine to such a patient all the muscles may be so tender that the patient is unable to sleep and this muscle tenderness may be associated with a rise in temperature to as high a level as 104 F. There may be nausea and vomiting. The muscle pain lasts from two to three weeks and then disappears completely in spite of continuing thyroid. The pain is probably related to the sudden changes which occur in the chemistry of the muscle.

DENTAL NEURALGIA

To the Editor—A married woman aged 47 had the roots of the left upper incisors and canine teeth removed in September 1942. Since then she has been complaining of a pulling sensation over the left cheek, on the left eye and forehead, which has been annoying. There is slight tenderness just below and medial to the left infraorbital foramen. There are no other physical findings. X-ray examination of the upper jaws and sinuses is negative. Kindly discuss the diagnosis, treatment and probable duration of this condition.

Samuel Sunshine, M D, East Milton, Mass

ANSWER—This patient probably has a dental neuralgia due to disease in the gums of the left upper jaw. Despite the fact that roentgenograms of this region fail to show any abnormalities, there may be present in the gums another root that is exposed or there may be some caries. A competent dentist should examine this patient in detail looking for roots, caries and small openings. He should use a dental mirror. The treatment consists in removal of the foreign substance, treatment of the caries or finally laceration of the gums. This case does not appear to be a trigeminal neuralgia but a dental neuralgia. The pain should disappear when the cause is removed.

EXERCISE AFTER CARDIAC INFARCTION

To the Editor—I read with great interest from page 1350 of the Dec 19 1942 issue of The Journal an answer dealing with the question of exercise after complete healing of mild cardiac infarction. There I read "Exercise is probably desirable in the effort to maintain a good general state of health as well as to help to control obesity and to prevent a sluggish peripheral circulation." As one of those physical educators who sees value in exercise, I am of course overjoyed at this recognition of exercise in the management of recovered heart cases. But in spite of my pleasure I do not agree entirely with the enthusiastic answer of this query. It is hard to imagine the person with mild cardiac infarct who is able to do enough exercise to control obesity. Thus for example, in order to work off 1 pound of body fat one would have to walk 144 miles at the rate of 1 mile in thirty minutes, one would have to fence for eight hours or do parallel bar work for seven and one half hours. I could not recommend such doses for patients with heart disease. It would be too much of an overload even in the judgment of an exercise physiologist.

Arthur H Steinhilber, Chicago
Professor of Physiology, George Williams College

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THE PLANNING OF MEDICAL SERVICE FOR PRESENT NEEDS AND FUTURE REQUIREMENTS

PRESIDENT'S ADDRESS

JAMES E. PAULLIN, MD
ATLANTA, GA

Those of us whose privilege it was to serve our country during the first world war and to observe in the past few years the gradual destruction of principles for which we fought now face a new world conflict. Those of us who have an opportunity now to participate in the defense of our nation must turn our attention to a study of medical needs during the present emergency and to planning for the postwar world. Such planning should consider the rehabilitation of mankind and the establishment of a permanent peace which will assure to every man, woman and child freedom of thought, freedom of action and liberty. Hate, despotism and tyranny should have no place in a postwar world dedicated to humanity. Medicine has a fundamental role and will assume an integral part in the establishment of enduring world peace. Without healthy minds and bodies, no nation of civilized men can survive or prosper.

The government of the United States was founded on certain principles which establish our present mode of living, thinking and acting. These principles were written into our Constitution by Thomas Jefferson, the anniversary of whose two hundredth birthday we recently celebrated. The dedication of a memorial to him, in the city of Washington, pays tribute to a great man who wrote "We hold these truths to be self-evident that all men are created equal, that they are endowed by their Creator with certain unalienable rights, among these are life, liberty and the pursuit of happiness." He also gave expression to a guiding principle, on which a sound program of medical planning is based, when he said "I have sworn upon the altar of God eternal hostility against every form of tyranny over the mind of man." The achievements of the medical profession in our country are an example of the wisdom of such freedom. By scientific progress in the control of infectious diseases, including the almost complete eradication of a few diseases by prophylactic inoculations, prevention of accidents, establishment of adequate public health measures and development of better curative treatments, many years have been added to the span of life.

The present global war, with its far-flung battle fronts, has created many new and unexpected problems and has placed heavy demands on the medical resources

of our country. As the war progresses in duration and in intensity, these demands will be greatly multiplied. We must be prepared to meet medical problems as they arise, to supply the immediate needs and to formulate plans for effective service under changing conditions. In formulating such plans the American Medical Association is not an isolated unit. For the greatest good the combined and cooperative efforts of all organizations interested in medical care must be enlisted as participants in the program. The American Medical Association, the American College of Surgeons, the American College of Physicians, the American Dental Association, the American Nurses Association, the Association of American Medical Colleges, the United States Public Health Service, the Medical Corps of the Army and Navy, the Procurement and Assignment Service are vitally interested in the perfection of plans which will furnish better and more evenly distributed medical service for our people. I know of no time in the history of American medicine when such an undertaking could be more effectively or usefully initiated than now.

MEDICAL EDUCATION

The maintenance of an acceptable program of medical education is an essential part of the war effort. To meet present military and civilian needs, the Council on Medical Education and Hospitals of the American Medical Association and the Association of American Medical Colleges have endorsed a continuous program of medical education and training in most of the medical colleges of the United States. With this acceleration of the educational program a medical student completes a four-year course of study in three calendar years. The establishment of this program has thrown an additional burden on already depleted faculties of medicine. Much less time can be given to investigative work which is an important contribution of these institutions to the advancement of medical teaching and knowledge.

The lowering of the draft age to 18 years and the establishment of Specialized Collegiate Training Programs by the Army and Navy for premedical and medical students place further responsibilities on the members of faculties of medicine. The selection and assignment of students to various courses and institutions, together with the interruption of study by the fulfillment of a thirteen-week military training program for those in the Army, still further complicate a difficult situation.

Provision has not been made for the education and training of doctors for civilian practice. Approximately 20 per cent of the facilities of each medical school can be utilized for the training of women and men physically disqualified for military duty and a few deterred by Selective Service. From these sources, civilian and other nongovernmental needs must be met. With the

graduation of approximately 6000 students each nine months, it is estimated that 1200 can be used as replacements for civilian needs. This will be increased by five or six hundred physicians who are being retired from the military services each year. Most physicians who serve civilian needs are over 45 years of age, consequently the expected mortality will be high amounting to 2500 or more each year. Plans should be formulated now for the better utilization of this group when the necessity arises.

SUPPLYING CIVILIAN NEEDS

The rapid expansion of essential war industries has necessitated an unpredictable and unexpected increase in the resident population about many of these plants. With such a rapid increase in population unusual demands have been made for housing, sanitation and medical care. In some localities these needs could not be immediately supplied, thus causing acute distress. To formulate plans and recommendations for the handling of such emergencies, the War Participation Committee of the American Medical Association in conference with the United States Public Health Service and the Procurement and Assignment Service, agreed on certain methods of procedure which could be utilized to meet these emergencies. These recommendations have been published in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* and were sent to the department of public health in every state and to every state chairman of the Procurement and Assignment Service.

Much has been said of the importance of redistribution of physicians throughout the United States. Indeed, some have urged the creation of a governmental agency to supply medical care to all who require it. When the medical needs of a community cannot be met at a local or state level, the state medical society may request the central office of the Procurement and Assignment Service, with the help of the United States Public Health Service, to supply the need by relocating physicians. An attempt is first made to relocate physicians within the state for such service; when this is not possible, they are obtained from other states. For the period ended March 31, 1943, thirty-three states reported to the Procurement and Assignment Agency 692 relocations. During 1942 and for the first quarter of 1943 a total of 866 doctors were relocated, not all of these by the Procurement and Assignment Service. Just now, according to the best information available, there is need for approximately 300 additional physicians to supply medical needs in 198 areas. The United States Public Health Service has been most cooperative in helping to supply urgent needs in those communities in which the local and state medical societies and the Procurement and Assignment Service were unable to give immediate assistance. The Public Health Service assumes this responsibility as an emergency measure, and physicians so assigned are under the direction of the state department of public health. By this procedure areas which required medical service have been supplied with physicians sufficient to meet their needs. This has been accomplished, furthermore, without gross violation of the rights of the individual states to regulate medical practice, of the rights of physicians who have entered military service to retain the practices that they have developed over the years, and of the rights of the patients to receive the medical care that they required.

MILITARY PERSONNEL

The American Medical Association has a continuing interest in every physician who has joined the military forces. Our obligation to keep physicians informed concerning matters of military importance is the publication in each issue of *THE JOURNAL*, under the special heading "Medicine and the War," of the activities of various agencies in national defense. Scientific achievements as related to war, are published in *THE JOURNAL* as well as in *War Medicine*.

In view of the emergency, all large medical meetings have been postponed for the duration of the war. Previously medical meetings served to supply short post-graduate courses for many members. The discontinuance of these meetings created a new obligation for organized medicine. With the approval of the Surgeon General of the Army, the Navy and the United States Public Health Service, the American Medical Association in cooperation with the American College of Surgeons and the American College of Physicians, is now offering a series of "Wartime Graduate Medical Meetings" to all service hospitals of the Army and Navy over the entire United States. The committee in charge of this program has the help of a large group of consultants in special medical fields as well as the aid of most medical schools. The organization of a faculty for graduate medical training contemplates making available to military organizations various types of medical instruction conducted in the form of lectures, clinics, round table discussions and ward rounds. The program consists of thirty or more different subjects, from which each organization may choose six or eight for presentation by experts. Thus medical leadership again proves itself alert to the needs of the hour.

THE PROCUREMENT AND ASSIGNMENT SERVICE

Before the declaration of war, the Committee on Medical Preparedness of the American Medical Association had prepared a roster of all physicians of the United States with detailed information relative to their training, their professional qualifications and their scientific achievements, and a statement as to their availability for military service. With the establishment in October 1941, by executive order of the President of the United States of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians, the accumulated data of the Committee on Medical Preparedness became available for the beginning of this work. Shortly after the establishment of this service and before either an adequate secretarial staff or permanent quarters could be obtained, and before members of the board could become fully acquainted with the problems involved, war was declared. With the declaration of war there was a request from the Surgeon General of the Army for the recruitment of a large number of physicians for duty with the medical corps. To supply this demand the only available data were those furnished by the Committee on Medical Preparedness. During the active stage of supplying this need it soon became evident that the voluntary enlistment of physicians would deprive many communities of essential medical service. A committee on the Allocation of Personnel was created to determine the distribution and effectiveness of the available physicians and dentists in each state and to establish a measure whereby the medical and dental needs of each state could be equally and fairly adjusted. With the aid of the United States

Public Health Service, statistical data were accumulated and after many conferences a quota of one physician to fifteen hundred persons was established.

As a result of these investigations it soon became evident that many states had surpassed their quotas of physicians and dentists, while other states were far behind their allotment. When war was declared 13,000 physicians were on duty with the Army and Navy. During 1942 this was increased to approximately 42,000, the requirements had been met. During 1943 approximately 11,000 additional physicians will be required representing about all that can safely be spared from civil practice. According to the quota system previously established this number must be drawn from thirty-four states. There are only fifteen states which must yet supply more than 100 physicians each. This does not mean that recruitment will be discontinued from states without quotas for 1943. Certain large cities in these states have a physician-population ratio greater than the standard accepted. These cities will be called on either to furnish physicians for communities within that state which are in need of doctors or to declare their younger men available for military duty.

The recruitment program is being pushed now in some five or six states that are a little backward about supplying their proportion of physicians. While the enlistments just now are behind schedule, I am convinced that we still have enough available patriotic physicians to supply the needs of our armed forces on a voluntary enlistment program. Physicians have never failed to respond in an emergency and they will *not fail now*.

The Procurement and Assignment Service is the only federal agency directly concerned in maintaining a sufficient number of physicians in civil practice to maintain medical education at its present level, to supply the medical needs of industry and to furnish medical care for the civilian population. Medicine is honored in being the only group in our population with such a responsibility assigned to its own members. This activity has been possible only through the cooperation of local and state chairmen of the Procurement and Assignment Service with the directing board. The seriousness and earnestness with which these men have performed their duties is a source of gratification. The criticism aimed at the Procurement and Assignment Service for alleged mistakes or deficiencies has usually emanated from sources ignorant of its accomplishments or seeking to promote disruption in medical affairs. Such criticisms have in most instances been made without any investigation of the truth or falsity of the claims. As a member of this board I feel that it has performed a creditable task; its accomplishments have been achieved through the voluntary effort of doctors and it will continue in the future as it has in the past to meet honestly and fearlessly the obligations placed on it by the President of the United States.

PLANNING FOR POSTWAR MEDICAL SERVICES

After the cessation of hostilities the American Medical Association with its 123,000 members faces the obligation of directing the intelligent planning and continuation of procedures which can be utilized in the rehabilitation of the health and medical needs of our people and through other agencies made available to the countries of our allies. Problems will arise in this country that will need serious consideration. No doubt

the greatest challenge to the medical profession that will come to us and to other agencies responsible for the readjustment that must take place after the war concerns the reabsorption into medical practice of doctors who will return from military service. During the past two years, through my connection with the American Medical Association, the American College of Physicians and the Procurement and Assignment Agency, it has been clearly shown that many communities, particularly those in rural districts, have suffered because of an uneven distribution of public health facilities, hospital beds and medical personnel. We should now be planning methods for overcoming these inequalities. Our present system for the education and training of medical students necessitates some provision which will enable them to go to rural communities and to practice there the type of medicine for which they have been trained. Arrangements may be developed whereby such communities can establish medical centers through which necessary hospital and laboratory facilities for the diagnosis and treatment of disease will be available for all civilian needs. The Beveridge plan and the report of the National Resources Planning Board indicate that the trend of medical practice inclines toward the establishment of the hospital and the medical center as the sources for distribution of medical care. The present emergency has accentuated the needs for such an arrangement. Even now in areas of great distress the local profession in cooperation with the United States Public Health Service and other federal agencies, can arrange for the establishment of such facilities for the use of these communities.

It will be an obligation of the medical profession to provide for the physicians who return from military duty an opportunity to have refresher courses or post-graduate training which will bring them up to date on the newer methods of diagnosis and treatment which have been developed during their military service. No doubt the government will recognize its obligation in making such provisions possible. The general practice of medicine will require more physicians than are now engaged in such service. The development of a community hospital service staffed with an adequate number of specialists capable of administering to the needs of a large number of people would make more physicians available to provide general medical service for the community.

The successful completion of such a program cannot be accomplished by the medical profession alone. Physicians, dentists, nurses, public health officials, hospital administrators and technicians as well as governmental agencies interested in the health needs of a community, must cooperate in its development. Such a cooperative group can plan for the essential needs and for the proper distribution of medical care so that the greatest good can be achieved.

The maintenance of the high standards of medical education which now prevail reached through the continuous striving of medical leaders together with ample provision for medical research is fundamental to continued medical progress. Just now most research is concerned with problems directly related to national defense. The results of some of this can be utilized in civilian life such as the advancement in chemotherapy, the study of virus diseases and tropical medicine. The development of new drugs for the treatment of disease and particularly the results of research in aviation, are

only a few of these benefits. There is, and will be for the duration, a diminution in investigation concerning many diseases which are constantly with us, such as arteriosclerosis, heart disease, arthritis, cancer and mental disease. Facilities and personnel must be provided to institutions and laboratories for the resumption of studies on these and other unsolved problems directly affecting the health of our people. Stimulation to undertake such work must be furnished by the medical profession to many of those returning from military service war weary and exhausted. The time is not too soon for those who are far sighted to survey the field and to lay the lines of attack on these unsolved problems.

A committee on Postwar Medical Planning of the American Medical Association working in cooperation with similar committees from the American College of Surgeons, the American College of Physicians and other well recognized organizations should now begin to formulate plans whereby the facilities of all groups who occupy a vital part in the rendering of medical care can be more efficiently applied. When the war is over there can be offered to the people a carefully designed scheme for the medical rehabilitation of a war sick people. There are many agencies useful in preparing such a program which undoubtedly will help in an undertaking of this nature.

Admiral McIntire pointed out in a recent address that many physicians who are now members of the Medical Corps of the Army or Navy will continue in these services long after the war is over to meet the medical needs of peoples all over the world. Medical education in most of the Axis and Axis dominated countries has either ceased or progressed at an extremely low level during this war. Medical teaching in some of the countries of our Allies has been continued under serious military stresses. The medical profession of this country may be called on after the war to furnish teachers, instructors and practitioners to many countries to aid in the care of those stricken with disease. We must be prepared to meet the demand.

Poverty, hunger and disease know no bounds. Let us recognize our humanitarian obligation and duty, as representatives of a nation which possesses medical and other resources superior to those of any other nation in the world, to make our talents available in this emergency. Let us cooperate with all related organizations and governmental agencies interested in postwar rehabilitation to help in achieving the restoration of health and hope to a world suffering the devastating effects of a ruthless war. Such an undertaking is one of the essentials of an abiding peace. To this end the medical profession dedicates itself until the world shall again be progressing peacefully on the paths of human advancement.

The Origin of Superior Men—We may conclude therefore that the production of superior men is surely not an accident, that it has only a slight affiliation with income, that it is closely related to the kind of persons residing in New England and in the block formed by Colorado, Idaho, North Dakota, South Dakota, Utah and Wyoming from 1870 to 1900, and that these persons probably diverged from the average of the country toward the qualities which make persons in 1930 learn to read, graduate from high school, spend public funds on libraries rather than roads and sewers, own their homes, avoid homicide and be free from syphilis.—*The Origin of Superior Men, Scientific Monthly* 56 424 (May) 1943

THE PARAFFIN WAX OPEN AIR TREATMENT OF BURNS

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The present global war has resulted in so many serious burns occurring *en masse* that surgeons face a challenge to devise some simple method of treatment which will be effective, humane and at the same time simple enough for application by inexperienced assistants to overworked doctors and nurses. In the emergencies of civilian and military bombings during the past few years, patients have necessarily been treated by many different doctors and by many types of treatment. Sufficient experience is now available to permit evaluation of various methods so that some uniformity of the best treatment can be established.

The following simplified technic that is presented has been employed successfully in private practice for



Fig. 1—Gauze mesh becomes enmeshed in the tiny proliferating epithelial cells. Each removal, even when wet, will delay healing and frequently increases scarring. Toxic materials are no menace when they are flushed off without trauma.

the past twenty-two years and is believed to be peculiarly suitable for present war conditions. A colored moving picture will demonstrate the technic that was used in a series of cases at the Mare Island Naval Hospital.¹ Of special interest to orthopedic surgeons is the absence of restricting gauze bandages, which encourages early free motion and prevents many contractures and deformities which have occurred in the past.

The treatment of any burn is naturally divided into general systemic care and local treatment and dressing. As far as general systemic care is concerned, the treatment of early shock has been fairly well standardized. Morphine for the relief of terror and pain is in common use. Plasma is still the best agent to maintain blood proteins, to supply liquids and to prevent and

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¹ Technic and motion picture presented before the American Academy of Orthopedic Surgeons in Chicago Jan. 17, 1943.

diminish hemoconcentration. When at all possible and absence of nausea permits liquids by mouth are given generously and a high protein diet is used.

Late shock, which seems to be precipitated by that vague substance called burn toxemia, when accompanied by loss or destruction of blood, is most effectively controlled by whole blood transfusions.

There is also general accord in combating severe systemic infections which are dreaded complications of burns by the use of some sulfonamide compound internally. Our armed forces are using this method in the field prophylactically, as well as preventive inoculation for tetanus before combat service.

However the paraffin wax open air treatment, which is a local dressing varies from any other treatment in the following respects:

- 1 No cleansing or debridement is necessary before application of the wax.
- 2 No gauze or disposable tissue is incorporated in the wax.
- 3 Frequent shower baths form part of the treatment.
- 4 No dressing or covering other than the wax is employed, thus permitting early motion and constant observation.
- 5 One technic serves for burns on all parts of the body.
- 6 The same treatment is used for first aid and for definitive care.

Paraffin Wax Formula

Paraffin wax	670 Gm
Household wax	Melting point about 125° F. This softens the skin. For first aid ointment reduce to only 20 Gm rather than 670 Gm.
Petrolatum	250 Gm
Liquid petrolatum (heavy)	150 cc
Cod liver oil	50 cc.
Cottonseed oil or olive oil has been substituted satisfactorily.	
Sulfanilamide powder	50 Gm
Resorcinol 10 Gm in 15 cc of ethyl alcohol has been used as an effective antiseptic (before sulfanilamide).	
Menthol	1 Gm
Camphor	1 Gm
These relieve any itching or burning sensations.	
Oil of eucalyptus	1 cc
Used as a deodorant.	

Without cleansing or debridement of the fresh burn the paraffin wax formula is sprayed on all burned areas immediately sometimes preceded by frosting of the burned area with sulfanilamide powder.

The wax and petrolatum are melted on a water bath then the other materials are stirred in. While still melted pour the mixture into insecticide spray "guns" and allow to cool (melting point 117° F). The melting point may be adjusted for use in different climates by increasing or decreasing the amounts of petrolatum or wax. The mixture will keep indefinitely although it will turn brown if heated excessively. Reheat on a water bath and then spray it. Keep the mixture well agitated to keep the sulfanilamide in suspension.

The application of the wax spray stops pain and minimizes shock. In the wax are incorporated the soot, oil, dirt and broken skin, which all come off during the next few days. This produces a gentle delayed non-traumatizing cleansing.

However conventional debridement can be done before application of the wax if desired but many victims of burns from Pearl Harbor, the South Pacific and the Boston fire who of necessity received no elaborate debridement showed splendid results. It is difficult to justify the rupturing of any bleb during the first few days since bleb contents are practically identical chemically with blood plasma. When conservation of

this plasma is desired, why should a clean closed wound be converted to an open one and thus more fluid loss be allowed?

Following the immediate treatment of a burn, the control of external or surface infections is the next important problem. The paraffin wax prevents the



Fig. 2—The wax spray is applied in a thin layer while the freshly showered area is still moist. The tiny globules of the wax spray adhere to the healing cells and push the water aside.

formation of sealing-in crusts, and since it cracks easily it provides excellent continuous drainage, a fundamental factor in the control of any infection. External infections usually become dangerous only if they are sealed in by crusts or leather-like eschars.

In minimizing contamination from without, the recent work by Dr. O. H. Robertson of Chicago shows the worth of propylene glycol as a germicidal vapor to

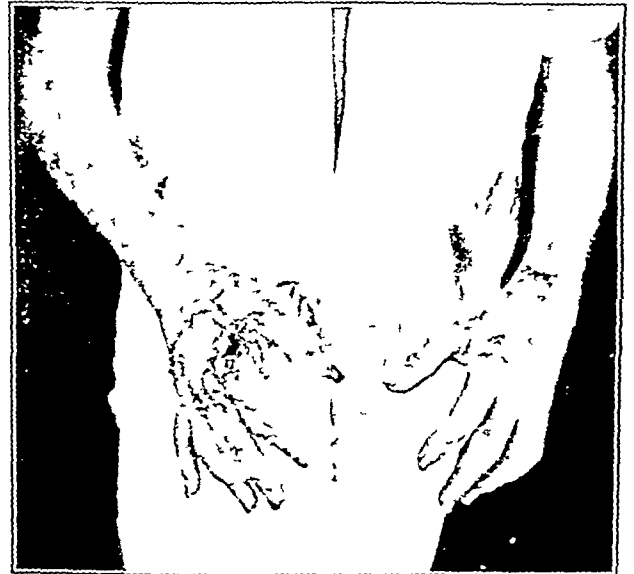


Fig. 3—A flash burn from a bomb destroyed full thickness of the skin over several areas. Function is maintained while the slough is separating.

sterilize the air in a room. Commander A. P. Krueger corroborates this work.

It is important to keep the floors and furniture clean. Moist sawdust is helpful in sweeping the floors. Protection of the fresh open wound against the organisms harbored by the nose and throat of attendants can be controlled by masking.

Because many of the bacteria come from the hair follicles and sweat glands, most burns are considered to be infected after twelve hours. Countless antiseptics, coagulants and tanning agents have been used in an attempt to sterilize the skin without destroying delicate

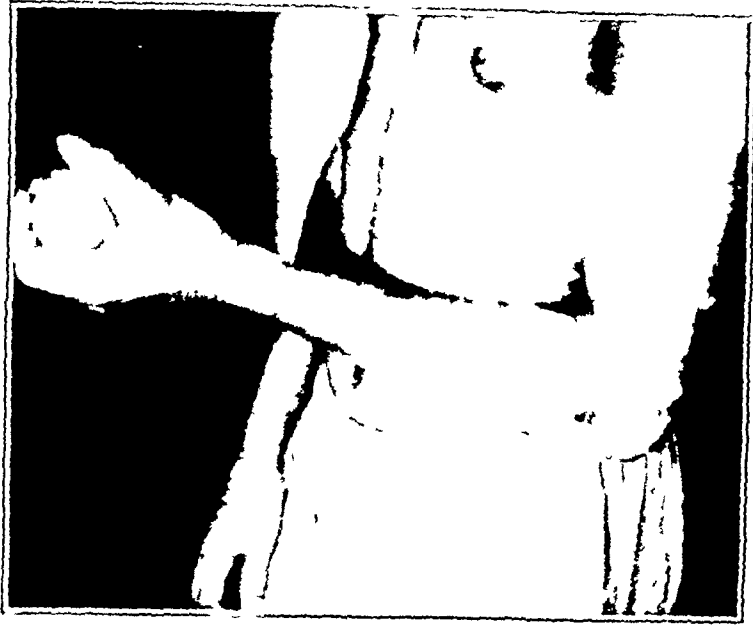


Fig. 4.—Early passive motion prevents most atrophy fixed contractures.

tissue cells. Although this is desirable, it is practically impossible. However, when the paraffin wax spray is used the burn can be sprayed as often as necessary for the first few days and then once daily or oftener if necessary for comfort. The collected perspiration, exudate and toxic materials are flushed off by tap water in one of the three following ways depending of course on the patient's condition:

1. A flower spray or irrigating spray if the patient is confined to his bunk.
2. A hand bath spray while the patient is seated on a chair in a bathtub.
3. Under any ordinary shower if the patient is ambulatory.



Fig. 5.—Axillary contractures can be prevented by early motion. Frequently actual overhead traction is used. This patient had a severe flash burn. Five pounds extension was applied after four weeks. There was no contracture.

legs, or areas difficult to bandage such as the genitalia, eyes, ears and nares.

Many classifications of burns are given, but it is believed that the depth of corium involvement is more important than the surface area involved. It seems more rational to speak of only two classes of burns, namely whether there is full thickness destruction of skin or not. The undamaged sweat and sebaceous glands, together with the hair follicles, supply the tiny islands of epithelium from which the wounds heal when the full thickness of skin is not destroyed.

If these as well as all injured and healing cells are preserved throughout treatment, there will be better scars and quicker healing. Early motion and a pliable skin surface will minimize contractures and disfiguring adhesions. Most victims of burns with large areas of "full thickness" destruction of skin probably do not survive.

It is problematic whether any formula speeds healing. The first great advance that must be taken in any treatment of burns is to give the undamaged cells a chance to heal without interference of traumatizing, cleansing or tanning agents, chemical irritants or even fine gauze and frequent dressings. The paraffin wax in the formula is an effective substitute for gauze. Ordinary

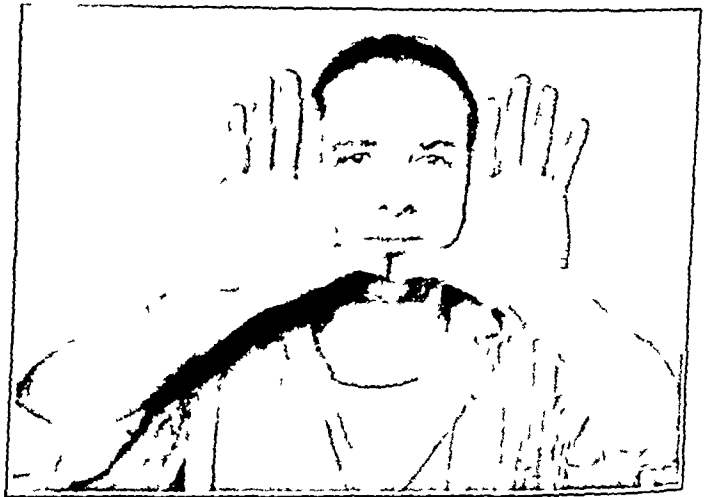


Fig. 6.—The patient's right palm was burned by hot pitch. He was urged to keep up the muscle tone of the forearm and let the burn heal under the wax spray.

ointments have less viscosity when placed on warm skin and either run off the area if uncovered or are absorbed into the gauze if covered. The higher melting point of the paraffin mixture keeps the areas covered.

The real problem is to preserve as much of the "partial thickness" burned skin as possible. These constitute most of the burn areas. All "full thickness" areas must have skin grafted on them. As soon as the slough has separated, the area should be frosted with sulfanilamide powder and then covered with a heavy coat of wax spray. Over this are placed several layers of gauze, and then a pressure bandage is applied.

This is done only in preparation for skin grafting or if desired when a patient is to be evacuated to another station. The wax separates easily and is still on the gauze surface and not absorbed into its mesh as ointments are. When the dressing is removed the area is smooth.

The type of skin graft to be employed is determined by the area involved as well as by the preference of the surgeon. The Paget dermatome offers the best method in most instances.

A first aid wax ointment can be made by reducing the amount of paraffin in the formula presented to 20

Tub baths are not permitted, as contamination of relatively clean areas can be caused by bacteria from regions like the anus. The paraffin wax is particularly efficacious on easily constricted areas like the arms and

Gm This is spread on waxed paper or cellophane and then applied to the burn or even directly to the burn area in extreme emergencies. The first aid ointment is sometimes incorporated into gauze strips to facilitate application. The paraffin increases the viscosity which



Fig 7—Even thin clothing will protect the skin from intense heat if the duration of the flash is not too long

is an advantage in hot climates. Paraffin also protects the area from gauze.

Military necessity frequently makes hurried evacuations imperative. The spray is sometimes covered by waxed paper or cellophane and may even be held in place by a pressure gauze bandage until the new station is reached. Men may carry a spray gun with them to be used at the new station.

CONCLUSION

Any universally accepted technic of treatment of burns should embody the following principles:

1 It should be simple and inexpensive enough to be available at many stations.

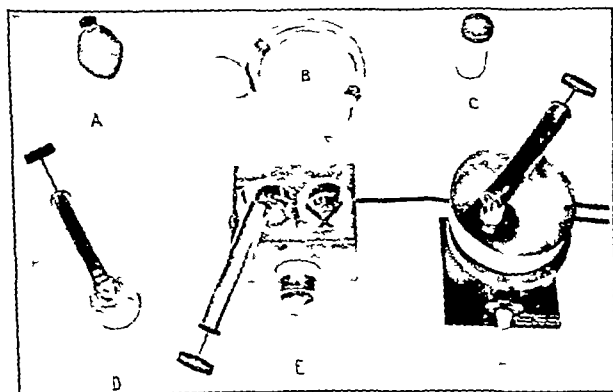


Fig 8—A a flower spray B a hand bath spray C ultraviolet powder to be frosted on moist infected areas under the paraffin wax film D an ordinary insecticide gun a tiny hole in the top releases trapped exuding air and improves its function E an electric globe heater to be used in lieu of boiling water aboard ship F an ordinary water bath.

2 It should be available to and susceptible of being used by untrained persons.

3 It should be complete in itself and not require gauze as experience shows that sterile gauze is not always available at the place where the patient is burned.

4 It should be applicable to any part of the body, whether the burned area is on the face, scalp, neck, genitalia, hands or easily constricted areas like the arms and legs or around the eyes, ears, lips and nares.

5 It should be applicable to any type of burn, whether due to flash or fire or to scalding with water or oil.

6 It should be inexpensive.

7 It should stop pain instantly and provide comfort throughout healing.

8 It should keep almost indefinitely.

9 It should allow early free motion to prevent contractures. Increased muscle action will aid morale and increase the appetite.

10 It should allow frequent inspection of all areas by a surgeon or physician at all times without the necessity of removing elaborate dressings.

11 It should prepare areas for early, necessary skin grafting.

12 It should be as effective on old infected burns as it is on fresh ones.

13 It should reduce dressing time by at least 90 per cent over present methods and do so painlessly.

14 It should permit the continuous escape of toxic exudates.

15 It should permit the washing away of odors, perspiration and noxious substances by frequent water sprays or showers.

The use of paraffin wax technic as described, has for more than twenty years demonstrated its value in meeting these requirements.

RED CELL TRANSFUSIONS IN THE TREATMENT OF ANEMIA

A PRELIMINARY REPORT

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The extensive use of human plasma in recent years has made available large quantities of red blood cells. These for the most part have been discarded. Interest in the use of red cells for transfusion purposes has arisen in England during the last few years. MacQuaide and Mollison,¹ Williams and Davie,² and Watson³ all have used concentrated erythrocyte suspensions successfully for the treatment of anemia. In this country Warren Cooksey⁴ has given numerous transfusions of red cells suspended in saline solution. He has been responsible for the increasing interest and use of such transfusions by physicians in the Detroit area.

Red cells were used for transfusion purposes by Robertson⁵ during the first world war and by Castellanos and Riera⁶ in 1937.

In 1938 I gave a transfusion of washed red cells to a patient with subacute leukemia who suffered reactions from whole blood. The same type of reaction occurred with the washed cells. In March 1942 a suspension of red cells was given to a patient with leukemia for the same reason and again failed to obviate the reaction.

Dr. Sidney O. Levinson gave the author helpful suggestions and continued cooperation in this work.

From the Department of Medicine, Northwestern University Medical School, and from the Laszlo Memorial Hospital.

Read before the Chicago Society of Internal Medicine, Feb. 22, 1943.

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Pepper and Horack⁶ reported the first instance of crystalline sulfathiazole concretions in the renal tubules of a patient treated for pneumonia with sulfathiazole. Shortly after this, Loewenberg, Sloane and Chodoff⁷ reported 1 case of sulfathiazole urinary calculi appearing in the kidneys, ureters and bladder. From pathologic and clinical observations in 4 cases in which death occurred during sulfathiazole therapy, Lederer and Rosenblatt⁸ reported that the significant pathologic lesion was similar to that more recently noted by Merkel and Crawford⁹ consisting of multiple areas of focal necrosis in the liver, spleen, bone marrow, lymph nodes and lungs as well as the kidneys. Winsor and Burch¹⁰ reported 6 cases of severe renal involvement from sulfathiazole with three deaths. The autopsy material showed sulfathiazole crystals within the renal tubules, the tubules were dilated and showed signs of degeneration. Other signs of sulfathiazole damage to the kidney similar to that described by Antopol and Robinson¹¹ were present. Imduer and Atcheson¹² reported 2 cases of complete anuria and death following sulfathiazole therapy. In addition to striking parenchymal changes, the kidneys showed the accumulation of great clumps of crystals in the tubules and calices in 1 case and of crumbly brownish crystalline material within the pelvis and ureters in the other. In no instance, however, has a radiopaque calculus or pelvic caliceal membrane been reported as forming directly or indirectly from sulfathiazole.

According to earlier records, sulfadiazine was more potent, less toxic and less likely to precipitate in the urine and therefore less apt to cause renal complications than any of the other sulfonamide drugs. However, many reports have since appeared of severe renal damage due to the newest of the sulfonamides. Lehr and Antopol¹³ reported renal lesions caused by sulfadiazine in rats and interpreted their significance. Gross, Cooper and Hagen¹⁴ postulated that because urolithiasis occurred in rats given sulfadiazine this complication would occur also in man. They concluded that crystal deposition took place almost exclusively within the renal tubules and commented on the absence of hematuria because of the fan shaped, rounded contour of the crystals and also on the absence of tissue trauma because of imprisonment of the crystals within the tubular structures. Other authors, including Plummer,¹ Flippin and his co-workers¹⁵ and Finland and his associates,¹⁷ reported the incidence of hematuria as

small. Thompson, Herrell and Brown¹⁸ noted a case of anuria after sulfadiazine therapy. Hughes, Sayen and La Towsky¹⁹ reported a case in which actual urinary calculi recovered from the urine were composed entirely of sulfadiazine. These calculi varied from 1 to 3 mm in diameter. Bradford and Shaffer²⁰ reported a death due to sulfadiazine in which the renal changes were similar to those reported in experiments on animals by Antopol and his associates.²¹ An accumulation of precipitated, noncrystalline, free drug was demonstrated within the urinary tract. Following prolonged sulfonamide administration, the resulting uroliths were composed of acetylated drug and the authors used the term "calcifying nephrosis" to describe the reaction in the tissues adjacent to the drug deposits. Special staining demonstrated calcium deposition not only in the zone adjacent to the tubules but also within the lumen. Intense inflammatory changes and extensive necrosis occurred in tissue surrounding the drug deposit when the accumulations were not removed by irrigation within twenty-four hours. Apparently no roentgenograms were available to determine the possible radiopaque nature of this calcareous deposit about and within the renal tubules. Schulte, Shidler and Niebauer²² reported a case of death from anuria due to sulfadiazine. Rames²³ reported an instance of ureteral obstruction and death following the use of sulfadiazine, and Hellwig and Reed²⁴ reported a case of anuria in which death occurred following sulfadiazine therapy. Keitzer and Campbell²⁵ reported 11 cases of renal suppression following sulfadiazine therapy, in 4 of which cystoscopy and ureteral catheterization were required.

For the most part, authors have indicated that sulfathiazole and sulfadiazine crystals precipitated within the renal pelvis and calices are highly soluble and will dissolve readily either under renal pelvic lavage with sterile distilled water through a ureteral catheter or spontaneously if the drug is discontinued and fluids are forced. Crystals precipitated within the renal tubules are not amenable to such therapy. Although there have been no reports of large, conglomerate, putty-like calculi forming within the renal pelvis and calices during sulfathiazole or sulfadiazine therapy, such an occurrence following sulfapyridine therapy was recorded recently by Newman and Shleser.²⁶ In their case the earthy, crumbly, conglomerate mass was removed surgically two years after the sulfapyridine had been administered. That a similar situation may occur during or after sulfadiazine or sulfathiazole therapy when certain precipitating factors such as high urinary concentration and partial or complete ureteral obstruction are present is suggested by the 2 cases here reported.

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REPORT OF CASES

CASE 1—R C S a man aged 48 entered the Methodist Hospital on Feb 1, 1942. A small calculus 4 mm in diameter was demonstrated in the lower portion of the right ureter which produced mild ureterectasis and pyelocaliasis. A ureteral catheter was manipulated past the calculus with difficulty and after 10 cc of dark concentrated urine was aspirated from the right kidney pelvis the patient was relieved of pain in the right flank. Sulfathiazole was given in doses of 60 grams (4 Gm) daily during the next three days. It was discontinued the fourth day because of nausea and resumed the following day in 30 grain (2 Gm) daily doses until February 12, when cutaneous manifestations and fever developed. These apparently were due to drug sensitivity or idiosyncrasy, because the fever and rash promptly subsided after the drug was discontinued. The total dosage of sulfathiazole over the eleven day period was 31 Gm. On the last day of drug administration the blood sulfathiazole level was 37 mg per hundred cubic centimeters and the non-protein nitrogen was 31 mg per hundred cubic centimeters. Adequate fluid intake and output were maintained during this period.

On February 9 ureteral instrumentation was again carried out. A ureteral catheter was introduced easily past the calculus to the right renal pelvis, and 35 cc of dark brownish urine aspirated from the renal pelvis showed 10 to 12 pus cells and 75 to 100 red blood cells per high power field in the uncentrifuged specimen. Sulfathiazole crystals were not seen. Roentgenogram showed no shadow to indicate calculus other than that in the lower portion of the right ureter. The retention ureteral catheter failed to drain adequately owing to the thick consistency of the urine, and therefore it was removed a few hours after insertion, 2 cc of sterile liquid petrolatum being injected as the catheter was withdrawn. The patient left the hospital on February 16.

During the next two weeks the patient continued to have dull aching pain in the right flank and intermittent fever. On February 28 a right ureteral catheter was passed easily to the right renal pelvis and the irrigating fluid returned clear. The renal pelvis was irrigated with 1 per cent silver nitrate solution and the catheter was removed. Roentgenograms showed no calculi either in the ureter or in the renal pelvis although the patient was not conscious of having passed a stone.

During the next month the patient had intermittent fever, uncontrolled gross pyuria, general evidence of sepsis and dull aching pain in the right flank. On numerous occasions the urine was noted by the patient to contain dirty gray shreds and particles. On March 9 the patient brought in a specimen of urine containing a piece of dirty gray membranous material measuring 4 mm in diameter and 3 inches (7.5 cm) in length.

An excretory urogram on March 23 demonstrated moderate impairment of function of the right kidney and numerous calcareous shadows measuring from 5 to 10 mm in diameter, located within moderately dilated right renal calices.

Removal of the calculi by nephrotomy or pyelotomy seemed advisable and operation was carried out on March 27. Moderate perinephric and periureteral inflammation was encountered. When the renal pelvis was opened several ounces of foul smelling but fairly clear urine was released and digital exploration of the calices and pelvis failed to locate any calculi. Because of the severe inflammatory reaction in the renal parenchyma and pelvis, nephrectomy was done.

The kidney was inspected minutely and no calculi were found. The pelvis and calices were partially covered by an adherent dirty gray membrane resembling the material recovered from the urine two weeks before. Some of this membrane was stripped from the walls of the calices. It felt gritty and under the fluoroscope it cast a definite shadow. No crystals were seen in scrapings of this membrane. Pathologic examination by Dr C P Baker revealed that the right kidney weighed 145 Gm. The capsule was firmly adherent. In the cortex and running into the medulla were yellow gray areas measuring 1.4 cm. These were found in both poles of the kidney. The pelvic mucous membrane and that of the calices was thickened. In some of the calices there was calcareous inspissated material.

Sections showed noticeable polymorphonuclear leukocyte collections in the medulla and cortex. The diagnosis was severe pyelonephritis with calcareous inspissated material.

The patient left the hospital on the fourteenth postoperative day and has remained well during the fourteen months since operation.

During the eleven day interval of sulfathiazole therapy, 31 Gm of the drug was administered, the fluid intake and output were adequate and no sodium bicarbonate was given. The nonprotein nitrogen did not rise and the blood sulfathiazole level at the end of this period was only 37 mg per hundred cubic centimeters. The fact that his fever promptly subsided after the drug was discontinued suggests a drug idiosyncrasy or sensitization. No renal shadows were seen until approximately six weeks after the drug was discontinued. While there is no definite proof that sulfathiazole was



Fig 1 (case 2) — Appearance on May 6, 1942 showing a shadow 5 mm in diameter interpreted as a ureteral calculus in contact with the ureteral catheter that has been passed slightly beyond it. Note particularly that there is no evidence of right renal calculus.

the primary cause of the formation of the radiopaque membrane within the renal pelvis and calices. I find no record of such a complication of ureteral calculus reported before the sulfonamides were available. Gross renal infection and unilateral urinary stasis were probably contributing factors but may have been major factors in the cause of this lesion. The decision to remove what were thought to be putty-like calculi from the renal pelvis and calices by operation seemed logical. It is quite possible however that this membranous material might have passed spontaneously as in case 2, although in this instance nephrectomy was desirable because of the gravity and extent of the associated pyelonephritis.

CASE 2—E B a man aged 63 an accountant was admitted to the Methodist Hospital on April 29, 1942 with right renal colic of over a four hours duration. An excretory urogram

on April 30 showed a right ureteral calculus 5 mm in diameter located 10 cm above the ureteropelvic junction. The portion of ureter above the calculus, the renal pelvis and the calices were slightly dilated. Each kidney had good function. One ureteral catheter was passed by the calculus on May 1 but was removed after forty-eight hours because it drained poorly.



Fig. 2 (case 2)—Appearance one week after that shown in figure 1 using two right ureteral catheters. No radiographic material has been detected. What at first appears to be a straghorn calculus filling the pelvis and calices is in reality a radiopaque membrane lining the mucosa in this area. Note the variation in density strongly suggesting the membranous nature and note too that the catheters extend beyond the medial border of the shadow. Repeated irrigations with sterile water failed to effect any change in the appearance of this shadow.

in spite of frequent irrigations with sterile water. During a period of four days, starting May 1, 11 Gm of sulfathiazole was given and oral fluids were forced. Because of diminished urinary output, chills and fever occurring May 4 and 5, cystoscopy was repeated on May 6 and a catheter was introduced past the right ureteral calculus to the renal pelvis, where 5 cc of dark, reddish, turbid urine was aspirated. By x-ray examination no shadows were noted in the renal or ureteral areas, with the exception of the small ureteral calculus previously noted (fig. 1).⁷

The ureteral catheter was left for continuous drainage and kept open by frequent irrigations with sterile water. During the four days that the catheter remained, the fluid intake was maintained by mouth and augmented by intravenous dextrose solution, and the urinary output was noticeably increased to a normal level. Sulfadiazine was started on May 6 and continued until May 12 in moderate divided daily doses. A total of 19 Gm of the drug was given in the seven day period. The sulfadiazine blood level on May 12 was 5.2 mg per hundred cubic centimeters. The nonprotein nitrogen blood level on May 9 was 39.4 mg per hundred cubic centimeters and on May 12 it was 42.5 mg. Because of mounting nonprotein nitrogen, chills and fever, cystoscopy was repeated on May 13. After a right ureteral meatotomy was done, two No. 6 x-ray ureteral catheters were passed by the ureteral calculus to the renal pelvis, where 15 cc of yellowish brown, grossly infected, turbid

urine was aspirated. Roentgenograms taken at this time showed a calcareous membrane covering the entire surface of the mucosa of the upper and middle calices and upper part of the renal pelvis (fig. 2). This remained even after repeated renal pelvic lavage with sterile water. The two ureteral catheters were left for kidney drainage. Nearly continuous sterile water irrigation of the renal pelvis through the two ureteral catheters during the first twenty-four hours failed to show any appreciable change in the extent of the calcareous membrane. Sodium citrate-citric acid solution (sodium citrate 45.2 Gm, citric acid 38 Gm, distilled water 1,000 cc) was used for irrigation during the next twenty-four hours, again without appreciable change in the radiographic appearance of the right renal calcareous shadow. The catheters were removed. The renal output had improved and the nonprotein nitrogen had come down to 33.8 mg per hundred cubic centimeters on May 16. The blood sulfadiazine had come down to 0.7 mg per hundred cubic centimeters on May 16. Cystoscopic examination on May 18 revealed a calculus 5 mm in diameter in the bladder, which was removed. A right ureteral catheter passed through the wide open right ureteral meatus could be introduced only 20 cm up the ureter, where it met an obstruction which was shown by x-ray examination to be due to masses of calcareous deposits in the upper part of the ureter. Other calcareous deposits were noted in the lower calices and at the ureteropelvic junction. The catheter was removed. During the following week the patient improved rapidly, he was free from pain and his temperature remained normal. He was dismissed from the hospital on May 25. Excretory urograms on May 23 showed the right kidney to have fair function and little hydronephrosis, and the calcareous deposits had nearly disappeared from the interior calices, ureteropelvic junction and upper part of the ureter, although the shadow in the upper calices remained unchanged. The nonprotein nitrogen remained normal. The urine was grossly infected.

The patient returned to his work on June 12. On June 26 he had a sudden onset of right renal and ureteral pain. Cystoscopic introduction of a right ureteral catheter and aspiration of 40 cc of dark gray, turbid urine from the right kidney pelvis gave the patient immediate relief. The renal pelvis was thoroughly irrigated with acriflavine solution and 1 per cent silver nitrate. Three days later he voided a large, dirty gray, membranous mass followed by a large amount of turbid gray urine. This material was placed in a bottle of sterile water and roentgenographed (fig. 3). Note that the membranous material resembles closely the shadows previously noted in the right



Fig. 3 (case 2)—Appearance of the membranous material recovered from the patient's voided urine on June 29, forty-seven days after it was first visualized. The membranous material is suspended in a bottle of water. Note that the density and contour resemble the shadow demonstrated in figure 2.

renal pelvis in size, contour and configuration. On July 9, another x-ray examination (fig. 4) showed that the main radiopaque cast was absent from the right superior calyx, although two small, partially calcified encrustations about 6 mm in

diameter persisted in the superior and middle calices and no calcareous deposits were evident in the ureter. On July 31 the urine was crystal clear and no pus cells were seen on microscopic examination. The patient is now symptom free.

Microscopic examination of the urine and scrapings from the membrane showed sulfadiazine crystals. The microscopic paraffin sections were not diagnostic and showed only amorphous material. The crystals had been dissolved in the process of making the sections. Chemical analysis of the membrane was not made.

No attempt to render the urine alkaline was made during the period of sulfonamide therapy. Sulfonamide drugs were given during the thirteen day period from May 1 to May 12 with the exception of one day (May 5). A total of only 11 Gm of sulfathiazole was given in a five day period. Then sulfadiazine was given for seven days, the total dose being only 19 Gm, at the end of which time the sulfadiazine blood level reached only 5.2 mg per hundred cubic centimeters. Sunderman, Pepper and Benditt²⁸ have shown that the acetyl derivative of sulfathiazole is only one tenth as soluble in urine as is the free form, and both are one half as soluble in urine of pH 5.6 as that of pH 7.6. This finding has been corroborated by Curtis and Sobin.²⁹ Since the urine in this case was persistently acid with few exceptions, during sulfonamide therapy alkalis should have been given. While the renal output was consistently below normal during the first six days of sulfonamide therapy, it was adequate during the remainder of the time. This does not necessarily indicate that the output was sufficient from the right kidney, and it must be assumed from the clinical course that drainage from the right kidney was definitely impaired until the calculus was passed on May 17. Certainly, the partial or complete obstruction of the right ureter during this time would render the urine in the renal pelvis highly concentrated and this associated with infection would produce an ideal situation for a deposit of the acetyl and free forms of the sulfonamide drugs.

Sulfonamide compounds would seem contraindicated when ureteral obstruction exists.

The radiopaque calcareous membrane formed very rapidly for it was not present on May 6 (fig 1) although perhaps a membranous deposit had already

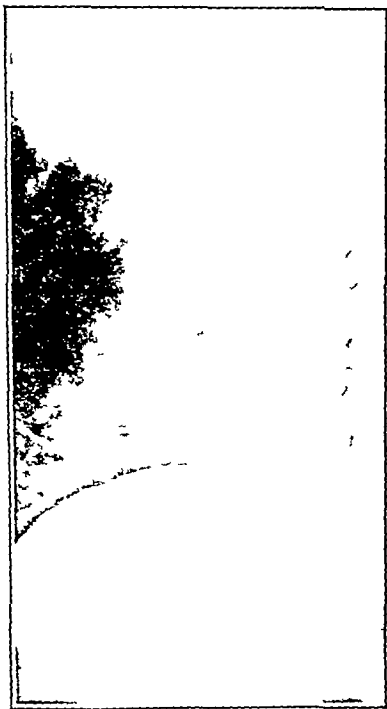


Fig 4 (case 2)—Check up of the right renal area on July 9. Most of the radiopaque membranous material has separated and passed down the ureter.

formed but had not become calcified and therefore was not demonstrable on x-ray examination. On May 13 the membrane was distinctly visible (fig 2). It is probable that the sulfadiazine rather than the sulfathiazole was the cause because sulfadiazine crystals were noted in the urine and in the scrapings from the membrane.

That the sulfonamide compounds were not the major cause in the formation of the membrane is highly possible. Other factors, such as infection and obstruction, may have played a more important part, but I have never encountered a radiopaque membrane lining the pelvis above a ureteral calculus, nor have similar cases been reported by others prior to the sulfonamide era.

SUMMARY AND CONCLUSIONS

Two cases were observed in which a calcareous radiopaque membrane formed on the epithelial surfaces of the calices and renal pelvis of a kidney partially or completely blocked by a small ureteral calculus. Sulfathiazole in 1 instance and sulfadiazine in the other are thought to be at least partly responsible for this complication. Similar sulfonamide renal complications have not previously been reported. The membrane and kidney were available for study in 1 case and only the membrane passed spontaneously in the other.

Sulfathiazole and sulfadiazine may cause rapid formation of a nonsoluble calcareous, radiopaque membrane on the epithelial surfaces of the calices and pelvis if there is an associated ureteral stasis, pyelonephritis and alkaline urine. Therefore these drugs should not be given indiscriminately in such cases but it thought mandatory, every effort should be made to prevent the formation of such membranes by correcting ureteral stasis, maintaining renal drainage, improving the renal output and rendering the urine highly acid (pH 5.6 or less).

Early operative removal of such membranes is not indicated, for it is quite impossible to remove this material early either by nephrotomy or pyelotomy, when separation from the pelvis and calices is difficult. Later such membranes may separate spontaneously and are then more easily removed, or they may pass without operation.

527 Medical Arts Building

The Per Capita Consumption of Sugar—World production of raw sugar in 1939 was not far from 35 million tons. Of this nearly 22 million tons came from the sugar cane and considerably more than 12 million tons from the sugar beet. The United States and its island possessions produced about 5½ million tons. Louisiana and Florida are the leading cane sugar states. California and Colorado the chief beet sugar states. In the United States the per capita consumption of sugar rose from about 40 pounds a year (raw value) in the decade 1870-1879 to 107 pounds in 1920-1929 but dropped back to 102 pounds for the period 1930-1939. In prewar years several other countries reported still higher consumption of sugar but the figures are not available at present. The world average sugar consumption was reported to be 30½ pounds per capita for the season 1939-1940 for one year. The desirability of such a large consumption of sugar in the United States is doubtful. Sugar supplies about one sixth of the caloric mass and hence displaces the consumption of less refined foods that would carry minerals and vitamins as well as energy.—PETERSON, William H., Skinner, John T. and Strong, Frank M. *Elements of Food Biochemistry*. New York: Praeger-Hall Inc. 1943.

²⁸ Sunderman F. W., Pepper D. S. and Benditt Eleanor. Sulfathiazole in Blood and Urine. *Am. J. Med. Sc.* 200:790-795 (Dec.) 1940.

²⁹ Curtis A. C. and Sobin S. S. Solubility of Acetylsulfathiazole and Acetylsulfathiazole in the Urine. *Ann. Int. Med.* 15:554 (Nov.) 1941.

CONTINUOUS CAUDAL ANESTHESIA IN
THREE HUNDRED UNSELECTED
OBSTETRIC CASESMAJOR JAMES M. SILVER
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The history of continuous caudal anesthesia for obstetrics was discussed by Edwards and Hingson¹ in 1942 and later by Hingson and Edwards² and by Gready and Hesselstine.³

This paper is an analysis of 300 obstetric cases at the Brooke General Hospital in which continuous caudal anesthesia was employed. In 288 anesthesia was satisfactory, in 12 it was not and supplementary anesthesia was necessary. This type of anesthesia was used for all patients admitted to the hospital for delivery with a few exceptions which will be mentioned. The 300 cases which form the basis of this report therefore represent an average group and are not selected cases. The only obstetric patients for whom this type of anesthesia was not used were those who presented definite obstetric contraindications such as placenta previa, contracted

hours until the membranes ruptured, whereupon rapid completion of dilatation would ensue. For this reason we artificially ruptured membranes at this stage and thereby considerably shortened labor in these cases. This absence of progress should be watched carefully, otherwise prolonged labor may result.

The second stage of labor was altered greatly by continuous caudal anesthesia. This was particularly true among primiparas. The patient did not have any desire to bear down because of the anesthesia of the perineum. For this reason the head may be left on the perineum for hours if the attending doctor is not watchful.

Multiparas were able to push the baby out rather easily when instructed to do so. Primigravidas were unable to do this even after prolonged pushing. In 20 cases we attempted to have primigravidas expel their babies. In all of these cases the level of anesthesia was well below the halfway mark between the symphysis and the umbilicus. Yet, in all of these cases, after two hours of pushing with their contractions, little progress was made. It is our belief that more than two hours pounding on the perineum is dangerous to the welfare of the infant. For this reason it was necessary to perform episiotomy on all primiparas, and for 70 per cent of our primiparas forceps also were necessary for delivery.

Posterior positions were much more common when caudal anesthesia was employed than in our previous cases. Posterior positions occurred in 10 per cent of the cases, whereas we previously observed it in only 4 per cent. This change was attributed to the relaxation of the levator muscles with the resultant failure of a large number of fetuses to rotate spontaneously. This was compensated for by the ease with which rotation could be effected. This was true only if time was given for the head to descend to the perineum. It was our policy to allow babies in the posterior position to remain on the perineum for two hours and then to rotate the child if rotation had not taken place. Rotation will occur in about 50 per cent of cases under caudal anesthesia. It has been noted in posterior positions that as the head descends through the pelvis the patient experiences severe pressure pains in the back and in the pelvic bones that cannot be relieved by caudal anesthesia. This pain apparently has no relation to uterine contractions, as it is constant. The patients are completely relieved of uterine pain even in the presence of severe pressure pains.

As we have had only four breech presentations in this series, little can be said except that the babies were delivered with ease owing to the relaxation of the perineum. This was also true of the one set of twins. One of these had a breech presentation and the other a cephalic, both were delivered with ease, as the mother had two children and pushed both out spontaneously when instructed to do so.

The third stage of labor should be managed carefully. Oxytocics should not be given prior to separation of the placenta, nor should the uterus be manipulated before separation takes place. If oxytocics are given or the uterus is manipulated earlier, tetany of the uterus is likely to occur and a retained placenta results. One should leave the uterus entirely alone until separation of the placenta takes place, then gentle traction may be made on the cord and, placing the other hand on the abdomen one pushes the uterus gently upward with the thumb, thus the uterus is pushed away from the placenta. When this maneuver is completed, the placenta will be in the vagina and a gentle push on the

Number of Pregnancies and Complications in 300 Obstetric Cases in Which Continuous Caudal Anesthesia Was Employed

Number of pregnancies	Cases
First pregnancies	276
One or more previous pregnancies	24
Complications	
Breech presentation	4
Posterior position	25
Spontaneous rotation	10
Forceps rotation	18
Multiple pregnancies (twins)	1

pelvis or some abnormality of the sacrum or coccyx. This series included anterior, posterior and breech presentations, one face presentation and one set of twins, as may be seen in the accompanying table.

The type of solution used was a 1.5 per cent solution of procaine hydrochloride. The amount given varied considerably, depending on the length of labor and how quickly the continuous caudal anesthesia was started. The largest quantity used was 1,000 cc. and the least was 30 cc. The longest administration was twenty-four hours and the shortest thirty minutes. The average anesthesia time was eight hours and twenty minutes.

The first stage of labor was conducted along natural lines. If its progress was to be normal, it was necessary to watch the level of anesthesia. In our cases we found it expedient to keep the level of anesthesia halfway between the symphysis and the umbilicus. If it was allowed to become lower anesthesia was not complete, and if it extended higher progress of labor was impaired.

It was noted early in our series that in many cases labor progressed rapidly until the cervix was dilated 7 or 8 cm. and then would make no progress for several

From the Sections of Obstetrics and Anesthesia of the Surgical Service of Brooke General Hospital, Fort Sam Houston, Texas.
Released for publication by the War Department Manuscript Board, which assumes no responsibility, other than censorship, for the contents of this article.

1 Edwards, W. B., and Hingson, R. A. Continuous Caudal Anesthesia for Obstetrics, *Am. J. Surg.* 57: 459-464 (Sept.) 1942.
2 Hingson, R. A., and Edwards, W. B. Continuous Caudal Anesthesia for Obstetrics, *J. A. M. A.* 121: 225-229 (Jan. 23) 1943.
3 Gready, T. G., Jr., and Hesselstine, H. C. Continuous Caudal Anesthesia in Obstetrics, *J. A. M. A.* 121: 229-230 (Jan. 23) 1943.

uterus in order to make it act like a piston will deliver the placenta. Gentleness cannot be stressed too much in these maneuvers, otherwise tetany of the uterus will result with retention of the placenta. If the method just described is used, considerably less blood is lost than in cases in which caudal anesthesia is not used. Delivery by Crede's method should never be attempted.

The over-all length of labor was slightly increased in cases of continuous caudal anesthesia. The average length of labor in our cases before caudal anesthesia was employed was eight hours, since caudal anesthesia has been used it has been fourteen hours. This is attributed to the prolongation of the second stage of labor. It has been our policy in this series to take the patient to the delivery room when the presenting part can actually be seen at the vulva.

In the 300 cases no maternal mortality occurred. No effect was noticed on the baby, all cried spontaneously on delivery. Three babies were lost, but the causes were entirely unrelated to the anesthesia. This is a very low fetal mortality rate and may signify that labor under caudal anesthesia is less traumatic to the baby. It cannot be accounted for in any other way.

INDICATIONS FOR STARTING CAUDAL ANESTHESIA

We have learned that certain conditions should be fulfilled before continuous caudal anesthesia should be started. These hold true only for primigravidas, as the caudal anesthesia may be started for multigravidas as soon as definite labor is established. These conditions are as follows: (1) The head should be engaged, (2) contractions should be occurring at five minute intervals or less, (3) there should not be any disproportion between the presenting part and the pelvis and (4) dilatation of the cervix of 1 cm or more should have occurred.

In the first 20 to 30 cases caudal anesthesia was started before the cervix was dilated 1 cm and in some cases before contractions were five minutes apart. In all these cases labor was slowed down definitely and in some it was stopped completely. It was then necessary to let the anesthesia wear off before labor progressed. Caudal anesthesia was started again when the requirements just listed were met. Labor was concluded rapidly. These observations demonstrated that caudal anesthesia should not be started too soon. In the last 150 cases the foregoing indications have been fulfilled before caudal anesthesia was started, and uniformly good results have been obtained.

COMPLICATIONS AND PRECAUTIONS

The dangers of this type of anesthesia may be grouped under three headings: (1) infection, (2) injection into the cerebrospinal space and (3) circulatory collapse.

Infection should be seriously considered as the needle is introduced through a region which is hard to sterilize. In our first cases the site of injection was cleansed with soap and water followed by an antiseptic solution. In the first 50 cases in our series one epidural abscess occurred. The patient was seriously ill for three weeks but responded to large doses of sulfonamide compounds and completely recovered. Since that time we have cleansed the part with soap and water followed by alcohol and ether and then have printed it with an antiseptic solution. It must be stressed that strict asepsis is absolutely essential during the entire technic.

Injection into the dura is obviously dangerous, and the precautions to be taken will be explained in the

technic of administration. This complication did not occur in any of our 300 cases.

The most serious danger is that of circulatory collapse. This occurred in 3 of our 300 cases. In 1 of these the blood pressure and pulse could not be obtained and the fetal heart rate became irregular and almost stopped. The baby put out large quantities of meconium, which was evidence that it was in distress. Epinephrine was given intravenously, and both mother and baby recovered without any apparent ill effects.

To prevent such collapse, 2 minims (0.12 cc) of epinephrine was placed in the first 25 cc of the anesthetic solution injected. This was repeated in subsequent injections only when the systolic blood pressure fell to less than 100 mm of mercury. Since this method was adopted, we have not had any further cases of collapse. Such a small quantity of epinephrine has no effect on labor, and any other effect it may exert is purely transitory.

CONTINUOUS CAUDAL ANESTHESIA IN CASES OF ECLAMPSIA

Continuous caudal anesthesia was used in the treatment of 3 patients who had eclampsia in this hospital. All of these had one or more convulsions, and use of continuous caudal anesthesia gave similar results. The following is a summary of one of the cases.

The patient's blood pressure measured in millimeters of mercury was 190 systolic and 110 diastolic on admission. An attempt was made to quiet her with sedation but her condition failed to improve. Later on the day of admission, blindness developed suddenly. At this time the membranes ruptured and the patient went into active labor. One hour after labor started, she had a convulsion lasting two minutes and went into coma. Blood pressure at this time was 200 mm systolic and 120 mm diastolic. Three hours after labor started continuous caudal anesthesia was begun. The systolic blood pressure immediately dropped to 130 mm and the diastolic to 90. The patient came out of the coma and was rational for the first time in four hours. The headaches and dizzy spells that she had complained of all day were gone and she stated that she felt fine. The blood pressure remained less than 150 mm systolic and 90 diastolic throughout the entire course of labor and the patient was delivered of a normal living child. She did not have any more convulsions nor did she return to coma.

In the other 2 cases of eclampsia the histories were similar and results were equally satisfactory. More work is being done on this phase of continuous caudal anesthesia. It should be pointed out, however, that these patients should be watched for circulatory collapse, as too great a drop in blood pressure might be disastrous.

TECHNIC OF PRODUCING CONTINUOUS CAUDAL ANESTHESIA

The patient is placed on her right side in a modified Sims position and close to the side of the bed. The lumbosacral region is scrubbed with soap and water followed by alcohol and ether. Tincture of mercuriolate then is applied to the region and sterile drapes are put in place. A skin wheal is raised over the sacrococcygeal ligament. A 13 gage needle is passed through the skin wheal and is advanced through the sacrococcygeal ligament. After the tip of the needle comes into contact with bone on the anterior border of the caudal canal, the needle is rotated 90 degrees to bring its bevel against bone. The needle is then advanced about 1 inch (2.5 cm). A glass syringe containing 25 cc of the anesthetic solution is attached to the needle and 1 or 2 cc of the anesthetic solution is injected to clear the

needle of any obstruction. The plunger is withdrawn gently in order to make sure that the tip of the needle is not lying within the lumen of a blood vessel or within the subarachnoid space. Twenty-five cc of the anesthetic solution is injected slowly into the caudal canal.

As soon as the initial dose has been injected the syringe is detached from the needle and a No. 5 French nylon ureteral catheter which has been sterilized in an autoclave is passed through the needle and is advanced until the tip of the catheter is approximately $1\frac{1}{2}$ inches (3.8 cm) above the sacral hiatus. The catheter is now supported in place while the needle is removed. The catheter is taped to the skin and the region is sealed with adhesive tape to prevent soiling from the perineum. The patient may now be turned on her back and made comfortable. It is important to refrain from advancing the tip of the catheter more than $1\frac{1}{2}$ inches (3.8 cm) into the caudal canal. If the catheter is placed high in the canal, unilateral anesthesia may result.

Additional injections of 25 cc of the anesthetic solution are given whenever the patient begins complaining of discomfort.

COMMENT

We believe that the catheter method is much safer than the method of using an indwelling needle. If a needle breaks in the caudal canal surgical intervention for its removal will be necessary. Indwelling needles also produce an unnecessary amount of trauma inside the caudal canal. The sacrococcygeal ligament acts as a fulcrum, holding the hub of the needle in a fixed position. Every motion of the patient will cause the tip of the needle to sweep the inside of the caudal canal, damaging the vascular plexus and traumatizing the periosteum. This cannot happen if the needle is replaced with a flexible ureteral catheter.

The position of the patient during the initial injection is important. We do not believe we are justified in employing the knee-chest position. If the patient is placed in a modified right Sims position near the edge of the bed it is an easy matter to reach over her and place the needle and catheter in the caudal canal.

We have kept our patients in a slight Fowler position during labor. This prevents the anesthesia from ascending to an unnecessary height and also prevents the fall in blood pressure and nausea which frequently occur if the anesthetic solution ascends to envelop the thoracic nerves.

Our first 25 or 30 patients were anesthetized with 1.5 per cent solution of procaine without epinephrine. In these cases we observed a few who had a sudden lowering of blood pressure followed by a feeble thready pulse, nausea and vomiting. Since that time we have included 2 minims of epinephrine with the initial injection for all patients except those with toxemia. We have not observed evidence of cardiovascular collapse since epinephrine was added to the anesthetic solution, nor have the patients become nauseated.

We have used metycaine for a number of patients and have not been able to demonstrate results superior to those obtained with procaine. Procaine has been used in the majority of our cases because we believe it to be the safest local anesthetic agent available at present.

CONCLUSIONS

1 Continuous caudal anesthesia is satisfactory in most cases.

2 We feel that the use of a ureteral catheter is safer and more comfortable for the patient.

3 Epinephrine should be added to the initial injection of anesthetic solution into the caudal canal in all cases except those of toxic reactions.

4 Continuous caudal anesthesia may be of service in cases of eclampsia, for 3 patients with eclampsia were delivered while under caudal anesthesia without any maternal or fetal death and with apparent control of symptoms of toxemia.

5 Absolute asepsis must be observed at all times.

6 A lower fetal mortality rate than usual was noted.

EXCRETION OF THIAMINE, RIBOFLAVIN, NIACIN AND PANTOTHENIC ACID IN HUMAN SWEAT

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The excretion of vitamins in sweat is of interest from the standpoint of the metabolism of such vitamins in the body and the possible loss of such vitamins by this channel, especially in instances of profuse sweating. Such results also have a bearing on the physiology of perspiration. The amount of sweat vitamins might also conceivably have a bearing on the growth of organisms on the skin, since some of these vitamins have a definite effect on the growth of certain micro-organisms.

One of us has reported on the excretion of ascorbic acid in sweat.¹ An increased excretion of this vitamin was noted in sweat after administration of large doses of the vitamin. Hardt and Still² studied the excretion of thiamine as well as of ascorbic acid in sweat after exercise. They concluded that 5 to 15 per cent of ingested thiamine might be the daily loss by way of the sweat and that the giving of 50 mg of thiamine to their subjects led to an increased excretion of thiamine by this channel. Results on niacin, pantothenic acid and riboflavin do not appear to have been previously reported.

We have studied the excretion of thiamine, niacin, riboflavin and pantothenic acid in heat sweat of human subjects with and without the administration of large doses of these vitamins. The subjects were normal men.

METHODS

Specimens of sweat were collected as follows. The subjects were encased in a rubber bag as far as their necks and were seated in a heat cabinet. Incandescent lamps furnished sufficient heat to obtain 100 to 200 cc of sweat in twenty to thirty minutes.

Thiamine was determined by the chemical method of Kirch and Bergeim,³ and niacin,⁴ pantothenic acid⁵

The expenses of this investigation were met in part by a grant made to the University of Illinois by Standard Brands, Inc. From the Departments of Dermatology, Physiological Chemistry, and Chemistry, University of Illinois College of Medicine and of Pharmacy.
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and riboflavin⁶ by microbiologic methods. In the thiamine method the sweat was concentrated by evaporation in vacuo in acid solution. In the other methods the sweat was filtered and heated to kill bacteria before analysis.

In certain instances large doses of the vitamins were given by mouth or by intramuscular injection at different periods before sweating was induced. Details of administration and analytic results obtained are given in table 1.

THIAMINE IN SWEAT

Thiamine values varied from <0.06 to 0.60 microgram per cubic centimeter of sweat. The <0.06 microgram value does not indicate a complete absence of thiamine but merely that the amount was too small to be determined by the chemical method used. In general subjects were given a shower bath shortly (usually about forty-five minutes) before sweating was induced. This was done in order that sweat evaporated on the skin might be removed so that the results obtained would approximate as closely as possible the values for the sweat as it poured out by the sweat glands. Nevertheless some concentration of sweat on the surface of the skin probably occurred in some cases, and some of the values may be somewhat high on this account. This is suggested by the fact that when two successive samples of sweat were obtained the second sample generally showed somewhat lower values for thiamine as well as other vitamins. The lower values in the table are thus probably in general to be given some preference. Further light is thrown on this question by experiments 21 and 22. In experiment 21 two samples of sweat each of 200 cc were collected one immediately after the other. The first sweat should have washed the skin well, so that the second sweat should have been a fairly pure secretion. Yet analysis for the vitamins shows little change in values. Nor were the results much different in experiment 22 in which a single specimen was taken from the same subject without previous bathing. Experiment 22 may have been influenced by the fact that on the day of sweating the outdoor temperature was around 95° F and hence fairly profuse sweating had occurred before the sample was taken. That the influence of evaporation of sweat on the skin in these experiments was not such as strongly to affect the results is further indicated by the reasonable constancy of the findings and by comparisons such as were made in experiments 19 and 20 in which the findings were similar in spite of the fact that in the first test the subject was given two baths at forty-five minutes and five minutes before sweating was induced and in the second case no bath at all was given on the day of sweating.

An average value of 0.2 microgram per cubic centimeter of sweat was obtained. For reasons stated this figure may be a little high and the value of 0.15 microgram may be more nearly representative. A really definitive average would require a larger number of cases. 0.15 microgram per cubic centimeter would correspond to 150 micrograms per liter of sweat. Hardt and Still⁷ found about 90 micrograms per liter in their experiments.

The physiologic significance of these results is not entirely clear. Williams⁸ gives figures on the amounts

of these vitamins contained in a well rounded diet (2,500 calories). For thiamine he gives a figure of 3 mg a day. Lane, Johnson and Williams⁹ calculate, however, that the thiamine content of the average American diet, such as was consumed by the middle two thirds or three fourths of the population prior to the advent of enriched bread and flour was about 0.8 mg per 2,500 calories and that if the use of enriched flour and bread becomes universal the average intake will be increased to about 1.3 mg per 2,500 calories. Taking the figure of 150 micrograms per liter of sweat, one would have in this amount of sweat about 5 per

TABLE 1—Thiamine, Riboflavin, Niacin and Pantothenic Acid in Sweat (Micrograms of Vitamin per Cubic Centimeter of Sweat)

Ex periment	Thi amine	Ribo flavin	Niacin	Panto thenic acid	Type of Diet and Comment
1	<0.06	0.10	0.36	0.43	Regular mixed diet
2	<0.06	<0.06	0.10	0.33	Regular mixed diet
3A	<0.06	0.12	0.33	0.30	Regular diet—thiamine 3 mg, riboflavin 3 mg, niacin 30 mg and pantothenic acid 10 mg a day for 4 days' first sweat specimen
3B	<0.30	0.10	<0.10	0.30	Same as 3A second sweat specimen
4	0.60	0.12	0.30	0.26	Same as 3A for 3 days' no extra vitamin for 2 days before sweating
5	0.15	0.11	0.40	0.35	Regular mixed diet
6	0.30	0.11	<0.10	0.45	Regular mixed diet
7	0.06	0.18	0.15	0.33	Regular mixed diet
8	0.24	0.20	0.10	0.38	Regular mixed diet
9	0.30	0.23	0.12	0.37	Regular mixed diet
10	0.06	0.16	0.12	0.78	Regular mixed diet
11A	0.06	0.30	0.12	0.30	Regular mixed diet
11B	<0.06	0.20	0.13	0.20	Same sweat as 11A but incubated for 24 hours at 37° C before analysis
12	<0.06	0.03	0.25	0.33	Regular mixed diet
13	0.24	0.25	0.30	0.32	Regular mixed diet
14	<0.06	0.15	0.29	0.23	Regular mixed diet
15	0.06	0.03	0.30	0.20	Day of sweating thiamine 6 mg, riboflavin 10 mg, niacin 100 mg, pantothenic acid 20 mg preceding day 14 times as much
16A	0.30	0.14	0.46	0.34	Regular diet—sweat before vitamin injection
16B	0.15	0.05	0.35	0.23	Sweat 30 minutes after intramuscular injection of thiamine 10 mg, riboflavin 16 mg, niacin 30 mg, pantothenic acid 36 mg
17	0.09	0.13	0.30	0.19	Regular mixed diet 4 days after injection (16B)
18A	0.45	0.13	0.30	0.30	Regular mixed diet before vitamin injection
18B	0.30	0.14	0.30	0.12	One hour after intramuscular injection of thiamine 15 mg, niacin 30 mg, riboflavin 15 mg and pantothenic acid 84 mg
19	0.30	0.35	0.35	0.38	Regular mixed diet bath 45 minutes and 5 minutes before sweating
20	0.20	0.30	0.20	0.19	Same as 19 but no bath on day of sweating
21A	0.40	0.20	0.12	0.30	Regular diet first 60 cc of sweat
21B	0.30	0.30	0.10	0.20	Same as 21A second 60 cc of sweat
22	0.34	0.19	0.15	0.19	Same as 21A but no bath on day of sweating

cent of a good intake or about 11.5 per cent of the 1.3 mg figure for the average American diet. Under average conditions of temperature and humidity and light work the amount of sweat may not be much over 500 cc a day. Any increases in temperature and amount of work readily increase the amount of sweating, so that with warm weather or fairly active work 2 to 3 liters of sweat may be secreted and with a hot environment and active work considerably larger amounts of sweat may be poured out. With 3 liters of sweat the loss by secretion would correspond to about 15 per cent of intake on a good diet and more than 30 per cent of intake on the average American diet,

⁶ Snell, F. E. and Strong, F. M. *Indust. & Engin. Chem. (Anal. Ed.)* 11: 346 (1937). Silber and Unna.⁷
⁷ Williams, R. J. *Approximate Vitamin Requirements of Human Beings*. J. A. M. A. 119: 15 (May 2) 1942.

⁸ Lane, K. L., Johnson, E. and Williams, R. R. *Source of the Average American Diet*. *Food and Nutrition* (June) 1942.

taking the 1.3 mg figure. Hardt and Still figured that 5 to 15 per cent of ingested thiamine is lost with moderate temperature and work. It would seem that under average conditions the loss of thiamine in sweat, while appreciable, might not be of great physiologic significance. With profuse perspiration the loss might well be of sufficient concern to warrant special precautions to insure that the thiamine level of the diet did not fall too low. It must, of course, be borne in mind that some persons may excrete more than the average amount on which these calculations are based and some definitely less.

RIBOFLAVIN IN SWEAT

Riboflavin values found for sweat were 0.03 to 0.30 microgram per cubic centimeter, or an average of 0.15 microgram. With some special emphasis on the lower values or reasons previously stated, the average would be nearer 0.12 microgram. This would be 120 micrograms per liter of sweat and a little over 3 per cent of the figures of Williams for a good diet (37 mg a day or about 5.5 per cent of a more nearly average American intake of 2.2 mg). These values are somewhat less than those obtained for thiamine, and the physiologic significance of the losses by sweat may be somewhat less. The loss under average conditions is probably not of great importance but might become so in case of profuse perspiration and diets not optimal for this vitamin.

PANTOTHENIC ACID IN SWEAT

For pantothenic acid values of 0.12 microgram to 0.80 microgram were obtained with an average of 0.34 microgram per cubic centimeter of sweat. As the lower values probably represent more nearly the sweat as secreted, a figure of 0.3 microgram may be more representative. If one considers a good diet to contain about 11 mg of pantothenic acid, the loss in a liter of sweat would be about 3 per cent of intake, or for 3 liters about 9 per cent. This loss is proportionally similar to the losses of thiamine and riboflavin and may have a similar significance.

NICOTINIC ACID IN SWEAT

Values for nicotinic acid in sweat were obtained varying from 0.1 to 0.46 microgram per cubic centimeter, with an average of 0.23 microgram. This may be slightly high owing to the concentration of sweat on the skin, so that a value of 0.2 microgram may be more nearly correct. This would correspond to 200 micrograms of nicotinic acid per liter of sweat. This would be about 0.5 per cent of the amount in a good diet or about 1 to 2 per cent of that in more usual but adequate diets. The loss of nicotinic acid in sweat could hardly be of physiologic significance.

INFLUENCE OF HIGH VITAMIN INTAKE

Several experiments were carried out in which the person was given large amounts of each of the vitamins studied either by mouth or by intramuscular injection. The results are given in table 1. The results for thiamine are somewhat irregular, so that further study is needed. The results are complicated by the fact that when no special vitamin is given a second specimen of sweat may contain less vitamin than a first specimen,

owing probably to the fact that the first sweat washes out any adherent vitamin that may have been concentrated on or in the skin. Also, perhaps, because the effects of administration are somewhat transitory. Hardt and Still found that after one hour of exercise the ratio of thiamine in sweat to that in urine might be 71:1 and after an hour and a half only 8.5:1. Our results, as far as they go, indicate that injection or ingestion of thiamine in large amounts may have some effect on excretion in the sweat, but such effect is very slight compared with the amounts so administered.

It may be that there is some effect as long as the thiamine in the blood remains very high but that the thiamine is rapidly removed from the blood by the tissues so as not to be readily called on for excretion. This fits in with the fact that the thiamine content of the blood is very low and exists mostly in combined form. We have tested several specimens of sweat for thiamine pyrophosphate by treating the sweat with phosphatase⁹ before analysis, and our results have always been negative.

No increase of riboflavin was noted in sweat after ingestion or injection of large doses of this vitamin. Nor were definite significant changes noted in the studies on niacin and pantothenic acid. It seems clear, therefore, that when large doses of the four vitamins studied are given by mouth or are injected intramuscularly a considerable part of this vitamin is not excreted in the sweat. This is probably due largely to the fact that these vitamins do not remain in free form in the blood in high concentration for any long period. This appears to be more probable than that the sweat glands have such an extremely low capacity for excretion of these vitamins, since, as shown by Hardt and Still, under certain conditions the excretion of thiamine in sweat may be greater than that in urine. Under ordinary conditions, however, the twenty-four hour elimination of these vitamins by the urine is much greater than in the sweat. It must also be borne in mind that the combined urine and sweat thiamine do not account for more than a part of the ingested thiamine, apparently because of the destruction of the vitamin in the body.

The losses per liter of sweat of about 3 to 10 per cent of the intake for thiamine, riboflavin and pantothenic acid are not much different from the losses of about 4 per cent for ascorbic acid (about 2 mg per liter compared with the adult requirement of about 50 mg a day). Since vitamin C-salt tablets have been reported from the medical division of the du Pont Company as superior to salt alone in cases of profuse sweating, it is possible that the other vitamins might also be helpful under similar conditions.

BACTERIA AND THE VITAMINS OF SWEAT

The bacteriology of the sweat as far as these vitamins are concerned may be considered from two angles. The question arises first as to whether the sweat bacteria destroy or use up the vitamin present or engage in any synthesis. We found on incubating sweat at 37°C for twenty-four hours that there was some decrease in the thiamine level but no change in the pantothenic acid, niacin or riboflavin levels. Under these conditions considerable bacterial growth occurs and the sweat changes from a pH of about 5 to one of about 8. It may be that the destruction of thiamine noted was due to the alkalinity developed. However, it does not appear that

⁹ Stuebeling, Hazel K., and Phipard, Esther F. Diets of Families of Employed Wage Earners and Clerical Workers in Cities, Washington, D. C., Circular 507, United States Department of Agriculture, 1939.

bacteria are much concerned with either the formation or the destruction of these vitamins on the surface of the skin and that the vitamins found are not of bacterial origin.

Further support for this view was obtained in experiments in which 5 cc of sweat was added to 5 cc of plain broth with or without the addition of 20 micrograms of thiamine and incubated at 37 C for twenty hours. No significant change was noted in the amount of thiamine in either case indicating that the bacteria of the sweat neither synthesized nor destroyed thiamine under these conditions. The use of dextrose acid mediums in place of plain broth gave similar results, indicating that the p_H of the medium was not a factor. The results are shown in table 2.

SUMMARY AND CONCLUSIONS

Heat sweat was found to contain on the average about 150 micrograms of thiamine, 120 micrograms of riboflavin, 300 micrograms of pantothenic acid and 200 micrograms of nicotinic acid. It is possible that these values may be slightly higher than true values for sweat as secreted by the glands because of the difficulty of entirely avoiding concentration due to evaporation on the skin surface. These values per liter correspond

TABLE 2—Sweat Bacteria and Thiamine Destruction and Synthesis

Five cc of sweat plus 5 cc of medium was incubated at 37 C for twenty hours. Bacterial growth was noted in all cases.

Experiment	Medium Used	Thiamine Present Before Incubation Micrograms	Thiamine Found After Incubation Micrograms
1	Plain broth	0	0
2	Plain broth	0	0
3	Plain broth	20	21
4	Plain broth	20	21
5	Acid dextrose broth	0	0
6	Acid dextrose broth	0	0
7	Acid dextrose broth	20	20
8	Acid dextrose broth	20	21

for thiamine to about 5 per cent of intake on a good diet, for riboflavin and pantothenic acid to about 3 per cent and for nicotinic acid to about 0.5 per cent. For average American diets the percentages would be more nearly 10 per cent for thiamine, 5 per cent for riboflavin and 1 per cent for nicotinic acid. The excretion of such amounts of these vitamins cannot be said to be negligible from the physiologic standpoint although perhaps becoming of real importance only in case of rather profuse sweating or on diets low in these vitamins. The elimination of nicotinic acid could hardly be of importance in any case. The losses of the other vitamins are of the same order as losses reported for ascorbic acid in sweat. Since favorable results have been reported in the administration of ascorbic acid in cases of profuse perspiration it is possible that supplements of other vitamins might be worthy of trial under similar conditions. Ingestion or intramuscular injection of large amounts of these vitamins did not lead to any noticeable or persistent increase of their secretion in the sweat.

These vitamins as found in sweat appear to be a true excretion not appreciably influenced by bacteria on the skin. Sweat contains sufficient of these vitamins to promote bacterial growth provided conditions are otherwise favorable. Thiamine appears to exist in sweat only in the free form.

FAMILIAL TUBEROUS SCLEROSIS (EPILOIA) WITHOUT ADENOMA SEBACEUM

REPORT OF TWO CASES

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Tuberous sclerosis (epiloia, Bourneville's disease) is considered a rare and unusual entity. For this reason its presence as a diagnostic possibility in cases in which epileptiform seizures are present is seldom entertained. Yet the literature on this subject has assumed impressive proportions. In the sixty years from the time Bourneville¹ first described it in 1880 down to 1940 one hundred and twelve reports have been collected dealing with tuberous sclerosis and its related neurocutaneous syndromes (Recklinghausen's neurofibromatosis, angiomas of the cerebri or Sturge-Weber's disease, and von Hippel-Lindau's disease).

In recent years the roentgenologist has become more alert to the significance of metastatic calcifications (calcified plaques) in survey films of the skull as an identifying feature of tuberous sclerosis, and the internist has in turn been stimulated to search for its other characteristic manifestations. With the increasing use of pneumoencephalography, this type of ectodermosis is being more commonly reported, its features are more clearly defined and more light has been thrown on its hamartial nature and its relation to the tumor problem.²

In this communication it is our purpose to present 2 cases of familial epilepsy in which the weight of evidence is diagnostic of tuberous sclerosis.

REPORT OF CASES

CASE 1—W. M. Jr., a white man aged 22, seen April 8, 1941, had a history of epileptic seizures and poor vision. He had been a confirmed epileptic since the age of 2 years. In the week preceding the first visit he averaged eight to ten seizures a day. Well defined mental deterioration and periods of irritability had appeared in recent months. He stuttered and had never been able to pursue any gainful occupation. His father's grandfather was known to have had convulsions. A grandfather and aunt were operated on for 'brain tumor'. Physical examination revealed no cutaneous lesions and no evidence of facial rash suggestive of adenoma sebaceum. The extremities showed no loss of motor power. Decided mental retardation was present.

The eyeballs were prominent with a widening of the palpebral fissures. There was a horizontal and rotatory nystagmus present with movement to the right. Extensive choroidal changes were present involving both eyes with a moderately advanced grade of optic atrophy. Large macular atrophic lesions were noted. Myopia of a high grade was found. The lesions were believed by the ophthalmologist to be on the basis of a hereditary macular degenerative process, congenital and colobomatous in origin.

Roentgenograms of the skull showed that the outer table was thick and a number of calcified deposits were seen

From the Jewish Hospital.
Dr. Samuel Levine rendered aid in the interpretation of the roentgenogram.

Released for publication by the War Department Medical Service, which assumes no responsibility other than censorship for the contents of this article.

¹ Bourneville D. M. Contribution à l'étude de l'épilepsie et de l'épilepsie hémiparétique. Arch. de méd. 1880; 1: 31-41.
² Molten S. E. Hamartial Nature of Tuberous Sclerosis (Cerebral and Its Location in the Tumor Process). Report of Cases with Autopsy of the Kidney and Adenoma Sebaceum. Arch. Int. Med. 63: 531-729 (April) 1942.

throughout the calvarium 3 to 5 mm in circumference (figs 1 and 2). A pneumoencephalogram (made by Dr Michael Scott) showed focal areas of brain atrophy in the right parietal region. There was an obliteration of the subarachnoid pathways in the right frontal area. A number of microgyria were observed. The right ventricle was not outlined by air.

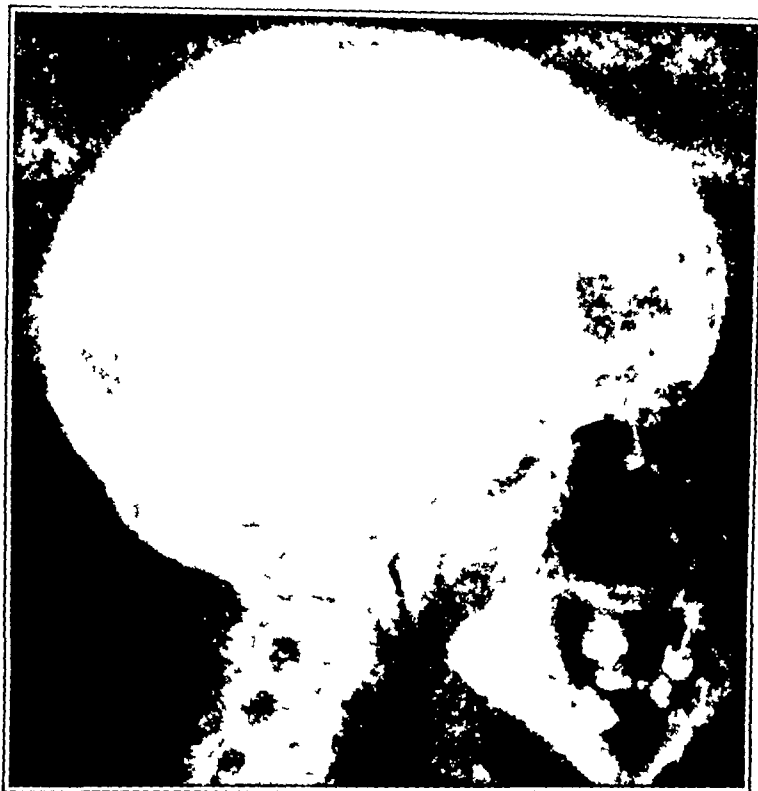


Fig. 1 (case 1)—Lateral view of survey roentgenogram showing metastatic calcifications throughout the calvarium. The patient has epilepsy with mental deterioration and macular degenerative changes.

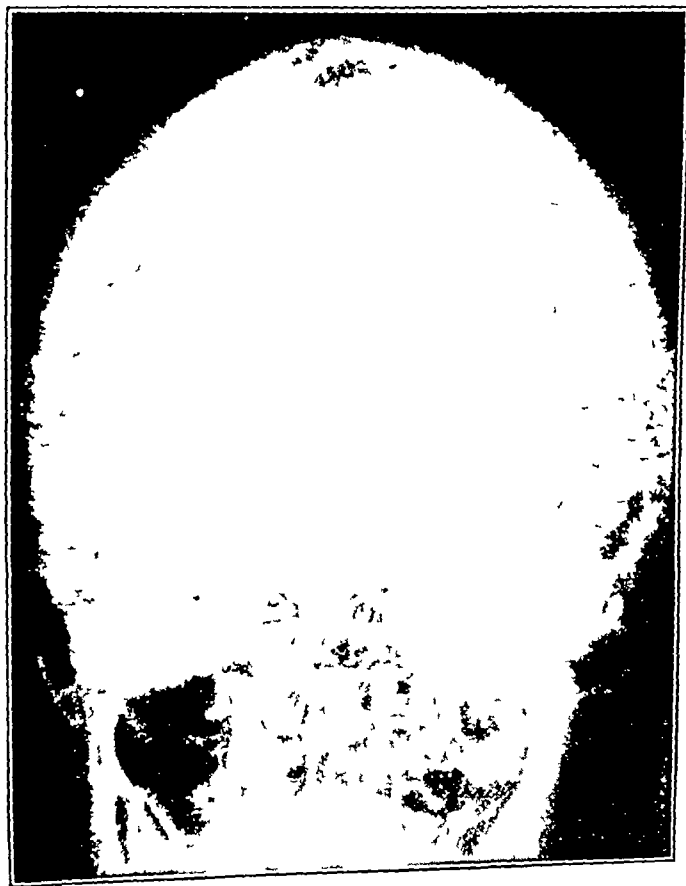


Fig. 2 (case 1)—Anteroposterior view showing calcified areas scattered throughout the brain substance, one is situated in the region of the right ventricle.

Numerous small irregularly calcified deposits were seen (figs 3 and 4) which in the opinion of Dr E. P. Pendergrass, were situated within the ventricles. Two masses may be noted in figure 4 located in the region of the unfilled right ventricle in the anteroposterior view.

The hemoglobin content was 135 Gm., and there were 4,950,000 red blood cells and 6,800 white blood cells. Sick cells were absent. Serologic reaction of the blood was negative. No ova or parasites were found on repeated stool examinations. The purified protein derivative test was negative. Blood calcium was 111 mg per hundred cubic centimeters of blood. A roentgenogram of the chest showed clear lung fields, and the long bones presented no alteration in structure or architecture. Intravenous urography showed good bilateral function and no evidence of renal neoplasm or congenital malformation. The patient responded well to phenytoin sodium therapy and at present convulsions have decreased to two slight attacks every three months.

CASE 2—W. M., a white man aged 46, father of W. M. Jr., was seen Nov. 12, 1941 following a typical epileptic seizure of short duration. The history revealed one slight attack twelve years before. Examination, both physical and neurologic, proved negative. The eyegrounds were normal.

A roentgenogram of the skull on the left side in the basal view showed one or two small calcifications situated in the region of the left ventricle (fig. 5).

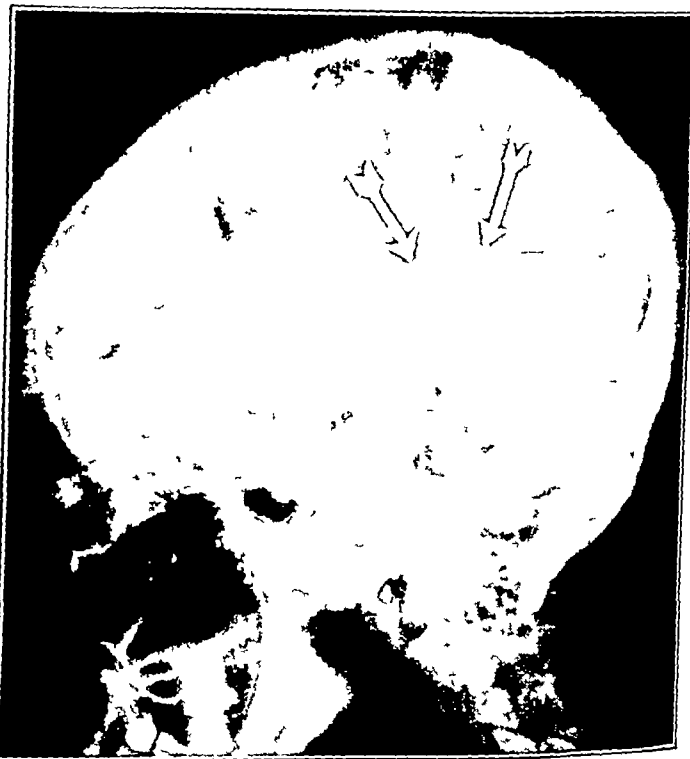


Fig. 3 (case 1)—Lateral view following pneumoencephalography showing calcifications within the shadow of the left ventricle above the fluid level. Note microgyria.

With phenobarbital and sedatives, the patient was asymptomatic until April 4, 1942, when a convulsion occurred in his sleep.

SYMPTOMS

Tuberous sclerosis, in its classic form, presents the following symptoms: (1) epileptic seizures, (2) mental deficiency, (3) adenoma sebaceum (acneiform eruption, butterfly or bat wing in distribution, involving the nasolabial folds and having a trigeminal distribution), (4) congenital tumors of the eye (van der Hoeve's phacoma) and of other organs including rhabdomyomas of the heart and kidney (hypernephroma or Wilms' tumor), (5) periungual fibromas, (6) cystic changes in the small bones, (7) other less frequent congenital defects such as harelip, cleft palate, hypoplasia of kidney and ureter, pulmonary artery stenosis, simian hands, hypertrophy of the external ears, high arched palate, spina bifida, microcephaly and accessory digits, syndactyly, hemihypertrophy, epicanthus, transposition of the great vessels and intestinal polyps.

PATHOLOGY

Sclerotic potato-like patches are scattered over the surface of the brain, and from this characteristic the name tuberous sclerosis is derived. The heterotopic plaques are distinguished from the normal cortex by their rubbery consistency.⁴ More characteristic are the

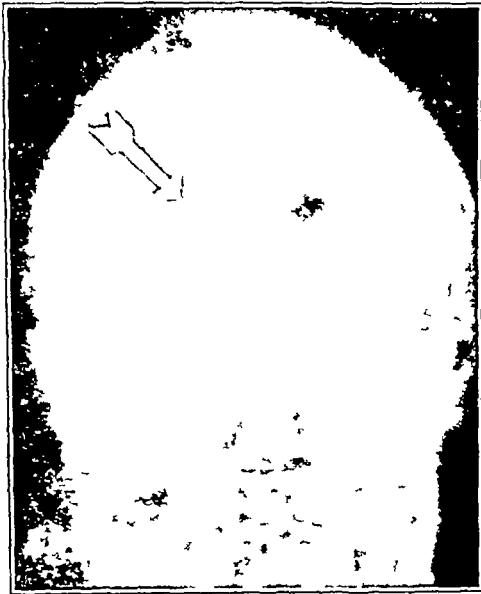


Fig. 4 (case 1)—Posteroanterior view of pneumoencephalogram. Arrow indicates calcified mass located in region of right ventricle which did not fill with air.

subependymal proliferations that are found in the lateral ventricles closely associated with the choroid plexuses.

Abortive and latent forms of the disease lacking a fully developed picture have been recognized. Critchley and Earl⁵ classify these as follows:

- 1 Adenoma sebaceum alone
- 2 Adenoma sebaceum with epilepsy and without mental defect
- 3 Adenoma sebaceum with symptoms pointing to intracranial neoplasm
- 4 Visceral tumor alone with familial history of tuberous sclerosis

Demonstrable calcifications within the brain in tuberous sclerosis were first mentioned in the Scandinavian literature when Dalsgaard-Nielsen⁶ reported fleecy calcifications in a boy aged 14 years who had had convulsive seizures since the age of 9 months and adenoma sebaceum at the age of 12 years. Some were interpreted as hyperostotic formations of the internal lamina, others were assumed to be in the brain substance. The need for the use of the pneumoencephalogram in the light of these facts becomes apparent.

ETIOLOGY

Adenoma sebaceum appears to be evidence of a general ectomesodermal disturbance. The retinal tumors are believed by Grinker⁷ probably to be astroblastic neoplasms, and others view them as tumors of low

malignancy. The congenital phacomias arise from the nerve fiber layer appearing as small white or gray tumors. These were noted by van der Hoeve⁸ in his original description as being also present in von Recklinghausen's neurofibromatosis and von Hippel-Landau's disease which emphasizes one of the characteristics common to this group of congenital neurocutaneous syndromes.

In the background of these congenital anomalies, Yakovlev and Guthrie⁹ state, is present an embryonal disturbance of the differentiation of the ectodermal elements. The similarity between tuberous sclerosis, neurofibromatosis and trigeminal nevus (angiomas cerebri) has been ascribed by Schwartz and Abramson¹⁰ on an etiologic basis to the interplay of varying combinations of developmental defects. "Of special interest is the occurrence of cutaneous anomalies which are indicative of associated maldevelopments in deeper seated embryologically related structures such as the central and peripheral nervous systems. Also of importance is the frequent association of the three congenital disorders with mental defect and epilepsy."

COMMENT

The discovery of discrete calcified intracranial deposits renders it incumbent on the observer to incriminate or exclude, in addition to tuberous sclerosis, a number of causes. These may be (1) calcified hemorrhagic foci due to birth injury, (2) tuberculomas, (3) calcified multiple angiomias, (4) parasitic disease (calcified echinococcus cysts), (5) disturbance in calcium metabolism as seen in parathyroid disease, (6) old abscesses as a result of meningeal disease or pachymeningitis.

In the cases reported herewith, the studies served to exclude any of these possibilities. Birth injury was



Fig. 5 (case 2)—Basal view of survey film. Arrows indicate two small calcifications in the region of the left ventricle. Father of patient 1 with a history of convulsions and long periods of remission.

absent. Tuberculosis was ruled out by a negative history, examination of the chest and cutaneous tests. Stools were clear of ova and parasites. Blood calcium

⁴ Lind W. A. T. Epilepsy M. J. Australia 2: 290-294 (Sept. 20) 1924.

⁵ Critchley, MacDonald and Earl, C. J. C. Tuberous Sclerosis and Allied Conditions. Brain 55: 311-346 (Sept.) 1932.

⁶ Dalsgaard-Nielsen, T. Tuberous Sclerosis with Unusual Roentgen Picture. Nord. med. tidskr. 10: 1541-1548 (Sept. 28) 1935 (quoted by Heublein, Fendergras and Widmann⁷).

⁷ Grinker, R. R. Tumors of the Retina in Cytology and Cellular Pathology of the Nervous System. New York, Paul B. Hoeber, Inc. vol. 3, pp. 1055-1059.

⁸ van der Hoeve, J. The Doyne Memorial Lecture. Eye Symptoms in Phacomatosis. Trans. Ophth. Soc. U. Kingdom 52: 389-401, 1932.

⁹ Yakovlev, P. I. and Guthrie, R. H. Congenital Ectodermic (Neurocutaneous) Syndromes in Epileptic Patients. Arch. Neurol. & Psychiat. 26: 1145-1194 (Dec.) 1931.

¹⁰ Schwartz, H. and Abramson, H. Neurocutaneous Syndromes in Childhood. J. Pediatr. 3: 587-607 (Oct.) 1933.

and phosphorus levels were within normal limits. There was no history of infection or meningeal disease, as well as no roentgen evidence of cystic bone disease. The serologic tests were negative.

The weight of evidence favoring a diagnosis of tuberous sclerosis in case 1 includes the presence of epileptic seizures, mental deficiency, eye changes consisting of congenital degenerative atrophic macular changes, calcified masses in the brain localized to the ventricles with an associated microgyria, familial tendency as shown by the presence of epileptic seizures and similar calcifications located in the region of the father's left ventricle and the further evidence of convulsions and brain tumor in the history of other members of the family.

The absence of the typical cutaneous manifestations (adenoma sebaceum) in both cases in the presence of these observations serves to classify these cases among the abortive forms. A number of cases of tuberous sclerosis have been reported in which evidence of nevus facial eruption was not present. Berkwitz and Rigler¹¹ report a case in which encephalography disclosed multiple tumor-like nodulations in the lateral ventricles with none of the usual evidences of adenoma sebaceum. A case reported by Drake¹² as tuberous sclerosis showed discrete masses of calcifications in the occipital region with bulging of the right thalamus into the lateral ventricle by encephalography, but physical examination revealed neither retinal phacomia or adenoma sebaceum. Heubelm, Pendergrass and Widmann,¹³ who quote Drake's case, concur in his opinion that this clearly represented a case of tuberous sclerosis.

The familial incidence of tuberous sclerosis has been reported by a number of observers. Fabing¹⁴ reported its presence in identical twins, and 5 cases of adenoma sebaceum in one family were cited by Shelmire.¹⁵ As previously noted, a latent form classified by Critchley and Earl includes one of visceral tumor with a family history of tuberous sclerosis.

Our attention to the possible diagnosis was directed by the fact that the father had a convulsion while the son was under our observation. The long interval of years between seizures in the father's history is a helpful diagnostic point, since long remission has been stated by Sherlock¹⁶ and others as differentiating these seizures from those due to idiopathic epilepsy.

In evaluating the evidence presented in these case reports, Pendergrass¹⁷ concurred with us that we were dealing with 2 cases of tuberous sclerosis.

A clear understanding of the nature of these calcifications is a necessary corollary to intelligent treatment. Cortical "scars" have been subjected to operative removal, with reported relief of symptoms. Mayfield,¹⁷ for example, reports the removal of two large irregular areas of calcification from the right premotor area and one from the left premotor area of a male Negro with a manic depressive psychosis who had developed jacksonian epilepsy five years after first coming under his observation. Two years after recovery from the opera-

tion the attacks recurred. No pneumoencephalographic studies were reported in this case. In the light of the preceding considerations it is readily apparent how thorough the search for the etiology of the epileptiform seizures must be before definitive therapeutic procedures are instituted.

SUMMARY AND CONCLUSIONS

1 In the 2 cases of familial multiple cerebral calcifications associated with epileptiform seizures here reported the additional evidence in 1 case of mental deficiency, congenital eye defect, localization of the calcified masses to the lateral ventricles by pneumoencephalography and the presence of calcifications in the other case in the region of the ventricles justifies the diagnosis of tuberous sclerosis (epiloia).

2 The more frequent use of roentgenography and pneumoencephalography is recommended in cases of epilepsy to establish the diagnosis of this neurocutaneous syndrome, even in the absence of adenoma sebaceum.

3 The increasing recognition of this entity will serve more clearly to define its hamartial nature and delimit the diagnosis of idiopathic epilepsy to an ever smaller group.

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RENAL GLYCOSURIA IN SELECTEES AND VOLUNTEERS

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A study of glycosuria was made on 45,650 consecutive selectees and volunteers aged 18 to 45 years who appeared for final examinations at the Boston Induction Center prior to army induction. The incidence of glycosuria in this group was 0.8 per cent, or 367 cases. The glycosurias were classified into three groups, there were (a) 208 cases of diabetes mellitus, (b) 126 cases of transient glycosuria and (c) 33 cases of renal glycosuria.

Renal glycosuria is regarded as a rare disorder. Joslin and his associates¹ found 62 cases of renal glycosuria, including 9 cases of renal glycosuria of pregnancy, among 18,000 cases of mellituria. Fitz² reported that the compiled records of the Massachusetts General Hospital and Peter Bent Brigham Hospital for the last decade showed the diagnosis of renal diabetes only 36 times. Fowler³ discovered only 7 cases of renal glycosuria among 4,000 cases of mellituria at the Montreal General Hospital, while Wilder⁴ noted 82 cases at the Mayo Clinic. Falta⁵ in Vienna believed the condition was not so uncommon, but a number of cases he reported as renal glycosuria present rather high blood

Sergeant Lowell V. Kingsley gave assistance from the Boston Recruiting and Induction Station. Released for publication by the War Department Manuscript Board which assumes no responsibility, other than censorship, for the contents of this article.

1 Joslin, E. P., Root, H. F., White, Priscilla, and Marble, Alexander. The Treatment of Diabetes Mellitus, ed. 7, Philadelphia: Lea & Febiger, 1940, p. 714.

2 Fitz, Reginald. Renal Diabetes. Oxford Medicine, edited by H. A. Christian, New York, Oxford University Press, vol. 4, part 1, p. 173 (1933).

3 Fowler, A. F. Renal Glycosuria, Ann. Int. Med. 7, 213 (Oct.) 1933.

4 Wilder, R. M. Clinical Diabetes Mellitus and Hyperinsulinism. Philadelphia and London, W. B. Saunders Company, 1940, p. 23.

5 Falta, W. Renaler und insulärer Diabetes, Berlin and Vienna: Urban & Schwarzenberg, 1930, p. 45.

11 Berkwitz, N., and Rigler, L. G. Tuberose Sclerosis Diagnosed with Cerebral Pneumography, Arch. Neurol. & Psychiat. 34, 833-838 (Oct.) 1935.

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14 Shelmire, J. B. Adenoma Sebaceum, a Report of Five Cases in One Family, J. A. M. A. 71, 963-965 (Sept. 21) 1918.

15 Sherlock, F. B. The Feeble Minded, London, Macmillan Company, Ltd., 1911, p. 239.

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sugar curves, which we would diagnose mild diabetes mellitus. It was observed more commonly in Scotland by the Peels,⁶ who disclosed 30 cases of renal glycosuria among 115 recruits with mellituria.

In our series of 367 cases of glycosuria, renal glycosuria appeared so frequently that a study of this disease appeared of considerable practical importance.

PLAN OF INVESTIGATION

The men who appeared for final examinations before being inducted into the army were those who did not have gross disqualifying defects detected without instruments, those who were not confined to institutions and who did not have known syphilis. All men had thorough physical and mental examinations, x-ray examinations of the chest and urine examinations. The test for sugar in the urine was made with Benedict's solution. Two drops of urine were placed in 15 cc of Benedict's qualitative solution and boiled for five minutes. If the urine was sugar free, the solution remained clear blue, if sugar was present the color varied from an opaque green to brick red, with a precipitate depending on the concentration of sugar in it. The qualitative amounts of sugar in the urine were indicated according to the color by 1+ for green, 2+ for yellow, 3+ for orange and 4+ for brick red. If repeated urine examinations showed sugar and no verified history of diabetes was obtained, the men were sent to an army hospital for sugar tolerance tests. A standard dose of 100 Gm of dextrose was employed and was ingested after the subject had fasted overnight. The concentration of sugar in the blood and urine was determined in specimens taken during fasting and at intervals of one-half, one, two and three hours after the ingestion of the dextrose. The determination of the blood sugar was made on 2 cc samples of venous blood according to the method of Folin and Wu.⁷ Here the test for sugar in the urine was made with 8 drops of urine in 5 cc of Benedict's qualitative solution. In addition, various other studies were made on certain clinical features of the disease.

RESULTS

The diagnosis of renal glycosuria was made when the subject had a normal blood sugar curve and specimens of urine contained varying amounts of sugar after the ingestion of 100 Gm of dextrose. Some of the fasting urine specimens were recorded as sugar free at times. Typical examples of these cases are shown in the accompanying chart. In 20 of these cases the peak of the blood sugar curve was below 140 mg per hundred cubic centimeters, in 4 cases the maximum rise was 150 mg per hundred cubic centimeters and in 9 cases the maximum level was approximately 160 mg per hundred cubic centimeters after the ingestion of the standard dose of the dextrose.

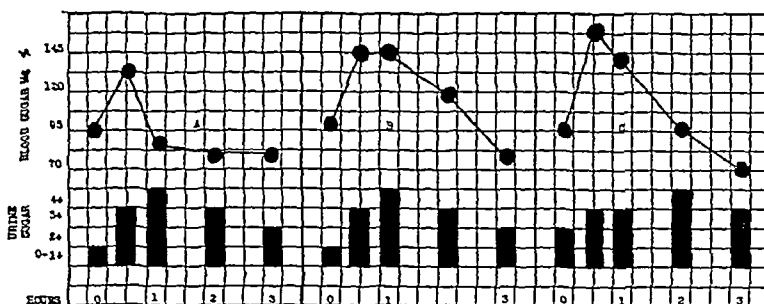
Glycosuria occurred in all cases at a blood sugar level of 110 mg per hundred cubic centimeters or less and in some cases the level was as low as 75 mg per hundred cubic centimeters. Although some authors define renal glycosuria as a persistent glycosuria with normal blood sugar curves, we considered our criteria satisfactory.

The difference in our results and theirs appeared too great to be explained simply on the basis of the variation in the diagnostic criteria. However, it was interesting that our investigation and that of the Peels were made on recruits with mellituria and in both of these there was a high incidence of renal glycosuria.

CLINICAL FEATURES

Age—Renal glycosuria may be recognized at any period from infancy to old age. However, the age of the persons in our group was of considerable interest because renal glycosuria occurred predominantly in the younger selectees in contrast to true diabetes, which appears chiefly in the older persons. Twenty-three, or 70 per cent, of the men were 20 to 29 years of age, while 10, or 30 per cent, were 31 to 44 years of age, as shown in table 1. In comparison approximately 59 per cent of the men examined here were 20 to 30 years old, while 41 per cent were 31 to 45.

Family History of Diabetes—The familial incidence of this type of glycosuria has been pointed out by a number of writers, such as Brown and Polshuck.⁸ Twenty-two persons with renal glycosuria were questioned concerning their family history of diabetes. Of these, 7 persons, or 32 per cent, gave a family history



Illustrations of sugar tolerance results obtained in renal diabetes following the ingestion of 100 Gm of dextrose. A represents 13 cases B 11 cases and C 9 cases.

of diabetes, which appeared in only 1 member of the family in all instances. It is not known whether the familial cases were true diabetes or renal glycosuria, since the history was based on the person's statements. Although this group is small the findings appear significant when compared with that of a control group. In the controls 2,293 consecutive nondiabetic selectees were interviewed and 119 persons, or 5.2 per cent, gave a family history of diabetes, which occurred in all cases in 1 member of the family.

Occupation—The occupation was studied in 22 cases of renal glycosuria. In 15 cases the work was laborious with such occupations as machinists, truck helper, sheet metal worker, pipe fitter, carpenter, welder and day laborer. In 7 cases there were sedentary occupations as salesman, timekeeper, shoe dealer, taxi driver and 3 clerks. These men had lived in the rural as well as the urban districts.

Marital State—The marital state was known in 21 cases. Sixteen persons were single, 4 were married and 1 was separated.

Nationality—The nationality or racial origin of these 33 men was studied. The racial origin as ascertained in 20 instances in which the parents were foreign born was 7 Irish, 2 French, 2 German, 2 Jewish, 1 Italian, 1 Greek, 1 Portuguese, 1 African, 1 Scotch and 2 of

6 Peel, Albert A. F. and Peel, Mary W. Glycosuria in Recruits. *Glasgow M. J.* 125: 141 (May) 1941.

7 Folin, Otto and Wu, Hsien. A System of Blood Analysis. Supp. 1. A Simplified and Improved Method for Determination of Sugar. *J. Biol. Chem.* 41: 367 (March) 1920.

8 Brown, M. S. Jr. and Polshuck, Rubin. Familial Renal Glycosuria. *J. Lab. & Clin. Med.* 20: 605 (March) 1935.

doubtful extraction. Some of these men were not born in this country. The other 13 persons came from families who had been in this country for a number of generations.

Symptoms—None of these men had any symptoms related to the glycosuria. In fact they were physically a very healthy group with no complaints. The blood pressures were normal except in 1 case, in which it was 170/110. The known duration of the glycosuria was of interest because 31 of the 33 men never knew they had the disorder before this examination. Two youths aged 21 and 22 had sugar in the urine, which was found on routine examinations five and two years before respectively.

Height and Weight—The heights of these men ranged from 62 to 74 inches (157.5 to 188 cm) and the weights from 113 to 229 pounds (51 to 104 Kg). The average height without shoes was 68 inches (173 cm). This measurement did not differ significantly from the average height with shoes for males of 68¼ inches (173 cm) based on insurance data.⁹ They appeared to have a normal distribution in regard to

TABLE 1—*Age of Thirty-Three Patients with Renal Glycosuria*

Age, Year	Number of Cases
15	17
16	6
17	7

TABLE 2—*Status of Height of Thirty-Three Persons with Renal Glycosuria*

Number of Cases	Weight According to Height and Age—Army Standard ¹⁰
12	7 to 14 pounds underweight
3	22 to 33 pounds underweight
14	Normal weight
2	15 to 64 pounds overweight

height, and most of them were between 66 and 70 inches (168 and 178 cm) tall.

In contrast to diabetic patients who are generally overweight, persons with renal glycosuria in this group were usually of normal or subnormal weight according to army standards¹⁰ as shown in table 2. One half of them were 7 to 33 pounds (3 to 15 Kg) underweight, while 14 were of normal weight. Weights which usually ranged from 3 pounds (1.3 Kg) below to 7 pounds (3.2 Kg) above the army standards for height and age were called normal. Two men were 43 to 64 pounds (19.5 to 29 Kg) over the standard weight, although they were only 8 to 26 pounds (3.6 to 12 Kg) above the maximum standard. Their heights were 74 and 70½ inches (188 and 178 cm) and weights 216 and 229 pounds (98 and 104 Kg) respectively. In a further control study the weight according to height of 1,000 consecutive selectees was compared with the army standards and was found to be almost identical with them. There was no definite history of weight loss.

X-Ray Examinations of Lungs—X-ray examinations of lungs were made in all these cases of renal glycosuria

and in no case was there any active tuberculosis. The results were entirely normal in 32 cases. In 1 case there was a healed primary complex of the left lung.

COMMENT

Renal glycosuria is considered to be a rare condition even among the general run of cases of mellituria. In this study there was the high incidence of 33 cases of this disorder as proved by sugar tolerance tests in 367 consecutive persons with glycosuria between the ages of 18 to 45 years, as compared with the low incidence in the experience of others. It was unusual to find such a large percentage of these cases, although the Peels obtained similar results in recruits. In other words there was 1 case of renal glycosuria in approximately every 11 persons who showed sugar in the urine at this induction center. This finding is of great practical importance in the management of glycosurias from the point of view of diagnosis, treatment and prognosis. There are many people with glycosuria who are treated for diabetes mellitus without having had blood sugar determinations or sugar tolerance tests. If our results could be applied to the general population between the ages of 18 to 45 years it would mean that many patients with glycosuria are being treated needlessly for diabetes mellitus when they may be having renal glycosuria. This is important because diabetic treatment in renal glycosuria has been considered unnecessary since the restriction of carbohydrate in the usual diabetic diet has no appreciable effect on renal glycosuria. Perhaps, with the loss of sugar in the urine, patients with renal glycosuria who are especially underweight should have an increased amount of carbohydrate in the diet. On the other hand, they should have prolonged and periodic observations particularly because of the strong history of diabetes in these cases.

The prognosis is good with normal life expectancy, although the condition appears to be chronic without symptoms. The disease apparently does not progress to diabetes mellitus according to Joslin and his associates,¹ Fitz and Wilder.⁴ In their large experience they have never seen a case of renal glycosuria in which true diabetes developed, although it has been suggested by others. The pathology of renal glycosuria is not known because no autopsy in such a case has been reported. However, there is evidence of a physiologic defect in the renal tubules. Friedman and his associates¹¹ studied the renal blood flow, glomerular filtration rate and the degree of tubular reabsorption of dextrose in renal glycosuria using the diodrast and inulin clearance tests. They found the effective renal blood flow and glomerular filtration to be normal in renal glycosuria. On the other hand, they noted a diminished tubular reabsorption of dextrose in renal glycosuria which did not appear to be due to any organic kidney defect, for at plasma dextrose levels above 200 mg per hundred cubic centimeters the efficiency of tubular reabsorption of dextrose in these cases equaled or exceeded that found in nonglycosuric persons.

SUMMARY

A study was made of 33 cases of renal glycosuria which occurred in 367 cases of mellituria found in 45,650 consecutive men aged 18 to 45 years who appeared for final examination at the Boston Induction Station.

⁹ Medical Impairment Study, Actuarial Society of America and Association of Life Insurance Medical Directors, New York, 1929, p. 138.
¹⁰ Army Regulations No. 40 105, War Department, Washington, D. C., Oct. 14, 1942.

¹¹ Friedman, Meyer, Selzer, Arthur, Sugarman, Jerome and Sauer, Maurice. The Renal Blood Flow, Glomerular Filtration Rate and Degree of Tubular Reabsorption of Glucose in Renal Glycosuria, *Am J M S*, 204: 22 (July) 1942.

Renal glycosuria appeared predominantly in the younger subjects 23 being 20 to 29 years of age, while 10 were 31 to 44 years of age. A family history of diabetes was obtained in 32 per cent of those questioned on this point in contrast to 52 per cent in a nondiabetic group. The occupations of most of these men were of a laborious nature.

There were no symptoms referable to the disease. In all of these cases, renal glycosuria was found on routine examinations. The average heights were normal whereas in all but 2 cases the weights were either normal or subnormal.

The finding of 1 person with renal glycosuria in approximately every 11 with mellituria here was unusual and important from the standpoint of diagnosis, treatment and prognosis. It is urged that all persons with glycosuria have sugar tolerance tests or nonfasting blood sugar determinations made in order to rule out renal glycosuria because diabetic treatment has been considered unnecessary in this condition. Nevertheless, persons with renal glycosuria deserve periodic and prolonged observations especially because of the strong family history of diabetes in these cases.

Our observations strongly suggest that renal glycosuria is a symptomless, not uncommon clinical entity which may follow a definite pattern as to age and weight and merits more extensive study.

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Clinical Notes, Suggestions and New Instruments

LEWISITE BURNS OF THE EYE

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It is generally presumed that much of the incapacitation resulting from exposure to lewisite will be due to lesions of the eye, as has been the case with mustard gas. Because of the importance of this subject at the present time and the apparent absence of similar case reports previously, 2 instances are described in which ocular lesions occurred following exposure to lewisite under field conditions.

EXPOSURE AND INCIDENCE

The exposure occurred in the early afternoon in mid-January. The temperature was 25 F. and there was considerable wind. An ampule containing 100 cc of 5 per cent lewisite in chloroform was exploded at a distance subsequently measured as 50 to 80 feet from a group of 33 observers in an open field. The observers were standing down wind to the explosion. Within a few minutes after the explosion pieces of indicator paper which the observers were holding in their hands were said to have shown droplets indicating the presence of liquid lewisite.

Of the 33 in the group 19 developed cutaneous lesions and 2 ocular lesions. 10 noted lacrimation.

REPORT OF CASES SHOWING OCULAR LESIONS

CASE 1—L. D. a man aged 46 with no antecedent ocular disease and no previous exposure to lewisite or mustard gas complained of severe burning of the eyes and involuntary spasm of the lids within a few seconds after the explosion. Epiphora was prompt and copious; the tears wetting the collar. No odor was detected.¹ Owing to the irritant nature of the gas

the patient believed that he was being exposed to tear gas and therefore did not apply for treatment for ten minutes. At this time both eyes were washed copiously (two minutes to each eye, repeated two or three times) with water from a drinking fountain, followed by a single irrigation of sodium bicarbonate solution. The latter is said to have decreased the discomfort. However a fairly severe foreign body and burning sensation with attendant epiphora and blepharospasm persisted for approximately twelve hours. The symptoms were most severe within a few minutes after the exposure.

Examination ten hours after the explosion showed a diffuse papular eruption of the forehead, eyelids and cheeks. The ocular manifestations were similar in the two eyes. The lids were moderately edematous. The conjunctivas were not edematous but the pericorneal vessels were dilated producing a violaceous flush over the ciliary region. There were six or seven separate lesions in the lower halves of both corneas. These were all superficial and appeared with the biomicroscope to be limited to the epithelium. The larger two formed branched lines about 1 mm in length (similar to lesions in early dendritic keratitis). The smaller lesions consisted of numerous gray dots producing a picture of keratitis epithelialis. There was no extensive loss of epithelium but all lesions stained locally with fluorescein. Neither infiltrates nor epithelial edema was detectable except immediately adjacent to the dendritiform lesions. Corneal sensitivity as determined with a wisp of cotton was normal. The anterior chambers were clear and no evidence of iritis was present. The fundi were normal.

Five per cent sulfadiazine ointment was placed in both eyes once. The patient was again examined twenty-three hours after the initial exposure. Subjectively the eyes were considerably improved. The edema of the lids and the dilatation of ciliary blood vessels were less noticeable. The corneal lesions showed no change that was apparent with the biomicroscope and still stained with fluorescein. The eruption of the face was less pronounced and caused less subjective burning than previously.

The patient was not further treated. He was again examined forty-eight hours after the initial exposure. Symptomatically he was entirely well. The eyes were grossly normal. With the biomicroscope a faint haze could be seen in the superficial stroma corresponding to the former dendritiform lesions but there was no staining with fluorescein. Two weeks later the patient reported that he had had no recurrence of symptoms.

CASE 2—B. A. a man aged 34 had no antecedent ocular disease and no previous exposure to lewisite or mustard gas. As in case 1 a sensation of severe burning spasm of the lids and lacrimation occurred within a few seconds after the release of the gas. No odor was detected¹ and the patient believed the irritant to be tear gas. About ten minutes after the exposure the eyes were irrigated several times with water. Except during and immediately after the exposure the only symptoms were occasional foreign body sensation and slight blurring of vision with the right eye.

Examination ten hours after the explosion showed a diffuse papular eruption of the forehead. The lids of the right eye were slightly edematous and those of the left normal. The pericorneal vessels on the right were slightly dilated. In the pupillary area of the right eye there was a superficial linear opacity about 2 mm in length which was seen with the biomicroscope to be made up of thirty to fifty tiny white dots. These dots stained individually with fluorescein. Epithelial edema was not noted. Corneal sensitivity was normal. The left eye was entirely normal. The right eye was treated with a single instillation of 5 per cent sulfadiazine ointment.

When reexamined twenty-three hours after the initial exposure the edema of the lids had disappeared. The patient was asymptomatic. The appearance of the corneal lesion had not changed and still stained with fluorescein. The patient was not examined again but two weeks later reported that he had had no further symptoms.

COMMENT

The ocular effects in these 2 cases are of interest in comparison with lesions known to have occurred from mustard gas. Lewisite and mustard gas are the two irritants which

From the Howe Laboratory of Ophthalmology, Harvard Medical School. Approved for publication by Milton C. Winternitz, M.D., Chairman of the Committee on the Treatment of Gas Casualties.

¹ Others in the group are said to have detected the characteristic odor of lewisite.

as far as information is available, are likely to be used in the present war, and both are notoriously toxic to the eye under laboratory conditions. Judging from observations limited to these 2 cases, the most striking difference between lewisite and mustard gas in man is the time after the exposure at which the symptoms occur and the protective reflexes become operative. With a concentration of mustard gas comparable to that of lewisite in the exposures reported, no symptoms occur for several hours after the exposure, while in the case of lewisite irritation is practically immediate. Indeed, both patients believed that they were being exposed to tear gas. This difference may well be of major importance. Owing to its nonirritative nature, mustard gas may be absorbed into the cornea over a considerable time, resulting in a cumulative effect. Lewisite on the other hand, elicits prompt irrigation by tearing, lessening or further contact by blepharospasm and, most important, the painful awareness of noxae in the area. It seems altogether likely that this difference in reaction accounts in large measure for the apparent difference in severity of the ocular manifestations resulting from the exposure to the two gases.

SUMMARY AND CONCLUSIONS

1. In 2 instances of ocular lesions in man resulting from exposure to lewisite droplets and gas the chief manifestations were in the superficial cornea and resulted in no permanent damage.

2. An important difference between exposure to lewisite and mustard gas in man is the fact that one is promptly irritating and evokes prompt protective reflexes, while the other does not.

3. This difference would seem to account for the relative mildness of the ocular lesions from lewisite in the foregoing instances.

243 Charles Street

NAIL POLISH DERMATITIS

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Because of an apparent increased incidence of nail polish dermatitis and because the condition is so frequently not recognized, we venture again to call it to the attention of the profession.

Within a period of twenty-three days recently we have seen 25 cases. None of these had been recognized. The condition varied in duration from a few days to several months. A representative percentage of the group of patients had been under dietary and other internal forms of treatment, including that directed toward "acidity." The majority of these patients presented a simple dermatitis with edema of the eyelids associated with a dermatitis of varying severity involving the neck. Several presented areas of dermatitis over the shoulders where contact was made in the adjusting of shoulder straps. The patches developed on the thighs where contact was made by the patient pulling down her girdle while dressing. Two instances were noted on the legs below the knees where liquid nail polish had been applied to stop runners in stockings. One patient had a patch of dermatitis on the forearm where contact was made by flexion with a patch test above the elbow.

Both colored and clear polishes were found to be at fault, but naturally most outbreaks were traced to the tinted brands. Seven different manufacturers were represented, and the very expensive brands were quite as frequently at fault as the cheaper ones. One representative manufacturer assured us that attempts to identify and eliminate the offending fraction would not be practical at present because of the extreme variation in composition of different lots of basic materials.

All cases were proved by patch tests. It was frequently difficult to convince patients of the source of their trouble, and they were loath to eliminate liquid nail polish. It seems advisable to point out that we frequently found it necessary to continue the patch tests for several days to produce a positive reaction. All cases cleared promptly following discontinuance of liquid nail polish and the application of soothing agents.

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From the Department of Dermatology, School of Medicine, University of Pittsburgh

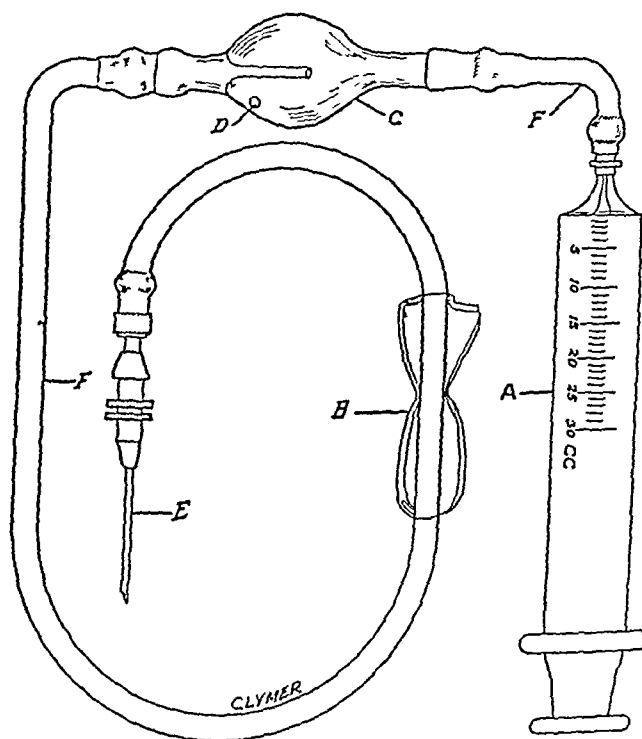
AN IMPROVED "FIELD" POTAIN ASPIRATOR

MAJOR DAVID BALL
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Actual field conditions in the Army of the United States often demand the improvisation of an apparatus that ordinarily is found on the shelf of any surgical supply store on the home front.

Shortly after we set up a tent hospital in the field "somewhere in Persia," a patient with a large pleural effusion was admitted. The clinical diagnosis was confirmed by an x-ray examination of the chest, which revealed a large left pleural effusion with displacement of the heart to the right. Only part of our equipment had as yet arrived, no Potain or other aspirating set was available and there were no glass Y or T tubes with which to make a set.

It occurred to me that a closed system aspirator might be made, utilizing rubber tubing, a pinch clamp, a syringe and a Murphy type intravenous drip tube. This material had just been made available from the set accompanying human plasma given to a patient in shock.



Improved "field" Potain aspirator. A, syringe; B, pinch clamp; C, Murphy type intravenous drip tube; D, hole in tube; E, needle; F, rubber tubing.

The apparatus was set up as illustrated in the diagram. With the pinch clamp B closed, the needle E is inserted into the pleural cavity. The finger of the operator then is held over the hole D in the Murphy drip tube C, the pinch clamp B opened and an assistant withdraws the barrel of the syringe A, thus filling the system and syringe with fluid from the pleural cavity. When the barrel of the syringe is full, the operator closes the pinch clamp B, removes his finger from the hole D in the drip tube and the assistant pushes down on the plunger of the syringe, thus forcing the aspirated fluid through the hole in the drip tube into a collecting basin. This process is repeated until the fluid is aspirated from the pleural cavity.

In the case in question, 1,675 cc of fluid was removed with ease in no more time than is ordinarily taken with a standard apparatus. An x-ray examination of the chest after the paracentesis did not reveal the presence of any air in the pleural cavity and most of the fluid had been removed.

The material necessary to make the apparatus is usually available in the smallest hamlet or with any field medical corp.

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Special Article

HANDBOOK OF NUTRITION XVI

IMPROVING THE QUALITY OF CHEAP STAPLE FOODS

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These special articles on foods and nutrition have been prepared under the auspices of the Council on Foods and Nutrition. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the Council. These articles will be published later as a Handbook of Nutrition.—Ed

Discoveries in the science of nutrition over the past three decades have made it possible to state more exactly than ever before the many specific factors that are essential for satisfactory nutrition. A brief classification of them would include food energy, the protein factor, essential fatty acids, indispensable mineral nutrients and the vitamins. An attempt to list individually all the substances required gives a total of approximately forty, the exact number depending on whether the claims for the existence of certain factors are to be accepted or not. In view of this new knowledge it is obvious that foods can now be evaluated in a manner much more precise and specific than was ever possible before. These recent discoveries have also included the isolation and finally synthesis on a commercial scale of several of the vitamins, thus making it possible to add these factors to foods. Such possibilities have naturally received the attention of both the food industry and students of nutrition and public health. On the industrial side it has been necessary to solve many technological problems. Nutritionists, clinicians and governmental agencies faced with these possibilities have naturally interested themselves in the formulation of principles to be followed in such addition of special factors to foods, amounts to be added and related topics.

The application of these new discoveries can of course result in the production of new foods that would doubtless be classified for some time at least as novelties or specialties because of their relatively high cost and only slight use by the mass of the population. In contrast to this, and much more important for public health and preventive medicine, is the application that means definite improvement in the quality of cheap staple foods that occupy prominent places in the dietary. To the extent that these staples, already endowed with a high consumer appeal and acceptance, can be nutritionally improved the chances of incidence of diseases that represent dietary shortcomings can be reduced and the cause of public health thus advanced. This article deals with the latter possibility.

THE GRAINS

Discussions of the foods that figure prominently in various dietaries throughout the world, therefore staple foods,¹ usually deal with them in terms of their contribution to the energy needs of the population. The cheapest source of food energy in the diets used

throughout the world is the cereal grains. In the United States the two cheapest sources of calories are cereal products and cane sugar. In southern China and certain other parts of the Orient rice is the most economical and readily available food and therefore the most widely used cereal. From the standpoint of worldwide use rice comes first, this cereal is eaten by more people than any other member of the cereal grain group. The dominant cereal used as human food in the United States is wheat.

The greater keeping qualities of milled cereals in contrast to the whole grain, together with the exigencies of modern civilized life such as ease of transportation over long distances, has resulted in some degree of milling of the grain becoming the established custom, a practice which, from the standpoint of nutritive value of the material, means loss in corresponding degree. It is not surprising, therefore, that the addition of essential vitamins and minerals to milled cereal products, wheat flour for example, should have received serious

TABLE 1—Current Standards for Enrichment and Fortification of Foods

Enriched White Flour ² (Required)	
Thiamine	From 1.66 to 2.5 mg per pound
Riboflavin	From 1.2 to 1.8 mg per pound
Nicotinic acid (niacin) or its amide	From 6 to 24 mg per pound
Iron	From 6 to 24 mg per pound
Enriched White Flour (Optional)	
Vitamin D	From 250 to 1,000 U S P units per pound
Calcium	From 500 to 2,000 mg per pound
Wheat germ	Not more than 5 per cent
Oleomargarine Fortified with Vitamin A (Federal Register 6 27(1) [June 7] 1941)	
Not less than 9,000 U S P units of vitamin A per pound	
Milk Fortified with Vitamin D	
Council on Foods and Nutrition of A M A approves milk containing from 135 to 400 U S P units per fluid quart or reconstituted quart	
Iodized Table Salt	
Council on Foods and Nutrition of A M A accepts salt containing 0.01 per cent of potassium iodide or equivalent of sodium iodide provided distribution of the iodide in the salt is uniform and this concentration is present after storage under ordinary conditions. Food and Nutrition Board of National Research Council also has approved of this standard.	

attention as one of the new possibilities for application of modern nutritional knowledge in the interest of preventive medicine.²

Interest in this possibility of improving the nutritive value of wheat flour has finally resulted in the establishment by the Food and Drug Administration of the federal government of standards for enriched flour.³ The substances and amounts to be added in making this product are given in table 1. Current standards for enrichment or fortification of other foods are also given in this table.

Enforcement of the regulation with respect to enrichment of flour with riboflavin has been delayed because of shortage of this vitamin owing to lack of satisfactory methods for production of it on an industrial scale. Until this problem has been solved, riboflavin will be too expensive and difficult to secure to warrant making

From the Department of Physiological Chemistry, Yale University School of Medicine.

¹ Bennett M. K. Wheat in National Diets. Wheat Studies of the Food Research Institute, Stanford University 18 37-76 (Oct.) 1941.

² Cowgill G. R. The Need for the Addition of Vitamin B₁ to Staple American Foods. J. A. M. A. 113 2146-2151 (Dec. 9) 1939.

³ Definitions and Standard of Identity for Flour and Related Products. Federal Register 6 25 2352 (May 27) 1941.

its addition compulsory. Progress toward solution of this problem has been made, however.⁴

Discussion of this "enrichment" or fortification problem has brought out many suggestions of principles and facts to be considered when making additions of vitamins and minerals to foods.⁵ It is pertinent to inquire whether a lack of the dietary essential in question in the ordinary diet of the people is sufficiently widespread to justify the proposed addition of it to appropriate foods. If no real need for such addition can be shown, one may well question the wisdom of it as a socially planned and directed move; its chief justification then becomes a commercial one dependent for its success almost entirely on advertising and other promotional activities of units of the food industry.

If there are reasonable grounds for believing that a serious deficiency of the dietary factor of interest does exist, the question arises as to the most suitable food to be 'enriched' or fortified with it. There may be rather general agreement as to the class of food to be enriched but it does not necessarily follow that all products in this class should be so treated. As an example of this situation consider macaroni, which is

may now be cited. Students of nutrition have long agreed with Sherman that there is a real likelihood of a significant deficiency of calcium, and therefore there is justification for promoting wider use of calcium rich foods like milk, milk products and green leafy vegetables. There are also reasons for believing that the American diet is not as rich in thiamine as it should be. The testimony offered in the hearings held by the Food and Drug Administration which resulted in the federal standards for enriched flour supported the view that the average American dietary does not furnish amounts of some essential vitamins and minerals sufficient to insure the public health. On the basis of the evidence they have summarized concerning the existence of malnutrition in our population, Jolliffe, McLester and Sherman⁶ believe that such malnutrition is sufficiently widespread to justify taking measures to obviate it.

VITAMINS AND MINERALS

In 1939 the Council on Foods and Nutrition of the American Medical Association considered this general question of the addition of vitamins and minerals to foods and adopted the following statement as an expression of its policy:

The Council on Foods desires to encourage the restorative addition of vitamins or minerals or other dietary essential, in such amounts as will raise the content of vitamin or mineral or other dietary essential of general purpose foods to recognized high natural levels, with the provision that such additions are to be limited to vitamins or minerals or other dietary essentials, *for which a wider distribution is considered by the Council to be in the interest of the public health.*⁶

The words that I have italicized are particularly pertinent here because they state an important limitation which not only the Council has adopted, when expressing its approval of such additions, but the Committee on Food and Nutrition (now Food and Nutrition Board) of the National Research Council as well.

In its approach to this problem the Council on Foods and Nutrition of the American Medical Association deemed it advisable to express the limitations of additions of various factors to general purpose foods in terms of milligrams per hundred calories and established such limitations with respect to calcium, iron, thiamine, riboflavin and niacin. The values are presented in table 2.

The Committee on Food and Nutrition of the National Research Council expressed its views on this question in the following resolution:

WHEREAS, There exist deficiencies of vitamins and minerals in the diets of significant segments of the population of the United States which cannot promptly be corrected by public education in the proper choices of foods, be it resolved in order to correct and prevent such deficiencies:

1 That the Committee endorses the addition of specific nutrients to staple foods (as indicated under 6 below) which are effective vehicles for correcting the above deficiencies in the diets of the general population, or of significant advantage of geographic, economic or racial segments thereof,

2 That the Committee opposes the inclusion of additions of specific nutrients under definitions and standards which may be promulgated under the Food, Drug and Cosmetic Act except in the case of foods which constitute such efficient vehicles of distribution,

TABLE 2—Important Food Values of Natural Grains and Upper Limits of 'Restoration' for General Purpose Cereal Foods

Product	Ca	Fe	Thia	Ribo	Niacin
	Mg. per 100 Calories	Mg. per 100 Calories	mg. Mg. per 100 Calories	flavin Mg. per 100 Calories	Mg. per 100 Calories
Restored cereal	75	15	0.25	0.10	
Cornmeal	72	09	0.05	0.05	0.4
Oatmeal	56	12	0.21	0.05	0.4
Whole wheat flour	115	14	0.11	0.07	1.5

made largely of wheat flour. Macaroni is always boiled when being prepared for the table, and tests have shown that such handling results in loss of roughly 50 per cent of added vitamin B₁. Therefore, even if the pure vitamin can be obtained at practically negligible cost, so that relatively large amounts more than sufficient to offset such loss can be added, one may well question the practicality of its addition to macaroni. As another example one may consider the fortification of lard with vitamin A. Since this animal fat is widely used in cooking and such use results in appreciable loss of the vitamin, a conservative attitude toward the question of the addition of vitamin A to lard is justified. In the light of these two illustrations it is obvious that a body of facts regarding the need for various dietary essentials and the probable supply in common foods is required, as well as information of the technological sort concerning the feasibility of the proposed addition to any given food product before approval should be given any specific proposal of enrichment or fortification.

Concerning this question of need for particular dietary factors by the American people, numerous papers

⁴ Glavin, C. A. Riboflavin, a B Vitamin Soon Possibly to Become a Requirement for Enrichment Bakers Weekly, July 27, 1942.
^{5a} The Fortification of Foods with Vitamins and Minerals. A Symposium held at the American Institute of Nutrition, Toronto, Ontario, April 26, 1939. Published in the Milbank Memorial Fund Quarterly 17: 221-262 (July) 1939. American Institute of Nutrition, Symposium on Fortified Food, April 1, 1942. Published in Federation Proceedings 1: 324-351 (Sept.) 1942.

⁵ Jolliffe, Norman, McLester, J. S., and Sherman, H. C. T. Prevalence of Malnutrition, J. A. M. A. 118: 944-950 (March 21) 1937.
⁶ Annual Meeting of the Council on Food, J. A. M. A. 113 (Aug. 19) 1939.

3 That the Committee favors unequivocally the fulfillment of the nutritional needs of the people by the use of natural foods as far as practicable and to that end encourages education in the proper choice of foods and the betterment of processes of food manufacturing and preparation so as to more fully retain the essential nutrients needed thereto,

4 That, to avoid undue artificiality of food the Committee favors, whenever practicable the choice, as vehicles for the corrective distribution of vitamins and minerals, of those foods which have suffered loss in refining processes and recommends that the vitamins and minerals added to such foods should preferably be the kinds and quantities native therein in the unrefined state

5 That the addition of other than natural levels of vitamins and minerals to foods which are suitable as vehicles of distribution may be sanctioned when more natural routes are practically unavailable as ways to correct known nutritional deficiencies

6 That at present the Committee favors appropriate enrichment of flour and bread (and perhaps corn meal), the fortification of milk with vitamin D the suitable addition of vitamin A to table fats and of iodine to salt for dietary use There is no information available to the Committee at the present time which indicates that it is desirable for the Committee to recommend the addition of vitamins or minerals to foods other than those named

7 That specifically the Committee opposes the addition of synthetic vitamins to carbonated beverages and confectionery

From the statement quoted it is evident that the idea of adding vitamins and minerals or other dietary essentials to foods has been accepted sufficiently to secure official sanction in the following cases the appropriate enrichment of flour and bread (and perhaps other cereal products) with several factors, the fortification of milk with vitamin D of table fats with vitamin A, and of table salt with iodine To what extent other additions will finally acquire widespread acceptance and then official approval only time and the accumulation of new data can determine

When it has been agreed that certain dietary essentials may well be added to particular foods or classes of foods the question arises as to how much should be added The discussion of this problem has been most interesting to follow It has been argued that a worthwhile principle to apply is that of restoration of the milled or processed food by appropriate addition of dietary factors to give a product approximating the natural food source, whole wheat flour for example as contrasted with highly milled white flour This has been called the principle of restoration Paragraph 4 of the statement of the National Research Council Committee is based on this idea of "restoration" of the milled product to something comparable to the natural one

When a single dietary factor is being considered, this principle has much to commend it For example, the processing of a fruit juice may result in appreciable loss of vitamin C, and products of this sort are normally very valuable as sources of this factor The addition of ascorbic acid in amount sufficient to "restore" this particular processed juice to approximately the highest concentration characteristic of the natural juice would seem justifiable The principle of restoration proves to be unsatisfactory, however, when the addition of more than one factor is being considered In the case of ordinary wheat flour, for example, the addition of

vitamin B₁ in amount sufficient to make the flour approximately equal to whole wheat with highest natural concentration means a significant addition of the restorative sort, a restorative addition of riboflavin (vitamin B₂) to the flour, however, means very little because the cereal grains are not good natural sources of this factor It therefore riboflavin is nevertheless to be added to the flour in significant amounts the addition means "fortification" because the enriched product will contain even more riboflavin than is found in the natural whole grain

When several dietary factors are being added to a given staple food, some in accordance with the principle of restoration others in accordance with fortification, one is not limiting oneself to making the staple processed food as nearly as possible like the natural source but frankly modifying it to make an entirely new product to meet a particular nutritive situation Enriched flour is the prime example of this In such a case it is evident that the proposed addition of several factors is best made in some relation to the human requirement for them, taking into account the other

TABLE 3—Thiamine Content of Cereal Grains and Types of Wheat

Milligrams per Pound *

Kind of Grain	Thiamine	Type of Wheat	Thiamine
Oats	2.20-1.50	Durum	2.13-3.50
Wheat	1.43-3.50	Hard spring	1.43-3.49
Barky	2.33-3.33	Hard winter	1.58-71
Corn	1.53-3.04	Pacific	1.71-4.4
Rye	1.53-2.5	Soft red	1.9-2.5

* Original data from Taylor who comments as follows: The data include analyses of pure varieties and nondescript (more than random samples) commercial grades and ungraded from good and poor crop stored for short and longer periods with different methods of drying. The significance spreads cannot be as wide as those given.

sources of supply available in the dietary and other pertinent considerations It may be questioned whether there are very many staple foods that lend themselves as suitable vehicles for the wider distribution and intake of several dietary factors instead of only one or perhaps two In view of this there may still be a place for operation of the principle of restoration in the improvement of numerous processed foods

OTHER METHODS OF IMPROVING FOODS

The foregoing discussion has dealt with the ideas that have been advanced for improving staple foods by what might be called the artificial addition of dietary factors lost as a part of food processing There are other ways of achieving the same objective that should be mentioned One may select plant varieties on the basis of genetic constitution and vitamin content It is known that varieties of wheat and other cereals differ considerably in their respective contents of thiamine Data bearing on this topic have been summarized by Taylor and are shown in table 3 In addition to illustrating the variation in thiamine content characteristic of cereal grains the data in table 3 emphasize a point frequently forgotten by those who argue that enrichment of flour is unnecessary, that the use of whole

7 Taylor, A. E. Why Enrichment of Flour? Wheat Studies of the Food Research Institute, Stanford University 18:77-113 (N) 1941 See particularly page 92

grain flour is the answer to the basic problem being attacked. There is no such thing as a standard whole wheat flour with respect to "high natural level" of thiamine content. The adoption and wide use of a standardized enriched flour in contrast to a nondescript unstandardized whole wheat product has therefore some definite points in its favor.

Some staple foods of plant origin can be nutritively improved by the adoption of special methods of cultivation. At the present time we do not know all that we should like to know about the effects of various environmental factors on the vitamin and mineral content of important plants that we use as food. The subject is being actively investigated.⁸ Exposure to sunlight, supply of special materials in the soil, water supply and similar factors require investigation. A food like the potato which remains in the soil until harvested, is known to reflect in its iodine content the iodine concentration of the soil and water.⁹ In an iodine survey of various sections of the state of South Carolina the iodine content of potatoes grown in the respective areas proved to be as good a criterion of iodine supply as analyses of water and soil. In dealing with a shortage of dietary iodine, obviously, then, one has several possibilities: namely (a) wider use of sea food, which is an excellent natural source of this element; (b) wide use of a root vegetable like the potato cultivated in an iodine enriched soil or water or (c) the fortification with iodine of a product such as table salt. The first two of these possibilities are impracticable for an inland area for obvious reasons yet valuable procedures in coastal regions, the inland area situation is more easily met by the use of iodized table salt.

Nutritive improvement of foods of animal origin like milk and its derivatives can be achieved in accordance with much the same principles. Milk is such a valuable food that nutritive improvement of it has not had very extensive consideration. Most of the discussion of this topic has centered around the use of fortified milk as a means of increasing the supply of vitamin D to growing children and thus improving the utilization of its calcium. Vitamin D milk may be obtained by direct addition to the milk of a concentrate of the vitamin, with such products differing merely in the source of the concentrate added, such a milk is obviously a "fortified" one. Vitamin D may also be added to the milk through the metabolism of the cow by feeding a product like irradiated yeast, which contains the vitamin. This amounts to affecting the environment in which the milk is produced.

The addition of vitamin A to milk or its fat derivative butter has received some attention. The vitamin A content of butter is known to vary with the season, being low in winter and high in summer.¹⁰ The development

of a butter more uniform in vitamin A content is a worthy objective of the butter industry that has apparently had less attention than it deserves, such a product would be the logical one with which to meet the competition offered by vitaminized oleomargarine. Vitamin A concentrates could of course be added to winter butter. In view of recent experiments by Deuel and his associates,¹¹ there is presented the possibility of significantly enriching cow's milk with vitamin A by feeding certain extremely concentrated preparations of the vitamin. Improved feeding of cows during the winter season constitutes another approach to solution of this question.

From this brief discussion it should be evident that by improving the quality of cheap staple foods it is possible to affect the public health in many important ways. The success which attends this method will obviously depend on several factors. One is the extent to which the consumer is made aware of the values of the improved product when it is in the market competing with the older unimproved but accepted food. The solution of this problem lies in consumer education, and in this work the physician can do much because of his influential position in the community. If the improved product can be given a favored status of some sort, its use will of course be increased. South Carolina and Louisiana have passed laws requiring all white flour sold in their respective domains to be of the enriched variety. Louisiana has also passed a law requiring that all oleomargarine offered for sale contain vitamin A. It is possible that still other states will follow the lead of South Carolina and Louisiana in these respects. This way of achieving greater consumption of a desired product has certain shortcomings as well as advantages. In the case of enriched flour used in these Southern states the advantages are believed greatly to outweigh the disadvantages, because in enriching its flour the milling industry has tended to enrich only the more expensive brands, it is especially important that the enriched flour be used extensively by the lower income groups of the population who have the least money to pay for the improved product. It is to the credit of the milling industry that it has sought to bring about by voluntary means the enrichment of all its staple flour by every unit of the industry. The enactment of laws to solve problems always poses of course some additional problems of effective enforcement and the like, whether a law will be readily accepted, no matter how desirable it may be from a strictly scientific point of view, depends on a sufficient number of the people being properly informed and convinced of its value. Thus we are brought around once more to the fact that the fundamental solution of our basic problem lies in effective education of the general public with respect to the principles of nutrition, food values and related topics. Given the proper education in these matters, the general public will naturally prefer more and more the improved staple foods over those that are not improved, the extent to which this occurs will very largely determine the role that this particular application of modern knowledge in nutrition plays in promoting the public health.

333 Cedar Street

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Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

ALVIN E. SMITH, M.D., Secretary

DIETHYLSTILBESTROL (See the Supplement to New and Nonofficial Remedies 1942, p. 20)

The following dosage forms have been accepted

JOHN WYETH & BROTHER, INC., PHILADELPHIA

Ampoules Diethylstilbestrol (in corn oil), 0.5 mg per cc 1 cc

Ampoules Diethylstilbestrol (in corn oil), 10 mg per cc 1 cc

Tablets Diethylstilbestrol 0.1 mg and 0.5 mg

Suppositories Diethylstilbestrol 0.1 mg and 0.5 mg

THE LAKESIDE LABORATORIES, INC., MILWAUKEE

Tablets Diethylstilbestrol 0.1 mg

THE UPJOHN COMPANY, KALAMAZOO, MICH

Capsules Diethylstilbestrol 0.1 mg 0.5 mg and 10 mg

Ampoules Sterile Solution Diethylstilbestrol (in vegetable oil), 0.5 mg per cc 1 cc

Ampoules Sterile Solution Diethylstilbestrol (in vegetable oil), 10 mg per cc 1 cc

Suppositories Diethylstilbestrol (Juvenile Size) 0.1 mg

Suppositories Diethylstilbestrol (Adult Size) 0.5 mg

E. R. SQUIBB & SONS, NEW YORK

Tablets Diethylstilbestrol 0.1 mg, 0.5 mg, 10 mg and 50 mg

Ampuls Diethylstilbestrol (in corn oil), 0.2 mg per cc 1 cc

Ampuls Diethylstilbestrol (in corn oil), 0.5 mg per cc 1 cc

Ampuls Diethylstilbestrol (in corn oil), 10 mg per cc 1 cc

Ampuls Diethylstilbestrol (in corn oil), 50 mg per cc 1 cc

Diethylstilbestrol Pessaries 0.1 and 0.5 mg

TETANUS TOXOID—Tetanus Toxoid is a sterile solution of the product of growth of the tetanus bacillus (*Clostridium tetani*) so modified by treatment with solution of formaldehyde as to have lost the ability to cause toxic effects in guinea pigs but retaining the property of inducing active immunity.

The toxicity of Tetanus Toxoid shall be so low that 5 cc or the material does not cause any symptoms of tetanus in a guinea pig within a period of twenty-one days after its injection into the animal. The antigenic value shall be such that 1 cc of the material six weeks after injection shall protect at least 80 per cent of guinea pigs from all symptoms of tetanus for a period of ten days after the injection of 10 minimum lethal doses of tetanus test toxin into each animal.

Actions, Uses and Dosage—To protect against infection three doses of 1 cc each intramuscularly or subcutaneously with an interval of three weeks between injections. An additional dose of 1 cc should be given at the time of injury or infection.

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Tetanus Toxoid (Fluid) 1 cc and 30 cc vials in packages of one 1 cc vial, three 1 cc vials and one 30 cc vial.

SODIUM BENZOATE—When dried at 100 C for six hours contains not less than 99 per cent of $\text{C}_6\text{H}_5\text{COONa}$. U. S. P.

Actions and Uses—The intravenous use of sodium benzoate as a liver function test was suggested by Quick and his co-workers in 1938 (Quick, A. J., Ottenstein, H. N. and Weltcheck, Herbert, *Proc. Soc. Exp. Biol. & Med.* 38: 77 [Feb.] 1938) to overcome the disadvantages associated with its oral administration. In the presence of normal liver function

in man, benzoic acid is excreted as hippuric acid. The rate at which this material is excreted determines the functional ability of the liver and often demonstrates the presence of liver damage before clinical signs are evident.

The test is contraindicated in the presence of renal disease, because here the hippuric acid is but partially eliminated.

Dosage—The bladder is emptied before administration of the drug. Inject slowly intravenously, 20 cc of sodium benzoate solution containing 1.77 Gm of the salt (equivalent to 1.5 Gm of benzoic acid) using not less than five minutes for the injection. Exactly one hour after the injection a complete urine specimen is collected and the amount of hippuric acid determined by the method developed by Quick (Quick, A. J., *Am. J. Digest. Dis.* 6: 71b [Dec.] 1939).

An adult with a normal liver will excrete at least 1 Gm of hippuric acid (equivalent to 0.68 Gm of benzoic acid) within one hour after receiving sodium benzoate intravenously.

GEORGE A. BREON & COMPANY, INC., KANSAS CITY, MO

Ampul Sodium Benzoate Solution 1.77 Gm (equivalent to 1.5 Gm benzoic acid) in 20 cc.

ALLERGENIC EXTRACTS (See New and Nonofficial Remedies, 1942, p. 1)

U. S. STANDARD PRODUCTS CO., WOODWORTH, WIS.

The following additional allergenic extracts marketed in 5 cc vials representing 20,000 pollen units per cubic centimeter, have been accepted:

Alfalfa (Turf) *Alfalfa* Berles (Black) *Birch* (Walls) *Burning Bush* Cedar (Mountain) *Chrysanthemum* Clover (Red) Clover (Sweet) *Dandelion* *Daisy* (Ox-eye) *Peanut* *Pine* (White) *Pine* (Common) *Poplar* (Lombardy) *Ragweed* (Swamp) *Sage* (Common) *Sage* (Pursh) *Snapdragon* *Sudan Grass* *Sunflower* *Sycamore* *Grass* *Walnut* (Black) *Water Hemlock* (Western) *Wheat* (Field) *Yarrow* *Dock*

The following product is supplied in 5 cc vials representing 30,000 pollen units per cubic centimeter and in packages of four 5 cc vials representing respectively 100, 1,000, 10,000 and 100,000 pollen units per cubic centimeter.

Ragweed (Common and Common Ragweed in equal parts)

The following product is supplied in 5 cc vials representing 30,000 pollen units per cubic centimeter.

Grass (Common and Bermuda) *Jun Grass* *Orchard Grass* *Red Top* *Saint Bernard Grass* and *Timothy* in equal parts

MERSALYL AND THEOPHYLLINE—A mixture containing two parts by weight of mersalyl U. S. P. and one part by weight of theophylline U. S. P.

Actions and Uses—(See New and Nonofficial Remedies 1942, p. 320 under Salyrgan-Theophylline Solution.)

Dosage—Two tablets may be given in one dose in the morning after breakfast and repeated in four to five days if required. As an adjunct to intravenous medication, one tablet may be given daily for one or two weeks but in such instances rest periods of one or two weeks should intervene between courses of treatment.

WINTHROP CHEMICAL COMPANY, INC., NEW YORK

Salyrgan-Theophylline Tablets. Each tablet contains 0.08 Gm. mersalyl and 0.04 Gm. theophylline.

SULFAGUANIDINE (See New and Nonofficial Remedies 1942, p. 159)

The following dosage forms have been accepted

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Sulfaguanidine (Powder) bulk.

Tablets Sulfaguanidine 0.5 Gm. (7.7 grains)

SULFAPYRIDINE (See New and Nonofficial Remedies 1942, p. 146)

The following dosage form has been accepted

PITMAN-MOORE COMPANY, INDIANAPOLIS

Tablets Sulfapyridine 0.5 Gm. (7.7 grains)

ETHYL AMINO BENZOATE (See New and Nonofficial Remedies 1942, p. 65)

The following dosage forms have been accepted

GEORGE A. BREON & COMPANY, INC., KANSAS CITY, MO

Benzocaine in Oil. Bottles of 1 ounce and 1 pint. Contains benzocaine 2.5 per cent W/V and croton-chastoreol 0.5 per cent W/V in cottonseed oil.

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SATURDAY, JUNE 12, 1943

REORGANIZATION OF UNITED STATES PUBLIC HEALTH SERVICE

The labyrinth of federal public health legislation extending over a period of one hundred and forty-three years has not produced a uniform pattern of requirements with respect to the administrative operations of the Public Health Service. Now a more efficient organizational structure of the Service is proposed by legislation pending in Congress, introduced at the request of the Administrator of the Federal Security Agency. The structure, according to Administrator McNutt, is extremely cumbersome at present, resulting inevitably in an overlapping of functions and in a duplication of effort. Important war responsibilities too have been imposed on the Public Health Service which emphasize the need for internal reorganization.

Senate and House committees have conducted hearings on companion bills, S. 400 and H. R. 649, introduced respectively by Senator Thomas and Representative Bulwinkle to give effect to the recommendations of the Administrator of the Federal Security Agency. The Senate bill has already passed the Senate in an amended form. As amended, it provides that the Public Health Service will consist of the Office of Surgeon General, the National Institute of Health and two bureaus to be known as the Bureau of Medical Services, to operate all hospitals and clinics under the jurisdiction of the Service, and the Bureau of State Services, to administer grants-in-aid and to supervise services to the several states. The Surgeon General will be authorized to assign functions and to establish within the National Institute of Health the two bureaus and in the Office of the Surgeon General such divisions, sections and other units as may be required. In this way, according to the report of the Senate Committee on Education and Labor, it will be possible to place like functions within controlling units, eliminating greatly the need for coordination and leaving to subordinate officers many details which now inevitably find their way to the Surgeon General.

The Director of the National Institute of Health, the chiefs of each of the bureaus, and the officer assigned

as Chief Medical Officer of the United States Coast Guard will be commissioned medical officers detailed by the Surgeon General from the regular corps and while so detailed will be Assistant Surgeon Generals and will have the same grade and will receive the same pay and allowances as the Assistant to the Surgeon General. In the office of the Surgeon General there will be established a Dental Division and a Sanitary Engineering Division. The chiefs of such divisions will be a commissioned dental officer and a commissioned sanitary engineer officer respectively, each of whom will have the grade, pay and allowances of an Assistant Surgeon General.

In addition to the provisions of the legislation relating to the reorganization of the Service, provisions are included to provide for commissioned officers of the Service a parity of promotion, pay and benefits with commissioned officers of the Medical Corps of the Army. In time of war or national emergency, any commissioned officer of the regular corps of the Public Health Service may be appointed to a higher temporary grade with the pay and allowances thereof without vacating his permanent appointment. Reserve officers of the Service may be distributed in the several grades without regard to the proportion which at any time obtains or has obtained among the commissioned medical officers of the Service.

The record of each commissioned officer of the regular corps initially appointed above the grade of Assistant Surgeon, after the first three years of service in such grade, will be reviewed and any such officer who is found to be unqualified for further service will be separated from the Service and paid six months' pay and allowances. Original appointments in the commissioned corps both regular and reserve, may be made to a junior grade which shall correspond to that held by a second lieutenant in the Medical Department of the Army, persons so appointed will be entitled to the same pay and allowances as a second lieutenant in the Medical Department of the Army. After not less than one nor more than two years of service, each such appointee in the regular corps may be examined and either promoted to the grade of Assistant Surgeon or separated from the Service.

Commissioned officers of the Public Health Service, regular and reserve, will be entitled to the same pay, allowances and all other rights, benefits and privileges authorized or provided for officers of corresponding grade of the Medical Corps of the Army. All commissioned officers of the Service detailed for duty with the Army or Navy will be held and considered to be in the active military service of the United States. While so detailed they will be subject to all the laws and regulations operative for the government or the respective services to which they are detailed. The additional benefits to be granted by this legislation will be available to commissioned officers of the Service.

regular and reserve, and to their surviving dependents, it may who were serving outside the continental limits of the United States on Dec 7, 1941 or who since that date have been made prisoners of war or who have been disabled or who have lost their lives while on active duty

This legislation contains nothing further to extend the activities or further to enlarge the powers of the Public Health Service. In the language of the Senate Committee on Education and Labor, it merely provides "for an orderly realignment of the many activities of the Service from an administrative standpoint, provides for the much needed temporary promotion for certain officers in the Service and provides reasonable benefits for the officers of the Service in connection with their duties to the armed forces"

One Senate amendment to the Senate bill provides that "for the duration of the present war and for six months thereafter graduates of reputable osteopathic colleges shall be eligible for appointment as reserve officers in the Public Health Service". In all other respects, the legislation seems to propose an improvement in the quality of services rendered by the personnel of the Service. The osteopathic amendment, if permitted to remain in the bill will inevitably have the opposite effect by its recognition of an inferior type of medical education. Certainly it will not increase the good repute of the Service. The Medical Departments of the Army and Navy have consistently insisted that the high quality of their commissioned personnel be maintained. The Federal Security Agency and the United States Public Health Service should do everything possible to prevent the enactment of legislation designed to undermine standards. Let the people continue to have faith in the dependability of the United States Public Health Service

ASPHYXIATED TUBERCULOSIS VACCINE

The tubercle bacillus survives a temperature as low as that of liquid helium as well as freezing up to two hundred times with liquid nitrogen¹. In this remarkable resistance to cold the bacillus differs from mammalian cells and tissues, the activities of which are retarded at temperatures near the freezing point but which in general do not survive actual freezing. The prolonged survival of the bacillus when frozen may be explained by dormancy on the part of its enzymes under low temperature. The bacillus can survive desiccation also. Hermetically sealed in glass capsules containing less than one billionth of an atmosphere, the bacillus survived more than one year at body temperature. In this experiment the bacillus was very dry, which may have contributed to its dormancy. Incubated in a par-

tial vacuum, saturated with water vapor but deprived of oxygen, the bacillus lost all power of growth, even when introduced into the most highly susceptible animal body. The bacillus, so to speak, was asphyxiated but without loss of antigenic action as revealed by immunizing animals with avian and human strains of asphyxiated tubercle bacilli.

Preparation of a nonviable asphyxiated tuberculosis vaccine with immunizing power allegedly superior for laboratory animals to other products is reported by Potter² of the Laboratory of Preventive Medicine, University of Chicago. Numerous investigators³ have attempted to obtain a relatively undenatured tuberculosis vaccine by storing dry tubercle bacilli at refrigerator temperatures in the maximum vacuum obtainable with a high grade mercury pump. Such stored bacilli remain alive and fully infective for at least two years, presumably because of a nearly complete metabolic standstill caused by absence of moisture and warmth. In order to kill the bacilli by lack of oxygen, Potter therefore repeated the tests under conditions that maintained normal moisture and optimal temperature.

Highly virulent human tubercle bacilli were placed in empty pyrex test tubes together with 0.5 cc of freshly boiled tap water. The oxygen was then removed in three stages, first by prolonged evacuation with a Hvac pump, by which the estimated oxygen pressure was reduced to a two-hundredth part of that of the original air. Second, the evacuated tubes were filled and reevacuated seven times with electrolytic hydrogen, after which only a hundred-thousandth part of the original oxygen remained in the tubes. Finally the residual traces of oxygen and hydrogen were absorbed on powdered palladium sponge. The tubes were then stored in the dark at 38 C.

All organisms from tubes thus prepared and opened between the twentieth and forty-second day of storage failed to grow when plated on a variety of favorable culture mediums. Five to 10 guinea pigs were injected subcutaneously with each asphyxiated sample. Guinea pigs injected with the twenty to twenty-five day asphyxiated cultures occasionally developed tuberculosis. All guinea pigs injected with cultures asphyxiated for at least thirty days showed no evidence of tuberculosis when killed eight weeks later. Similar results were obtained with asphyxiated highly virulent bovine and avian strains, 6 week old chicks being used as the test animal.

Since tubercle bacilli killed by asphyxiation are presumably less denatured than bacilli killed by heat or chemical antiseptics, it would seem reasonable to hope that asphyxiated vaccines would have immunizing powers superior to those of any other nonviable tuberculosis vaccine thus far tested. A series of rabbits and pigeons were therefore given five subcutaneous injections at five day intervals of asphyxiated avian

1 Kyes, Preston and Potter, T. S. The Resistance of Avian Tubercle Bacilli to Low Temperatures. *J. Infect. Dis.* 64: 123 (March-April) 1939.

2 Potter, T. S. Survival of Oxygen and Water Deprivation by Tubercle Bacilli. *J. Infect. Dis.* 60: 83 (Jan-Feb) 1937.

3 Potter, T. S. *J. Infect. Dis.* 71: 220-232 (Nov-Dec) 1942.
4 Loefer, T. S. *J. Infect. Dis.* 57: 149 (Sept-Oct) 1935.

tubercle bacilli. The pigeons continued well for seven and one-half months, at which time they were killed, necropsies revealing almost complete disintegration and absorption of the injected vaccine without active tuberculosis. The rabbits were killed from one year to seventeen months after vaccination, at which time they were also without signs of tuberculosis.

Beginning at four and one-half months after this vaccination, groups of rabbits with an equal number of nonvaccinated controls were tested for acquired immunity by intravenous injection of massive test doses of living avian tubercle bacilli. The vaccinated rabbits developed but one-sixth as many lesions as the controls and by the end of fifteen months had shown but one-fourth their tuberculosis mortality. This degree of postvaccinal immunity is apparently superior to that reported by Opie and Freund following vaccination with heat killed tubercle bacilli. Potter's tests show that an appreciable degree of the postvaccinal immunity persists for at least a year, with full duration not yet determined. Attempts to improve the nonviable tuberculosis vaccine by adopting methods that would facilitate more rapid interstitial disintegration and absorption of the injected asphyxiated bacilli are now in progress.

Current Comment

DELAYED RUPTURE OF THE SPLEEN

Delayed splenic rupture and the syndrome which accompanies it, rare in peacetime now takes on new importance because of its potentially great increase in incidence resulting from warfare. In a recent review of this subject Zabinski and Harkins¹ analyzed 66 reported cases of traumatic subcutaneous rupture of the spleen with delayed hemorrhage, including 4 of their own. Delayed splenic rupture is most common in men in the third decade in life. Falls and traffic accidents are the most common etiologic agents. About 50 per cent of the secondary ruptures occur after intervals of less than seven days, while in an additional 25 per cent the latent period ends during the second week. Fractured ribs on the left side occur in about 10 per cent of the cases. Kehr's sign (pain in the left shoulder due to irritation of the phrenic nerve) is present in about 28 per cent or more of the cases. Other diagnostic signs are similar to those occurring in any type of splenic rupture such as sudden collapse or shock, rapid or increasing pulse rate, progressive anemia, white cell count from 12,000 to 20,000, absence of fever over 99 F, pain, tenderness, dullness and rigidity in the upper left quadrant and in some instances signs of free fluid in the peritoneal cavity. Without operation, mortality ranges from 77 to 100 per cent. When splenic laceration is suspected, Zabinski and Harkins say, the patient should be kept in bed under close observation. When the diagnosis is reasonably

definite, or at the first sign of secondary hemorrhage, splenectomy should be performed. Adequate treatment of shock with plasma or whole blood forms a necessary adjunct to the operative procedure. This syndrome is especially insidious and treacherous because of the almost symptom free latent period, but this delay also offers an opportunity for diagnosis and proper treatment.

HYPERVITAMINOTIC GALLSTONES

According to data recently reported by Ruth Okey¹ of the Department of Home Economics, University of California, an excessive intake of vitamin B may lead under certain nutritional conditions to the formation of gallstones in experimental animals. The California biochemist studied the vitamin tolerance of guinea pigs maintained on a basic diet consisting of casein, crisco, wheat bran, dried brewers' yeast, Hubbels salt, agar and cornstarch, plus 1 per cent cholesterol. This diet was supplemented by a daily pipet feeding of a vitamin mixture consisting of cerophyll, carotene, irradiated ergosterol, orange juice, wheat germ oil and other factors previously found necessary for maximum growth. Control (cholesterol free) animals of this series had a growth rate slightly less than animals maintained on their previous stock diet. Okey attempted to improve their nutrition by a supplementary daily administration of 25 micrograms of riboflavin, 125 micrograms of calcium pantothenate or both. These supplementary vitamins increased the apparent well being of both control and cholesterol fed animals, but to her surprise the guinea pigs which were fed cholesterol and given supplementary vitamin B showed an abrupt and usually fatal anemia without the usual preliminary loss of weight or other signs of illness. Eighty per cent of the necropsies in these fatal cases revealed gallstones (often impacted) accompanied by irritating lesions of the gallbladder and biliary passages. Fifteen per cent of the fatal cases showed "murky" bile but without macroscopic gallstones. Satisfactory necropsies were not possible on two other fatalities, since the animals died at night and the gallbladder had burst and their contents had been lost. All control guinea pigs of the series of animals not given the vitamin B supplement but fed cholesterol were free from gallstones. Reviewing previous necropsy records Okey found that all previously recorded cases of gallstones were associated with diets particularly rich in cholesterol (unextracted casein and/or egg yolk) and diets also probably containing an excess of riboflavin. The conclusion seems inevitable that an overabundance of vitamin B will lead to gallstone formation in animals otherwise tolerant to cholesterol rich diets. Taken in connection with the recent demonstration of the deleterious effects of excessive doses of thiamine on natural resistance to experimental poliomyelitis,² Okey's observations are of basic clinical interest. Analyses of her vitaminogenic gallstones showed that they were rich in calcium phosphate although containing some cholesterol.

5 Opie, E. L., and Freund, Jules. *J. Exper. Med.* **66**: 761 (Dec) 1937.
1 Zabinski, E. J., and Harkins, H. N. Delayed Splenic Rupture. *A Clinical Syndrome Following Trauma*, *Arch. Surg.* **46**: 186 (Feb) 1943.

1 Okey, Ruth. *Proc. Soc. Exper. Biol. & Med.* **51**: 349 (Dec) 1942.
2 B1 Vitamin Hypoimmunity, editorial, *J. A. M. A.* **121**: 14 (April 17) 1943.

THE SURGEON GENERAL OF THE ARMY

On June 1 Major Gen Norman T Kirk became Surgeon General of the Army succeeding Major Gen James C Magee who retired with an excellent record for leadership and for the maintenance of high standards in the military medical service. The medical department of the Army has grown in size and importance beyond anything ever previously anticipated. There are now thirty-four general hospitals and about five hundred station hospitals in the continental United States and a great number of other army hospitals scattered throughout the world. Brigadier General Kirk, who as surgeon general will hold the rank of major general relinquished at the time of his appointment the position of commanding officer of the new Percy Jones General Hospital at Battle Creek, Mich. In 1919 General Kirk was in the surgical service at Walter Reed General Hospital and later had duty at Johns Hopkins University Hospital, the Massachusetts General Hospital and the Station Hospital at Fort Sam Houston, Texas where he became chief of the surgical service. He served subsequently as chief of the surgical service at Sternberg General Hospital in Manila, the Station Hospital at Fort Mills in the Philippine Islands, again at Sternberg and later at the Walter Reed General Hospital in Washington. General Kirk addressed the House of Delegates of the American Medical Association at its opening session in Chicago on June 7. The medical profession will, of course, tender to him, as it has to his predecessors, the complete support that is so vital in maintaining for our troops the high quality of medical care that has been exemplified in the past.

ARCHITECTS LOOK AHEAD IN
HOSPITAL PLANNING

The *Architectural Forum* for May contains two articles written by architects discussing the designing of hospitals and health facilities of the future. The architectural problems faced include the use of new materials, new types of design for better utilization of space and sunlight and low cost. Both of these articles are of interest as being indicative of forethought on the part of the architects in the planning of hospitals and health centers when their building again becomes possible.

ISOLATION OF PROTEIN HORMONES OF
THE PITUITARY BODY

The pituitary body dominates the glands of internal secretion through the hormones produced by its anterior or glandular lobe. Growth, reproduction and metabolism are regulated by these hormones, which are believed to be proteins. The isolation and characteristics of these proteins are receiving close cooperative attention from biologists and chemists. The progress of current investigations in this field was reviewed at a recent conference in New York¹. Shedlovsky, discussing the criteria of purity of proteins, points out that in the case of biologically active substances the evidence on which to base judgment as to purity must come from three distinct sources, namely accurate biologic assays,



MAJOR GENERAL NORMAN T. KIRK

chemical analyses and studies in electrophoresis, solubility and ultracentrifugation. Significant progress is recorded in the work on the follicle stimulating (Chow), the luteinizing (Fevold) and the growth and metabolic (Long) hormones of the anterior pituitary, but conclusive results have not yet been reached. According to Abraham White the lactogenic hormone, best known as prolactin, is the first anterior pituitary hormone to be isolated in pure form. The evidence at hand indicates that prolactin is a protein. Recently this hormone has been found to induce corpus luteum activity in hypophysectomized rats. Irving and du Vigneaud summarized the status of the posterior pituitary hormone problem by saying that the pressor and oxy-

tocic hormones isolated from the posterior lobe have not yet been obtained in pure form, but highly potent preparations represent "fairly pure preparations of separate molecules which may be similar chemically." A protein with pressor, oxytocic and antidiuretic activity has been isolated from the posterior lobe in what seems to be pure form, but further work is necessary before this protein can be accepted as a posterior lobe hormone with multiple activities. As emphasized by van Dyke in his introduction to the conference, biologists and chemists must continue their alliance in research toward the isolation of the hormones of the pituitary in pure forms. This is the only way by which advances can be made in the solution of some of the problems of this extraordinarily complex gland.

¹ van Dyke, H. B., Chow, B., Bacon, F., du Vigneaud, Vincent, Fevold, H. L., Irving, George W. Jr., Long, C. N. H., Shedlovsky, Theodore and White, Abraham. Protein Hormones of the Pituitary Body. *New York Acad. Sc.* 13: 253 (Feb. 26) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession

ARMY

SOLDIERS GET HIGH QUALITY OF MEDICAL TREATMENT

The Office of War Information announced on May 19 that more than 97 per cent of the naval and marine wounded at Pearl Harbor to March 31, 1943 have recovered and that an analysis of available data on the army wounded shows that recoveries are comparable to naval and marine percentages. Never before in history the Office of War Information states, has the fighting man had available such medical care and equipment as the United States now furnishes its defenders. The care of the wounded under the American system of military medicine begins with the soldier himself, each one having fastened to his belt a first aid packet, a package of sulfadiazine tablets and a sulfonamide powder. If the soldier is conscious after being wounded he begins to take the sulfadiazine tablets at once, dusts the sulfonamide powder in his wound and uses the first aid packet. In all probability, however, a hospital corpsman has come to his aid before he has a chance to do this. The corpsman administers quickly to the soldier, ties a tag to the soldier's belt showing what treatment has been given, fixes a bit of gauze to a bayonet or stick to mark the soldier's location and then goes forward with the attack. Litter bearers then carry the wounded soldier to a battalion aid station farther back where he is attended by physicians and cared for until he can be removed in an ambulance or other conveyance still farther back to the collecting stations. Here the various cases are classified and the more seriously wounded taken to field or evacuation hospitals usually from 5 to 7 miles from the fighting front. The field hospitals are mobile but equipped with the most modern supplies and staffed by expert surgeons with specialists available for all kinds of injuries. Farther back are the large general or base hospitals, usually several hundred miles from the battle area and the equal in equipment to the most elaborate city hospitals. Here the wounded may remain until fully recovered and returned to duty or they may be sent to hospitals in the United States. Some wounded men in distant battlefields have reached the homeland faster than the report of their having been wounded. A severely wounded soldier was brought home for treatment from Egypt by ambulance plane in seventy-two hours, others have been flown to the homeland from the Far East, India and Africa. Should medical supplies be delayed in reaching the battle area, American doctors have been trained to perform their duties with such equipment as is at hand. Some ships carrying medical supplies for the North African campaign were torpedoed and yet a system of caring for the wounded was established right from the beaches of the Mediterranean, that this method also was effective was shown by the hundreds of recoveries from wounds.

ANNUAL MEETING OF MILITARY SURGEONS

The Association of Military Surgeons of the United States will hold its fifty-first annual convention in Philadelphia at the Bellevue-Stratford Hotel on October 21-23. Doctors will assemble from all fronts where United States forces are fighting and from the great base hospitals where rehabilitation of the wounded is in progress, bringing with them information on the latest techniques of wartime medicine and surgery. Lectures, demonstrations, moving pictures and teaching panels are planned to present data to the convention.

The honorary chairman of this convention is Rear Admiral Ross T. McIntire, Surgeon General of the Navy. The general chairman is Capt. Joseph A. Biello, Medical Corps, U. S. Navy. The vice chairmen are Brig. Gen. George F. Lull, M. C., U. S. Army, of Washington, D. C., and Comdr. E. L. Bortz, MC, USNR, of Philadelphia. National officers of the association are as follows: president, Capt. William L. Mann, MC, USN, National Naval Medical Center, Bethesda, Md.; first vice president, Col. Lucius V. Salisbury, Medical Corps, New York National Guard; second vice president, Asst. Surg. Gen. Warren F. Draper, U. S. Public Health Service; third vice president, Col. Edgar Erskine Hume, Medical Corps, U. S. Army; fourth vice president, Col. Irvin Abell, Medical Reserve, U. S. Army; fifth vice president, Dr. Martin L. Cooley, Veteran's Administration; secretary, Col. James M. Phalen, U. S. Army (retired); and executive secretary, Stuart E. Womack, U. S. Army (retired).

REDUCE NUMBER OF DOCTORS ALLOTTED TO CERTAIN UNITS

The War Department has ordered that as a general policy and in order to place the medical officers available where they are most needed, regimental and separate units, such as battalions, which now are authorized to have two medical officers by the Tables of Organization will be provided only with one medical officer while in continental United States. Before such units go overseas, the number of medical officers will be increased to Tables of Organization strength.

All Tables of Organization which include medical and dental officers will be revised to show, in the case of attached medical and dental officers, that they will be furnished only as required and available in continental United States. All medical and dental officers designated in Tables of Organization as captains or as first lieutenants will be shown as authorized in either rank, no specification being made.

WAR DEPARTMENT ORDERS EXERCISE FOR HEALTH

The War Department has ordered, according to the *Army and Navy Journal*, that, whenever possible, the duties of officers whose work is confined primarily to offices will be so arranged that each such officer will be allowed at least one-half day a week other than holidays and Sundays for physical exercise in the interest of good health and mental fitness. Exercise in the open air or in a well ventilated room will be taken regularly by all officers not actually participating in active outdoor instruction of troops.

PERMANENT PROMOTIONS

The President of the United States has nominated, among others in a list of army officers for permanent promotion in the regular army, the following in the medical corps: Albert R. Driesbach from captain to major; James E. Vickers, George Arack, Robert G. Rate and Ivan C. Dimmick Jr., from first lieutenants to captains; and from lieutenant colonel to colonel Andrew W. Smith, No. 80 on the lieutenant colonel's relative list, M. C., to and including Seymour C. Schwartz, No. 103.

THE MOORE GENERAL HOSPITAL

The Moore General Hospital is situated in the picturesque Swannanoa Valley surrounded by mountains, 13 miles west of Asheville, N. C. The elevation is 2,250 feet. A short railroad spur connecting the main line of the Southern Railroad with the hospital proper expedites the movement of patients, in that hospital trains may be drawn into a specially constructed station on the hospital reservation. Here a covered platform has been built level with the railway car floor, where patients can be easily removed and placed in the station. Ambulances receive patients from a completely closed in and heated platform and transmit them to the receiving office where they are unloaded on a similarly constructed platform. This cantonment type hospital at present has 1,520 beds available and it has been authorized to administer fever therapy.

The medical officers at present on duty are:

Col Frank W. Wilson, Commanding
Lieut. Col. Roger H. Albee, Hospital Inspector and Plans and Training Officer
1st Lieut. Jacob J. Belter, Surgery
1st Lieut. Stephen M. Clement, Neuropsychiatry
Major Nathan B. Cohen, Chief, Eye, Ear, Nose and Throat
1st Lieut. Robert M. Dicus, Jr., Orthopedics
Major Louis S. Faust, Assistant Chief of Medical Service, Chief of Cardiovascular Section
Capt. Joseph H. Garthe, Chief of Communicable Diseases
Major Thomas A. Gibson, Executive Officer and Public Relations Officer
1st Lieut. Silvio M. Guglielmelli, Medical Service
Major Willard F. Hollenbeck, Chief of Medical Service and Chief of Gastrointestinal Section
1st Lieut. Robert K. Harvey, Orthopedics
Major John S. Hooker, Sr., Chief of General Medicine Section
Major William A. Hunter, Chief of Neuropsychiatric Section
Capt. Charles W. Knerler, Chief of Dermatology and Syphilitic Section
Capt. Eugene H. King, Medical Service
Capt. Sol E. Kantor, Anesthetist
Capt. Edwin F. Lathbury, Eye, Ear, Nose and Throat
1st Lieut. Oscar Legault, Neuropsychiatry
1st Lieut. Alfred D. Levick, Surgery
1st Lieut. James T. Marr, Roentgenology
1st Lieut. Henry B. Marshall, Urology
Capt. John S. McKee, Jr., Receiving and Disposition Officer
Capt. Francis J. McMahon, Surgery
Major Frank G. Murphy, Chief of Orthopedic Section
Capt. Dewey T. Nabors, Chief of Genitourinary Service
1st Lieut. James J. O'Leary, Jr., Assistant Chief of Surgical Service
Capt. Ferdinand Piazza, Assistant Receiving and Disposition Officer
Capt. Richard C. Ritter, Orthopedics
Major Earl W. Rothermel, Chief of Physical Therapy Section
Major Malcolm H. Rourke, Registrar, Trial Judge, Advocate, Commanding Officer Detachment of Patients, Intelligence Officer
Major George L. Sackett, Chief of Roentgenologic Service
Capt. Donato A. Santarsiero, Ophthalmologist
1st Lieut. Robert V. Schatken, Surgery
1st Lieut. Samuel Sober, Medical Service
Major Lester C. Thomas, Chief of Surgical Service
Capt. Calvert R. Toy, Medical Service
1st Lieut. Charles A. Tucker, Eye, Ear, Nose and Throat
1st Lieut. David Turnoff, Medical Service
Capt. Franklin H. Wakefield, Surgery
Capt. Thomas B. Wilson, Chief of Laboratory Service

PRECISION IN PLACEMENT OF MEDICAL SPECIALISTS

The War Department announced on May 27 that the Office of the Air Surgeon has placed in accordance with their professional specialties 98.8 per cent of all Army Air Forces medical officers who are qualified as specialists by the specialty boards or colleges of the medical profession of the remaining 12 per cent the large majority are officers assigned to administrative duty because of special ability in that field or functioning as executive officers and commanding officers of hospital installations.

This record of accurate utilization of the specialized qualifications of Army Air Forces medical officers has been achieved through constant watchfulness by the Office of the Air Surgeon. A constant check on the assignments of doctors on duty with the Army Air Forces by the Air Surgeon assures continuation of their efficient use.

ARMY HOSPITAL NEEDS SPECIAL TYPES OF PERSONNEL

The U. S. Army Finney General Hospital at Thomasville, Ga., is urgently in need of personnel with specialized types of training to complete its organization. Being unable to secure such personnel locally, the personnel director of the Finney General Hospital appeals to those trained and qualified for certain positions to make application to him as soon as possible. He also urgently requests any person who has acquaintances qualified for these positions to write in at once giving their names and addresses. The commanding officer of the Finney General Hospital is Col. S. M. Browne, and the personnel director is Capt. Cletus A. Sharkey. Application should be made on Civil Service form number 57, obtainable at any postoffice or civil service office. The following positions are available: medical technicians in bacteriology, roentgenology, surgery, chemistry and general laboratory work, assistant medical technicians in general laboratory work, bacteriology, roentgenology, surgery (tissue work) and chemistry, orthopedic mechanic, junior orthopedic mechanic, occupational therapy aides, dental mechanics, assistant dental mechanics, dental hygienists and dental assistants. The base pay plus bonus per annum for these various positions varies from \$1,750 a year to \$2,433.12 a year.

CLASS OF AVIATION PHYSIOLOGISTS

Another class of aviation physiologists graduated at the School of Aviation Medicine in Texas on April 17. The course of instruction covers the effects of lowered barometric pressure, anoxia and the effect of flight on man, the operation of low pressure chambers, the theory and practical use of oxygen equipment and the conduct of high altitude indoctrination and classification. Among the graduates were the following medical officers: all first lieutenants, Stephen J. Alexander, Jr., Crawfordsville, Ind.; Russell G. Barnes, Jr., Hastings, Minn.; Gordon A. Brown, St. Paul; William C. Browne, Corydon, Pa.; Daniel H. Cahoon, Boston; Albert W. Dautrich, Torrington, Conn.; Ward S. Fowler, Elkins Park, Pa.; William L. Hartmann, New York; Erle M. Heath, Pittsburgh; Henry F. Keiber, Staten Island, N. Y.; Donald R. McRae, Jr., Augusta, Ga.; Archibald G. Martin, Suffolk, Va.; Milton Mazer, Philadelphia; and Norman E. Mendenhall, Johnstown, Pa.

AMERICAN CASUALTIES IN NORTH AFRICA

The Secretary of War announced that from Nov. 8, 1942 to May 15, 1943 the American casualties in the North African military operations including the initial landings were 2,184 killed, 9,437 wounded and 6,937 missing including prisoners of war.

ARMY PERSONALS

Lieut. A. L. Batalion, Medical Corps, Army of the United States of America, W. Va., has been reported missing in action since February 17. Lieutenant Batalion was commissioned in the Army in October 1942.

Major John M. Cotton arrived in San Francisco a few days ago after spending sixteen months as executive officer at a base hospital in the South Pacific Area. Before entering the service in 1941, Major Cotton practiced psychiatry in New York. He praised the work done by those charged with bringing the sick and wounded from the front through the jungles to the base hospitals for treatment. In the more overgrown sections they had to resort to extreme ingenuity in devising any means possible to get the sick and wounded over the large gorges and through the thick mountain jungle.

Brig. Gen. James S. Simmons, A. U. S. director of the Preventive Medicine Division, Office of the Surgeon General, United States Army, delivered the John Wickoff lectures at New York University on April 15 and 16. The title of the first lecture was "The Preventive Medicine Program of the United States Army" and of the second lecture, "The Present

State of the Army's Health" Duke University, Durham, N C, conferred the honorary degree of Doctor of Science on General Simmons at commencement exercises on May 22

Col Charles F Shook, M C, of the supply division of the Surgeon General's Office, has been detailed to duty with the headquarters of the American Red Cross in Washington According to the *Military Surgeon*, Colonel Shook will represent the medical services of both the Army and the Navy in carrying on with the Red Cross in its campaign for blood plasma This work will require much travel to blood donor centers throughout the country

Dr Currier McFwen, dean of the New York University College of Medicine, has been granted a leave of absence from that position and has gone in the army, where he is serving as executive officer of the Bellevue Hospital affiliated unit, the First General Hospital, which is now in training at Fort George G Meade, Maryland

The promotion of Capt Miles G Bell, M A C, to major makes him the first Medical Administrative Corps officer candidate school graduate to attain that rank, while other M A C officers hold higher rank, theirs was received by direct commissions Major Bell is a graduate of the first O C S class at Carlisle Barracks, Pa, receiving his commission in September 1941 On graduation he remained as department of administration instructor Coming to Camp Berkeley, Texas, in May 1942 with the original group of officers to activate the O C S, he was made director of the department of administration Major Bell is the son of Lieut Col Charles A Bell, M C, retired now on duty at the Army and Navy General Hospital, Hot Springs, Ark

Lieut Col Charles R Rayburn, professor of psychiatry at the University of Oklahoma Medical School, is now serving as executive officer of the base hospital at Hunter Field, Savannah, Ga

Dr Joseph J Eller, New York, gave a lantern slide demonstration and lecture on "The Diagnosis and Treatment of Benign and Malignant Tumors of the Skin" before the Army medical and dental officers at Morrison Field, West Palm Beach, Fla, May 7

Major Saverio C Franco, M C, stationed at the 79th General Hospital, Camp White, Oregon, was promoted to the rank of lieutenant colonel on April 13

Major L Rush Lambert of Fairmont, W Va, state medical selective service officer, Charleston, W Va, was promoted to lieutenant colonel on March 6

MANUAL OF INDUSTRIAL NUTRITION

The Nutrition in Industry Division of the War Food Administration of the U S Department of Agriculture, Washington, D C, has published a "Manual of Industrial Nutrition," which is available on request from the Nutrition in Industry Division or from any one of the seven regional offices of the Food Dis-

tribution Administration Dr Robert S Goodhart, chief of the division, said that there is evidence that many of the usual practices associated with the preparation and service of food in plant cafeterias and restaurants result in serious losses in food values This booklet outlines the effect these food losses may have on absenteeism and production and on the ways in which food may be selected, prepared and served in order to reduce unnecessary losses in food values It is said that the losses of thiamine ran as high as 92 per cent in the preparation of a meal of meat, potatoes and beans in one plant cafeteria

OFFICERS ON DUTY AT CAMP CARSON

The new station hospital at Camp Carson, Colorado, is located on the plains a few miles out of Colorado Springs The following list shows the chiefs of sections and other officers now on duty at the station hospital

Col John I Marker, Commanding Officer
Capt Edward D Greenwood, Executive Officer and Chief, Neuro psychiatry Section
Major James C Harberson, Chief, Surgical Service
Lieut Col Philip S Hench, Chief, Medical Service
Major William M B Brown, Chief, Eye, Ear, Nose and Throat Clinic
Major Harry W Woodward, Chief, Orthopedic Section
Capt Lester W Bird, Chief, Roentgenologic Section
Capt Richard H Mullen, Chief, Physical Therapy
Capt Aaron D Vogelsing, Chief, Genitourinary Section
1st Lieut George A Bradasch, Chief, Anesthesia Section
Major Robert O Garvin, Chief, Gastroenterology Section
Capt Henry A Brunsting, Chief, Dermatology Section
Capt Paul E Laville, Chief, Laboratory Service
Capt Donald W Ingham, Chief, Cardiovascular Section
Capt Nathaniel J Cohen, Chief, Communicable Disease Section
Capt John C Nunemaker, Librarian
Major James L Blanton, 1st Lieut Edgar S Brintnall, Capt Winfield L Butsch, Capt Donald C Campbell, Capt Howard C Coggeshall, Capt Dawson A Dowell, Major Thomas J Dry, Capt Earl M Edison, Major Clifford O Erickson, Capt R Gibson, Capt Wendell C Kelly, Major Harry W LeFevre, 1st Lieut Martin L List, Capt Arthur S Mann, Capt Fayette D Severance, Capt Gerald H Smith, Capt Malcolm C Fodd, 1st Lieut George L Walker, Capt David R Wall

THE DIVISION OF MEDICAL INTELLIGENCE

Dr Gaylord W Anderson, head of the division of preventive medicine and public health of the University of Minnesota School of Medicine, has been granted a leave of absence from that position in order that he may serve as head of the division of medical intelligence in the Office of the Surgeon General of the Army in Washington, D C The division of medical intelligence compiles health, climatic and sanitation evidence with respect to every area to which United States troops may be sent Such matters as the types of insects, snakes and diseases peculiar to the area, degrees of heat and humidity, poisonous plants, necessary dietary precautions and probable purity of the water supply are included in comprehensive surveys

NAVY

LIEUTENANT ROBERTS AWARDED SILVER STAR

Lieutenant (jg) Charles Purcell Roberts, USNR, of Atlanta, Georgia, has been awarded the Silver Star for services "above and beyond" the line of duty in action as a medical officer serving with a beach party of a U S Navy transport during the occupation of French Morocco The commanding officer of the ship on which Lieutenant Roberts was serving made the following recommendation concerning the award

As the medical officer of the Naval Beach party of the U S S *Edward Rutledge*, which vessel transported the assault units of the 3rd Battalion of the 30th Infantry, U S A, and participated with them in the landing and attack operations upon Fedala, French Morocco, which resulted in the capture of the city and the quick capitulation of French Morocco, Charles Purcell Roberts, Lieutenant, junior grade, MC-V(S), U S Naval Reserve, showed exceptional gallantry and devotion to duty in his constant and tireless efforts, above and beyond the limits of ordinary endurance to succor the wounded and administer surgical aid which directly resulted in saving life and limbs

During the period of Beach Party operations the medical unit suffered frequent strafing and bombing attacks from the air as well as from land installations and he was notable for his coolness, personal bravery, leadership and constant concern for both his patients and hospital corps personnel During the bombing and strafing of the beach by enemy planes, Dr Roberts calmly continued to administer intravenous plasma to a wounded soldier in the open field with utter disregard to his own safety His stamina, leadership and organizational ability was demonstrated by his handling of the wounded at the evacuation station at Fedala, where, for a considerable time, he was the only medical officer present He was held in great affection and admiration by those to whom he ministered

Lieutenant Roberts graduated at Emory University School of Medicine, served at the Peter Bent Brigham Hospital in Boston for two years, at the Rhode Island Hospital for one year, was resident physician at the Pratt Diagnostic Hospital, Boston, for two years, then practiced medicine in Boston until he entered the Navy in June 1942 Lieutenant Roberts is the son of Dr Charles W Roberts of Atlanta, a member of the Board of Trustees of the American Medical Association

MISCELLANEOUS

TRAINING OF MEDICAL PERSONNEL
IN U S S R BEFORE AND DURING
THE PRESENT WAR

PROF V LEBEDENKO

Representative of the Red Cross and Crescent of the Union of Socialist
Soviet Republics to the United States

Moscow

Quite recently the Union of Socialist Soviet Republics celebrated its twenty-fifth year of existence. Looking back one unwillingly begins to compare that which existed previously with the present as we know it. However, only such a comparison makes it possible for one to grasp the full significance of our accomplishments, concerning which we can speak with the greatest pride. Twenty-five years of building up a vast nation from its very roots, the colossal development of industry and agriculture, the introduction of new social concepts into the lives of the people, the inception of a new understanding of everyday commonplace existence—all these have required and still require of the millions of the population of our country a constant state of strain, tenseness and supreme strength and effort. Such conditions call for a nation of physically strong and healthy individuals.

For this reason one of the very first tasks which the Soviet government obligated itself to fulfil was to provide the nation with an adequate number of medical personnel and to reconstruct or rather actually to create, a new widespread system of social medicine.

In the fall of 1913, shortly before the first world war Russia could claim no more than 24 000 civil doctors of varied specialties. Of this total number 71 per cent were engaged in urban practice and only 29 per cent were distributed among the rural regions. Under these circumstances there were such instances as one general practitioner serving an area of 13 000 square versts with a population of as much as 40,000, and thus a region without road or other developed means of transportation. Also at this time, of the total number of doctors only 1 800 were surgeons.

The training of physicians in the old czarist empire prior to 1917 was accomplished in seventeen medical schools, associated with universities, courses of higher learning for women and military medical academies. Each year each of these schools graduated from less than 100 to no more than 200 or 250 doctors.

The explosion of the first world war in 1914, with the drafting and enlistment for military service of a large proportion of the medical profession, seriously affected the entire structure of civil medicine. The very first days of the war evidenced the woful lack of medical personnel both at the front and on the home front. This shortage was particularly felt in the field of surgery. As the war progressed this situation rapidly became worse. Therefore as one of its first sweeping reforms, the Soviet government was faced with the problem of providing for the population free medical care and service by highly trained personnel. This required an immediate expansion of educational and training facilities and the necessity of greatly increasing the ranks of the medical profession.

The year 1918 saw the opening of three new medical schools in three different cities. In 1922, sixteen addi-

tional medical schools were opened. This network of educational facilities grew year by year until at the beginning of the present war there were fifty-two medical schools in the country. In addition there then existed three military medical academies and nine stomatologic institutes. All these schools had an aggregate enrolment of 106,000. These institutions offer complete curriculums in therapy and general medicine, in sanitation and public health and in pediatrics. The overall purpose of all these institutes and courses was the preparation of doctors specializing in various fields.

The courses in therapy are designed to prepare the general practitioner. After being graduated from a five year course of this nature the physician is usually assigned to a rural district or to a hospital as a second (assistant) doctor.

The courses in hygiene, sanitation and public health are intended to give the doctor a general overall medical background and specifically to concentrate on questions of public health and hygiene. After being graduated from such courses, the doctor is in a position to practice independently immediately.

The third group of courses in pediatrics are organized so as not only to train students in the relatively narrow sphere of pediatrics but to prepare them as well to be directors of child care and welfare.

In addition to the fifty-two medical schools referred to twelve institutes were organized which offered to practicing physicians the possibility for study and further specialization. In addition to all this, many medical scientific research institutes were established. These have played a great role in raising the qualifications of a great number of physicians.

Glancing at these naked figures, one can scarcely visualize the tremendous organizational groundwork which was required in the establishment and operation of each of these schools. The problem was not only one of erecting buildings, supplying required apparatus and instruments, necessary textbooks and instruction materials as well as dormitories and other facilities for the students, but it required also the basic preparation of qualified teachers to staff these schools. Obviously all the preliminary organizational tasks were accomplished satisfactorily, since the present situation as regards preparation for a medical career remains the same as it was prior to 1941. Namely, there has been no curtailment of enrolment nor has the number of years required for completing a diploma course been reduced, and the full period of five years of study is still in effect. It is true that in the first year of the war the entire curriculum was cut down to four years, however, it was quickly seen that such a reduction was unnecessary and the five year course was reinstated. One of the best indications of the high quality of the medical personnel which these many institutes have trained is the fact that as high as 70 per cent of present war casualties have been returned to the front completely restored to health.

It is interesting here to say something about the way students are studying during these days of war particularly those in Moscow medical schools. In the fall of 1941 the work of the Moscow medical schools was disrupted temporarily during the fierce drive of the Nazi armies on the Soviet capital, but this situation lasted for only two months. The main body of students and professors was evacuated to other cities rather in the rear in the same manner as were evacuated all

the institutes which had existed in the regions occupied by the Nazis. All these schools are now carrying on their normal teaching and research functions just as they had been doing previous to their removal into the interior of the country. Further, as one may judge from the various periodical journals and reports of conferences, the standards of work and quality of these schools and institutes has not been lowered nor has it remained static at the same high level which it had reached prior to the war, but it has actually been greatly raised and improved.

In speaking of the problem of the preparation of the individual medical students for their work, it must be pointed out that this is often carried out in spite of great difficulties. Among these the most pressing are the material problems of existence and the questions of food and lodging created as a result of dislocation and hardships wrought by the war. These cannot be divorced from the basic procedure of study, since they undoubtedly under the present situation, require a great deal of time and energy to resolve.

However, each student with his great love of country and his consciousness of the debt of each citizen to his state and its people carries on his work selflessly and with the greatest success and achievement.

THREE TONS OF QUININE GIVEN TO ARMED FORCES

More than 3 tons of quinine, about 9,000,000 doses of 5 grains each were presented to the armed forces by the American Pharmaceutical Association on May 11, according to the *Evening Star* (Washington D C). The collection of quinine was begun on February 15 by thousands of American druggists (*The Journal* Oct 3, 1942 p 377). The gift was received on behalf of the Army and Navy by Chairman May of the House Military Affairs Committee and Admiral Ross I. McIntire, Surgeon General of the Navy at brief ceremonies at the institution's headquarters, 2215 Constitution Avenue, Washington, D C. The quinine will be reprocessed in Navy laboratories and made available immediately to men in uniform. Dr E F Kelly, secretary of the American Institution of Pharmacy, estimated the market value of the quinine at \$88,500.

PERU DONATES 100 POUNDS OF QUININE

The President of Peru recently gave to President Roosevelt 100 pounds of quinine, which was officially presented to the American Pharmaceutical Association, custodians of the National Quinine Pool, during a reception at the Hotel Shoreham in Washington, D C, the Bureau of Medicine and Surgery, U S Navy, announced on May 27.

RESTRICTIONS REMOVED ON USE OF STEATITE TALC

The War Production Board issued on April 30 Conservation Order M-239 as amended. The new regulation removes the existing restrictions on the delivery and use of steatite talc for other than specified uses, establishes controls over the production and grading of steatite talc, provides a system of inventory control based on maximum consumer stocks, and releases all frozen stocks of steatite talc purchased prior to the original issuance of M-239 (Oct 13, 1942). Consumer inventory restrictions on steatite talc under the amended order vary according to the kind of talc and its intended use. In the case of talc other than steatite talc, regardless of use, a six months supply is permitted, while in the case of steatite talc to be held by dealers or distributors a two months supply is allowed. Producers will file monthly reports on form PD-862 on all types

of talc received and ground. Consumers will report on form PD 863, on a quarterly basis, all types of talc received or used and indicate the end use to which this material is put.

WAR CIVILIAN SECURITY PROGRAM

The Federal Security Agency has published a general statement of the War Civilian Security Program as it affects members of the Citizens Defense Corps of the Office of Civilian Defense, Aircraft Warning Service and Civil Air Patrol. The temporary War Civilian Security Program of the Federal Security Agency includes medical care, public assistance and stated cash benefits for civilians whose aid is necessitated by enemy action. The purpose of this statement is to outline the program only as it affects certain civilian defense workers injured in the performance of official duties. Additional information may be obtained from the field representatives of these agencies.

PUBLIC HEALTH UNDER HITLER

The Russian Tass news agency quoted reports from Geneva as saying that a German military delegation visiting Budapest recently had "demanded" the mobilization of 3,000 Hungarian surgeons and "surgeon's assistants" for service with the Nazi forces.

The Tass dispatch, reported by the Federal Communications Commission from an English language Morse code transmission, said that Nazi officials had also demanded the mobilization of 70 per cent of the remaining civilian doctors in Rumania.

As stated in the *Hungary Post* of February 5, the Alispán of Pest country, Laszlo Endre, in his report for the past quarter says, *Inter alia*, that the shortage of doctors is increasing. There are twenty-four district medical officers' posts vacant and forty-five district medical officers' posts are being dealt with by deputies. There are areas where two or three communities are without doctors, because so many medical men are on military service.

The *Medizinische Klinik*, Berlin, of February 5 published a report of the German medical conference in Prague, Czechoslovakia, on June 19, 1942. Dr Kindermann gave a lecture on the frequency of tuberculosis in Prague. Tuberculosis was responsible for 214 deaths per hundred thousand inhabitants in 1922, while in 1936 the figure was 126. It rose again sharply in 1941 to 156 per hundred thousand inhabitants. The proportion between the sexes was 100:190, with a higher mortality rate for male patients. (The equivalent figures for the old reich territory were 100:120.) In the last few years some 1,200 people died annually of pulmonary tuberculosis in Prague, which would correspond roughly to about 4,500 cases of open pulmonary tuberculosis. This would mean that 45 people there out of each 10,000 suffer from this disease, while in the reich there are only 30 to 40 cases per 10,000. By compulsory registration, 2,000 of these 4,500 cases have become known and are being treated.

In an article on the diet of patients in wartime by Dr W. Gerke, reported to the Office of War Information, the following advice is given: "Supplementary food should not be prescribed too freely, particularly in such cases of patients suffering from malignant tumors, because it is quite senseless to give for creamy milk, butter and eggs to be given to a patient suffering from the last stages of cancer. Adding these valuable foods to the diet of a cancer patient who, in the opinion of his doctor, is not expected to live not only involves a loss of our total food resources, it also is not to the interest of the patient or his relatives to prolong the usually very painful last stage by additional food of high caloric value."

The German *Reichs-Gesundheitsblatt* of February 3 contains an article by Dr R. Rose on new ways of combating lice, describing the different methods for delousing. He says:

that serum prophylaxis plays only a minor part in the prevention of typhus and that the main point is the thorough extermination of the lice. This is the only means of surmounting the dangers from this disease. The chemicals and methods used in delousing do not at the same time act as disinfectants, as the delousing of infected people is not the duty of an ordinary delousing station but the task of the fever hospitals. Some of the methods mentioned are hot air, prussic acid vapors, a new and highly poisonous substance called Ventox and finally the dry cleaning of clothes by means of 'acetomine'. It must always be borne in mind that all materials used for delousing are made from chemicals which are in short supply and should therefore be applied sparingly.

Le Soir of January 30, 1941 made the following announcement: 'The secretary general of the Ministry of the Interior and of Public Health in Belgium has decided that expectant and nursing mothers are to be allowed precedence in the queues outside shops. On presentation of a special card these women will be able to be served before others. In the event of this right to priority not being respected, the person concerned may of course appeal to the police or gendarmes who are there to keep order in the queue. Any complaints should be addressed to the Infants' Welfare Center by whom the card was issued.'

In Kassel according to the Hamburg *Fremdenblatt* of January 10 the 93 year old Dr. Karl Hauptmann, an eye specialist, has resumed practice as locum tenens for a younger colleague who has been called up.

According to the *National Zeitung* Essen, Poland of January 7, in order to encourage German families to have many children the town of Leszno (Lissa) in the Warthegau has come to an exemplary decision. With a view to promoting germanization in the reconstructed territories families with three children will receive special premiums for every additional child, i.e. 25 reichsmarks for the fourth child, 50 for the fifth, 100 for the sixth and 150 for any further child. The payment will always be effected on the day of national regeneration, January 30. In addition parents will receive a lump sum of 20 reichsmarks for the fourth and every additional child when it starts going to school as a school allowance (erschulungsbeihilfe). Furthermore the fourth and every additional child receives a clothing allowance when joining the 'jungvolk,' or BDM. These allowances are conditional on the parents having to provide for at least three children.

In an article dealing with hunger edema the *Bulletin de l'Académie royale de médecine de Belgique* 1942 it is stated that 48 patients suffering from this disease visited the hospital. The protein osmotic pressure varied between 12 and 35 cm. In 77 per cent of the cases an abnormally low percentage of assimilation was evident. Bradycardia was a frequent appearance, the lowest pulse rate was 38. Diuresis usually set in once the patient was in the hospital. The protein osmotic pressure hardly alters after the edema has disappeared. Relapses are frequent when the patients leave the hospital and could be avoided only if the food supply was improved.

According to *Transocean* France of March 16, 2,000,000 Frenchmen have died as victims of venereal disease in France during the last ten years and some 5,000,000 Frenchmen are suffering from syphilis today according to statements made by the director of the Prophylactic Institute of Paris, Dr. Arthur Wernes, in an interview granted to *Paris Soir*. Dr. Wernes declared that during the last three years alone infections have trebled. The nation's life now depends on the effective combating of venereal disease which is vitally threatening the French population.

NPD of March 15 reports from Hamburg that the Asid Serum Institute in cooperation with Prof. Dr. Kuster of Leipzig has discovered a new means of combating infectious diseases.

It is the blood lost by mothers in childbirth which has not heretofore been put to any use. This new serum, "Homoseran Asid," is produced by blending the blood of many thousands of mothers. It is then preserved and its quality examined by the state office for testing immunization serums. So far only Germany has succeeded in making use of this serum provided by nature. The serum can also be used for blood transfusions without regard to the blood group of the donor or the patient.

According to Radio Paris of March 15 the French Corporative Health Group has made interesting suggestions to the public authorities relating to the work of doctors, chemists and dentists. These plans include the completion of one year's effective rural service, of which six months would be spent in social agricultural service by students in the categories mentioned. A second year for continuing study would be combined with social service in factories assisting doctors of big concerns.

The *Reichsgesetzblatt* of March 16 publishes the regulation for the protection of marriage, the family and motherhood dated March 9, to take effect a fortnight after publication. It was also to apply in the incorporated eastern districts. Paragraph 3 says: 'Whoever refuses assistance to the woman bearing his child will be liable to imprisonment. She may need help during pregnancy or at the birth, and without it her life or that of the child may be in danger.' Paragraph 7 reads: 'Whoever manufactures, advertises or sells means or objects intended to prevent or interrupt pregnancy or prevent venereal diseases purposely or contrary to regulations will be sentenced to imprisonment for up to two years.' Paragraph 9 reads: 'The reich minister of the interior will regulate the manufacture, advertisement and sale of means and objects for the prevention or interruption of pregnancy or the prevention of venereal diseases.'

The *Deutsche Zeitung in den Niederlanden* of March 8 states that in answering the call of the SS-Ersatzkommando, 35 Dutch voluntary auxiliary nurses met at the Hague on March 6, before their departure for Donmeren where they will take a theoretical course of training. Observerführer Dr. Reuter, German Red Cross deputy in the Netherlands, addressed the girls, who after completing the theoretical training, will have a practical hospital training before joining the German Red Cross.

According to a short wave broadcast from Berlin April 5, Professor Finsterer of Vienna has successfully performed several operations in which the stomach was completely removed and the intestine sewed to the esophagus. It is reported that these patients still retain the normal sensation of hunger, and that therefore the scientific assumption of hunger pangs originating in the stomach is false.

Het Nieuws van den Dag Netherlands of March 8 gives the following categories of persons who will be considered for vitamin C tablets which will be supplied by the Government Office for Food Supply in Wartime: (a) Pupils in elementary schools will receive three 50 gram tablets a week. (b) Young and expectant mothers who produce a doctor's certificate saying that they are in their fifth month of pregnancy can get seventy-two tablets or 50 Gm each. This also applies to young mothers who have a child which was born between Dec. 1, 1942 and March 28, 1943. (c) Certain groups of laborers will in agreement with the enterprises by which they are employed be supplied with tablets for a temporary period. (d) It is possible the tablets will also be supplied to very young children. A further announcement will follow.

The *Bulletin de l'Ordre des Pharmaciens* Belgium of March 7 states that insulin is very scarce and that there is also a shortage of tubes. Consequently diabetic patients will soon be unable to obtain insulin. Chemists should therefore do their utmost to collect the tubes.

ORGANIZATION SECTION

OFFICIAL NOTES

COMMITTEE ON AMERICAN HEALTH RESORTS RECOMMENDS THAT WORD "CURE" BE AVOIDED

The Committee on American Health Resorts has authorized publication of the following statement

W. W. BACER, M.D.

The word "cure," analogous to the German "kur," has become traditional in connection with health resorts. "Cure" is a word which the American people associate with complete relief from disease or from symptoms, whereas the same word as used in health resort terminology refers rather to the program and procedure involved in treatment, that is, to the method, not the result. The Committee recognizes that traditional use of words cannot be modified arbitrarily, but the Committee cannot allow the impression to be fostered that complete relief from disease or from symptoms will necessarily result from health resort treatment. The Committee recommends that the use of the word be avoided whenever possible.

For the present the Committee will require that, in the printed matter issued by American health resorts listed under the Committee's rules, the word "cure" shall always appear in quotation marks except in instances in which its significance actually and justifiably is that of complete relief from disease or the symptoms thereof. The first occurrence in any piece of printed matter of the word "cure" shall, in addition to quotation marks, bear an appropriate reference mark and a footnote which shall read:

"Cure" means a treatment program at a health resort and does not refer to the eradication of the medical condition.

DOCTORS AT WAR

The first radio broadcast of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy will be heard on Saturday, June 19, at 5 p. m. Eastern War Time (4 p. m. Central War Time, 3 p. m. Mountain War Time, 2 p. m. Pacific War Time). An exception is the Chicago area, where the broadcast will be heard by transcription at 10:30 p. m., Saturday, over Station WMAQ.

The June 19 program is entitled "Report to America." On this program will appear two Army medical officers broadcasting by short wave from two foreign theaters of war, one Navy officer broadcasting from a foreign theater and one Navy officer broadcasting from a home base. The names of these officers and their locations are not divulged in advance for military reasons. For the same reason their subjects will not be announced.

SUMMER HEALTH HINTS

The next three programs for the new series of broadcasts to be given over radio station WLS Thursday afternoons at 2:45, Central War Time, under the title "Summer Health Hints" will be as follows:

June 17 "Safety in Swimming"

June 24 "Sunburn—Tans—Freckles"

July 1 "Heat and Sun"

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status—S. Res. 74 has been reported to the Senate, proposing to authorize the Senate Committee on Education and Labor, or a subcommittee thereof, to make a full and complete study and investigation, in cooperation with such public and private agencies and such persons as it might see fit to consult regarding the distribution and utilization of medical personnel, facilities and related health services. H. R. 2664 has passed the House and Senate, a bill to provide for the training of nurses for the armed forces, governmental and civilian hospitals, health agencies and war industries through grants to institutions providing such training.

Bills Introduced—S. 1161, introduced by Senator Wagner, New York, for himself and Senator Murray, Montana, and H. R. 2861, introduced by Representative Dingell, Michigan, propose to create a Unified National Social Insurance System to provide, among other things, temporary and permanent disability benefits, maternity benefits and medical and hospitalization insurance benefits.

STATE MEDICAL LEGISLATION

Alabama

Bill Introduced—S. 168 proposes the submission to the voters of an amendment to the state constitution authorizing the legislature to appropriate such portion of the surplus of the proceeds of the state income tax as it deems advisable for the purpose of public health and public welfare, including old age assistance.

California

Bills Enacted—A. 667 has become chapter 779 of the laws of 1943. It amends the health and safety code by, among other things, adding thyroid to the list of drugs which may be sold only on the written prescription of a member of the medical, dental or veterinary profession who is licensed by law to administer such drug and by prohibiting the sale of any drugs, medicines or other substances intended to be used for the cure or treatment of gonorrhea, syphilis, chancroid, lymphogranuloma inguinale or granuloma inguinale except on written order of a duly licensed physician. A. 1287 has become chapter 883 of the laws of 1943. It amends the education code by authorizing boards of education to grant health and development certificates to persons holding a certificate of registration as an audiometrist issued by the state board of public health, by providing that the qualifications of an otologist shall be a physician's and surgeon's certificate and a health and development certificate, by providing that the qualifications for an audiometrist shall be a certificate of registration as an audiometrist issued by the state board of public health and a health and development certificate, and providing that no otologist or audiometrist shall be employed or permitted to supervise the health and physical development of pupils unless he holds a health and development certificate.

Florida

Bills Introduced—S. 595 proposes that the responsibility for the enforcement of laws relating to public health and to the practice of medicine, surgery, chiropractic, naturopathy, etc.,

ing and midwifery shall rest on all law enforcement officers of the state of Florida and the counties thereof and on the state board of health acting through its duly appointed agents. S 596 proposes to require every holder of a license to practice medicine, pharmacy, osteopathy, chiropractic, naturopathy, nursing, midwifery or any other medical or material method of the practice of the healing art to record his license in the office of the clerk of the circuit court of the county in which he intends to practice and to obtain a certificate of registration annually from the secretary of the state board of health. The fee for such annual certificates shall be \$1. S 621 proposes to define a public hospital as one which enjoys an immunity or exemption from the payment of taxes or which contracts with the state of Florida or with any county or municipality therein for the hospitalization, care or treatment of indigent or other persons referred to the hospital by any public authority. The bill then proposes that in the management of any such hospital no discrimination shall be made against practitioners of any regular school of medicine and surgery recognized by the laws of Florida and all such regular practitioners shall have equal privileges in treating patients in said hospital. The patient shall have the right to employ at his or her own expense, his or her own physician and when acting for any patient in such hospital the physician or surgeon employed by such patient shall have exclusive charge of the care and treatment of such patient and nurses therein shall as to such patient be subject to the directions of such physician, every licensed physician residing in the county where such hospital is situated shall automatically by virtue of his residence therein and his license to practice, be and continue to be on the staff and a member of the staff of such hospital and so long as his right to practice medicine in Florida remains unrevoked he shall not be demoted or removed from said staff nor declassified to an associate membership, or otherwise deprived of any of the honors, rights and privileges of full membership on the staff. Finally, the proposal would authorize any physician who has been discriminated against to sue the hospital and recover therefrom at the rate of \$50 for each day the discrimination continues.

Bills Passed—S 580 passed the senate, May 21. It proposes that the several colleges and universities located and operating in the state of Florida be authorized directed and required to waive the last two semesters of preparatory college work required for entrance to the various professional schools operated by them in all instances where the applicant for admission and study in such professional colleges has completed all preparatory college work required for such admission except two semesters or less of study in the preparatory subjects and where such applicant has failed to complete his or her last two semesters or less of preparatory study by reason of his or her having been inducted into any branch of the armed forces of the United States during or after the month of January 1940. S 641 passed the senate, May 25. To amend the medical practice act, it proposes that the clerk of the circuit court shall not accept for recording and shall not record any license to practice medicine dated after the effective date of the act unless the same has been presented to him for recording on or before sixty days after the date of the license and provided further that no license to practice medicine dated prior to the effective date of the act may be recorded by the clerk of the circuit court unless it has been presented to him for recording on or before the expiration of six months from and after the effective date of the act or within sixty days after the date of recertification thereof by the board of medical examiners. S 653 passed the senate May 26. It proposes that the disablement or death of an employee resulting from an occupational disease shall be treated as the happening of an injury by accident and the employer's liability for the payment of compensation, medical and other benefits under the Florida workmen's compensation law shall be extended to such diseases. The proposal then lists twenty-four diseases which are to be deemed occupational in nature.

Illinois

Bills Introduced—S 525 to amend the medical practice act proposes that students matriculating or entering on a medical course during the years 1942, 1943 and 1944 may take a course the elapsed time of which is not less than thirty-six months

rather than forty months as previously required. The purpose of this proposal is to enable graduates of accelerated medical schools to obtain licensure in Illinois. S 551 proposes the appointment of a committee to investigate chronic diseases among indigents with the duty, among others, to make a complete and thorough survey of the number of persons in Illinois in indigent circumstances who are afflicted with chronic diseases not already provided for in existing state institutions and who require hospital care at public expense. H 760 proposes circumstances under which the voters of a county may vote on the proposition of whether or not the county should provide for the treatment of persons afflicted with cancer or tumor.

Massachusetts

Bill Introduced—H 1791, to amend the law relating to the registration of nurses, proposes that during the existing war applicants for registration need only be 20 rather than 21 years of age.

Bill Enacted—H 1519 has become chapter 233 of the laws of 1943. It provides that hospital records shall be admissible as evidence in a court so far as they relate to the treatment and medical history of a case and authorizes a court to admit photographic or microphotographic copies thereof in evidence.

Missouri

Bill Introduced—H 575, proposing to amend the criminal law concerning abortions by eliminating therefrom an existing proviso exempting instances in which an abortion or miscarriage was procured in order to preserve the life of the mother or unborn child when such action was necessary in the opinion of a duly licensed physician, was amended in the house so as to exempt the performance of an abortion when the same is necessary to preserve the life of the woman or that of an unborn child or if the person performing same is not a duly licensed physician, unless the said act has been advised by a duly licensed physician to be necessary for such a purpose.

Nebraska

Bills Enacted—Bill No 139 was approved, May 25. It amends the law regulating the practice of medicine and surgery by providing among other things that (1) persons serving an internship in an accredited hospital shall be exempt from the provisions of the law, (2) osteopathic licentiates shall be exempt from the law so long as they do not represent themselves to be physicians and surgeons or profess or hold themselves out to administer or prescribe drugs in any form or perform operative surgery with instruments or practice obstetrics, (3) chiropractic licentiates shall be exempt from the provisions of the law so long as they confine their practice to the treatment of human ailments by the adjustment by hand of any articulations of the spine, (4) any limited licentiate shall be exempt from the law so long as he confines himself strictly to the field for which he is licensed and does not hold himself out as administering or prescribing drugs in any form or performing operative surgery or practicing obstetrics and (5) an approved medical school may now give the required four courses of lectures or eight months each without the limitation that no two of such courses be held in one year, the amendment providing merely that no two such courses shall be held concurrently. The bill further provides that any person now licensed to practice osteopathy in the state of Nebraska may, if application is made prior to July 1, 1948, take the regular examination given before the board of examiners in medicine and surgery and if successful he shall receive a license to practice medicine and surgery in the state of Nebraska provided however that any doctor of osteopathy now licensed and practicing in the state of Nebraska who is able to show satisfactory evidence of having taken and successfully passed the regular examination in medicine and surgery shall be issued a license hereunder on payment of the prescribed fee. Bill No 334 was approved, May 24. It prohibits the sale and distribution of any material or substance containing live micro organisms which are pathogenic to human beings except pursuant to a permit issued according to rules and regulations promulgated by the director of health or the state veterinarian.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SEND-
ING THIS DEPARTMENT ITEMS OF MORE OR LESS
GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTI-
VITIES, NEW HOSPITALS, EDUCATION, AND PUBLIC HEALTH)

ARIZONA

State Medical Election—Dr. Dan I. Mahoney, Tucson, was chosen president-elect of the Arizona State Medical Association at its annual meeting, April 30, and Dr. Otto F. Utzinger, Ray, was installed as president, other officers are Drs. Florence H. B. Yount, Prescott, vice president, Frank J. Milloy, Phoenix, secretary and Clarence I. Yount, Prescott, treasurer.

CALIFORNIA

State Medical Election—Dr. Lowell S. Gorn, Los Angeles, was chosen president-elect of the California Medical Association at its annual meeting in Los Angeles in May and Dr. Karl I. Schupp, San Francisco, was installed as president. Dr. George H. Kress, San Francisco, was reelected secretary-treasurer.

Health Officer's Manual Recommended for Spanish Publication—The chief of publications press division, Coordinator of Inter-American Affairs, plans to finance the translation into Spanish of the Health Officer's Manual by Dr. Jacob C. Genger, San Francisco. The volume has already been translated by Dr. Oswaldo Cuatrecasas Santiago, who proposes to publish it under his direction as a publication of the Dirección General de Sanidad of the Cuban government.

Corporation with Fictitious Name Cannot Employ Physicians—In an opinion April 23, the attorney general ruled that a physician may not operate a liquor cure establishment under a fictitious name and that it is not legal for a corporation using a fictitious name, to hire a physician as its manager. The opinion to the board of examiners in Sacramento stated that under the law a corporation cannot practice medicine or surgery directly or indirectly, hence it cannot get a license to practice, according to the *Los Angeles Times*.

Personal—Dr. Earl H. Coleman has been appointed city health officer of Fresno to succeed the late Dr. Carlton Mathewson. Dr. Coleman will serve on a part time basis. — James G. Stone, Los Angeles, executive secretary of the Los Angeles Tuberculosis and Health Association, was to join the administrative staff of the National Tuberculosis Association on April 15. — Lloyd F. Webster, Los Angeles, has been appointed director of health activities for the Los Angeles County Board of Education.

New Dean at University of Southern California—Dr. Burrell O. Raulston, professor and head of the department of medicine and director of clinical teaching since 1930, has been appointed dean and professor of bacteriology at the University of Southern California School of Medicine, Los Angeles. Dr. Seely G. Mudd has resigned as dean but will continue as professor of experimental medicine. Dr. Raulston was born in Jefferson City, Tenn., in 1887. He graduated at Rush Medical College in 1915. He subsequently served on the staff, first as instructor in pathology and later as assistant clinical professor in medicine.

CONNECTICUT

Personal—Brig. Gen. James Stevens Simmons, M. C., A. U. S., director of the preventive medicine division of the Office of the Surgeon General, U. S. Army, has been appointed lecturer in public health on the staff of the Yale University School of Medicine, New Haven.

School to Study Alcoholism—A six week session of a school of alcohol studies at Yale University has been announced in the *New York Times*. It will be sponsored by the scientists of the Yale Laboratory of Applied Physiology, of which Dr. Howard W. Haggard, New Haven, is director, and will enroll seventy-five educators, social workers, clergymen and enforcement officers. The school will open on July 8 and continue through August 18 under the direction of Elvin M. Jellinek, M. Ed., of the laboratory of applied physiology. He will be assisted by an advisory staff and faculty equipped to give opinion on the legal, medical, social and educational aspects of alcohol problems.

GEORGIA

Rapid Treatment Center—An allocation of more than \$262,000 has been approved by the Federal Works Agency to purchase land, buildings and equipment and finance alterations to the existing buildings on Oatland and White Marsh islands near Savannah for the establishment of a rapid treatment center for women infected with venereal diseases. According to the *Military Surgeon*, the center will be operated by the public health service with funds obtained from the Federal Works Agency under the provision of the Lanham act.

State Medical Meeting and Election—Dr. Cleveland Thompson, Millen, was chosen president-elect of the Medical Association of Georgia at its annual meeting in Atlanta, May 11-14, and Dr. William A. Selman, Atlanta, was installed as president. Dr. Edgar D. Shanks, Atlanta, was chosen secretary-treasurer for the eighth term. The ninety-fourth annual session of the state medical association was held at the Biltmore Hotel and speakers on the scientific session included Rear Admiral Ross F. McIntire, surgeon general, U. S. Navy, who delivered the Abner Wellborn Calhoun Lecture on "Medical Achievements in This Present War", Drs. Chauncey C. Maher, Chicago, "Complications of the Acute Coronary Thrombosis" and James H. Means, Boston, "Practical Points in the Diagnosis and Treatment of Graves' Disease". Dr. James E. Paulin, Atlanta, President of the American Medical Association spoke on "The Role of the Medical Profession in the Present War".

ILLINOIS

State Medical Election—Dr. Everett P. Coleman, Canton, was chosen president-elect of the Illinois State Medical Society at the annual meeting in Chicago in May and Dr. George W. Post, Chicago, was installed as president, other officers are Drs. Robert S. Berghoff and Wade C. Harker, Chicago, vice presidents, and Harold M. Camp, Monmouth, who was reelected secretary-treasurer.

Chicago

Meeting of Bacteriologists—Dr. Ludvig Hektoen was the principal speaker at the spring meeting of the Society of Illinois Bacteriologists at the Chicago Women's Club on May 21. His subject was "Fragments of the History of Bacteriology in Chicago".

Chicago Given Safety Award—The grand award of the National Safety Council for 1942, presented to Mayor Kelly on May 20, symbolizes the winning by Chicago of first place in the national safety contest for 1942 and was made on the city's reduction of traffic deaths below the average of the preceding three years and on general accident prevention efforts. A total of 466 persons died from traffic accidents in Chicago in 1942 as compared with 623 in 1941.

Medical Service Plans Council—At a luncheon session of the Medical Service Plans Council of America in the Palmer House, June 6, Mr. A. M. Simons, staff associate, Bureau of Medical Economics, American Medical Association, was the guest speaker on "Evolution of Medical Service Plans". At the afternoon session "Authorization of Payments for Services in Administering a Medical Service Program" was discussed by Drs. Norman M. Scott, Trenton, N. J., Medical-Surgical Plan of New Jersey, George F. Moench, Hillsdale, Mich., of the Kellogg Foundation and James C. McCann, Worcester, Mass., Massachusetts Medical Service.

Raymond Allen Named Dean of Illinois—Dr. Raymond B. Allen, executive dean of the Chicago Colleges of the University of Illinois, has been appointed dean of the medical school, effective September 1. He succeeds Dr. David J. Davis, who is retiring. Dr. Allen will continue in his present position of executive dean of the Chicago departments, which include the colleges of medicine, dentistry and pharmacy and other institutions associated with these units. Dr. Allen graduated at the University of Minnesota Medical School, Minneapolis, in 1928. From 1934 to 1936 he was associate dean in charge of graduate studies at the College of Physicians and Surgeons of Columbia University and associate director of the New York Post-Graduate Medical School and Hospital at Columbia from 1933 to 1936, when he became dean of Wayne University College of Medicine, Detroit. In 1939 he came to the University of Illinois.

LOUISIANA

New Professor of Pathology—Dr. Granville A. Bennett, associate professor of pathology, Harvard Medical School, Boston, has been appointed professor of pathology and bacteriology at Tulane University of Louisiana School of Medicine, New Orleans.

Institute of Mental Hygiene and Guidance Center—The New Orleans Institute for Mental Hygiene recently dedicated its new home at 1737 Prytanis Street. Rev. Thomas V. Moore, O.S.B., professor of psychology at the Catholic University of America, Washington, D.C., spoke on 'The Child Guidance Center and Its Service to the Community' and Robert L. Sutherland, Ph.D., director of the Hogg Foundation, University of Texas, Austin, Texas, 'Social Gains in Wartime.' The new home is an old residence of seventeen rooms which has been renovated by the city of New Orleans. Dr. Martha G. W. MacDonald, who has been director of the clinic since its beginning, is on leave of absence as psychiatric consultant for the Children's Bureau, Department of Labor, Washington, D.C. During her absence the consulting services of a number of neuropsychiatrists in the community have been available and Dr. Milton E. Kirkpatrick, New York, director of the division on community clinics of the National Committee for Mental Hygiene, has intermittently spent helpful periods at the clinic. The New Orleans Institute for Mental Hygiene, which sponsored the Guidance Center, was founded in 1938 by a gift of Mr. Samuel Zimurray; its affairs are administered by a private board which directs the policies of the clinic and employs the professional personnel. Prior to occupying its new quarters the clinic was housed in the Tulane University Medical School Building. The Guidance Center seeks to make available specialists for consultation concerning educational, social and emotional development of normal children. In 1939, the first year of operation of the clinic, 375 children were given service. 366 children were handled the following year and 314 in 1941.

MARYLAND

State Medical Election—Dr. Jacob W. Bird, Sandy Spring, was elected president of the Medical and Chirurgical Faculty of the State of Maryland at its recent annual meeting in Baltimore in April. He will take office on Jan. 1, 1944. Dr. William H. Toulson, Baltimore, is the secretary. The next annual meeting will be at Baltimore, April 25-26, 1944.

MASSACHUSETTS

Dr. John Downing Named Professor of Dermatology—Dr. John G. Downing, Boston, assistant professor of dermatology at Tufts College Medical School since 1932, has been appointed professor of dermatology and head of the department at Boston University School of Medicine. Dr. Downing was also recently named dermatologist and chief of the dermatologic service at Massachusetts Memorial Hospitals. Dr. Downing graduated at Harvard Medical School in 1915. He served in the U.S. Navy, 1917-1921, during part of which time he was medical officer of the U.S. Naval Hospital in Chelsea. He is consultant to the U.S. Public Health Service and the U.S. Veterans Administration and also president of the New England Dermatological Society.

MICHIGAN

Henry Russel Award—Dr. Carl Alfred Moyer, assistant professor of surgery at the University of Michigan School of Medicine, Ann Arbor, was recently presented with the annual Henry Russel Award given to a member of the university for outstanding work. Dr. Moyer's research was on the physiology of breathing and the effect of various drugs on the respiratory processes. He graduated at the university in 1937.

Hospital for "War Worker Patients"—An unused three-story building at the Dr. William J. Seymour Hospital, Eloise, has been leased by the Wayne County Board of Supervisors to a private organization of citizens who will operate it as a general hospital for the use of war worker patients of the medical practitioners in the western part of the county. The action followed a survey by the local procurement and assignment committee in cooperation with the Wayne County Medical Society showing that an acute population problem existed in the western half of the county, which is mostly rural and showing a population increase from 97,000 to 141,000. The county as a whole has 1 general hospital bed for every 311 people but the western section has only 1 for every 1,468 persons. When the newly acquired building at Eloise is in operation about 100 more beds will be added to the present 96. The building will be leased to a nonprofit group of interested citizens known as the People's Community Hospital Inc. The corporation will contract to arrange for the organization of a medical staff and administrative personnel. By leasing the building outright and charging for services as an independent contractor, the county of Wayne is thus kept distinctly out of the field of private hospitalization, it is announced.

Opening as Director of New County Health Department—The Civil Service Commission of Wayne County announces that applications are now being accepted for the position of director of the recently established county department of health. The salary will be \$7,000 a year to start and applications, which may be obtained from the civil service commission, 521 County Building, Detroit, must be delivered to the office of the commission on or before 4:30 p.m. Tuesday, July 6, or be postmarked before midnight of that date. The Wayne County board of supervisors recently established a health department to provide public health services throughout the county in both indigent and nonindigent cases, except that it shall not have jurisdiction in nonindigent cases in cities having an organized health department with full-time health officers, except that such cities may elect to join with the county in the organization. The director selected will be expected to organize and develop as well as to administer a comprehensive program of health services in the county. The examination will be unannounced and candidates will be rated on the basis of experience and training in the field of public health. Candidates may be required to appear at their own expense for an oral interview. Successful candidates for the position of director of health must have received the degree of doctor of medicine from a recognized medical school and must have satisfactorily completed at least one year in residence in the study of preventive medicine at a recognized university school of public health. They must have had at least one year of clinical experience, preferably in a hospital or acceptable standards, including, preferably, three months work in pediatrics and a similar period in infectious diseases. In addition the candidates must have had at least six weeks of field experience in an established state or local department or public health. Eligibility for medical licensure in the state of Michigan at the time of appointment is required. Exceptions to the foregoing standards will be made only for candidates who have, through experience and practical training, proved ability to perform successfully the duties of the position. The examination is open to any qualified citizen of the United States.

MISSOURI

State Society Gives Full Support to Hygeia—The Missouri State Medical Association in a resolution adopted at its annual meeting in St. Louis, April 18, gives full support and complete cooperation to its Woman's Auxiliary in the efforts to disseminate health information through *Hygeia*, the Health Magazine. Recognizing the great public need for reliable health information and in recognition of the service that *Hygeia* can perform in terms of industrial, civilian and community health, through the resolution the house of delegates of the association endorsed the publication and recommended that officers and members of the county medical societies of the association urge wider recognition of it in their communities. The resolution also urged the introduction of *Hygeia* in war industries, army camps, U.S.O. centers, reception rooms or physicians and dentists and among their patients, parent-teacher organizations, private clubs and other community centers.

NEBRASKA

State Medical Election—Dr. Floyd L. Rogers, Lincoln, was chosen president-elect of the Nebraska State Medical Association at its annual meeting in May. Dr. Albert L. Cooper, Scottsbluff, was installed as president. Dr. Roy B. Adams, Lincoln, is the secretary-treasurer. The 1944 session will be held in Omaha sometime in May.

NEW HAMPSHIRE

State Medical Election—Dr. James W. Jameson, Concord, was elected president of the New Hampshire Medical Society at its recent annual meeting in Manchester in May. Dr. Fred Fernald, Nottingham, was named vice president and Dr. Carleton R. Metcalf, Concord, was reelected secretary-treasurer.

NEW JERSEY

Medal Awarded to Dr. Conklin—The John J. Carty medal and award for the advancement of science awarded at the annual dinner of the National Academy of Sciences, April 26, was presented to Edwin Grant Conklin, Sc.D., The citation read: Zoologist, Cytologist and Embryologist, Philosopher, Teacher and Scientist. Student of Life and of Growth from Lowest Beginnings to Highest Consummation. Dr. Conklin received his doctor of philosophy degree from Johns Hopkins

University, Baltimore, in 1891 and an honorary degree of doctor of science from the University of Pennsylvania in 1908. He has been lecturer in biology at Princeton University since 1931 and president of Science Service since 1937.

NEW YORK

Physician's Acceptance of Deanship Postponed Because of Illness—Dr. Charles Oberling, pathologist of the Mary Imogene Bissett Hospital, Cooperstown and director of the Otsego County Laboratory, who recently accepted an invitation from the Iranian (Persian) government to be dean of the Medical Faculty of the University of Teheran and to act as medical adviser to the Iranian government in public health and hygiene, reached Buenos Aires and had to turn back to this country because of illness. Dr. Oberling, in accepting the appointment, was said to represent the national committee of the Fighting French. The *New York State Journal of Medicine* reported that Dr. Oberling had already spent two years in Iran helping the government to reorganize its medical services.

Commission Named to Study Mental Hygiene Hospitals—Governor Dewey on May 26 announced the appointment of a five member Morrell Act Commission to formulate a long range program for the improvement of the state's mental hygiene hospitals. The commission is the first of its kind ever appointed under the Morrell Act and will be headed by Archie O. Dawson, lawyer, who recently completed a Morrell Act investigation of conditions at the Creedmoor State Hospital. Other members of the commission are:

Lee B. Muller, esq., chairman, Cornwall, chairman of the state health department commission and superintendent of Cornwall Hospital.

Dr. Peter Hays, New York, secretary of the Medical Society of the State of New York.

Dr. Fraser D. McNeely, Kenmore, medical superintendent of the Buffalo General Hospital and vice president of the American College of Hospital Administrators.

Charles G. Russell, New York, assistant director and consultant on accounting of the United Hospital Fund.

According to the *New York Times*, Governor Dewey stated that the inquiry will not be of an "inquisitorial" nature and that the commission will undertake the constructive task of improving the mental hospitals and curing conditions in the mental hygiene department described by Mr. Dawson in his Creedmoor report, which suggested evidence of long-standing deterioration and breakdown in the department of mental hygiene.

New York City

Society Recommends Plan for Medical Care—The committee on medical economics of the Medical Society of the County of New York has issued recommendations pertinent to a plan for medical care. The recommendations have been adopted by the committee members of the society and, if accepted by representatives of the city government, would provide medical services at nominal rates for persons of low incomes and establish a central municipal registration bureau. The entire program would be conducted by a nongovernmental, nonprofit agency or corporation, set up with the cooperation of the city government with the board of directors one third city officials, one third physicians selected or appointed by the five county medical societies of Greater New York and one third by prominent laymen acceptable both to physicians and to government representatives. It also was recommended that the medical members shall constitute the medical policy committee and that there shall be no change in the medical policy without its consent. Other recommendations were that the premium charged shall be such that the physician shall receive \$2 per house visit and \$1 per office visit (to be adjusted at the discretion of the policy committee), that a panel shall be established and patients in their districts shall consult its members, that all licensed doctors of medicine may register for the panel and that special fees for other medical consultants will be set up with due regard to the costs and solvency of the plan. A paid physician would be chief executive of the corporation and the hours for receiving panel calls would be from 8 a. m. to 8 p. m. except in case of emergency. It is also provided that physicians on due notice should have the right to refuse emergency patients and that the patient may change physicians if he desires.

Report on Experiment in Voluntary Health Insurance—A report on the first two and one-half years of the functioning of the Corlears Hook Medical Association, an experiment in voluntary health insurance among low income families which began in June 1940, was released on April 22.

Dr. Morris A. Brand is medical director of the plan, which operates in a slum clearance project in the lower east side of Manhattan, inhabited by 1,771 families, of which 1,000 families are entitled to free care in the city's clinics and are also qualified for membership in the plan because of similar scales of income eligibility. The report states that the results during the two and one-half years of the plan's existence show that a large number of families in the low income groups, despite their eligibility for free city medical services, prefer to pay for their own medical needs provided they are not beyond their means. The study also revealed, it was stated, that such a plan would save considerable funds to the city, lower the demand on the city's hospital facilities and also add a new source of income to physicians in the neighborhood who become members of the plan. The experiment seems to prove that this low income group wants a medical service plan and must have it on a substandard fee basis, it was stated. This was shown by a voluntary enrollment of 45 per cent of those eligible, the decrease in the use of the ambulance from 800 trips in one year prior to enrollment to 148 trips in the first one and a half years as members, by the increased use of the doctor in the home and office, and by the decrease of visits to clinics from 2,816 to about 1,000 in one year for diagnostic and therapeutic facilities at the request of panel physicians. It has been further determined that these people are willing to pay what they can, as shown by the payment of \$8,300 during the two and a half years of enrollment, which started without subscribers and rose to an average of 500 families per month. In addition, they paid the expense of medication which a large number of them formerly obtained free of cost in the clinics. They were willing to do that to enjoy private care. Physicians recognize the need for some form of medical service plan and are willing to accept an equitable fee for their services, as manifested by the willingness of neighborhood physicians to serve on the panel. The physicians and the administrative board of the association recommended an increase in the doctor's fee for any future plan it was stated. It has been determined that the diagnostic and therapeutic facilities of a hospital and its clinics can be integrated with the services of the panel physicians.

NORTH DAKOTA

Personal—Dr. Earl M. Watson, health officer of Cass County, has been appointed health officer of Fargo, succeeding Dr. Elvin L. Sederlin, who resigned recently to become regional health officer of Valley City.—Drs. Frederick W. Fergusson, Kulm, and William H. Long, Fargo, were recently appointed members of the state board of medical examiners. Dr. William F. Sihler, Devils Lake, was reappointed to the board.

Twenty-Five Years of Ophthalmology—Dr. Tracy W. Buckingham, Bismarck, was elected president of the North Dakota Academy of Ophthalmology and Oto-Laryngology at the twenty-fifth annual session in Bismarck, May 10, and Dr. Frederick L. Wicks, Valley City, was reelected secretary. Speakers at the meeting included Drs. William L. Benedict, Rochester, Minn., on "A Critical Review of the Recent Proposed Treatments of Eye Diseases" and William T. Peyton, Minneapolis, "Brain Abscess."

SOUTH DAKOTA

Division of Public Health Education—The South Dakota State Board of Health recently established a division of public health education with Mr. I. R. Vaughn, assistant director of the division of vital statistics, in charge.

Dr. Cottam Named Superintendent of Health—Dr. Gilbert G. Cottam, Sioux Falls, has been appointed superintendent of the South Dakota State Board of Health to succeed the late Dr. John F. D. Cook, Pierre. Dr. Walvin R. Giedt, Vermillion, assistant state health officer and until Dr. Cottam's appointment acting superintendent, has resigned to become epidemiologist for the state health department of Washington.

VERMONT

Rehabilitation for the Tuberculous—The trustees of the Vermont Tuberculosis Association, Inc., have appropriated \$3,000, which will be matched by federal funds, to establish a special rehabilitation program for the tuberculous in the state. According to the *Bulletin of the National Tuberculosis Association*, the money will be expended under the supervision of the committee on rehabilitation of the association in consultation with the rehabilitation division of the state department of education and physicians in the state sanatoriums.

GENERAL

Pediatric Board to Hold Two Examinations—The American Board of Pediatrics announces that because of the large number of applicants two oral examinations will be held this fall one in New York, November 20-21, and the other in Cincinnati, December 11. A written examination will be held locally under a monitor, October 8.

Changes at Ciba Pharmaceutical Products—Dr Ernest Oppenheimer, formerly of New York has been chosen vice president of the Ciba Pharmaceutical Products, Inc. Summit, N. J. in charge of medical research, effective within a few months. Mr J. J. Brodbeck was recently elected president. Lee J. Perrin New York was elected chairman of the board of directors. Norman F. Storm vice president in charge of production and Vincent A. Burgher vice president in charge of sales.

Winners in Health Honor Roll Contest—The U. S. Chamber of Commerce and the American Public Health Association have announced the winners in their annual contest in community health promotion and preservation. More than five hundred and fifty communities participated. The thirteen winning cities are Milwaukee, Madison and Racine, Wis.; Detroit, Baltimore, Greenwich and Hartford, Conn.; Newton, Mass.; Reading, Pa.; Hackensack, N. J.; and Peoria, Evanston and La Salle-Peru, Oglethorpe, Ill. The twenty winning counties are Simile, Van Buren and Saginaw, Mich.; Davidson, Gibson and Memphis-Shelby, Tenn.; Fayette, Madison and Jefferson, Ky.; Lauderdale, Washington and Jones, Miss.; Olympia-Thurston and Whitman, Wash.; Arlington, Va.; Forsyth, N. C.; Glynn, Ga.; Gallatin, Mont.; El Paso, Texas and Santa Barbara, Calif.

Report of Blindness Prevention Group—The National Society for the Prevention of Blindness expended \$167,879 in 1942 to carry out its various activities. Chief on its projects were a glaucoma control demonstration and five eye clinics in New York from which the society expects to be able to formulate recommendations for a nationwide glaucoma control program. The report indicated that the society had intensified its industrial program brought about by the expansion of industry, increased employment of women and older men and steady acceleration in the production of war materials all of which have placed an additional burden on eyes. Working with industrial executives, safety engineers and others in establishing eye safety standards the society has formulated recommendations which, it followed according to the report, can not only increase efficiency and safety but will make greater manpower available through correction of defective vision among workmen who are otherwise able bodied.

American-Soviet Medical Society Formed—Dr Walter B. Cannon, professor emeritus of physiology, Harvard Medical School, Boston, is the president of the American-Soviet Medical Society, a new group founded to meet an increasing demand for information about the results and achievements of Soviet medicine. Dr Henry E. Sigerist, director of the Institute of the History of Medicine at Johns Hopkins University, Baltimore, is the editor of a journal to be published by the society and to be known as the *American Review of Soviet Medicine*. Temporary offices of the society are at 130 West 46th Street, New York. Through meetings, the publication of a journal and the establishment of a library of information, the society will tell physicians of America and members of the allied professions on what problems Soviet colleagues are working and what is being done to solve these problems. The society will also send American medical books and periodicals to the Soviet Union to keep the Russians informed of scientific developments in this country and to stimulate closer cooperation between the medical corps of the two countries. As soon as conditions permit after the war the society hopes to promote the exchange of students and scientists and to sponsor study hours in the two countries.

Special Society Elections—Dr E. Benjamin Gillette, Toledo, Ohio, was elected president of the Tri-State Medical Society of Indiana, Michigan and Ohio at its annual meeting in Ann Arbor recently and Dr Floyd R. Nicholas, Carter South Bend, Ind., was chosen vice president. Dr Oscar P. Klotz, Findlay, Ohio, is secretary and Dr Fredrick F. Yonkman, Detroit, treasurer. The 1944 convention will be in Toledo. —New officers of the American Institute of Nutrition chosen at a recent meeting in Detroit include Dr Howard B. Lewis, Ann Arbor, Mich., president; Icie G. Macy, Hoobler, Ph.D., Detroit, vice president; Arthur H. Smith, Ph.D., Detroit, secretary, and William H. Sebrell, Jr., Bethesda, Md., surgeon, U. S. Public Health Service, treasurer. —Dr Edwin G. Zabriskie, New York, was elected president of the American

Neurological Association at its sixty-ninth annual meeting in New York, May 7. Dr Henry Alsop, New York, was re-elected secretary. The dates of the next meeting will be decided sometime in December. —Dr Karl M. Bowman, San Francisco, was chosen president elect of the American Psychiatric Association at its annual meeting in Detroit in May and Dr Edward A. Strecker, Philadelphia, was installed as president. Dr Winifred Overholser, Washington, D. C., was re-elected secretary-treasurer.

CANADA

Dr Dafoe Dies—Dr Allan Roy Dafoe, a country practitioner who attained worldwide renown through the birth of the Dionne quintuplets, died at a hospital in North Bay, Ont., June 2, aged 60. Dr Dafoe died five minutes after he had been admitted to the hospital suffering from pneumonia. Born in Madoc, Ont., May 29, 1883, Dr Dafoe graduated at the local schools and took his M.B. degree at the University of Toronto Faculty of Medicine in 1907, where he also received his M.D. degree in 1928. He had been carrying on the activities of a simple country doctor in the rural community of Callander but on May 28, 1934, after he had officiated at the births of the Dionne quintuplets, Dr Dafoe became an internationally known figure. When he arrived at the Dionne home at 4 o'clock in the morning two of the babies had been born and the third was arriving. Dr Dafoe was given the Order of the British Empire by the king. In 1935 he was made an honorary member of the Toronto Academy of Medicine and in 1937 an honorary member of the Ohio State Bureau of Child Hygiene. He had also been medical health officer in North Hantsworth Township and an advisory editor of *Parents Magazine*. In 1942 Dr Dafoe resigned as physician to the Dionne quintuplets.

LATIN AMERICA

Hospital News—The new Hospital Infantil of Mexico City was formally opened on April 30. General Manuel Avila Camacho, president of Mexico, presided. Among the speakers were Dr Federico Gomez, head of the Hospital Infantil who reviewed the history of the hospital and Dr Gustavo Baz, the secretary of public welfare.

Agreement to Develop Quinine Plantation in Guatemala—The development of the largest cinchona plantation in the Western Hemisphere under an agreement between Guatemala and United States agencies has been announced. The plantation, which is known as El Porvenir, has been controlled by German interests through the Central American Plantations Corporation but controlling stock of this corporation now is in the hands of the United States Alien Property Custodian and transfer of the property to Guatemala is being arranged. The agreement for development of the property has been worked out among the Guatemalan government, the plantation corporation and the United States Board of Economic Warfare. The agreement has been ratified by Guatemala's legislative assembly. How many cinchona trees are on the 17,000 acre plantation in the District of San Marcos has not been determined. A large part of the acreage is devoted to coffee. The property is near good roads and only 9 kilometers from the Pan American Highway. Bark may be trucked 35 miles to Ayutla on the Mexican border. From there it can move to the United States by rail. A laboratory has been established at El Porvenir for testing the bark. There will be studies as to the best trees, experiments with grafting and transplanting, and setting out of seed beds. Drying kilns have been set up. It takes only a fourth as much time to dry this way as by the old method of spreading out in patios. Several hundred people live on the plantation which is on the slopes of Tajumulco, Guatemala's highest mountain. The trees grow mostly at elevations of between 4,000 and 5,000 feet. The mountain rises to 14,000 feet.

CORRECTIONS

Prevention of Sulfadiazine Crystalluria—In the fourth line of the Current Comment by this title in *THE JOURNAL*, May 29, page 311, Gilligan and his colleagues should read 'Gilligan and her colleagues.' The author whose work was referred to in the March *Proceedings of the Society of Experimental Biology and Medicine* was Dorothy Rourke Gilligan.

Personality Changes Following Substitution Therapy—In the article by Dr Jacob Kasanin and Lieut. Col. Gerson R. Biskind entitled 'Personality Changes Following Substitution Therapy in Preadolescent Eunuchoidism' in *THE JOURNAL*, April 24, in the second line of the fourth paragraph of the first column on page 1319 the word 'diameter' should have been 'circumference.'

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 1, 1943

The Publicity Campaign Against Venereal Diseases

As shown in previous letters to *THE JOURNAL*, the increase in venereal diseases due to the war and the need to protect our fighting men have made the problem of prevention urgent, and the Ministry of Health has taken the unprecedented step of inserting advertisements in the press throughout the country pointing out the dangers and the action to be taken. The Central Council for Health Education has held a conference in London to discuss health education and venereal disease. The chairman, Dr. Charles Hill, said that the problem could not be effectively tackled until the curtain of secrecy which surrounded it was lifted. Mr. Ernest Brown, minister of health, stated that the public still had a prejudice against the subject being discussed by women which must be broken down. The defense regulation for compulsory treatment (described in a previous letter) was to stop a gap in the treatment service. The press campaign would continue to stress the principle "Clean living is the only way to escape infection." He urged local authorities to take full advantage of posters, leaflets, lectures and films provided by the Central Council for Health Education. The council has been officially recognized as the one agency responsible for the central provision and integration of health education, including venereal diseases. The archbishop of Canterbury, who is president of the council, regarded the problem as primarily a moral one. All that we can do to promote healthy family life, both by adequate housing and by help to parents in the wise upbringing of children, was of inestimable value. He criticized the method followed in the army, which systematically ignored principle and instructed recruits in the use of prophylactics, thus suggesting fornication. What was primarily a moral problem was treated as if it were primarily a medical one. The sacredness of sex must be put first in our educational campaign. In the discussion which followed, some objection was taken to this view. A health officer, Dr. Maitland Radford, thought that a false antithesis between the religious and the secular approach had been suggested. Sex was not universally regarded as sacred. The secular approach allowed a wider attitude in sex behavior than did the religious. But those with different points of view could work together. The bulk of cases have been among homeless foreign sailors. Improvement in pay and prospects have altered the attitude of the men in the royal navy toward marriage, and most of them are married, but in the merchant service the men in many cases are without homes. A surgeon, Mr. McAdam Eccles, was glad that the public at last was freely discussing a subject which for fifty years he had tried to bring to notice. Doctors were looking to the public to give strong support to an educational campaign.

Nonspecific Epididymitis

At a joint meeting of the Sections of Urology and Surgery of the Royal Society of Medicine Mr. E. G. Slesinger discussed nonspecific epididymitis. During the last fifteen months Mr. Slesinger and his colleagues have seen 34 cases in the fighting services. The average age of the patients was 38.8 years. The symptoms were pain and swelling. In 19 the pain came first, in 8 the swelling and in 7 the pain and swelling came together. In 3 cases the onset was gradual, but in others it was stated to have been sudden. Some of the patients were febrile throughout, but most showed a pronounced pyrexia for the first few days. None of the patients appeared to be generally ill. In all cases there was tenderness and this was acute in 3

The whole epididymis was enlarged in every case, and the vas was demonstrable in 16. The urine showed a little albumin in 12, and coliform organisms were seen in 3.

Treatment consisted in rest in bed with support of the testis, the patient being fitted with a suspensory bandage. Sulfapyridine and sulfathiazole were tried, but neither made the slightest difference to the condition. Three patients were operated on. The results in the other 31 could be grouped as (1) resolution in from three to six weeks, (2) resolution requiring some months. In the second group some residual thickening was left in the epididymis, but the majority could not be followed up.

Mr. Slesinger considered that this series represented something new in incidence. In the absence of evidence of breakdown and obvious tuberculosis elsewhere the epididymitis must be treated conservatively in the first instance. Operation was not essential in any of the 3 cases in which it was performed. The lumen of the vas seemed to be the route of the infection. It was not clear whether the urine alone could produce an epididymitis or whether infection of the urine was a necessary concomitant. If all the 34 cases were due to infection with pathogenic microbes, it was difficult to believe that none would have suppurred. If the passage of uninfected urine down the vas was accepted as the determining factor there was nothing to explain why it should occur with such relative frequency in the men in the fighting services as compared with the normal population in peacetime.

Czech Medical Degrees Conferred at Oxford University

A graduation ceremony without precedent in the history of Oxford University has taken place. In the presence of the president of the Czechoslovak republic the vice-chancellor of the university at the request of the Czechoslovak government conferred degrees on Czechoslovak students who had completed their medical education in this country. As is the custom, the public orator's speeches of presentation were made in what was once the international language of Europe. He referred to the ceremony as *spectaculum tam novum tamque magnum* (a spectacle as novel as it was great) and to the spirit of the Czech people as *indomita haec gentis oppressae in rebus adversis constantia, gravitas, perseverentia* (indomitable constancy, dignity and perseverance of this oppressed race in the face of adversity).

The Medical Profession Demands the Pasteurization of All Milk

Pasteurization of milk is performed on a large scale but is not universal. A deputation of leading members of the medical profession asking that milk might be made safe by pasteurization or other heat treatment was received by the minister of food. Professor Picken, who represented the British Medical Association, said that the profession was satisfied that pasteurization was the only practical safeguard and that it had no serious disadvantages. Professor Garrod stated that bovine tuberculosis was a widespread menace and from 5 to 10 per cent of churn samples of raw milk were infected. Milk-borne tuberculosis was estimated to cause two thousand deaths a year. The minister said that he would report what had been said to the government.

Economy in Bread Increased Consumption of Potatoes

In normal times Britain imports about two thirds of its food. The need to devote shipping as much as possible to war purposes has altered this procedure. Now we are producing as much food as we can and the growing of cereals and potatoes has enormously increased. The one important food which has not been rationed so far is bread. A great increase in the

consumption of potatoes has reduced the need for bread, but the Ministry of Food is now considering further steps. A complete record of bread production and consumption, which would be an essential preliminary to rationing is being made. The fact that people's needs vary much is an obstacle. Lord Woolton, the food controller, wants to see more potatoes eaten instead of bread. The army is to do this. New instructions permit a substitution in the daily ration on the basis of 3 ounces of potatoes for 1 ounce of bread and 4 ounces of flour for 1 ounce. The present daily allowance for soldiers at home is 10 ounces of bread with 2 ounces of flour.

BRAZIL

(From Our Regular Correspondent)

May 11, 1943

Epidemiology of Cancer

No comprehensive work has ever been published about the epidemiology of cancer in Brazil. The problem has been particularly considered in relation to Rio de Janeiro, the largest city, where some aspects of the incidence of cancer have been analyzed by Luiz Briggs by J. Barros Barreto and by J. P. Fontenelle. A new contribution, rather more complete, has just been published by Dr. Joaquim E. Alencar. According to the latest available statistical returns, referring to the largest cities in the year 1941, cancer as a cause of death ranks in the sixth place in São Paulo and Belo Horizonte, in the seventh in Rio de Janeiro, Curitiba and Porto Alegre, in the eighth in Curitiba, in the ninth in Belém, Salvador, Niterói and Campos, and in the tenth in Recife, Vitória, Aracaju, Florianópolis, Maceio, Fortaleza and Santos. Thus cancer is less important in the northern, tropical, cities than in the southern ones with a cooler climate.

Dr. Alencar points out that, in the southern cities where the amount of people of European descent is larger, the principal cities present death rates from cancer in positive correlation with the percentage of European stock in the population. For the period 1932-1941 the average crude death rate per hundred thousand was as follows: Niterói 47.9, Rio de Janeiro 55.2, Curitiba 62.7, São Paulo 74.1 and Porto Alegre 88.0. It is necessary to point out also that these cities have a cooler and cooler climate as one goes south from Niterói to Porto Alegre. The crude death rate from cancer is increasing in Rio de Janeiro as Dr. Alencar shows, by the following rates: 1902-1911 33.8 per hundred thousand, 1912-1921, 41.7, 1922-1931, 45.9 and 1932-1941, 55.2. For the last five years, 1938 to 1942 the progression has been 55.0, 59.0, 65.3, 66.4 and 67.3.

One of the most interesting parts of the study is that concerning the distribution of the deaths according to the localization of cancer. From the beginning Dr. Alencar points out the defective classification of the localizations of cancer used in the International List of Causes of Death, in the previous editions as well as in the Fifth Decennial Revision made in October 1938 in Paris and now in use in many countries, including the United States and Brazil. Part II of this list, concerning Cancer and Other Tumors, is divided into eleven titles (numbers 45 to 55) related to malignant tumors, the first ten with cancer of the different organs of the digestive and the respiratory apparatuses of the skin of the nervous system and of the genitourinary organs and the last one (number 55) to include cancer of other organs (adrenal gland, bones, thyroid gland, and nasal cavity and accessory sinuses) and also of unspecified organs. As the number of deaths remains undetermined for the various unspecified organs classified under title 55 the inclusion of these deaths beside those of the other titles would cause a complete disturbance of the true percentage distribution. One solution for this difficulty is to separate the deaths classified under title 55 from those of the other titles for which the number of deaths is correctly related to a

specified localization. Thus, out of the total of 9,264 deaths, only 8,307 (3,735 of males and 4,572 of females) may be studied according to the localization, as there are 957 deaths classified as "cancer of other organs and unspecified organs." Out of these 8,307 deaths (of both sexes put together) from cancer the localization of which is well determined 626 or 7.5 per cent, are of the buccal cavity and pharynx, 1,861, or 22.4 per cent, are of the stomach and duodenum, 2,144, or 25.8 per cent, are of other parts of the digestive apparatus, 582, or 7.0 per cent, are of the respiratory apparatus, 596, or 7.2 per cent, are of the genitourinary organs except the uterus, 1,692, or 20.4 per cent are of the uterus, 640, or 7.7 per cent are of the breast, and 166, or 2.0 per cent, are of the skin. The distribution is different if we consider either sex separately. The deaths from cancer of the buccal cavity and pharynx represent 12.4 per cent in males and only 3.6 per cent in females for the stomach and duodenum the figures are respectively 33.1 and 13.5 per cent, for the other parts of the digestive apparatus, 29.1 and 23.1, for the respiratory apparatus, 13.0 and 2.1, for the genitourinary organs except the uterus, 9.9 and 4.9, for the uterus, 37.0, for the breast, 0.1 and 14.0, and for the skin, 2.2 and 1.8. To go further on the question of the distribution of the localization of cancer Dr. Alencar transcribes the data for the 1,616 cases attended during the year 1941 at the Center of Cancerology of Rio de Janeiro under the direction of Dr. Mario Kroeft: buccal cavity and pharynx 282 cases, or 17.4 per cent, other parts of the digestive apparatus 54 cases, or 3.3 per cent, respiratory apparatus 82 cases, or 5.1 per cent, genitourinary organs except the uterus 86 cases, or 5.3 per cent, uterus 368 cases, or 22.8 per cent, breast 224 cases, or 13.9 per cent, skin 192 cases, or 11.9 per cent, and other localizations 328 cases, or 20.3 per cent.

Types of Meningococci in São Paulo

Working with sixty strains of meningococci isolated from the cerebrospinal fluid and identified by biochemical tests, Dr. Jose Carlos Rivas found the following types of agglutination tests carried on in a water bath at 37°C during two hours: type I, fifteen strains (25 per cent), type II thirty-eight strains (63 per cent), type III, ten strains (16.7 per cent), type IV, seven strains (11.6 per cent).

Accordingly in the immunizations for the preparation of the polyvalent therapeutic serum emulsions of living and recently isolated meningococci in which the strains of type II predominate and of other types in the proportions in which they are found are employed as antigen by the Butantan Institute at São Paulo.

Marriages

JOHN YOUNG TEMPLETON III, Mooresville, N. C., to Miss Dorothy Fraley at Richmond, Va., April 30.

DANIEL LAURENCE MAGUIRE JR., Charleston, S. C., to Miss Martha Dora Oliver of Oswego recently.

LOUIS EMMETT BROWN JR. to Mrs. Mary Alice Parramore Douthett, both of Abilene, Texas, April 2.

FRIEDRICH EIGENBERGER to Miss Cordelia Schrader, both of Sheboygan, Wis., at Kohler, March 20.

ROBERT HOLT GREEN, Charleston, S. C., to Miss Audrey G. Johnston at New York recently.

WENDELL DAVIS, Rochester, N. Y., to Miss Marian Donaldson at Spring Creek, Pa. recently.

JOHN DAVID POWELL, Stuart, Va., to Miss Mable Kathryn Minter of Martinsville recently.

CHARLES HIGSMITH to Miss Virginia Brannin Adams both of Fayetteville, N. C., May 8.

WILLIAM CON TUCKER, Birmingham, Ala., to Miss Frances Hay at Fayette, April 11.

RAYMOND SHORT CAMP, Fairburn, Ga., to Miss Ruth Allgood of Marietta, May 7.

Deaths

Philip Heinrich Kreuscher * Chicago, Northwestern University Medical School, Chicago, 1909, since 1932 assistant professor of surgery and formerly instructor in orthopedic surgery and clinical assistant in surgery at his alma mater, clinical professor of orthopedic surgery at Loyola University School of Medicine from 1919 to 1932, member of the Clinical Orthopedic Society, Chicago Surgical Society, Chicago Pathological Society, Institute of Traumatic Surgery, American Association for the Surgery of Trauma and the Chicago Orthopedic Club, president of the Illinois State Medical Society in 1933 and past president of the Jackson Park Branch of the Chicago Medical Society, in 1934 president of the Northwest Regional Conference, fellow, vice president 1930-1931 and formerly a governor of the American College of Surgeons, medical director of the Industrial Commission of Illinois from 1932 to 1936, retired in February 1935 as chief surgeon of the Chicago District Carnegie-Illinois Steel Corporation, a position he had held since 1937, in the latter year had been named by the governor as a member to a newly created advisory board of the division for handicapped children, state department of public welfare and in 1942 was appointed chairman of the first special advisory committee to the division of industrial hygiene of the Illinois Department of Public Health, served as attending orthopedic surgeon to the Mercy, Misericordia and Cook County hospitals, attending senior surgeon to the Passavant Memorial Hospital and the Wesley Memorial Hospital where he died June 1, of acute cardiac failure, aged 59.

Guy Leartus Connor * Detroit, Johns Hopkins University School of Medicine, Baltimore, 1901, formerly assistant clinical professor of neurology, psychiatry and preventive medicine at the Detroit College of Medicine, member of the House of Delegates of the American Medical Association in 1917, 1918 and 1920, formerly a member of the Federation of State Medical Boards and in 1928 president, a member of the Michigan State Board of Registration in Medicine from 1917 to 1929 and secretary from 1924 to 1929, president of the Michigan State Medical Society, 1923-1924 and vice president, 1911-1912, president of the Detroit Academy of Medicine in 1917, fellow of the American College of Physicians, for many years medical director for the board of education of Detroit, served on the staffs of the Children's Hospital of Michigan, St. Mary's Hospital and the Harper Hospital, assistant secretary and managing editor of the *Journal of the Michigan State Medical Society* from 1903 to 1905 and associate editor from 1919 to 1923, aged 68, died April 19 in Fort Lauderdale, Fla., of cerebral hemorrhage.

James Pemberton Hutchinson * Media, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1893, member of the American Surgical Association and the Society of Clinical Surgery, at one time adjunct professor of surgery at his alma mater, served as a major in the medical corps of the U. S. Army and as chief of the American Hospital at Neuilly, France, during World War I, received the Cross of the Legion of Honor of France from the French government and the Distinguished Service Cross, formerly associate director and director of the Pennsylvania Mutual Life Insurance Company, Philadelphia, at one time on the staffs of the Pennsylvania and Methodist hospitals and St. Timothy's Hospital, now known as the Memorial Hospital, Roxborough, Philadelphia, formerly on the staff and from 1925 to 1941 a member of the board of managers of the Hospital of the Protestant Episcopal Church, Philadelphia, for several years president of the board of directors of the School for the Blind, Overbrook, aged 75, died, April 8, of heart disease.

Frederick Cowles Herrick * Cleveland, Western Reserve University Medical Department, Cleveland, 1897, demonstrator of surgery at his alma mater from 1901 to 1907, instructor in surgery from 1907 to 1910, lecturer on surgery, 1910-1911, associate in surgery from 1911 to 1921, assistant clinical professor from 1921 to 1933 and later associate clinical professor of surgery, specialist certified by the American Board of Urology, Inc., and the American Board of Surgery, fellow of the American College of Surgeons, member and past president of the Ohio section of the American Urological Association, chief surgeon at Camp Grant, Ill., and Base Hospital number 83 of the American Expeditionary Forces during World War I, colonel in the medical reserve corps of the U. S. Army not on active duty, formerly chief of the surgical staff, St. Vincent Charity and Cleveland City hospitals, consultant in urology at St. John's Hospital, member of the city chamber of commerce, aged 70, died, April 5, of hypertensive arteriosclerotic heart disease.

George Burt Lake * Highland Park, Ill., Rush Medical College, Chicago, 1902, Army Medical School, Washington, D. C., 1911, assistant surgeon for the Mexican Central Railway from 1902 to 1904, practiced at Wolcottville, Ind., from 1904 to 1910 and was town health officer, 1907-1908, special lecturer in hygiene and sanitation at Purdue University, La Fayette, Ind., from 1908 to 1910, an officer in the medical corps of the U. S. Army from 1910 to 1924, resigned as a major, served during World War I, colonel in the medical reserve corps of the U. S. Army not on active duty, member of the Association of Military Surgeons of the United States, American Physicians' Art Association, Illinois Academy of Science and the American Association of the History of Medicine, attending internist to the American Hospital, Chicago, from 1927 to 1934, editor and publisher of *Clinical Medicine and Surgery*, author of poetry, aged 62, died, March 2, in the Lake Forest (Ill.) Hospital of paralytic ileus and hemorrhaphy.

William Edgar Caldwell * New York, University and Bellevue Hospital Medical College, New York, 1904, professor of clinical obstetrics and gynecology at the Columbia University College of Physicians and Surgeons, New York, formerly instructor of obstetrics at the New York University Medical College, specialist certified by the American Board of Obstetrics and Gynecology, Inc., member of the American Gynecological Society, fellow of the American College of Surgeons, served as a captain in the medical corps of the U. S. Army during World War I, for many years on the staff of the Bellevue Hospital, associate director of the Sloane Hospital for Women, consultant to the Presbyterian Hospital, New York, and the Monmouth Memorial Hospital, Long Branch, N. J., in 1934 received a gold medal from the American Roentgen Ray Society and in 1941 the honorary degree of doctor of public health from New York University, aged 63, died, April 1, of congestive heart disease.

William Allan * Winston-Salem, N. C., College of Physicians and Surgeons, Baltimore, 1906, professor of medical genetics at the Bowman Gray School of Medicine, served as visiting professor of medicine at the Medical College of Virginia, Richmond, and professor of parasitology at the North Carolina Medical College, Charlotte, past president of the Medical Society of the State of North Carolina and the Mecklenburg County Medical Society, member of the Association of American Physicians, specialist certified by the American Board of Internal Medicine, served during World War I, lieutenant colonel in the medical reserve corps, U. S. Army not on active duty, formerly director of the family record department at the Memorial Hospital in Charlotte, aged 61, died, April 24, in the North Carolina Baptist Hospital of lobar pneumonia.

Albert P. Brubaker, Philadelphia, Jefferson Medical College of Philadelphia, 1874, member of the Medical Society of the State of Pennsylvania, emeritus professor of physiology and medical jurisprudence at his alma mater, professor of physiology at the Pennsylvania College of Dental Surgery from 1885 to 1907, formerly lecturer of physiology and hygiene at the Drexel Institute of Art, Science and Industry, received the honorary master's degree from the Franklin and Marshall College, Lancaster, Pa., in 1888, a member of the College of Physicians of Philadelphia, Academy of Natural Sciences, American Philosophical Society and the American Physiological Society, author of a textbook of "Human Physiology" published in many editions, aged 90, died, April 29, in the Jefferson Hospital.

Arthur Henry Geiger * Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900, chairman of the Illinois Professional Committee for Medicine, Department of Registration and Education, specialist certified by the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology and the Association of Military Surgeons of the United States, lieutenant colonel in the medical reserve corps of the U. S. Army not on active duty, member of the attending staff of the Henrotin Hospital, president of the staff and attending ear, nose and throat surgeon to the Illinois Masonic Hospital, where he died, May 12, of bronchogenic carcinoma of the right lung, aged 65.

Cornelius Gysbert Dyke * New York, State University of Iowa College of Medicine, Iowa City, 1926, associate professor of radiology at Columbia University College of Physicians and Surgeons, specialist certified by the American Board of Radiology, Inc., member and in 1938 vice president of the American Roentgen Ray Society, member of the American College of Radiology and the Harvey Cushing Society, director of radiology at the Neurological Institute of New York, joint author with Dr. Leo M. Davidoff of "Normal Encephalogram".

1937 and Roentgen Treatment of Diseases of the Nervous System 1942 attending radiologist to the Presbyterian Hospital where he died April 23 of acute leukemia, aged 42

Kerwin Weidman Kinard \oplus Swarthmore Pa University of Pennsylvania Department of Medicine Philadelphia 1908, past president of the Jackson County (Mo) Medical Society and the American Association for the Study of Goiter fellow of the American College of Surgeons served as an officer in the medical corps of the U S Army and during World War I, colonel in the medical reserve corps of the U S Army not on active duty formerly chief of the division of clinics bureau of tuberculosis control, state department of health served on the staff of the Chester (Pa) Hospital, plant physician for the American Viscose Corporation Marcus Hook, aged 57 died, April 1, in Philadelphia of coronary occlusion

John James Corbett \oplus Detroit, Syracuse University College of Medicine 1917 associate professor of clinical proctology at the Wayne University College of Medicine specialist certified by the American Board of Surgery and a member of the founders group in proctology member and in 1940 elected vice president of the American Proctologic Society fellow of the American College of Surgeons served in the medical corps of the U S Army during World War I attending surgeon in proctology at the Harper Hospital Herman Kiefer Hospital and the Childrens Hospital an associate surgeon at the Receiving Hospital aged 49 died April 10 of carcinoma of the stomach

Herbert I Harris \oplus Lieutenant Colonel U S Army, retired General III University of Buffalo School of Medicine 1898 a contract surgeon in the U S Army from 1898 to 1908 captain in the medical section of the Officers Reserve Corps in 1917 and later a major lieutenant colonel in the medical corps of the National Army in 1918 honorably discharged Oct 31, 1919 and retired on the same date for disability in line of duty under a special act of Congress in June 1930 was retired with the rank of lieutenant colonel in the medical corps of the U S Army aged 68 died April 24 in the Community Hospital of diabetes mellitus and septicemia due to carbuncle of the neck

Frederick Allport Dale \oplus Colonel U S Army retired Baltimore University of Pennsylvania Department of Medicine Philadelphia 1900 commissioned a first lieutenant in the medical corps of the U S Army in 1901 and rose through the various ranks to that of colonel his military career took him to China Japan the Philippine Islands, Siberia and to France during World War I retired Aug 31 1936 at which time he was surgeon of the Third Corps Area now the Third Service Command fellow of the American College of Surgeons aged 70 died April 16 in the U S Marine Hospital Baltimore of cerebral hemorrhage

David Nathaniel Shippee, Wanaque N J Baltimore Medical College 1894 on the courtesy staffs of St Josephs and Paterson General hospitals Paterson served as health officer school physician and a member of the board of education of Pompton township at one time president of the First National Bank of Pompton Lakes for many years surgeon for the Erie Railroad an examining physician for the Passaic County Draft Board number 1 during World War I for many years first assistant chief of the fire department of Wanaque Valley, aged 69, died April 6 of cerebral hemorrhage and diabetes mellitus

Herbert Lynn Halbert \oplus Staten Island N Y Columbia University College of Physicians and Surgeons New York 1918 fellow of the American College of Surgeons president of the Richmond County Medical Society attending surgeon and roentgenologist Staten Island Hospital attending surgeon, Richmond Borough Hospital and Seaside Hospital consulting roentgenologist Richmond Memorial Hospital served in the army transport service during World War I aged 52 died, April 6 in the New York Post-Graduate Medical School and Hospital of intestinal obstruction

May Salona Holmes \oplus Orleans Mass Woman's Medical College of the New York Infirmary for Women and Children New York 1895 an Affiliate Fellow of the American Medical Association superintendent of the Belmont Hospital Worcester from its inception in 1896 until her retirement in 1941, in 1936 a three story isolation wing of the hospital was named the May Salona Holmes Building in her honor the hospital employees honored her by placing a tablet in the building's library aged 71 died April 4 in the Worcester City Hospital of carcinoma of the breast with metastases

Thomas W Adair, Archie Mo Kansas City Medical College 1885 member of the Missouri State Medical Association twice president of the Cass County Medical Society formerly chief examining physician for the Cass County Selective Service System served as a member of the board of education aged 86 died March 5, of pneumonia

Jacob E Barrows, Parkersburg W Va, Metropolitan Medical College, Chicago, 1900, member of the West Virginia State Medical Association aged 73, died, February 18, of angina pectoris

Samuel McCune Black, Carnegie, Pa Western Pennsylvania Medical College Pittsburgh, 1897, aged 73, died, February 13, of cerebral hemorrhage, hypertension, arteriosclerosis and carcinoma

John A Colgan \oplus Philadelphia, University of Pennsylvania Department of Medicine Philadelphia, 1901, formerly on the staffs of the Wills and Howard hospitals, aged 66, died February 16 of acute cardiac dilatation, chronic myocarditis and chronic endocarditis

John Parke Duggan, Pittsburgh, University of Louisville (Ky) Medical Department, 1911 served during World War I aged 55, died, February 5, in the Veterans Administration Facility of cerebral thrombosis and hypertensive cardiovascular disease

Alfred Elliott \oplus Middleboro, Mass College of Physicians and Surgeons Baltimore 1900 aged 71 served on the staff of St Luke's Hospital where he died March 1, of heart disease

Otoniel Trejos Flores, Dodge Center, Minn, Loyola University School of Medicine Chicago, 1919 mayor of Dodge Center from 1930 to 1932 Dodge County physician from 1926 to 1933 on the staff of the Owatonna (Minn) City Hospital aged 56 died March 5, in St Mary's Hospital, Rochester of diabetes mellitus and chronic nephritis

William H Gibson, Des Moines Iowa, Bennett College of Eclectic Medicine and Surgery, Chicago, 1903, aged 74, died March 4 of cerebral thrombosis

James A Henrichsen, Larsen, Wis, National Homeopathic Medical College Chicago 1894 member of the State Medical Society of Wisconsin aged 75, died, March 4 of carcinoma

Willis Wharton Jones, Washington, D C, Howard University College of Medicine, Washington 1904, aged 64, died, March 18 of hypertension and arteriosclerosis

William A Kinnan, Washington, D C Columbian University Medical Department Washington, 1895, aged 79, died, March 31, of carcinoma of the prostate

Francis Gustave Lagerstrom, Minneapolis, Kansas Medical College Topeka, 1899 aged 67 died March 13, of carcinoma of the tongue with metastasis and bronchopneumonia

N Sanford Messenger, Elmira, N Y University of Buffalo School of Medicine 1881, died, March 4, of coronary occlusion and arteriosclerosis

Avedis Nakashian, Forest Hills N Y American University of Beirut School of Medicine, Syria 1894, aged 75, died, March 29, of cerebral hemorrhage and heart disease

Lurton F Polk, Lincoln Neb, Physio-Medical College of Indiana Indianapolis, 1880, aged 84 died, March 22

George Rock, Auburn Ind Toledo (Ohio) Medical College 1891, aged 89 died March 31 in the Lutheran Hospital, Fort Wayne of carcinoma of the stomach

Emery Martin P Seeburt, San Francisco College of Physicians and Surgeons of San Francisco, 1918 aged 54, died March 27, of coronary occlusion

Frank Aloysius Tyler \oplus Seattle University of Minnesota College of Medicine and Surgery, Minneapolis 1906 formerly a druggist aged 60 died, March 3 in the Virginia Mason Hospital Seattle of cerebral thrombosis and arteriosclerosis

Charles Grover Walters, Pittsburgh University of Pittsburgh School of Medicine, 1910 aged 55, died, March 28 in the Mercy Hospital

DIED WHILE IN MILITARY SERVICE

Morris S Birnbaum, New York Medizinische Fakultät der Universität, Wien Austria 1937 member of the Medical Society of the State of New York first lieutenant in the medical reserve corps of the U S Army aged 30 died Aug 18 1942 at the Island of Oahu Territory of Hawaii of brain tumor

Sam Futrovsky, Washington D C George Washington University School of Medicine Washington 1940 served as a resident on the staff of the National Homeopathic Hospital first lieutenant in the medical corps of the Army of the United States a flight surgeon attached to Elgin Field Fla where he died Oct. 6 1942 of injuries received in an airplane accident, aged 29

Correspondence

THE MEDICAL PROFESSION AND PLANNED HEALTH

To the Editor—Is the health of the people the concern of the people? The answer to this question is a challenge to the American medical profession. The war is accelerating the trend toward greater and more comprehensive social planning by governments throughout the world, and in every instance special consideration is being given to problems of national health. Our own government has stated clearly that the health of the people is the concern of the government. The Beveridge plan in England, the social security laws in New Zealand, the proposed Australian plans and the social security legislation already submitted to the Congress may be prophetic evidence that a program of planned health in our own country is ultimately inevitable. The medical profession, therefore, may soon be faced with a crisis in its affairs.

In general our profession has always regarded the health of the people as its own concern, and any attempt at governmental interference has been looked on with suspicion. This attitude is not peculiar to the medical profession but is common to many groups possessing specialized knowledge. Thus the banker may assume that he alone should regulate matters of finance, and the lawyer the field of law. As long as the course of human events runs smoothly, these assumptions are not questioned by the people. However, in periods of great social unrest, when adverse circumstances cast doubts on the validity of such assumptions, a significant change may occur. The people, having lost confidence in leaders of specialized groups, then undertake tasks requiring technical knowledge which they do not possess. In the absence of informed leadership, theories and plans are developed which must be discarded later because of their unsoundness and unsuitability. The mutual grievances of the moment then preclude the integration of the special knowledge of the one group with the needs of the other. At such times only by the closest cooperation and mutually unselfish devotion to a common objective can public confidence be maintained and progress assured.

It would be useless to deny that we are now going through a period of great social change and that the concept of a system of planned health, by the state, for all the people is rapidly emerging as an important part of every social security program. It may be interesting to point out that its origin is outside the medical profession. Organized medicine, however, cannot ignore for long this widespread popular demand, which affects so vitally its traditional tenets.

The attitude which the medical profession takes toward governmental planned health can be the one decisive factor which determines whether the plan shall be conducted on a high intellectual and scientific plane or on the level of purely economic and political expediency. The history of this movement in other countries has been too frequently associated with antagonism and bitterness, resulting in compromises which have proved to be unsatisfactory both to the state and to the medical profession. This predicament could be avoided if the state and the profession agreed to recognize their respective limitations. The larger aspects of a social security program and the scope of planned health should concern primarily the state, and here the role of the physician is that of a citizen rather than a doctor. The medical, or professional, phase of the program is the concern chiefly of the medical profession, since it alone possesses the technical knowledge on which far reaching decisions and plans for better health must be based.

It is increasingly obvious that it would be futile for the medical profession to favor the status quo, since in a society

changing as rapidly as ours the status quo is merely an illusion. We must go either forward or backward, and the status quo is relative regression, since society is surging onward. Furthermore, no group or profession, however well intentioned, can withstand a rampant public opinion once the people have become convinced that they have a just cause.

What, then, is the task which confronts the medical profession in this critical period of its long and honorable history?

First of all the profession should agree to join with the state in the common enterprise of formulating a plan which would provide the highest possible degree of health for all the people. At the outset the state and the profession should have a clear understanding of the common purpose and the common goal. The best minds and talent of the profession and the state must be enlisted to survey, jointly and objectively, the vast existing mechanisms of medical and all allied services. This study should embrace the scientific, the educational, the administrative, the economic and the sociological aspects of the entire field. In addition, a study should be undertaken along similar lines of planned health programs soon to be introduced or already functioning in other countries.

It would be a work of monumental proportions, but from the knowledge thus gained a foundation could be laid on which to build a system of planned health which approached the ideal and for which the state and the medical profession assumed joint responsibility. Since the public, in the final analysis, is both judge and jury, the result of this cooperative study and the plan arising from it should receive the widest possible publicity to the end that an informed people might render a fair and competent judgment.

Here is the task and the opportunity for service worthy of a great profession. May the effort be not too little or too late!

ASHLEY W. OUGHTERSON, M.D., New Haven, Conn.
EDWARD J. OTTENHEIMER, M.D., Windham, Conn.

"HUEPER'S OCCUPATIONAL TUMORS"

To the Editor—In the Book Notices in *THE JOURNAL*, January 23, was a review of Hueper's "Occupational Tumors and Allied Diseases." A paragraph states what the character of the subject matter is. And then follow four paragraphs of adverse criticism of some small phases of these important industrial problems.

I believe that this is an unfair review of a stimulating and exceedingly interesting presentation of the problem of occupational cancer. The reviewer may not agree with the author's theories concerning the origin of these malignant growths but he must have had his curiosity aroused regarding the origin of so many different forms of cancer which can be directly related to industrial chemical hazards. The historical presentation of chimney sweeps' cancer from the time of Percival Pott down to the present forms a fascinating chapter which is well worth the attention of any student of cancer. The author has collected an amazing number of references to every form of cancer which may have an occupational relationship. In some portions of this review he speaks authoritatively, as in the dye cancers of the genitourinary apparatus. The chapters on the radioactive chemicals are well done and beyond controversy. It is unnecessary to take up the subject matter chapter by chapter. There is a wealth of material in this book and much of it is new to the average medical reader. The attempt to include some of the more doubtful types of malignant tumors under the hazards of industry may be put down to enthusiasm. Inaccuracies, as noted in *THE JOURNAL* review, are bound to occur in such an extensive subject. These will no doubt be corrected in later editions.

To my mind this book is a "must" volume to every physician connected with industry. The clinical workers in the tumor clinics of the country will find much to arouse their interest from reading this book. The research workers also can use it as a reference book to great advantage.

JOHN J. MORTON, M.D., Rochester, N. Y.
Professor of Surgery, University of Rochester
School of Medicine and Dentistry

TREATMENT OF DELAYED MENSTRUATION

To the Editor — An article recently published displays a deliberate obscurity in reference to previous work and thus gives a false impression of originality to the casual reader. I refer to A Combined Method for the Treatment of Delayed Menstruation and a Test for Early Pregnancy, by Haig Carapetyan (THE JOURNAL, May 8, p. 81).

The author treats the subject as if it were a new idea arrived at by acute deduction from vague hints in the previous literature. Actually the original clinical article on this subject was published by myself and co-workers in THE JOURNAL two years ago. In this article we related the subject matter to our previous work in animals and reported our results in 48 clinical cases. Since that time there have been at least four confirming clinical reports in the American literature, namely:

- Settel Edward Simultaneous Use of Prostagmine Methylsulfate as Treatment for Delayed Menstruation and as a Diagnostic Test for Pregnancy *M Rec* 155 331 (Jan.) 1942
Grossman L. L. Treatment of Delayed Menstruation with Prostagmine *West J Surg* 50 103 (Feb.) 1942
Parrella Dominick Prostagmine in Delayed Menstruation *North est Med* 41 384 (Nov.) 1942
Sneider M. J. The Prostagmine Pregnancy Test and Treatment for Delayed Menstruation *Illinois M J* 83 107 (Feb.) 1943

There have also been some confirming articles in the South American literature. At least 200 clinical cases in all are now on record. To these Dr. Carapetyan has merely added 57 additional cases which are only confirmatory in nature and which do not add any original observations or ideas.

True Dr. Carapetyan mentions my previous articles in his paper. But this is only with reference to certain control animal experiments and is done in such a way as to make his own clinical data appear to be completely original. He makes no mention whatever of the confirming literature indicated. Nowhere either in the body of his paper or in his conclusions, does he say or even suggest that his data are confirmatory in nature.

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Michael Reese Hospital.

'PENTOSURIA AND DIABETES MELLITUS'

To the Editor — It should have been as apparent to us as it was to several friendly critics that the evidence presented in our report (THE JOURNAL, Sept. 5, 1942, p. 25) did not warrant the statement in the summary that we were dealing with a case of chronic essential pentosuria. Using the same tests as were used at the time of the original study (as well as additional tests) seven collections of the same patient's urine at intervals between September 1942 and January 1943 were found to contain no pentose. This further evidence, in our opinion, makes it clear that the reported pentosuria was transitory, certainly not 'chronic,' and doubtfully worthy of the designation 'essential.'

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Massachusetts Memorial Hospitals

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL June 5, page 397.

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ARIZONA * Phoenix July 6-7 Sec. Dr. J. H. Patterson, 826 Security Bldg. Phoenix
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been realized heretofore. Many instances of chorioretinitis formerly diagnosed as tuberculous, metastatic or of unknown etiology may be due to toxoplasma, especially if cerebral calcification is present.

Am J Roentgenol & Rad Therapy, Springfield, Ill 19 145-288 (Feb) 1943

- Mediastinal Pleurisy in Infants R A Harvey, Rochester, N Y — p 145
- Study of the Widened Mediastinum in Children and Pitfalls in Diagnosis A V Shapiro and I Bell, New York — p 159
- Oil Aspiration Pneumonia M Moch and H K Taylor, New York — p 177
- Röntgenologic Considerations in Diagnosis and Treatment of Diaphragmatic Hernia S W Harrison Rochester, Minn — p 185
- Carcinoma of Heart at Postmortal Demonstration New Signs in Roentgen Diagnosis Case Report P S Friedman Philadelphia — p 197
- Diagnosis of Posterior Disruption of the Intervertebral Disk, with Special Reference to (1) Its Differentiation from Certain Degenerative Lesions of the Disk and Its Related Structures and (2) Interpretation of Contrast Myelography J Hewitt Philadelphia — p 199
- Intraspinal Irritation W A Neale Cleveland — p 211
- Pyogenic Osteomyelitis of Thoracic Spine Preceding Primary Pulmonary Disease H A Solomon and A I Pichman New York — p 213
- The Specific Value of Roentgen Treatment in Chronic Asthma W M Hull, K M Balyat and F K Chont Oklahoma City — p 227
- Radiation Therapy as Aid in Control of Chronic Otorrhea I B Finner Jr and A H Doudy Rochester, N Y — p 231
- Radiation Treatment Mild Radiation Therapy Definition and Method of Application S Klingenstein Buenos Aires, Argentina — p 240
- Effect of Roentgen Irradiation on Capillary Permeability and Inflammation in Skin of Rabbit R H Koxson and H Carl Memphis, Tenn — p 249

Pyogenic Osteomyelitis of Thoracic Spine—In the developing clinical picture of pyogenic osteomyelitis of the spine, Solomon and Pichman point out, the local or distant paravertebral complications may commonly appear as the primary condition, while extensive destruction of the spine may progress and remain unrecognized. In any instance with high fever, pain in the back over the spine and x-ray evidence of mediastinal widening (mediastinitis) should have the possibility of pyogenic dorsal vertebral osteomyelitis excluded regardless of other pulmonary signs, symptoms or x-ray appearances and despite the failure to demonstrate x-ray changes in the vertebrae. The clinical, pathologic and x-ray features of this condition are discussed and an illustrative case with changes at necropsy is reported.

Roentgen Treatment of Chronic Asthma—Observations on the roentgen treatment of their first 100 consecutive patients with chronic asthma over six months unexpectedly focused the attention of Hull, Balyat and Chont on the importance of infection in the asthmatic problem. Because of the superior results in such patients from roentgen therapy the selection of the 1,529 patients treated since has been made easier. Although a number of investigators have used roentgen therapy in the treatment of asthma, none have considered fully the importance of infected accessory nasal sinuses as an etiologic and aggravating factor in severe cases. Most of the patients who received roentgen therapy to the chest also received radiation therapy to the accessory sinuses whenever they were involved. At this time the authors are able to offer the following conclusions on this method of treating severe asthma complicated by infection:

- 1 Asthma can be controlled in many individuals who did not respond satisfactorily to methods used previously.
- 2 Radiation therapy in asthma is of definite value to patients with infection in the bronchial tubes and/or the paranasal accessory sinuses.
- 3 Infection has proved to be of greater importance in the asthmatic problem than previously regarded because of the pronounced response of these individuals to radiation therapy.
- 4 Radiation therapy of patients with asthma free of infection seems to have little or no effect.
- 5 The technic of choice is the "cross fire" method in which the dosage is concentrated over the greatest areas of the lungs where most of the bronchial tubes are distributed.
- 6 The method is not without danger but is safe when accurate, detailed records are kept on each individual and when the dose of radiation is maintained within a safe range. Irradiation of larger areas of the chest appears to have given better results.

American Journal of Tropical Medicine, Baltimore 23 1-140 (Jan) 1943

- Horizons of American Tropical Medicine Presidential Address, American Society of Tropical Medicine E C Faust, New Orleans — p 1
- Some Impressions of Medical Practice in the Tropics President's Address, 1942, the American Academy of Tropical Medicine H C Clark, Panama, Republic of Panama — p 11
- *Modified Intraperitoneal Protection Test for Yellow Fever Based on Greater Susceptibility of Immature White Mice to Extraneural Injection of Yellow Fever Virus L Whitman, Rio de Janeiro, Brazil — p 17
- *Apparent Recent Extension of Typhus in United States N H Topping and R I Dyer, Bethesda, Md — p 37
- Study of Delicacies of Polished Rice in Relation to Beriberi E B Vedder, Washington, D C — p 43
- Therapeutic Interruption of Artificially Induced Malaria Infections M I Boyd, Tallahassee, Fla — p 49
- Hematologic and Immunologic Studies on Natural and Induced Leishmaniasis in Puppies H A Senejti, New Orleans — p 53
- Observations on Malaria in Presence and Absence of Anopheles Gambiae in Experimental Area (Cumbe) Ceara, Brazil O R Causey, H M Deane and L M Deane, Aracati, Brazil — p 59
- Ecology of Anopheles Gambiae in Brazil O R Causey, L M Deane and M P Deane Aracati, Brazil — p 73
- Viability of Anopheles Gambiae Eggs and Morphology of Unusual Types Found in Brazil M P Deane and O R Causey, Aracati, Brazil — p 95
- Poison Cone Shell W J Clench, Cambridge, Mass., and Yoshio Kondo, Honolulu, Territory of Hawaii — p 105
- Low Temperature Freezing of Malaria Parasites R D Maxwell, Syracuse, N Y — p 123
- Method for Collection, Transportation and Study of Anopheline Eggs and Adults O R Causey, Fortaleza, Brazil — p 133

Intraperitoneal Protection Test for Yellow Fever—Whitman found that mice between 18 and 21 days of age are intermediate between newborn and adult mice in their susceptibility to the intraperitoneal injection of yellow fever virus. Uniform death may be produced by injecting one tenth of the virus dosage required for adult mice without the need for the additional intracerebral injection of starch. Three times as much virus is required to kill 21 day old mice as it does to kill 18 day old mice.

Recent Extension of Typhus in the United States—Topping and Dyer present histories of several cases of endemic typhus that occurred in cities not considered within the endemic area in the United States. They recommend that physicians throughout the Midwest and other sections of the country keep endemic typhus fever in mind as a possible diagnosis in cases of fever of undetermined origin, particularly those with an unexplained exanthem.

Archives of Neurology and Psychiatry, Chicago 49 323-488 (March) 1943

- *Experimental Studies on Headache Analysis of Headache Associated with Changes in Intracranial Pressure E C Kunkle, B S Ray and H G Wolff, New York — p 323
- Predisposing Factors in Bromide Intoxication A Angyal, Worcester, Mass — p 359
- Meningeal Gliomatosis Secondary to Intramedullary Glioma Ronta Amyot, Montreal, Canada — p 383
- *Sequelae of Equine Encephalomyelitis H H Noran and A B Baker Minneapolis — p 398
- Attempts at Treatment of Schizophrenia and Other Nonepileptic Psychoses with Dilantin L B Kalinowsky and T J Putnam, New York — p 414
- Effect of Extremes of Environmental Change on Man President's Address L J Pollock, Chicago — p 421
- Effect of Autonomic Drugs on Cerebrospinal Fluid Pressure in Schizophrenic and Other Psychoses I Effect of Histamine E Friedmann and T Thale Norwich, Conn — p 449
- Electrical Skin Resistance Technique Used to Map Areas of Skin Affected by Sympathectomy and by Other Surgical or Functional Factors F G Whelan and C P Richter, Baltimore — p 454

Experimental Studies on Headache—Kunkle and his associates regularly induced headache in normal erect human subjects by the free drainage of approximately 20 cc of cerebrospinal fluid. Such drainage headache was reduced in intensity by the intrathecal injection of isotonic solution of sodium chloride and the restoration of the cerebrospinal fluid volume, by tilting the body toward the horizontal or simply by flexion or extension of the head. In its response to postural changes, drainage headache was independent of the estimated intracranial pressure. Drainage headache was usually augmented in intensity during distention of intracranial veins secondary to bilateral jugular compression. In a subject who previously had had

unilateral section of the roots of the fifth and ninth cranial and the upper four cervical nerves induced drainage headache was absent over the homolateral frontotemporal area. This indicates that the afferent impulses from the frontal portion of the area of drainage headache traverse the fifth cranial nerve. Thus it is inferred that drainage headache is caused primarily by traction by the brain on various structures sensitive to pain which anchor it to the cranium, dilatation of some of these structures, the intracranial veins and increase in brain volume are suggested as joint factors in the augmented traction which follows drainage of fluid and leads to headache. The headache that often follows lumbar puncture has predictable and unique features all of which indicate its similarity to drainage headache. The usual variety of postpuncture headache is similar in type and mechanism to the headache induced by drainage of cerebrospinal fluid, i. e. it is caused by dilatation of and traction on intracranial vascular structures sensitive to pain. It is probably secondary to a prolonged leakage of fluid through the dural hole in the lumbar sac produced by the operator's needle. The headache often associated with increased intracranial pressure has been assumed, but never proved to be related to the increased pressure. Present studies indicate that in the production of headache, increased intracranial pressure is neither a prime nor an essential factor. From the data it is concluded that the headache associated with decreased or increased intracranial pressure results from traction on or displacement of intracranial structures sensitive to pain and is by itself independent of generalized intracranial pressure changes.

Sequelae of Equine Encephalomyelitis—Noran and Baker studied the pathologic changes in the nervous system of a child who died three years and five months after contracting equine encephalomyelitis at the age of 5 months. During the years following recovery from the acute illness convulsive seizures, spasticity of all limbs atrophy of the optic nerves mental retardation and progressive cerebral atrophy developed. The observations represent the first report on the chronic end results of infection with the western strain of equine encephalitis. The neurologic lesions consisted chiefly of a destructive process which had produced multiple glia-lined cavities within the frontal lobes and widespread degeneration of the parenchymal elements throughout the brain. Many of the vessels were occluded by an endothelial increase or by deposition of calcium within their lumens. The extensive vascular damage, with occlusion of the lumens and ischemia appears to be the primary cause of the tissue damage in this disease and suggests a vascular spread of the virus.

Archives of Surgery, Chicago

46 307-458 (March) 1943

- Lesions of Supraspinatus Tendon Degeneration Rupture and Calcification C. L. Wilson Montreal Canada—p. 307
Effects of Administration of Sodium Sulfadiazine to Dogs B. Maisel Boston B. McSwain and F. Glenn New York—p. 326
Epidermoid Carcinoma of Anus and Rectum R. B. Cattell and A. C. Williams Boston—p. 336
*Dermoid and Epidermoid Tumors (Cholesteatomas) of Central Nervous System Report of 23 Cases C. W. Rand and D. L. Reeves Los Angeles—p. 350
*So Called Benign Metastasizing Gout Report of 2 Cases with Intracranial Metastasis H. H. Friedman Brooklyn—p. 377
Solid Carbon Dioxide Ferric Chloride Technique for Hemostasis Experimental Study of Its Effectiveness in Brain Viscera and Superior Sagittal Sinus J. Ebin New York—p. 386
Treatment of Acute Arterial Occlusion by Means of Intermittent Venous Occlusion Report of Case R. R. Linton Boston—p. 395
*Demerol Substitute for Morphine in Treatment of Postoperative Pain R. C. Batterman and J. H. Mulholland New York—p. 404
Misconception About the Springiness of the Longitudinal Arch of the Foot P. W. Lapidus New York—p. 410
Review of Urologic Surgery A. J. Scholl Los Angeles F. Hinman San Francisco A. von Lichtenberg Mexico D. F. Mexico A. B. Hepler Seattle R. Gutierrez New York G. J. Thompson J. Priestley Rochester Minn. E. Wildbolz Berne Switzerland and V. J. O'Connor Chicago—p. 422

Cholesteatomas of Central Nervous System—Eleven of the 23 epidermoids and dermoids (cholesteatomas) of the central nervous system that Rand and Reeves discuss are instances of diploic or cranial epidermoids. The cases represent tumors of the type observed in persons admitted to the neurosurgical service or discovered on postmortem examination at the Los

Angeles County General Hospital and cases of such neoplasms studied in private practice. As far as the authors know fewer than 200 epidermoids of the central nervous system have been reported. The intracranial variety is seldom diagnosed preoperatively. The extradural or diploic type can be recognized roentgenographically. The diploic type is easily accessible surgically and the operative results are exceptionally good. Sebaceous cysts of the scalp can be distinguished pathologically from epidermoid tumors by the absence of squamous epithelium and of keratohyaline granules and the presence, instead, of a secreting type of epithelium in the former. The fact that such epidermoids are sometimes overlooked may be given as the reason that Mahoney was able to find only 23 diploic epidermoids among the 142 that he found reported in the literature in 1936. Although complete extirpation of these tumors is necessary to prevent recurrence, this often is not feasible with intracranial epidermoids because of their extent and attachment to vital structures. The signs and symptoms of epidermoids of the cerebellopontine angle are similar to those of acoustic neuromas with the exception that cranial nerves on the affected side appear to be more definitely involved. "Epidermoid" and "dermoid" seem the most satisfactory terminology for these tumors. The use of the term "cholesteatoma" is unfortunate because it refers to a chemical by-product which is neither an essential nor an invariable constituent of these tumors.

So-Called Benign Metastasizing Gout—Friedman's first illustrative case of benign metastasizing gout neatly falls into this category. Yet in spite of the benign microscopic appearance of both the primary lesion and the secondary lesions the condition is regarded malignant. Secondary deposits in the skull indicate that invasion through the blood vessels had taken place at some time during the presence of the primary neoplasm of the thyroid. This is evidence of a malignant state. The microscopic structure is of little importance in the determination of a malignant condition of thyroid tissue. It is possible that serial sections of the thyroid might have uncovered a miniature carcinomatous area. Such an examination was not feasible in this case because of technical difficulties. Friedman's second case illustrates that metastasis from thyroid carcinoma may bear little or no resemblance to the primary lesion and that unless the primary tumor is also studied the true nature of the condition remains unrecognized. Because of the clinically benign appearance of the thyroid and the benign microscopic character of the cranial tumor this case would undoubtedly have been recorded in the older literature as metastasizing thyroid adenoma. The tumor's pulsatile nature and the audible bruit are in keeping with the well recognized clinical features of these lesions. Intracranial neoplasms in patients with goiters should be considered metastatic until proved otherwise even though the lesion of the thyroid appears insignificant. Treatment consists in radical surgical removal of both lesions followed by roentgen therapy.

"Demerol" as Substitute for Morphine—Batterman and Mulholland used Demerol as a substitute for morphine to control the postoperative pain and restlessness of 488 postoperative patients, 165 of whom had had abdominal section. Demerol also known as dolantin, is the ethyl ester of 1-methyl-4-phenylpiperidine-4-carboxylic acid. The majority had received the drug as a preanesthetic. Among the 164 postoperative patients who received it parenterally after laparotomy, 95.5 per cent of the 182 trials resulted in complete, satisfactory relief or pain discomfort and restlessness. After procedures other than laparotomy, Demerol was only slightly less effective. Thus in 91.5 per cent of 271 trials in 252 cases postoperative pain was completely controlled. An additional 5.2 per cent experienced relief for approximately three hours. In only 4 out of 45 trials after rectal operations did the Demerol fail to give a satisfactory response even in these 4 subsequent administration of a larger dose alleviated pain. Regardless of the severity of the condition the duration of the operation the age of the patient and the ultimate prognosis with rare exceptions 75 to 100 mg of Demerol parenterally every three to four hours, if necessary, made the patient comfortable and facilitated the usual therapeutic procedures. Orally Demerol was effective when pain was not severe or after acute postoperative symptoms had subsided. It is possible to continue to use and to rely on the

oral preparation if postoperative discomfort persists for several days. Postoperatively Demerol rarely caused untoward reactions. The incidence of vomiting was no more than expected after major operations. Since Demerol has been used in the surgical service respiratory depression has not occurred postoperatively. This is a distinct advantage over the opiates. The incidence of catheterization within twenty-four to forty-eight hours during ten months among 160 consecutive postoperative patients receiving morphine was 12.5 per cent as compared to 7.8 per cent among 178 consecutive patients operated on during eleven months. The majority of the patients who were catheterized, whether they received morphine or Demerol, had had a rectal operation, a herniorrhaphy or an operation on the lower part of the abdomen. Although the number of such postoperative patients is small and the difference in the incidence of urinary retention between patients given morphine and those given Demerol may not be statistically significant, it is the authors' belief that Demerol is less likely to produce this undesirable complication. In many patients 'gas' pains were effectively relieved. The antispasmodic action of Demerol and the lack of constipation may be definite advantages of the drug. It has little if any action on the cough reflex and hence does not encourage bronchial secretion. Its atropine-like action on mucous secretions and the bronchial dilatation that it produces are advantages. The latter is of particular help to patients with bronchial asthma, for whom morphine is contraindicated. Its only disadvantage is in as its postoperative use is concerned is its short action. There is no particular danger of causing undue depression through frequent or large doses.

Delaware State Medical Journal, Wilmington

15 17-34 (Feb) 1943

Medical Control of Industrial Exposure to Toxic Chemicals J. H. Louber, Wilmington—p. 17

Endocrinology, Springfield, Ill

32 229-304 (March) 1943

Stimulation of Mammary Glands in Hypophysectomized Rats by Estrogen and Testosterone S. I. Leonard, Ithaca, New York—p. 229
Influence of Age on Effect of Thyroidectomy in Rhesus Monkey W. Hirschmann, H. B. Shumacker Jr. and W. I. Straus Jr., Baltimore—p. 238

*Effects of Insulin on Blood Lipids of Man A. Kaplan, C. Entenman and I. I. Chalkoff, Berkeley, Calif.—p. 247

Nonspecific Results Obtained with Micromethod for Assay of Prolactin L. I. Lehr, R. W. Bates and O. Ruddle, Cold Spring Harbor, N. Y.—p. 251

Reaction of Chorionic Gonadotropin with Phenylisocyanate F. Bischoff, Santa Barbara, Calif.—p. 260

Thyroid Inhibiting Action of Hypophyses of Rats Fed with Thyroid J. R. Forzo Membrives, Buenos Aires, Argentina—p. 263

Progonadotropic and Aspecific Effects of Serum of Horse Immunized with Extracts of Sheep Pituitary Glands H. N. Marvin, Little Rock, Ark., and R. K. Meyer, Madison, Wis.—p. 271

Role of Bile in Absorption of Steroids H. Schley, Montreal, Canada—p. 279

Additional Data on Relative Absorption Rates of Subcutaneous Pellets of Various Crystalline Compounds in Rat T. R. Forbes, Baltimore—p. 282

Further Studies on Relationship of Progesterone to Ovulation and Fertilization in Persistent Estrous Rat J. W. Everett, Durham, N. C.—p. 285

Selective Bismuth Melanosis of Female Genital Tract Induced by Treatment with Sex Hormones F. Sulman, S. Levy Hochman and H. G. Lietz, Jerusalem, Palestine—p. 293

Relation of Certain Endocrine Glands to Body Weight in Growing and Mature Guinea Pigs J. P. Mixer, A. J. Bergman and C. W. Turner, Columbia, Mo.—p. 298

Effects of Insulin on Blood Lipids of Man—Kaplan and his associates measured the free and esterified blood cholesterol, total fatty acids and phospholipids in 9 schizophrenic subjects in whom hypoglycemia was maintained for several hours by the administration of up to 460 units of insulin. During insulin shock the blood sugar fell as low as 15 or 17 mg and remained at low levels for nearly two hours. The depth of shock observed in the subjects was variable. The almost complete removal of dextrose from the blood stream failed to change appreciably the concentrations of cholesterol, fatty acids or phospholipids of the blood. The injection of 460 units of insulin had as little effect as 110 units.

Gastroenterology, Baltimore

1 133-248 (Feb) 1943

Effect of Oral Administration of Sulfonamide Compounds on Fecal Flora of Patients with Nonspecific Ulcerative Colitis Enid C. Rodin, J. B. Kirsner and W. L. Palmer, Chicago—p. 133

*Clinical Use of Succinylsulfathiazole (Sulfisuxidine) B. B. Crohn, New York—p. 140

Chronic Ulcerative Colitis as Cause of Retarded Sexual and Somatic Development R. L. Benson and J. A. Bargen, Rochester, Minn.—p. 147

Lymphostromia of Intestine F. C. Usher and C. F. Dixon, Rochester, Minn.—p. 160

Principles in Use of Vitamins in Treatment I. Vitamin Deficiency Diseases D. I. Wilbur, San Francisco—p. 179

Studies of Enzyme Activities of Duodenal Contents as Means of Evaluating Pancreatic Function A. H. Free, A. J. Beams and V. C. Myers—p. 188

Effect of Gastrectomy on Growing Monkeys S. Freeman, V. H. Hough, H. Wikodsky and A. C. Ivy, Chicago—p. 199

*Gastroscopic Findings and Clinical Symptoms of Chronic Superficial Atrophic Gastritis C. F. Barnett, Atlanta, Ga.—p. 211

Gastroscopic Findings in Cholecystectomized Patients J. T. Howard, Baltimore—p. 217

1. Gastric Symptoms in Alcoholics With and Without Gastritis S. Gray, Chicago—p. 221

Succinylsulfathiazole—During the last six months Crohn subjected 28 patients with nonspecific ulcerative colitis, 8 with ileitis or ileocolitis and 1 with intestinal actinomycosis to therapeutic trial by the administration of succinylsulfathiazole. The dose was 0.25 Gm. of the drug per kilogram of body weight for ten days, after a lapse of five days a second series was given. With severe diarrhea some form of opium should be administered concurrently to slow down the intestinal discharge and to permit a natural concentration of the drug. Toxic effects were few, loss of appetite was common, nausea or vomiting was rare and occasionally there was a complaint of headache or malaise and mild prostration. In 5 an apparent and quick symptomatic cure was obtained and 11 more of the ulcerative colitis series showed definite improvement. The drug is a welcome addition, particularly since it exhibits no toxic by-effects and can be pushed in large doses with relative impunity. The best results are seen in acute colitis, therefore, if the disease should be recognized in its early acute stages and treated intensively with succinylsulfathiazole the whole picture of the lingering debilitating discouraging chronic ulcerative colitis might be altered. Three out of 4 patients with colitis can be carried to a stage of remission. Preventing recurrences is as great as if not greater than that of inducing the remission. Perhaps the continuous administration of the drug will meet this problem. The case for ileitis is less promising. Terminal ileitis is associated with delay in the distal loops of the small intestine, and a concentration of the drug at this point may overcome a pathologic process if the disease is really an infection. The patient with actinomycosis and several fistulas to the abdominal wall showed definite improvement. Under succinylsulfathiazole the fistulas showed a tendency to dry up, discharge diminished and the macerated dermal tissues of the abdominal wall were enabled to undergo a definite stage of granulation.

Chronic Superficial Atrophic Gastritis—Barnett believes that the moot point as to what constitutes an early chronic pathologic mucosal change may be partially resolved by its persistence. The presence of adherent mucus, patchy redness, definite erosions and edema, all still present on gastroscopic study after an interval of one month, should satisfy the most skeptical. Mucosal hemorrhages do not all progress into pigmented spots but may become erosions or heal. No clear demarcation between the superficial and the atrophic stages can be made. The superficial stage does occur in younger persons and has a shorter duration than the atrophic phase. Superficial gastritis may progress to true atrophic gastritis. In patients who have had frequent gastroscopic examinations, small patchy areas of atrophy can be observed to increase in size and become possible precursors of gastric carcinoma, gastric polyps and sometimes Addison's anemia. The transition of the superficial phase of gastritis into the atrophic phase, accompanied by increased manifestations of malaise, weakness, fatigue and nervousness, is described. Functional gastrointestinal irritability, as illustrated by mucous colitis, was not found to predispose to or to be etiologically related to superficial or atrophic gastritis.

However, the occurrence of mucosal hemorrhage in 39 per cent of patients with mucous colitis suggested that mucosal gastric hemorrhage, not accompanied by gastritis may have some relation to gastrointestinal irritability

Journal of Experimental Medicine, New York

77 195-296 (March) 1943

- Ultracentrifuge as Aid in Detection of Poliomyelitis Virus J L Melnick New Haven Conn.—p 195
Distribution of Water and Electrolytes Between Blood and Skeletal Muscle in Experimental Hypertension Lillian Etchelberger with technical assistance of M Roma Chicago—p 205
State of Vessels of Mesentery in Shock Produced by Constricting Limbs and Behavior of Vessels Following Hemorrhage I H Page Indianapolis and R G Abell Philadelphia—p 215
Oral Papillomatosis of Rabbits Virus Disease R J Parson Ann Arbor, Mich., and J G Kidd New York—p 233
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Ten Amino Acids Essential for Plasma Protein Production Effective Orally or Intravenously S C Madden J R Carter A A Kattus Jr., L L Miller and G H Whipple Rochester N Y—p 277

Journal of Nat Cancer Inst, Washington, D C

3 349-448 (Feb) 1943

- Carcinogenic Action of Two Azo Compounds in Mice H B Anderson and J E Edwards—p 349
Response of Strain A Female Mice to Small Amounts of o Aminoazo toluene H B Anderson and J E Edwards—p 355
Influence of Hybridization on Occurrence of Mammary Tumors in Mice H B Anderson—p 359
Absorption of Subcutaneously Implanted Pellets of Diethylstilbestrol in Men M B Shimkin and L Zon—p 367
Types of Tumor Induced by Ultraviolet Radiation and Factors Influencing Their Relative Incidence H G Grady H F Blum and J S Kirby Smith—p 371
Role of Thrombocytopenia in Hemorrhage Produced in Sarcoma 37 M B Shimkin and L Zon—p 379
Hydrolysis of Glutathione by Cathepsins of Normal Rat Tissues and Rat Hepatoma 31 Mary E. Mayer and J W Thompson—p 383
Cytochrome Oxidase and α Amino Acid Oxidase in Tumor Tissue. J Shack—p 389
Further Studies of Liver Catalase Activity of Tumor Bearing Animals J P Greenstein—p 397
Note on Copper Content of Tissues of Tumor Bearing Animals J P Greenstein and J W Thompson—p 405
Peculiar Growth Lesions in Frogs Induced by Irradiation of Sperm Cells with X Rays P S Henshaw—p 409
Tumor Enzymology J P Greenstein—p 419

Journal of Nervous and Mental Disease, New York

97 261-388 (March) 1943

- Significance of Psychologic Research in Schizophrenia K Goldstein Boston—p 261
Guillain Barre Syndrome Early Diagnosis (Case Report) D Shaskan New York—p 280
Psychiatric Contribution to Problem of Morale L R Sillman New York—p 283
*Cardiovascular Response to Acetyl Beta Methylcholine (Mechoyl) in Mental Disorders L L Altman Ossining N Y D Pratt New York and J M Cotton Hartford Conn—p 296
Disorder in Body Image in Clinical Pictures of Psychoses G Bychowski New York—p 310

Cardiovascular Response to Mecholyl in Mental Disorders—Altman and his co-workers tried to determine whether or not there is any significant or characteristic difference between the cardiovascular reactions of 49 male and 24 female psychoneurotic psychotic and normal subjects to acetyl beta-methylcholine chloride subcutaneously. As a rule the pulse rate increases from 15 to 60 beats per minute after the injection of the drug, the average increase was around 35 beats. The maximal reading was usually obtained three minutes after injection. This was followed either by a precipitate or by a gradual fall, so that the rate reached the preinjection level about twenty-one minutes after the drug was given. Two characteristics of the pulse and diastolic pressure curves were apparent regardless of whether the subject was normal, psychoneurotic or psychotic. The two curves of any single patient pursued remarkably parallel courses in relation to time, the two exhibited maximal deviation from the preinjection level at the same time and returned to that level in about the same time. However the curves were in general not similar quantitatively—a definite

increase in pulse rate was not necessarily associated with a pronounced fall in diastolic pressure. Also little correlation could be made out between the curves and the diagnosis. There was no significant difference except for a slight tendency for the recovery time to be prolonged as the anxiety to the depressed to the hebephrenic group was passed. The systolic blood pressure of the anxiety psychoneurotic group of patients fell within a range of —41 to —99, that of the manic depressive patients between —107 and —201 and that of the hebephrenic dementia precox patients between —205 and —299. Normal individuals when tested with epinephrine or mecholyl may react like the paranoid patients, and this raises the highly speculative question as to whether a normal subject with a high score may not be predisposed to a mental disorder such as anxiety, and whether one with a low score may not be exhibiting a predisposition for hebephrenic schizophrenia.

New Jersey Medical Society Journal, Trenton

40 81-120 (March) 1943

- Treatment of Burns and Foreign Bodies of Eye J M Carlisle Westfield and A Gibson Scotch Plains—p 89
The Hospital Its Trustees and Medical Staff J T Hanan Montclair—p 95
Combined Use of Arsenicals and Bismuth Compounds in Syphilotherapy I Silverman Clifton and A Kovic Passaic—p 98

New York State Journal of Medicine, New York

43 385-480 (March 1) 1943

- *Differential Diagnosis of Hyperparathyroidism with Especial Reference to Albright's Syndrome L W Gorham Albany—p 415
Syphilis as Cause of Delayed Pneumonic Resolution J F Worthen and M S Rapp Staten Island—p 419
Conservative Management of Obstetric Patients Presenting Premature Rupture of Fetal Membranes B J Pisani New York—p 421

Hyperparathyroidism and Albright's Syndrome—In the differential diagnosis of hyperparathyroidism, Gorham states Albright's syndrome, osteitis fibrosa cystica brown pigmented spots and precocious puberty (particularly in females), is most important. In a total of 51 collected reports of patients, 20 were uselessly subjected to operation and 4 of the 20 were operated on a second time. Albright's syndrome is the most important condition to be differentiated from hyperparathyroidism as records show that confusion arises in 40 per cent of cases. The syndrome occurs in a complete and in an incomplete form. The disease starts in early childhood, and in nearly all victims with the complete type symptoms develop before the age of 10. Patients with the incomplete form may be 30, 40 or older before clinical manifestations appear. The disease is more frequent in females. While the X-ray appearance of the bones may be confusing, it should be emphasized that in Albright's syndrome the lesions are scattered localized and multiple and that considerable portions of the skeleton are unaffected. This patchy distribution is in sharp contrast to the general decalcification of all osseous tissue found in hyperparathyroidism and osteomalacia and is more like Paget's disease and xanthomatosis. Sexual and somatic precocity are present regularly in the afflicted female and if accompanied by cutaneous pigmentation or lesions of the bone they should call Albright's syndrome to mind. Calcium and phosphorus determinations on the blood usually distinguish Albright's syndrome from hyperparathyroidism but occasionally a blood calcium above 11 mg and a blood phosphorus below 3 mg may cause confusion.

Rhode Island Medical Journal, Providence

26 19-32 (Feb) 1943

- President's Address Providence Medical Association H E Utter Providence—p 19
Progress Notes of Forty Eighth Evacuation Hospital W L Leet—p 22
Posterior Root Section for Athetosis Thirty Two Year Report L C Kingman Providence—p 26

Rocky Mountain Medical Journal, Denver

40 145-216 (March) 1943

- Industrial Disease and the Insurance Carrier R N Gray Hartford Conn—p 162
Digestive Disorders in the Tuberculous and Their Management J L Kantor—p 167
Protective Foods in Time of War H Gail Denver—p 174
Sulfonamides T D Cunningham Denver—p 173

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

65 313-466 (Dec) 1942

- Different Pathway for Pupillary Contraction P W Nathan and J W A Turner—p 341
Oligodendroglommatosis of Cerebrospinal Pathway Diana J K Beck and Dorothy S Russell—p 352
Functional Recovery Following Nerve Grafts and Other Types of Nerve Bridge I Gutmann and I K Sanders—p 373
Giant Cells of Ret., Motor Cortex and Pyramidal Tract Critical Review I M K Wilshe—p 409

British Journal of Radiology, London

16 31-68 (Feb) 1943

- Beam Direction in Radiotherapy Symposium I Ellis, C W Wilson, J L Dobbin, I G Grummett and A Green—p 31
Intraoral Radium Treatment of Cancer of Mouth J R Nuttall—p 45
Protection in Industrial Radiology W Banks—p 49
Calculated Nongravitic Cyst of Spleen A Elkeles and J I P James—p 51
Effect of X-rays on Cells Cultivated in Vitro Part II Recovery Factor Hie Lasmaki—p 61

British Medical Journal, London

1 277-308 (March 6) 1943

- Probable Influence of Health Education on Improving Appendicitis Mortality Rate D B Armstrong—p 277
Effect of Pit of Blood on Hemolysis With Special Reference to Blackwater Fever I Smith and R W Evans—p 279
Delay in Diagnosis and Symptomatic Treatment of Phthisis B Mann—p 283
Lymphadenoma and Leukemia A W Gull and A J McCall—p 284

1 309-340 (March 13) 1943

- Epidemic Nausea and Vomiting W H Bradley—p 309
Rubella Meningoencephalitis 2 Cases R I C Bradford—p 312
Planning for Treatment of Head Injuries H Cairns—p 313
Rehabilitation in an Emergency Medical Service Orthopedic Unit A S Malkin and G Parker—p 315
Universal Apparatus for Peroral Intratracheal Anesthesia G Humby, with Anesthetists Point of View by Margaret Hawksley—p 317
Impetigo Contagiosa in Services With Special Reference to Its Treatment with Sulfathiazole G A G Peterkin and L C Jones—p 318

Epidemic Nausea and Vomiting—Bradley relates that a widespread outbreak of nausea and vomiting was observed in Denmark in 1935. Similar outbreaks were reported in schools and among the general population in England. Although the disease is of minor significance, clinically and economically it may give rise to considerable administrative uncertainty. Those who are unfamiliar with the clinical and epidemiologic picture may be led to suspect food poisoning or dysentery and be stampeded into ineffectual and wasteful action. It is important that at present "epidemic nausea" should be considered in the differential diagnosis of all outbreaks of gastroenteritis. Observers believed that epidemic nausea and vomiting is an upper respiratory infection with an incubation period of from two to seven days and is probably due to a virus. The described outbreak strengthened the impression that the disease is communicable and that the port of entry is the upper respiratory passages. The incubation period was probably within the range of from two to seven days but could not be determined accurately. Infection ex alimentatione immediately preceding the attack was excluded.

Sulfathiazole for Impetigo Contagiosa—Peterkin and Jones state that the effect of local sulfanilamide and sulfapyridine therapy in impetigo was sometimes striking but often disappointing. Sulfathiazole proved to be the drug of choice. Sulfathiazole in a water miscible cream or a starch and zinc oxide paste was used in 120 cases, of 27 not cured by sulfathiazole, 17 were treated with 25 per cent cream. The 93 cures were obtained in an average of 68 days, which compares favorably with the average stay of impetigo cases in the hospital (146 days). The vehicle used seemed to make little difference in the healing rate of the skin. Cases treated with the 5 per cent paste healed in 65 days and those with the 5 per cent cream in 611 days. Results obtained with 5 per cent concen-

tration were better than those with 25 per cent and compared favorably with results from 10 per cent. Sulfadiazine and sulfamethazine were used in a number of cases, but the results were disappointing. Sodium sulfathiazole (5 per cent cream) gave somewhat erratic results but was definitely better than sulfadiazine and sulfamethazine. Quick healing was also obtained with sulfathiazole in ecchyma and early infective dermatitis, but results were disappointing in infectious eczematoid dermatitis, acne vulgaris and sycosis.

1 341-370 (March 20) 1943

- *Present Status of Aminoacridine Compounds (Flavines) as Surface Antiseptics C H Browning—p 341
Hernia Through Foramen of Winslow, Emerging Through Gastro-hepatic Omentum H Edwards and W Stewart—p 343
*Use of Methicidine, New Blood Pressure Raising Drug, in Surgical Operations H Dodd and F Prescott—p 345
Tetrachlorethane Poisoning G Forbes—p 348
Ilfert Syndrome in Iceland D E Rodger—p 351

Aminoacridine Compounds as Surface Antiseptics—Browning points out that limitations in the performance of the sulfonamides suggested a return to the aminoacridine compounds which were introduced as surface antiseptics in 1917. These substances are powerfully bacteriostatic toward the important pyogenic organisms and serum does not diminish their action, although blood somewhat reduces it and pus greatly. Their toxicity for the body as a whole is not high, they are comparatively un irritating, and they interfere little with phagocytosis. They are highly effective in preventing the development of infection with various organisms, including streptococci and certain gas gangrene anaerobes when applied to tissues at the site of inoculation. They can control established suppuration in wounds when drugs of the sulfonamide group have failed. Retardation of granulation and healing tends to follow continued use of these compounds, so that it may be advantageous to resort to other treatment later. The important point is their capacity to prevent or control infection.

N-Methylamphetamine, a New Blood Pressure Raising Drug—Dodd and Prescott studied the effects of N-methylamphetamine, a sympathomimetic drug known also as Methedrine or Pervitin. Blood pressure and pulse rates were recorded every three to five minutes in one hundred and thirty operations. In 54 cases the systolic pressure or the pulse pressure dropped sufficiently for the patient to need a pressor agent. N-methylamphetamine was used solely in these cases and was administered when the systolic pressure fell to and remained at 80 mm or less or when the pulse pressure was 10 mm or less, twenty minutes was allowed first for natural recovery. The capacity of N-methylamphetamine to meet the needs of these patients has been studied under average general hospital operating conditions. Anesthetics included all those in common use. N-methylamphetamine has been found to be an effective blood pressure raising drug with a prolonged action. The effective dose is from 15 to 30 mg intramuscularly, or 10 to 20 mg intravenously plus a depot dose of 10 to 20 Gm intramuscularly. In 97 per cent of the cases the systolic pressure was restored to normal levels in from two to eighteen minutes. The systolic pressure was raised from an average of 66 mm to an average maximum of 135 mm and settled to an average minimum of 124 mm. There is no abnormally high rise if the dose is carefully calculated. One injection was adequate for 81 per cent of patients, repeated injections were given to 17 per cent, 1 patient (2 per cent) did not respond. The blood pressure was maintained throughout operation and for several hours after.

Medical Journal of Australia, Sydney

1 89-112 (Jan 30) 1943

- Anesthesia in Military Hospitals W B Parsons—p 89
Uterine Prolapse Changing Viewpoints in Regard to Its Etiology and Treatment G G Bradley—p 93
Observations on Subtertian Malaria A D Cust—p 95

1 113-134 (Feb 6) 1943

- X Ray Localization of Foreign Bodies E W Frecker—p 113
Foreign Bodies in Relation to War Wounds R V Graham—p 117
Place of Quinine in Treatment of Subtertian Malaria A D Cust—p 119

Schweizerische medizinische Wochenschrift, Basel 72 105-1088 (Sept 26) 1942

- Bronchial and Pulmonary Cancer—Radiologic Aspects and Etiology—C Wegelin—p 105
- Clinical Aspects of Bronchial and Pulmonary Cancer—K Stachlin—p 106
- Radiologic Aspects of Bronchial and Pulmonary Cancer—H K Schinz—p 106
- Metal as New Carcinogenic Principle—H K Schinz—p 107
- Cobalt in Therapy of Mouse Cancer—F L Nicod and F Kogawa—p 107
- Artificial Carcinogenesis in Various Ionized Atmosphere—G Tsvet—p 107
- Extensive Atypical Cancer Epithelial Proliferation of Skin Following Smallpox Vaccination—J Walther—p 108
- Influence of Aspects of Cancer in Swiss Army—H von Mevener—p 109
- Question of Carcinogenic Action of Soot from Oil Burners—C Miescher and F Schwarz—p 108
- Production of Cancer by Photochemical Experimental Study—C Miescher—p 108

Bronchial and Pulmonary Cancer—Wegelin directs attention to the great increase in pulmonary cancer and to the question of whether this increase is real or apparent. Various factors may be responsible for the apparent increase such as improvement in histologic diagnosis and the change in the necropsy material. The change in age levels in the necropsy material deserves consideration. Statistical studies made at the author's request suggest that the higher age levels are a contributing cause in the increased frequency. Pulmonary cancer is from three and a half to four and a half times more frequent in men than in women according to several statistics. The macroscopic picture is not uniform. Wegelin accepts W. Fisher's classification into (1) a nodular and massive form (2) a diffuse infiltrating form (pneumonia-like) and (3) a nodular military form. Pulmonary cancer is slightly more frequent on the right than on the left side. Secondary changes occur in the form of necrosis and autolytic decomposition. Metastases are frequent in the author's material of 117 cases; metastases were not found in only 13. The etiology of pulmonary cancer rests on a rather insecure basis. The necessary statistical proofs for the role of chronic irritants in the pathogenesis of pulmonary cancer are still largely absent. W and C Macklin are inclined to ascribe a more important role to the hereditary than to the external factors. The author is inclined to believe that heredity as well as external irritants play a part.

Clinical Aspects of Bronchial and Pulmonary Cancer—Stachlin reports observations on 115 cases observed since 1924. The cases were verified by necropsy and 1 by a microscopic examination of lung puncture. All except 3 proved to be primary bronchial carcinomas, 2 were primary tracheal carcinomas and 1 alveolar carcinoma. No one symptom was present in all cases. Cough, the most frequent symptom, was absent in 19. Expectoration the next most frequent symptom was absent in 30 per cent. Bloody sputum reputedly suggestive of bronchial carcinoma was detected in only 8 cases. The raspberry jelly sputum regarded as especially characteristic was present in only 3 apparently less often than in other pulmonary diseases. All sputums were searched for tumor cells but were detected in only 1. Dyspnea was present in 73, cyanosis in 40 and the supposedly frequent chest and back pains in 45. Auscultation and percussion failed to reveal abnormalities in 42 per cent. Many symptoms result from complications or from local metastases. Exudative pleurisy often masks the primary tumor; this was observed in 29 cases. Hoarseness existed in 21, recurrent nerve paralysis in 10, audible stridor in 7, dysphagia in 5 and foreign body sensation in 2. These symptoms were caused by the enlargement of intrathoracic lymph nodes. Enlarged extrathoracic lymph nodes were noted in 19 cases (sixteen times in the neck). General symptoms included clubbed fingers, labile or sublabile temperature, weakness and emaciation. Only 78 of the patients exhibited cachexia. The peripheral tumors are not all alveolar tumors but may originate from the epithelium of the small bronchial ramifications. The majority of carcinomas begin in the hilus in one of the main bronchi. The further dissemination along the lymph passages of the lung may produce reticulated outlines in the roentgenogram. Bronchial cancers may give rise to pulmonary metastases which produce spherical shadows. Metastases into the regional lymph nodes are much more frequent than those into

the lung tissue. Necropsy discloses them in the majority of the cases. Secondary processes such as pleural exudates, broncho-pneumonia or atelectasis obscure the roentgenographic appearance even more frequently than do the lymph node metastases. Roentgenocopy usually reveals a combination of tumor shadows with shadows of secondary processes. Bronchography and particularly bronchocopy improved the diagnostic results. Early diagnosis is rarely possible because even small bronchial carcinomas may give rise to lymph node metastases. The prognosis is bad; only 7 of the patients survived for more than two years.

Bronchial and Pulmonary Cancer—Radiologic Aspects—Schinz reviews 70 cases of pulmonary cancer observed at the radiologic institute of Zurich during the decade 1930-1940. The average age of the patients, of whom 71 were men was 59.8 years. Bronchography was done in 21 cases, with positive results in 10. Bronchoscopy combined with biopsy was performed in 33 cases and gave positive results in one half. Early diagnosis is rare. The clinical picture is dominated by metastases of the regional lymph nodes, the diagnosis is usually made with the cancer in an advanced state. Irradiation produced early palliative results. Noticeable objective and subjective improvement and shrinkage of the tumor in the roentgenogram was observed in 42 per cent of the irradiated patients. The best early results were obtained with protracted fractionated roentgen irradiation. Intrabronchial radium implantation proved ineffective. Pulmonary cancers should be subjected to irradiation because in a certain percentage of the cases life can be made more bearable. In about one fifth of the cases the improvement is considerable but unfortunately not of long duration. Surgery might effect cure in the early stage, but timely recognition is rare. The author has gained the impression that of all cancers the pulmonary ones are least amenable to treatment.

Cancers Produced by Metals—Schinz reports studies on the possible carcinogenic action of metals. The aim was to throw light on the pulmonary cancers of the Schneeberg region, a mining district in which cobalt, nickel, bismuth, arsenic, iron and uranium ores are mined. Because of comparatively high radium emanation in the Schneeberg mines, it was assumed that the Schneeberg cancers, like those of Joachimsthal were radioactive cancers or, more correctly, electronic cancers. However, since pulmonary cancers were observed among men working with chromates, doubts were raised as to the radioactive origin of the Schneeberg cancer. Metal depots of chromium, arsenic and cobalt were made in the thighs of rabbits. After three years of observation none of the 21 animals exhibited tumors. Of 12 animals observed for a longer period 4 are alive, 1 died of cachexia without cancer and 7 died of malignant growth. Four of the cancers were in the lungs, 2 at the site of implantation and 1 in the hollow of the scutum. The author thinks that the carcinogenic action of metals has been demonstrated, for in view of the rarity of spontaneous cancer in rabbits he doubts that such a high percentage could have had spontaneous cancer.

Revista Medica Latino-Americana, Buenos Aires 28 9-80 (Oct) 1942. Partial Index

- Mal de los Pintos—C. Fonso Gandolfo and H. R. Kusiera—p 13
- Action of Estrone on Extrapancreatic Factors of Insulin Resistant Diabetes—F. Rocca and E. Pollack—p 1
- Prothrombin Time in Spinal Anesthesia with Nupercaine—A. E. De Ponton and K. Quesada—p 7
- Gas of Wartare History and Classification—K. Agrello and J. M. Frances—p 7
- Experimental Leukosis of Dental Origin—A. O. Tachella and A. C. Barriago and E. Frattolani—p 4

Action of Estrone in Insulin Resistant Diabetes.—Rocca and Pollack point out that the carbohydrate metabolism is regulated by multiple neurohormonal factors. Besides true pancreatic and renal diabetes there are forms in which the muscular apparatus of the pancreas does not play the decisive role and in which hyperactivity of the hypophysis, the thyroid or the adrenals is responsible. Symptoms of these types of diabetes disappear if the cause is suppressed by irradiation of the hypophysis by a thyroidectomy or by removal of the adrenal tumor. Extrapancreatic factors may also inhibit the action of insulin. The authors resorted to estrone therapy for diabetic

patients of both sexes, particularly those of the climacteric age and those with insulin resistance, because this hormone is an antagonist of the hypophysis, particularly of its regulatory effect during the menopause. Their observations on a group of patients suggests that estrone has a beneficial effect on the subjective symptoms, the general condition, the carbohydrate tolerance and the insulin requirement. In 1 case a daily dose of 270 units of insulin did not counteract the ketosis and glycosuria and did not reduce the diuresis but the condition improved when estradiol benzoate was given in large doses.

Experimental Dental Lesions of Glandular Origin—Eachella Costa and his collaborators subjected young dogs to thyroparathyroidectomies in order to ascertain whether dental disorders would result. In some of the animals the loss of parathyroids did not cause early or late tetany, probably because of the existence of iberothy parathyroids. The teeth in these dogs were smaller, the implantation was defective and the eruption retarded. In the dogs in which thyroparathyroidectomy resulted in postoperative tetany the dental lesions were more pronounced. They involved the calcification, leading to the destruction of the enamel and exposure of the dentin. The lesions are the result of changes in the calcium metabolism which in turn had been caused by the parathyroid deficiency. Compensatory endocrine treatment did not modify the lesions.

Lekarz Wojskowy, Edinburgh

31 27-61 (Sept-Oct) 1941

Cesarean Operation on Varices of Lower Extremities B. Hajduk — p. 27

Bright and Dark Aspects of Chemotherapy J. J. Chwast — p. 32

*Report of Diseases in Polish Soldiers Treated in Scotland in Summer of 1940 H. Blum — p. 38

Experience of the German Health Service During the Polish Campaign S. Strumenski — p. 52

Diseases of Polish Soldiers in Scotland—During the summer of 1940 in one field hospital of the Polish camp in Scotland, 1,065 patients were examined. The most frequent infectious disease was scabies (196 cases). It occurred only if disinfection was not adequate. Among 80 with venereal disease there were 31 with recent syphilitic infection, 6 with an old infection, 1 with tibia dorsalis and 42 with acute gonococcal infection. Troops should be examined two or three days after week end permits. Seventy cases of malaria of different forms were successfully treated with quinine and mefloquine. All the primary infections took place in military camps in Rumma, in the Babradak area. Other diseases were tuberculosis, rheumatic diseases, traumatic casualties, acute and chronic diseases of the alimentary tract, acute appendicitis, illnesses of the respiratory system of nontuberculous origin, diseases of the cardiovascular system, nephrolithiasis, cystitis, neurosis (in 29), tonsillitis, otitis media, hepatic and biliary duct diseases, turunculos (in 15), errors of retraction and 1 each of salivary calculus and tooth and mouth disease.

Experience of German Health Service During Polish Campaign—According to Strumenski the German literature from September 1939 to June 1940 is conflicting as to their preparedness for the evacuation and treatment of the wounded and ill brought about by the mechanized war. Their methods of evacuating the wounded were really not organized for perfect functioning. Contagious diseases and surgical war wounds were their most important concern. The first epidemic of *Shigella* dysentery occurred by the end of September 1939, when many German soldiers were afflicted. The mortality rate was approximately 10 per cent. The German epidemiologist Werner states that at the end of September 1939 epidemic typhus struck the German soldiers. Wildegans writes that the first medical problem of the army in Poland was the transportation of the wounded and ill from the combat zone, they were moved frequently from one station to another and it was several days before they reached a permanent hospital. The situation was similar to that existing in the first world war. Wounds from the maiming of various war arms were less numerous among the Polish than among the German soldiers. Later the situation became more favorable to the Germans, such wounds comprised only 50 per cent of a 5,000 bed capacity of a military hospital in Poland. However, there was a greater number of such German wounded during the invasion of Warsaw and

almost all required surgical treatment. True primary open wounds, when arriving at the hospital, were heavily infected, but still they were easier to treat than the primarily closed (sutured) wounds. The author encountered but 9 instances of gas gangrene among 10,000 wounds.

Voprosy Nevrokhirurgii, Moscow

6 1-49 (no 3) 1942 Partial Index

Surgical Technic in Craniocerebral Wounds N. I. Propper Grashchenkov — p. 3

Morphology of Spinal Fluid in Purulent Meningitis D. A. Shamburov — p. 18

Syndromes Associated with Lesions of Premotor and Motor Zones in Gunshot Wounds of Cranium, Pyramidal Syndrome E. V. Shmidt — p. 40

Surgical Technic in Craniocerebral Wounds—Propper Grashchenkov advocates a liberal use of sulfonamides in the treatment of penetrating craniocerebral wounds, which under conditions of present day warfare are almost invariably infected. Beginning at the first aid station, 1 Gm of sulfanilamide or sulfapyridine should be given internally every four hours. After primary excision of the wound with removal of superficial fragments of metal and bone, a mixture of sulfanilamide and sulfamethylthiazole in the form of an emulsion or a powder should be applied. Specialized neurosurgical units should be attached to the field hospitals to insure early treatment and to limit the stages of evacuation. These units should be equipped with x-ray apparatus and should have plentiful supplies of sulfonamide compounds and a sufficiently large nursing staff to provide individual care for the wounded. This type of wounded should maintain a recumbent posture during transportation, and jolting should be avoided as much as possible. Traumatic meningitis is to be actively treated by intraspinal injection of an 0.8 per cent solution of sulfanilamide, peroral administration of sulfapyridine (1 Gm every four hours) and abundant local treatment of the wounded with a mixed powder or emulsion of sulfanilamide and sulfamethylthiazole in a ratio of 1:2. Toxic effects on the blood may be detected early by noting the appearance of granulated neutrophils and beginning leukopenia. The most effective method for prophylaxis of cerebral abscess is the radical removal of bone fragments and infected metal splinters. Prolapse of the brain indicates a developing meningitis, abscess or gas gangrene and calls for causal therapy. Gas gangrene of the brain is a frequent complication and should be treated by surgical intervention and liberal use of sulfonamides. After infection of the wound has been arrested, granulation and epithelization may be stimulated by application of balsam oil dressings and ultraviolet irradiation. Increased intracranial pressure may be relieved by intravenous administration of a 40 per cent dextrose solution and a 10 per cent solution of sodium chloride. Magnesium sulfate should not be used at the same time as the sulfonamide preparations, since it increases their toxic properties.

Syndromes of Premotor and Motor Zones—Shmidt reports 2 cases of tangential cranial wounds with fracture of the internal plate of the cranial bones in which small fragments of bone injured a narrowly circumscribed area of the brain, producing syndromes of motor and premotor cortical lesions first observed by Fulton in experimental animals. Although the type of wound was essentially the same in the 2 cases the clinical picture was quite different. In the first case there was paralysis of the right leg with decreased tonus, positive Babinski and Oppenheim reflexes, slightly intensified tendon reflexes and foot clonus. These symptoms indicated an involvement of the motor zone (area 4 and the pyramidal tract). The second case presented a syndrome of premotor zone lesion—spastic paralysis with greatly intensified tendon reflexes, clonus, positive Rossolimo and Bekhterev-Mendel reflexes, grasping reflex of the foot and fanlike spreading of the toes in connection with an exaggerated plantar reflex. There were also definite vegetative disturbances. According to Shmidt the Rossolimo reflex is not a genuine pyramidal symptom but occurs in connection with lesions of area 6 and its pathways. Likewise spasticity is a symptom of the same type of lesion, only it is provoked by a more severe injury. A definite demarcation of the motor and premotor syndromes explains the frequent cases of "dissociated pyramidal syndrome" when either one or the other of its characteristic components is absent.

Book Notices

The Principles and Practice of Obstetrics By Joseph B. De Lee, A.M. M.D. and J. L. Greenhill, B.S. M.D. Attending Obstetrician and Gynecologist Michael Reese Hospital Chicago. Eighth edition. Cloth. Price \$10. Pp. 1101 with 1074 illustrations. Philadelphia & London: W. B. Saunders Company 1913.

Since 1913 there have been six editions of the De Lee textbook. Between the seventh and eighth editions Dr. De Lee died. Two years before his death he asked Dr. J. P. Greenhill to prepare the eighth edition.

In making this revision the author has endeavored to maintain the high standard set by Dr. De Lee for this book. Nearly all the additions, deletions and corrections were submitted to Dr. De Lee and received his approval. One of the major changes is a rearrangement of the material in the first third of the book. English terms have been substituted for Latin terms in naming presentation and position. New chapters have been added concerning obstetric and gynecologic endocrinology, the use of vitamin K in obstetrics, erythroblastosis fetalis, vitamins and mineral roentgenography in obstetrics, the sulfonamide drugs in obstetrics and the Waters extraperitoneal cesarean section.

Among the sections which have been completely rewritten are those dealing with the toxemias of pregnancy, contracted pelvis, puerperal infection, pyelitis, the acute infections, analgesia and anesthesia, the use of solution of posterior pituitary and of ergot and cesarean section. Many old illustrations have been omitted and many new ones have been added. Each of the bibliographies has been revised to bring it up to date. In his preface the author recognizes the assistance and the contributions of a number of physicians who have aided in maintaining the quality of the book. The index which occupies more than thirty pages is one of the most useful features of this most practical volume. The publisher has done a magnificent job in selecting for the work a light weight paper with an excellent finish so that the illustrations are of extraordinary quality.

The textbook is one of the most complete and at the same time one of the most practical works available in its field. The varied emphasis obtained by the use of different sizes of type and by the nature of the presentation makes it an exceedingly useful book to the student, the practitioner or the specialist.

Treatment of Fractures By Guy A. Caldwell, M.D., F.A.C.S., Professor of Orthopedic Surgery, Tulane University of Louisiana School of Medicine, New Orleans. Cloth. Price \$5. Pp. 303 with 92 illustrations. New York & London: Paul B. Hoeber, Inc. 1943.

Dr. Caldwell states in his preface that he is undertaking to present one or two procedures for each of the common types of fracture which have given good results in his own experience. He recognizes as most of us do that far too many and much too complicated techniques and apparatus have been proposed. The average surgeon or general practitioner finds it difficult to make a selection from among them for the cases that fall into his hands. Dr. Caldwell's discussions of the different kinds of fractures and his descriptions of the treatment methods employed are generally clear and practical. The bibliographies show extensive reading and study but go much beyond the material presented.

Recommendations for the early operative treatment of simple fractures might lead, as they have in previous journal articles and textbooks, to operation too early and to procedures beyond the capacity of the average surgeon. Dr. Caldwell does indeed state quite accurately the points involved but fails to emphasize the difficulties and danger of complications which may be encountered unless the doctor's facilities, experience and technique are such as to justify him in operating on fracture patients. After all, Dr. Caldwell's book is not written for the specialist.

In the treatment of compound fractures the control of hemorrhage, treatment of shock and wound medication are all given precedence over the reduction of the fracture and immediate immobilization. These should always be a first item of consideration. Also, the object of debridement is to remove all foreign material and devitalized tissue. This is accomplished by excising the skin margins for a distance of about one eighth

of an inch and enlarging the wound sufficiently. This is open to misunderstanding and misinterpretation so that excision is done instead of the drainage operation which should always be the principal object of the surgical procedure. Adequate drainage may usually be provided without removal of any skin or much other tissue. Nature should have the responsibility of separating the tissue that is going to die from living tissue which can be used in repair in a majority of these cases.

As is to be expected nowadays, the sulfonamide drugs are given a prominent place in the primary treatment of compound fractures. This leaves out of consideration the toxic character of the sulfonamide drugs, the fact that their role in infected wounds is still imperfectly understood and finally the fact that most wounds will recover with soap and water preparation and no chemical therapy whatever if the principles of surgical treatment are observed.

In chapters on fractures of the clavicle and scapula and fractures of the spine, simple efficient treatment is recommended and explained clearly and in satisfactory detail. The hanging cast of John Caldwell for fracture of the shaft of the humerus is described and recommended. This treatment does not conform to the principles of fracture treatment and should be accepted, if at all, with great caution. The hanging effect and exactly the position desired may be obtained by a body and arm cast in which immobilization is assured and complications of certain kinds much more certainly avoided.

One point of importance in the treatment of the fractures of the lower leg and ankle is that manipulative reductions are recommended without traction. In many of these cases adequate traction is a fundamental preliminary requirement. Manipulation without traction should generally be avoided. Pin traction through the heel with molding of the fragments into place in many lower leg and ankle fractures is the only satisfactory way to insure length and even correct relationship of the tibia, fibula and soft parts in the foot and ankle as a whole. It might be mentioned as a minor comment that the word traction does not even appear in the index of Dr. Caldwell's book which in itself suggests that this item in treatment is given inadequate consideration.

Biología y tratamiento de las heridas Por el Dr. Luis Gubern Sallachs, cirujano de número del Hospital de Badalona, Badalona. Con un prólogo del Dr. J. Puig Sureda. Cloth. Pp. 486 with 204 illustrations. Barcelona & Buenos Aires: Salvat Editores S. A. 1941.

The author of this book is a surgeon who has lived through the experiences of the Spanish Civil War. Although no doubt the multiple problems of a practical nature which came out of this war, problems which had to be solved often in the most precarious circumstances, were the direct motivation for his writing, the author has kept his book far above a simple manual in which clinical impressions are empirically recorded.

The first part comprising fourteen chapters is devoted entirely to the scientific principles governing the biology of injury and repair and of wound infection. The views of Carrel, Leriche, Harvey and others are amply considered and the newer knowledge on the processes of infection and resistance are carefully discussed. Every field in physiology, pathology and bacteriology is explored to yield data for a better understanding of the main topic of wound healing and wound infection, but this is done so thoroughly that the first part of the book is in itself a treatise or general pathology of interest to any student of medicine and biology.

The second part devoted to the treatment of wounds comprises another twenty-two chapters and it is in this part that original contributions or direct interest to the war surgeon are to be found. In this part we often come across the names of such surgeons as Carrel, Quenu, Delbet and Böhler, men who crystallized in their books the teachings from the first world war. We find also such names as Trueta, Gomez-Duran, Eguagaray and Argüelles who preceded the author in writing about war surgery in the Spanish conflict. The practice of operating regardless of advanced shock in patients is upheld. The usefulness of removing large segments of veins to avoid further extension of thrombophlebitis and septicemia is supported by adequate examples. Also the proper type of suture is indicated in each case.

In the treatment of gas gangrene, Gubern disagrees with Trueta on the application of the latter's method in severe cases and gives his reasons for so doing. The author's favored method seems to be that of Carrel modified by himself in that the wounds are irrigated when uncovered. This method he applies to wounds in which suture after surgical cleansing is contraindicated or in those previously infected. The methods of Trueta and Orr are amply discussed.

The last chapters are devoted to treatment by physical agents—sunlight being the best—antiseptics, maggots and several others. Orthopedics is also resorted to when the acute phase of the process has subsided.

Two very important items, treatment by sulfonamide compounds and therapeutics of shock, are only slightly dealt with. No new teachings on these two points emerged from the Spanish Civil War. There was neither time nor equipment for research, and there were no large amounts of drugs to be tested. These are the points left to be solved by war research going on at present in so many laboratories.

In the same way in which historians of the future writing on the second world war will have to consider the Spanish conflict as a foreword to it, so no doubt will surgeons of the future writing on war wounds have to take into consideration as a starting point what was sadly learned in Spain, the facts of which are crystallized in this book. Therefore the book is a precious document and its translation into English would be highly desirable.

Comparative Vertebrate Anatomy By Hilde Henrietta Hymn. American Museum of Natural History. New York. Second edition. Cloth. Price \$3.00. Pp. 511 with 116 illustrations. Chicago: University of Chicago Press, 1942.

Comparative anatomy is usually presented as a dry as dust course from which most students carry away an array of polysyllabic words and a vague impression that the vertebrates, including man, have developed from a diagram of a primitive chordate. Hymn's excellent presentation of the subject should do much to counteract this impression. With its functional and dynamic approach presented in scholarly yet readable and stimulating fashion, it presents comparative anatomy as a grand developmental process. Embryologic, microscopic, gross and physiologic data appear as a cleverly interwoven tissue. Many of the problems and unanswered questions are clearly placed for all to see. This volume should be the leading textbook in its field. As in the past, it will serve as an important aid to many future physicians in their attempts to answer many of the 'whys' and 'how comes' of the human body. It serves as both laboratory manual and textbook. The latter has been considerably enlarged over the previous edition and clearly reflects a long continued, careful perusal and evaluation of much of the enormous descriptive and experimental literature. The illustrations are excellent.

Lupus eritematoso (estudio clínico sobre 156 observaciones) Por el Dr. Félix Eduardo Ambroselli. Tesis. Universidad nacional de Buenos Aires, Facultad de ciencias médicas. Paper. Pp. 180 with illustrations. Buenos Aires: Imprenta de Alfredo Frascoli, 1942.

The author summarizes his extensive studies in twenty-nine conclusions, some of which follow. The incidence of the disease is 0.78 per cent of the total of dermatoses studied. Its relation to genuine skin tuberculosis is at the rate of 3 to 1. Cases in females are twice as frequent as in males, the highest incidence being between 20 and 30 years. Epithelioma as a complication was observed in only 2 cases. Sixty per cent showed radiologic signs of tuberculosis and 80 per cent responded to the intradermoreaction with tuberculin. Tuberculosis is not the only cause, for the disease is systemic and the result of several factors. Treatment with chaulmoogra oil and bismuth salts gives satisfactory results. Three hundred and eighty-four references and numerous illustrations are appended.

Cytology and Cell Physiology Edited by Geoffrey Bourne. Cloth. Price, \$6. Pp. 296, with illustrations. New York & London: Oxford University Press, 1942.

The mere existence of this book is worthy of comment, since it was written in Great Britain during the heaviest air raids, some of it actually in air raid shelters. The editor states in his preface that probably some part of every chapter was written

within the sound of falling bombs. That a composite work by nine authors could be brought together and attractively published under such difficulties is another evidence of British energy and tenacity.

Its eight chapters constitute a review by a group of workers, most of them relatively young, of selected aspects of cytology and of certain fields of biochemistry and biophysics which have something to contribute to our knowledge of cell structure and cell physiology. Its aim is to bring together the work in these fields in the hope of joint progress in the future. The authors assume that the reader has a general knowledge of cytology and they cover only the work of the past few years. On the one hand the book touches on morphology, including microscopic technique, the cell organelles such as mitochondria and the Golgi apparatus, the nucleus and the chromosomes, on the other hand it discusses the physical characteristics of cytoplasm, surface phenomena, the new monolayer technique, the study of mineral constituents by microincineration and microchemistry, and enzyme systems.

These chapters are all carefully and clearly written, and they assemble information which has not been brought together elsewhere, but they leave us all too well aware that cytology can not yet be greatly clarified by considerations drawn from physics and chemistry. Microscopic observation has added very little in the past few years to what it long since taught us about protoplasm, while it is as yet too early to get more than a glimpse of the light which is to come from physical chemistry. Only here and there in this book, as for example in the chapter on the monolayer technique as applied to substances of biologic importance, do we get a tantalizing glimpse of the future science of cytology. This disappointment is partly inherent in the subject matter, but it must be added that the book itself lacks the master's touch that might give unity and direction to the few real gems of recent years.

Its usefulness is therefore limited, for it is not intended to be a textbook for new students of cytology, nor does it go far enough to serve the advanced worker. For the graduate student beginning his research in physiologic cytology, and for the histologist or pathologist who needs to brush up on the recent work, it contains much information and a comprehensive bibliography.

Heart Disease Is Curable By Peter J. Steiner, M.D. Cloth. Price, \$1.98. Pp. 193. Garden City, New York: Doubleday, Doran and Company, Inc., 1943.

The chief objection to this book is its title. In the opening chapter the author states that by "curable" he means that which may be made much better and not necessarily all better. Yet one cannot escape the conviction that the title is designed to stimulate the interest of the prospective purchaser. The author writes in language which the layman can understand concerning the various types of heart disease and their management. He emphasizes the importance of early symptoms and urges prompt medical attention in order that a proper regimen may be planned for the individual case. He also offers sound advice to the person who has the fear of heart disease rather than the disease itself. On the whole the book should prove helpful to the person who wishes to know something of the nature of heart disease and of the way to live with it.

Laboratory Manual on Fundamental Principles of Bacteriology By A. J. Sille. B.S., M.S., Ph.D., Associate Professor of Bacteriology, University of California, Los Angeles. Second edition. Cloth. Price, \$1.50. Pp. 184. New York & London: McGraw-Hill Book Company, 1943.

This manual was written especially to accompany the author's textbook "Fundamental Principles of Bacteriology." Material is included to meet the requirements of beginning students in bacteriology and for students in various divisions of agriculture as well as forestry, home economics, pharmacy, dentistry, sanitary engineering, chemistry, physical education, hygiene and public health. The experiments are arranged for a one semester course of six laboratory hours a week. A brief introduction explains the purpose and value of each exercise. At the end of each exercise, questions are given. This manual may be recommended to students in elementary courses in which the author's textbook is used.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ROCKY MOUNTAIN SPOTTED FEVER AND DISTRIBUTION OF TICKS

To the Editor—I should like to have detailed information concerning available preparations for prophylaxis against tick bite fever. I am not familiar with the species of ticks in this section. I have a patient whose country place is heavily infested with ticks. There are two children in the family and the mother is anxious to have them immunized. Any information you have concerning sprays to be used on the lawn, pets and so on will be appreciated.

M D Arkansas

ANSWER—There are at present two preparations available for immunization against Rocky Mountain spotted fever (tick bite fever). The first of these is the vaccine prepared from infected tick tissues treated with phenol and solution of formaldehyde. This is the so-called Spencer-Parker vaccine that has been prepared by the United States Public Health Service for some fifteen years. It is distributed without charge to physicians in areas where the disease is endemic. It can be obtained by a physician on request addressed to either the Rocky Mountain Laboratory, Hamilton, Mont. or the National Institute of Health, Bethesda, Md.

The second vaccine that is available for the immunization against Rocky Mountain spotted fever is that prepared from the infected yolk sacs of fertile hens' eggs. This vaccine has been in use in certain sections of the United States for the past several years. The yolk sac vaccine is less difficult to prepare and may eventually supplant the tick tissue type material. One of the biologic laboratories has been licensed to manufacture the egg vaccine but because of press of war work it is doubted that the material is commercially available at this time. However, until such time as it is commercially available, this type of vaccine can also be obtained from the Public Health Service either at the laboratories in Hamilton, Mont., or in Bethesda, Md. In certain states where the attack rates warrant such procedure an adequate supply for each year has been sent to the state health department early in the tick season. In areas where the disease is commonly seen therefore vaccine can be obtained, without charge, directly through the state health officer.

Up until recently *Dermacentor andersoni* (the common wood tick of the Rocky Mountains) and *Dermacentor variabilis* (the brown dog tick, eastern wood tick) were the only two ticks implicated in the transmission of spotted fever to human beings. During the past few months Parker and his associates have found another possible vector, *Amblyomma americanum* (lone star tick) commonly found throughout the southern and southwestern part of the United States. The distribution of these three ticks is such that for practical purposes one can assume that there are few if any areas of the United States that are free from an effective vector of the disease.

There has not been described a tick repellent or spray that is very effective. The U. S. Department of Agriculture has recommended derris powder to use on dogs either as a powder or as a dip. The derris powder should have a rotenone content of at least 2 per cent. An effective dip or wash can be made by dissolving an ounce of soap in a gallon of water and adding 2 to 4 ounces of derris powder containing 4 per cent rotenone. The powder should be applied to the dog at intervals of two to three days and the wash or dip at intervals of five to six days. The handling of dogs or other animals infested with ticks is hazardous and should be done with care. Tweezers should be used to remove ticks if possible; otherwise the fingers should be protected with a piece of cloth or paper. The hands should be carefully washed afterward with soap and water and rinsed in alcohol to sterilize following soiling with contents of any possibly infected ticks.

OPERATION FOR CATARACT

To the Editor—What is the percentage of successful operations for cataract?

Israel Herman M.D. Paterson N. J.

ANSWER—The answer depends on the character of the cataract, on the patient and on the operator. The average skilled operator produces useful vision in about 90 to 98 per cent of operations for uncomplicated senile cataract provided there are no other ocular abnormalities.

EFFECT ON FETUS OF QUINIDINE ADMINISTERED IN PREGNANCY FOR PAROXYSMAL TACHYCARDIA

To the Editor—A white woman aged 38, five months pregnant, has had recurrent attacks of auricular fibrillation for the last three or four years. No organic heart disease is demonstrable. The electrocardiographic tracing is normal in all four leads except during the attacks of paroxysmal auricular fibrillation and then the tracing corroborates this rhythmic disturbance. There is no thyroid struma and there are no nodules palpable. The basal metabolic rate is minus 8 and the blood cholesterol is 333 mg. normal 140 to 170 mg. Her blood pressure is 110/80. There are no demonstrable foci of infection. The attacks respond promptly to 15 to 20 grains (1 to 1.3 Gm.) of quinidine sulfate. Is quinidine sulfate detrimental to the acoustic nerves of the fetus? Does this constitute a contraindication? If it does, what medication is suggested for the attacks or in the interim? Discussion of the etiology, not only in regard to the thyroid but as to the other possible causes will be appreciated.

John F. Rainey M.D., Anderson, S. C.

ANSWER—There are no published reports on the effect of quinidine sulfate on the acoustic nerves of the fetus. However, quinine, another of the cinchona bark derivatives, when given in large doses, may cause functional impairment of the eighth nerve (Goodman, Louis, and Gilman, Alfred, *The Pharmacological Basis of Therapeutics*, New York, Macmillan Company, 1940, p. 91). Correspondingly large doses administered to pregnant experimental animals have been shown to produce degenerative changes in the myelin sheath of the acoustic nerve (Covell, W. P., *A Cytologic Study of the Effects of Drugs on the Cochlea*, *Arch. Otolaryng.* 23:633 [June] 1936; West, R. A., *The Effect of Quinine on the Auditory Nerve*, *Am. J. Obst. & Gynec.* 36:241 [Aug.] 1938).

Although quinidine in large doses as well as quinine may give rise to symptoms of cinchonism, doses as small as 15 to 20 grains of quinidine sulfate should not be harmful to the patient or fetus (unless there is an idiosyncrasy to the drug). There is therefore no reason for discontinuing the quinidine therapy.

Alternative treatment would be full digitalization in the interim between attacks (1½ grains [0.1 Gm.] three times a day for a week, depending on the reaction of the patient) with subsequent maintenance dosage varying with the needs of the patient (1½ grains daily).

Paroxysmal auricular fibrillation occurs frequently in association with hypertensive, arteriosclerotic and rheumatic heart disease before the fibrillation becomes chronic. Its relationship to thyrotoxicosis is well established. When organic heart disease is not present, many varied conditions have been suggested as contributory and precipitating factors. These have been classified by Organ, Wolff and White (*Uncomplicated Auricular Fibrillation and Auricular Flutter*, *Arch. Int. Med.* 57:493 [March] 1936) into (1) toxic factors including (a) infections (such as pneumonia), (b) drugs (epinephrine, digitalis, ether), (c) other chemical agents (carbon monoxide, alcohol, tobacco), (2) traumatic factors, (3) reflex mechanisms (secondary to appendicitis, gallbladder colic), (4) exertion, (5) neurogenic influences including mental excitement and emotional disturbance.

When organic heart disease is excluded, paroxysmal auricular fibrillation is as benign as paroxysmal tachycardia of supraventricular origin.

Since nervous excitement and emotional strain have been frequently cited as precipitating attacks of paroxysmal auricular fibrillation in susceptible individuals, reassurance of this patient, alleviation of her fears or the emotional strain aroused by the pregnant state are important adjuncts to therapy and together with quinidine or digitalis prophylactically, should reduce the frequency of the attacks.

SUBCUTANEOUS EMPHYSEMA AFTER DELIVERY

To the Editor—I have a patient who two days after delivery showed rather pronounced cervical and upper thoracic emphysema of the subcutaneous tissues. X-ray examination showed that the emphysema extended into the mediastinum but there was no evidence of pneumothorax. Delivery was spontaneous and uncomplicated except for the fact that the patient's response to anesthesia (gas oxygen-ether) was bad, being accompanied by much retching, vomiting and coughing. I should like you to explain the mechanism in this case.

Captain M. C. A. U. S.

ANSWER—Emphysema of the cervical and upper thoracic, as well as the mediastinal subcutaneous tissues, usually arises as a result of trauma to the trachea or esophageal passages. There is rarely evidence of pneumothorax in these cases. This trauma may be so trivial that a careful examination may fail to reveal it. In the resuscitation of the newborn, similar emphysema may develop without gross evidence of the trauma in the trachea or the esophagus at necropsy. It is possible that the retching and coughing associated with the anesthetic produced the trauma which provided the avenues for the escape of the gas into the subcutaneous tissues.

not one of them was a good source of either virus or immunizing antigen for these two viruses. A study of the titers developed in several stocks of available mice indicated no significant differences. In general the highest titers were most regularly obtained in the brains of intracerebrally inoculated 2 to 3 week old mice. As regards the utilization of susceptible hosts of larger size, it was found that while the Syrian hamsters yielded titers of virus that were almost but not quite, as high as those achieved in mice, their brains were only about twice as large as those of mice. The horse was not investigated as a source of St. Louis encephalitis virus because of the very low titer of virus developed in its brain. Newborn lambs and young sheep were studied as a possible source of the Japanese B virus, but their brains were found to contain too small an amount of virus.

(b) *Selection of Strain of Virus*—The strain of virus used was found to be an important factor. Of the three strains of St. Louis encephalitis virus tested, the No. 3 isolated in 1933 (obtained from Dr. L. I. Webster), the 'Hubbard' isolated in 1937 (obtained from Dr. Margaret Smith) and the "Taylor" isolated in 1937 (obtained from Dr. Carl G. Hartford), the Webster No. 3 yielded four to six times as much virus as the other two strains in simultaneous tests on mice of the same stock and age. In tests for immunogenic potency of the inactivated viruses the "Taylor" strain was definitely inferior to the other two. Of the two strains of Japanese B encephalitis virus tested, the No. 12 obtained from Dr. L. I. Webster and the Nakayama, obtained from Dr. Margaret Smith, the Nakayama strain regularly yielded at least ten times as much virus as the Webster No. 12 and on complete inactivation of the virus the "Nakayama" strain yielded an adequate immunogenic vaccine while the other strain did not. Thus the Webster No. 3 strain of St. Louis encephalitis virus and the "Nakayama" strain of Japanese B encephalitis virus were chosen for the vaccines.

(c) *Effect of Centrifugation*—The effect of centrifuging the mouse brain suspensions on the virus content and antigenicity of the supernatant liquids was studied extensively with both viruses. In the case of the Japanese B virus repeated tests failed to show any difference in virus titer between the uncentrifuged suspension and the clear supernatant liquid obtained after spinning this suspension on a Swedish angle centrifuge at 3 000 revolutions per minute for thirty minutes. The uncentrifuged suspension nevertheless yielded a more potent vaccine. With the Webster No. 3 strain of St. Louis virus the uncentrifuged suspensions regularly yielded higher titers (three to ten times higher) than even the opalescent supernatant liquids obtained after horizontal centrifugation at about 2 000 revolutions per minute for ten minutes. Here again the results of a number of tests indicated that the uncentrifuged suspensions yielded the more potent vaccines. The intracerebral LD_{50} titers of four St. Louis encephalitis uncentrifuged vaccines were $10^{-8.2}$, $10^{-8.6}$, $10^{-8.3}$ and $10^{-8.6}$. The titers of the Japanese B vaccines were usually of the same order of magnitude.

CHOICE OF METHOD OF VIRUS INACTIVATION

Solution of formaldehyde, ultraviolet radiation, ozone and "soft" x-rays were studied for their capacity to inactivate these viruses with the least loss of antigenicity. The effect of different concentrations of solution of

formaldehyde acting at different temperatures was investigated. It was found (a) that both too little and too much could yield poorer antigens and (b) that, while inactivation entirely in the cold (2 to 6 C) was capable of yielding a satisfactory vaccine, exposure of the same material to room temperatures of 23 to 25 C for two days resulted in a practically worthless vaccine. The results of many tests indicated that a final concentration of 0.2 per cent solution of formaldehyde acting at 2 to 3 C yielded the best preparations.

The effect of ultraviolet irradiation (Hanovia Chemical Company spiral quartz-mercury resonance lamp, said to emit about 85 per cent of the energy in the line of 2 537 angstrom units) was studied on relatively clear angle centrifuged as well as on somewhat opalescent horizontal centrifuged preparations. In the case of St. Louis encephalitis virus the minimal amount of radiation required for complete inactivation of the virus resulted in the complete or almost complete destruction of its immunogenic capacity. Simultaneous tests on aliquot portions of the same St. Louis virus preparation indicated that treating with formaldehyde according to the procedure described yielded a satisfactory vaccine while ultraviolet irradiation did not. Ultraviolet irradiation did not destroy the antigenicity of the Japanese B virus but in comparative tests the vaccines produced by this method were no more potent and were often less potent than those produced by suitable treatment with formaldehyde. There was a wide range of safety in irradiation of the Japanese B virus since preparations which because of insufficient exposure, still contained small amounts of infective virus were no better as vaccines than preparations which had been irradiated for twenty to forty minutes more than was necessary to inactivate the virus.

The effect of ozone and of "soft" (long wavelength) x-rays was studied in collaboration with Dr. Harold J. Keisten of the Department of Physics of the University of Cincinnati in the hope of finding a chemical or physical method that would inactivate the virus and yield more potent vaccines than those obtained with the aid of solution of formaldehyde. Ozone gas, freshly prepared by the passage of a strong electric current through oxygen and bubbled into clear, angle centrifuged virus preparations required more than one and less than two hours for complete inactivation of the virus, and the antigenicity was apparently destroyed along with the virus. With the "soft" x-rays there was no evidence of inactivation after exposure for four hours unless a very thin layer of about 1 to 2 mm of the clear, angle centrifuged virus was used. Since no more than 1 cc could be handled at one time and the relatively large amounts required for assay and study could not be treated without great difficulty this approach was abandoned as impractical at the present time.

QUANTITATIVE ASSAY OF THE VACCINES

The desirability of testing the extent of resistance produced by the vaccines within one week and under conditions which may be considered comparable to those obtaining in nature necessitated devising a method of assay based on infection by the subcutaneous, intraperitoneal or intravenous routes. Studies on both the St. Louis and Japanese B viruses have revealed that resistance to infection by peripheral routes, other than the intranasal, develops spontaneously as mice grow older. This spontaneous maturation resistance was found to develop at different times and to different extents for the subcutaneous (or intramuscular),

intraperitoneal and intravenous routes. Considerable susceptibility to infection by the intraperitoneal and intravenous routes remains when resistance to subcutaneous or intramuscular infection is practically complete, and when the peak of spontaneous resistance is attained there is greater susceptibility to infection by the intravenous than by the intraperitoneal route. However, because of the greater ease of inoculating large numbers of mice by the intraperitoneal route and because a suitable age period was found during which it was possible to carry out quantitative titrations of susceptibility, this route of infection was chosen for testing the resistance produced by the various vaccines. This method of assay was also facilitated, if not actually made possible, by the use of virus suspensions of the highest possible intracerebral titers. Because there were occasional carriers of pathogenic enteric organisms among the stock of mice we used, the virus-containing brain suspensions were occasionally contaminated and would spoil a whole test. To have a source of known bacteria free virus of the highest possible titer it was necessary to resort to a special method of preserving the virus. The brains of infected 2 to 3 week old mice were ground to a 10 per cent suspension with undiluted rabbit serum which had been inactivated at 56 C. The uncentrifuged suspension, distributed in rubber capped vaccine bottles, was quickly frozen in a mixture of carbon dioxide and alcohol and stored in a box containing solidified carbon dioxide. On thawing and centrifuging these preparations at any time during a period of at least two months we obtained virus suspensions with intracerebral titers as high as or higher than those of fresh virus. We also found that some batches of broth could be highly toxic for the smaller concentrations of virus and therefore used 10 per cent rabbit serum in saline solution for the preparation of all dilutions.

In general two methods of assay, based on resistance to infection by the intraperitoneal route, were used: (1) a so-called "complete assay" in which 3 to 4 week old mice received graded doses of vaccine and one week later were tested for immunity with various doses of virus, and (2) a so-called "screening test" requiring a smaller number of animals, in which 8 to 12 week old virgin female mice received various doses of vaccine and one week later were tested for immunity with a single large dose of virus representing as a rule 10^8 intracerebral and 10 to 20 intraperitoneal LD₅₀ doses. In the case of St. Louis encephalitis virus the best results were obtained when, at the time of vaccination, the mice were close to 4 weeks old and were selected individually to weigh not less than 11 nor more than 13 Gm (this weight may be different for other stocks of mice). Mice younger than 3 weeks of age were not used because they did not develop as good an immunity in one week, while mice older than 4 weeks were not used for the "complete assay" because at the time they were tested for resistance one week later the intraperitoneal titer of the virus was usually not high enough in the unvaccinated controls. Using virus suspensions with intracerebral titers of $10^{8.0}$ or more, the intraperitoneal titers in the unvaccinated controls ranged between about 1/750 to 1/1,500. The intraperitoneal titrations were therefore carried out with fourfold dilutions of the St. Louis virus, and with mice selected by age and weight as described it was possible to obtain regularly graded results ranging between 100 per cent mortality and 100 per cent survival.

The Japanese B virus behaved differently in that it was pathogenic for approximately 4 week old mice in much smaller amounts by the intraperitoneal route. Thus on some occasions a single intracerebral LD₅₀ dose injected intraperitoneally produced fatal infection in 30 per cent of the mice. The best results were obtained when the mice selected for vaccination were 21 to 24 days old and for the stock we used weighed not less than 9 Gm nor more than 11 Gm. For the most part, however, mice of this age and size, when tested one week later, represent a population of uneven susceptibility (a situation which is undoubtedly also encountered in nature, in man, and other hosts), i.e., the majority are still susceptible to relatively minute amounts of virus given intraperitoneally while others may already be resistant to as much as 10^5 or 10^6 times that amount. For this reason it proved necessary to use about 10 mice for each dilution of virus in the intraperitoneal test and to inoculate the controls with tenfold dilutions extending to 10^{-8} or 10^{-10} and the vaccinated mice with 10^{-1} to 10^{-7} . This high susceptibility of a large proportion of mice to intraperitoneal injection of Japanese B virus disappears by the sixth week of life, and between the sixth and eighth weeks of life the resistance to large amounts of this virus may be greater than to similar amounts of the St. Louis virus. For this reason the simpler "screening" test with older mice, which has proved most valuable with the St. Louis virus, has frequently given poor results with the Japanese B virus. Because in several tests on large numbers of mice which were 4 to 7 months old the intraperitoneal injection of approximately 10^8 intracerebral LD₅₀ doses resulted in fatal infections in 95 per cent of the mice, the possibility that mice of this age may perhaps be more susceptible than those which are approximately 2 months old must still be investigated.

EFFECTS OF ST. LOUIS ENCEPHALITIS VACCINE IN MICE

Horizontal or angle centrifuged as well as uncentrifuged 10 per cent mouse brain suspensions inactivated by 0.2 per cent solution of formaldehyde at 2 to 6 C were capable of giving rise to significant resistance against infection by the intraperitoneal route within one week after the intraperitoneal injection of a single dose of vaccine. The results presented in table 1 show (a) the degree of resistance produced by a single dose of St. Louis vaccine, (b) that resistance is apparent after subcutaneous as well as after intraperitoneal vaccination although the latter route is more effective and (c) that the nonspecific effect of the intraperitoneal injection of brain tissue is negligible since the administration of the Japanese B vaccine by this route produced no significant resistance to infection with the St. Louis virus. The specificity of the induced resistance was further established when it was shown in simultaneous tests that the same Japanese B vaccine produced effective resistance against the Japanese B virus while the St. Louis vaccine did not. Additional evidence that the immunity produced by the St. Louis vaccine was systemic rather than local was obtained when it was found that mice developed resistance to infection by the intravenous route after introduction of the vaccine into the peritoneal cavity.

The results of many quantitative tests with single doses of vaccine indicated that while it was possible to establish significant resistance in one week even with amounts of vaccine as small as 0.03 cc, the develop-

ment of immunity was not uniform in all the animals, since a certain number invariably remained susceptible to infection. While it is a well established fact that multiple doses of noninfective vaccines produce a stronger immunity, it was necessary to determine how much could be accomplished by this means within a period of a week. A number of preliminary tests indicated that the immunity engendered in one week by a given small dose of vaccine was decidedly increased

zontal centrifuged vaccine prepared from the same lot of mouse brains. In this particular assay the total dose of 0.003 cc of the uncentrifuged vaccine still induced a significant immune response in that the mice were able to resist eighteen times as much virus as the unvaccinated controls. The results of many tests have indicated that by this method of assay the best vaccines we have been able to prepare have had a minimal immunogenic dose of 0.01 to 0.003 cc.

TABLE 1—*St. Louis Encephalitis Virus*

1 Influence of route of administration of vaccine. 2 Effect of Japanese encephalitis vaccine against infection with *St. Louis encephalitis virus*. Resistance of mice to infection by intraperitoneal route one week after vaccination with single dose.

Vaccine	Route of Administration	Dose, Cc	0.3 Cc. of Indicated Dilution of <i>St. Louis Virus</i> Injected Intraperitoneally						LD ₅₀ Titer*	Immunity Index†
			10	10	100	640	2,560	10,240		
Unvaccinated controls			10/10	10/10	10/10	4/8	1/8	0/8	750 †	
<i>St. Louis</i>	Intraperitoneally	0.3	10/10	9/10	5/10	6/10	2/8	2/10	610 ‡	
	Subcutaneously	0.3	7/10	1/10	1/10	0/10			10	64
<i>Japan. B.</i>	Intraperitoneally	0.3	4/10	7/10	7/10	1/10	2/9		28	23
									270	2

The mice used in this test were 1 to 4 weeks old at the time of vaccination.

* LD₅₀ titer, the dilution of virus at which the 50 per cent mortality end point is calculated to occur by the method of Reed and Muench.

† Non factor number divided denominator = number inoculated.

‡ The intracerebral titer of this virus was $10^{2.5}$ LD₅₀ cc.

§ *St. Louis* vaccine, Series C, horizontal centrifuged 0.2 per cent solution of formaldehyde $10^{7.5}$ LD₅₀ doses per 0.3 cc before inactivation, prepared 1/7/42, used 1/11/42.

¶ *Japan. B.* vaccine, Nakayama I, horizontal centrifuged 0.2 per cent solution of formaldehyde $10^{3.2}$ LD₅₀ doses per 0.3 cc before inactivation, prepared 1/6/42, used 1/11/42.

† Immunity Index = $\frac{\text{LD}_{50} \text{ titer of virus in unvaccinated mice}}{\text{LD}_{50} \text{ titer of virus in vaccinated mice}}$

LD₅₀ titer of virus in unvaccinated mice

LD₅₀ titer of virus in vaccinated mice

TABLE 2—*Immunogenic Effect of Formaldehyde Treated St. Louis Encephalitis Mouse Brain Vaccines One Week After Inoculation*
Resistance of Mice to Infection by Intraperitoneal Route

Vaccine	Total Dose, Cc	Mode of Administration*	Dilution of Virus Injected Intraperitoneally One Week After First Dose						LD ₅₀ Titer	Immunity Index
			10	10	100	640	2,560	10,240		
Unvaccinated controls			10/10	10/10	10/10	4/8	1/8	0/8	750 †	
Series N, horizontal centrifuged, 0.2% solution of formaldehyde	0.3	0.15 × 2	0/9	0/10	0/10	0/8	0/8	0/8	5—	150+
10 ^{7.5} LD ₅₀ doses/0.3 cc before inactivation, fluid prepared 9/25/42, used 10/6/42	0.03	0.015 × 2	5/10	3/10	0/8	0/8	0/8	0/8	14	50
		0.03 × 1	9/10	3/9	6/9	0/8	0/8		64	13
Unvaccinated controls			10/10	10/10	9/10	7/10	4/10	2/10	1,660 †	
Series P, horizontal centrifuged, 0.2% solution of formaldehyde	0.3	0.15 × 2	1/10	1/9	0/10	0/9			6—	275+
10 ^{7.5} LD ₅₀ doses/0.3 cc before inactivation, fluid prepared 10/30/42, used 11/10/42	0.03	0.015 × 2	9/10	2/10	2/10	0/10	0/9		20	83
	0.01	0.005 × 2	9/10	2/10	1/10	1/10	1/10		25	65
									28	69
Series P, uncentrifuged, 0.2% solution of formaldehyde	0.3	0.15 × 2	1/9	0/10	1/10	0/10	1/10		6—	275+
10 ^{7.5} LD ₅₀ doses/0.3 cc before inactivation, fluid prepared 10/30/42, used 11/10/42	0.03	0.015 × 2	3/8	0/9	1/10	0/5	0/9		15	110
	0.01	0.005 × 2	2/10	1/10	1/8	0/10	0/10		9—	185+
	0.003	0.0015 × 2	10/10	5/10	5/10	0/10	1/6		7—	235+
									90	18

All the mice used in these tests were close to 4 weeks old and each was chosen by weight, with few exceptions not less than 11 Gm nor more than 13 Gm.

* The second dose was given 3 days after the first in each instance.

† The second dose was given 3 days after the first in each instance.

‡ The intracerebral titer of this virus suspension was $10^{2.5}$ LD₅₀ cc.

§ The intracerebral titer of this virus suspension was $10^{2.5}$ LD₅₀ cc.

¶ The intracerebral titer of this virus suspension was $10^{2.5}$ LD₅₀ cc.

when the total amount was administered in two equal doses three days apart. The results presented in table 2 show not only that, by administering the total amount of vaccine in two doses in this manner, it is possible to produce a solid immunity against infection with the largest test doses by the intraperitoneal route, but also that the same amount of vaccine can be about thirty times more effective within one week when it is administered in two doses rather than in a single dose. Thus, in the case of two types of vaccine in series P, 0.01 cc given in two doses produced as much immunity as 0.3 cc administered as a single dose. The data in table 2, furthermore, indicate the better protective capacity of the uncentrifuged as compared with the hori-

zontal centrifuged vaccine prepared from the same lot of mouse brains. In this particular assay the total dose of 0.003 cc of the uncentrifuged vaccine still induced a significant immune response in that the mice were able to resist eighteen times as much virus as the unvaccinated controls. The results of many tests have indicated that by this method of assay the best vaccines we have been able to prepare have had a minimal immunogenic dose of 0.01 to 0.003 cc.

to give rise to solid resistance against infection by the intracerebral route, reported in the early years after its isolation, has been lost on passage. Tests which we have carried out with the "Hubbard" and "Taylor" strains of St. Louis virus which were isolated in 1937 indicated that they also gave rise to poor or irregular intracerebral resistance after a single injection of live virus.

residual solution of formaldehyde sufficient ammonium hydroxide was added to the vaccines to bring the p_H to about 8.2, their immunogenic potency diminished so rapidly on storage in the refrigerator that at the end of one month the vaccines were practically worthless. Subsequent studies showed that horizontal centrifuged or uncentrifuged vaccines containing 0.2 per cent solution of formaldehyde retained their original potency as

TABLE 3—Resistance of Mice to Intracerebral Inoculation of St. Louis Virus After Administration of Uncentrifuged Formaldehyde Treated Vaccines

Vaccine	Dosage		0.03 Cc of Indicated Dilution of Virus Injected Intracerebrally					LD ₅₀ Titer Log of Dilution	Immunity Index
	Total Cc	Individual	10 ⁻¹	10 ⁻²	10 ⁻³	10 ⁻⁴	10 ⁻⁵		
Inactivated controls								7.6	
R 0.2% solution of formaldehyde	0.5	0.2 x 4	5/10	8/3	6/10	5/10	0/9	5.5 - 9	125 + 9
R 0.4% solution of formaldehyde	1.0	0.2 x 5	5/9	4/10	1/11	1/10		5.4 - 9	169 - 9

The mice used in this test were approximately 3 weeks old virgin females at the time of vaccination. The first 3 doses of vaccine were given at 45 hour intervals and the others after a rest period of 4 days. The intracerebral test for resistance was carried out 3 weeks after the first dose of vaccine.

TABLE 4—Stability of Various Preparations of St. Louis Encephalitis Vaccine Under Various Conditions of Storage

Vaccine		Test for Resistance										Minimal Immunogenic Dose	
		Storage		Date	Intra cerebral LD ₅₀ Doses in Intra peritoneal Test Dose	Mortality of Unvaccinated Mice Inoculated 0.3 Cc 10 ⁻¹ Virus Intra peritoneally	Mortality of Vaccinated Mice Inoculated with 0.3 Cc 10 ⁻¹ Virus Intraperitoneally				Estimated by Inoculation	Estimated by Reed Muench Formula	
							Total Dose (Cc) of Vaccine *						
Series	Type of Preparation	Temperature C	Days			0.3	0.03	0.01	0.003				
K horizontal centrifuged 0.2% solution of formaldehyde 10 ⁻¹ LD ₅₀ doses per 0.3 cc before inactivation prepared 8/13/42	Fluid stored without neutralization of formaldehyde	2-3	8	8/25/42	10 ^{3.4}	10/10	1/5	3/10		<0.03	0.016		
	formaldehyde	2-3	32	9/21/42	10 ^{3.2}	11/12	0/11	0/10	9/10	<0.03	0.010		
	formaldehyde	2-3	63	10/27/42	10 ^{3.2}	11/12	0/12	1/12	4/12	<0.01	0.008		
	formaldehyde neutralized with NaHSO ₃ just before administration	2-3	123	12/21/42	10 ^{3.2}	11/11	0/11	5/11	4/11	<0.01	0.010		
		2-3	140	1/7/43	10 ^{3.0}	11/11	0/10	2/11	1/11	<0.01	0.007		
	Fluid formaldehyde neutralized with NaHSO ₃ on 8/17/42	2-3	32	9/21/42	10 ^{3.2}	11/12	1/10	5/9		<0.3	0.043		
		2-3	63	10/27/42	10 ^{3.2}	11/12	2/11	10/12		0.3	0.037		
		2-3	123	12/21/42	10 ^{3.2}	11/11	2/11	10/11		0.3	0.109		
	Lyophilized formaldehyde neutralized with NaHSO ₃ and adjusted to about 7.3 phenylmercuric borate added to 1:10,000 and lyophilized 8/17/42	2-3	18	9/21/42	10 ^{3.2}	11/12	0/9	2/10		<0.03	0.013		
	+	10											
		37.5	18	10/27/42	10 ^{3.2}	11/12	1/12	9/12	9/11	0.3	0.075		
		+	46										
		37.5	119	12/21/42	10 ^{3.2}	11/11	2/10	6/11	5/11	11/11	0.01	0.002	
	H angle centrifuged 0.2% solution of formaldehyde 10 ⁻¹ LD ₅₀ doses per 0.3 cc prepared 7/30/42	Lyophilized by foregoing procedure 8/2/42	2-3	43	9/21/42	10 ^{3.2}	11/12	0/11	1/10		<0.03	0.011	
2-3			124	12/21/42	10 ^{3.2}	11/11	0/11	4/11	9/10	10/10	0.03	0.022	
N horizontal centrifuged 0.2% solution of formaldehyde 10 ⁻¹ LD ₅₀ doses per 0.3 cc before inactivation prepared 9/23/42	Fluid	2-3	11	10/13/42	10 ^{3.2}	10/10	0/10	7/10	5/10	0.03	0.023		
	Lyophilized by foregoing procedure 10/3/42	2-3	0	10/13/42	10 ^{3.2}	10/10	0/10	1/10	6/10	0.03	0.013		
		2-3	33	11/18/42	10 ^{3.2}	10/11	0/3	3/10		0.03	0.015		
		2-3	23	11/18/42	10 ^{3.2}	10/11	0/10	4/3		0.03	0.004		
		+	7										
			37.5	86	1/7/43	10 ^{3.0}	11/11	0/10	5/11	8/11	10/10	0.03	0.001
	2-3												
N uncentrifuged 0.2% solution of formaldehyde 10 ¹ LD ₅₀ doses per 0.3 cc prepared 9/10/42	Fluid stored without neutralization of formaldehyde	2-3	11	10/13/42	10 ^{3.2}	10/10	0/11	0/11	0/11	<0.01	0.003		
		2-3	25	10/27/42	10 ^{3.2}	11/12	0/12	1/12	9/12	<0.01	0.003		
		2-3	97	1/7/43	10 ^{3.0}	11/11	0/11	0/10	2/11	11/11	<0.01	0.003	

* Administered in two doses as indicated in table 2.

The formaldehyde treated noninfective vaccines were also found to give rise to neutralizing antibodies in mice. The neutralizing antibody response against the St. Louis virus in mice even when living virus is used is of a low order and irregular, except after multiple doses and may not be demonstrable in mice which are actively resistant to infection.

STABILITY OF ST. LOUIS ENCEPHALITIS VACCINES

It was found early during the course of this work that when to reduce the irritating properties of the

determined by quantitative tests for five months or longer when they were stored in a refrigerator (2 to 3 C) in the fluid state without neutralization or the formaldehyde. That a certain amount of residual formaldehyde is necessary for the preservation of the potency of these vaccines was further proved by the fact that complete neutralization of the formaldehyde by means of sodium bisulfite without adjusting the p_H to neutrality or slight alkalinity also resulted in a definite drop in the immunogenic potency of the vaccine when it was stored in the fluid state. Because the untreated and unneutralized formaldehydized vaccine gives rise

to pain and local reactions on inoculation in human beings, and because it could not be expected to retain its stability unless it was shipped under refrigerated conditions, an attempt was made to obtain a more suitable preparation by lyophilization.

When formaldehydized mouse brain suspensions such as we used, with or without added ammonium hydroxide, are dried from the frozen state they become denatured to such an extent that rehydration is practically impossible. We are indebted to Mr. Willard G. Webster of Sharp and Dohme, Inc., for the suggestion that this denaturation can be avoided when sodium bisulfite is used for neutralization of the formaldehyde. Tests of various preparations on human volunteers indicated that in order to eliminate the pain and local reactions it was necessary to adjust the pH to about 7.3 as well as to neutralize the formaldehyde. The final procedure adopted for lyophilization of the uncentrifuged vaccine was therefore as follows:

1. After the infectivity of the virus has been destroyed and the intracerebral titration has indicated the presence of a

However, it is noteworthy that storage at 37.5 C and high humidity for a period of seven to ten days did not appear to diminish significantly the potency of such lyophilized vaccines, although longer periods of storage under these conditions were definitely detrimental. The indications are, however, that storage of the lyophilized vaccines under refrigerated conditions should preserve their potency for long periods of time.

Most of the quantitative tests on the stability of different types of St. Louis vaccines were carried out by the simpler "screening" method of assay, but basic results were confirmed by the more complete assays in younger mice. The data presented in table 4 show results obtained in the "screening" tests on several vaccines. It may be seen that with only occasional exceptions it is possible to obtain cleancut endpoints and reproducible values for the minimal immunogenic dose. The potency of a St. Louis encephalitis vaccine may be checked conveniently by this simpler method at frequent intervals, and a satisfactory vaccine should have a minimal immunogenic dose which is not less than 0.01 cc.

TABLE 5—Japanese B Encephalitis Virus, Nakayama Strain

Effect of different methods of inactivation on immunogenic capacity of angle centrifuged mouse brain virus. Resistance to intraperitoneal infection induced by a single dose in one week.

Vaccine		Test for Resistance, Dilution of Virus Injected							LD ₅₀ Titer Log of Dilution	Immunity Index
Preparation	Dose, Cc	10 ⁻¹	10 ⁻²	10 ⁻³	10 ⁻⁴	10 ⁻⁵	10 ⁻⁶	10 ⁻⁷		
Uninactivated controls		10/10	8/10	9/10	8/10	5/10	9/10	6/10	6.3+	
0.2% solution of formaldehyde	0.1	7/10	3/10	0/8	1/5	1/3			1.5	60,000+
5.0 C prepared 6/13/42 NaHSO ₃	0.03	7/5	6/3	1/9	5/9	1/9			3.1	1,000+
added 6/25/42 used 7/1/42	0.003	8/3	9/3	2/9	1/9	2/5			3.0	2,000+
As above lyophilized 6/20/42	0.1	2/1	6/9	1/9	0/9	1/9			1.7	40,000+
to 6/25/42 used 7/1/42	0.03	6/10	5/9	0/9	1/9	1/9			1.9	25,000+
Ultraviolet 10 min * 6/23/42	0.1	7/3	8/9	3/5	2/5	2/8			2.9	2,500+
stored at 5.0 C, used 7/1/42	0.003	9/9	7/3	1/3	1/8	3/8			3.6	500+
Ozone 2 hours 6/25/42 stored at	0.1	9/9	9/9	7/9	6/9	8/9			5.0+	?, < 90
5.0 C, used 7/1/42	0.003	9/9	8/9	7/9	7/9	4/9			5.0+?	?, < 20

* Approximately 3 to 4 week old mice used in this test.

* The infectivity of samples taken at different times during the ultraviolet irradiation was as follows: 20 minutes, 3/10; 30 minutes, 0/10; 40 minutes, 0/10.

† Infectivity tests on the ozone treated material were as follows: One hour, 10/10; 2 hours, 0/10.

satisfactory titer of virus before inactivation at any time after a period of eight to fourteen days, sufficient powdered sodium bisulfite is added to neutralize the residual formaldehyde completely. The Schryver test for formaldehyde is used as a check after diluting the vaccine 1:10 with distilled water, because the suspended brain tissue interferes with the reaction. Three to 4 mg. of sodium bisulfite per cubic centimeter of vaccine was usually sufficient.

2. The pH, which is about 6.6 at this stage, is adjusted to about 7.3 with sodium hydroxide.

3. Enough of a 1:100 solution of phenylmercuric borate is then added for antiseptic purposes to yield a final concentration of 1:50,000.

4. After removal of appropriate amounts for aerobic and anaerobic cultures and for intracerebral infectivity tests, the remainder of the vaccine was immediately distributed in lyovac containers, frozen in a mixture of solidified carbon dioxide and alcohol, and dried from the frozen state.

5. On completion of the lyophilization in twenty-four to forty-eight hours, the rubber stopper and glass sealed, evacuated ampules were stored in the refrigerator at 2 to 3 C.

Many tests on vaccines lyophilized in this manner showed that the potency was either fully preserved or only slightly diminished. It cannot be said that the mechanical conditions of lyophilization were optimal in our laboratory and it is not improbable that more adequately dried preparations could be obtained under the superior conditions obtaining in large scale production.

EFFECTS OF JAPANESE B ENCEPHALITIS VACCINES IN MICE

In general the basic properties exhibited by the St. Louis encephalitis vaccines obtain also for the Japanese B vaccines, except that the angle centrifuged preparations of the latter as a rule contained more virus before inactivation (10⁸ LD₅₀ doses or more per 0.3 cc) and possessed greater immunogenic potency. The data presented in table 5 on the immunogenic capacity of several different types of noninfective vaccines prepared from the same lot of angle centrifuged mouse brain virus clearly show the superiority of the formaldehyde method over ultraviolet irradiation and the practically negative results obtained when ozone was used to inactivate the virus. It may also be seen that the formaldehyde treated vaccine dried from the frozen state according to the procedure previously described produced excellent protection within one week even after a single dose of 0.03 cc. The fact that in the fluid preparation of the same vaccine the formaldehyde was neutralized with sodium bisulfite six days before it was used may perhaps account for the poorer resistance it produced with the 0.03 cc dose. It is noteworthy that the protection afforded by a single dose of the vaccine is just as definite at two months as at one week and may still be demonstrable six months after vaccination.

Since ultraviolet light has come to be regarded by many as being capable, under suitable conditions, of abolishing infectivity of the virus with the least deterioration in the antigenicity of the preparation, studies were carried out to determine to what extent the antigenicity diminished when the irradiation was carried beyond the minimal time required for the inactivation of the virus. Portions of the same angle centrifuged preparation of virus were distributed into four quartz tubes, which were irradiated one at a time, the course of virus inactivation being determined separately at given inter-

previously described procedure. That there are limits to this stability, however, is shown by the tenfold drop in potency which was demonstrated to occur when some of the ampules containing the lyophilized vaccine were stored in an incubator at 37.5 C and high humidity for a period of seventeen days (table 7).

The most reliable method for assaying the immunogenic potency of the Japanese encephalitis vaccine is illustrated in a protocol presented in table 8. The various amounts of vaccine are administered intraperitoneally in two doses three days apart and the

TABLE 6—*Japanese B Encephalitis*

Effect of ultraviolet irradiation for different periods of time on antigenicity of angle centrifuged mouse brain virus. Resistance of mice to intraperitoneal infection one week after single dose of vaccine.

Inactivation of Virus in Specimen		Vaccine		0.3 Cc. of Indicated Dilution of Virus Injected Intraperitoneally								LD ₅₀ Titer	Immunity Index	
Time Min.	Test for Virus	Total Time Irradiated Min.	Dose Cc.	10 ⁻²	10 ⁻³	10 ⁻⁴	10 ⁻⁵	10 ⁻⁶	10 ⁻⁷	10 ⁻⁸	10 ⁻⁹	10 ⁻¹⁰		Log of Dilution
Unvaccinated control.				9/10	8/10	5/10	7/10	6/10	6/10	4/10	0/10	0/6	6.1*	
15	5/5	40	0.3	3/5	0/7	0/6	2/6	0/6	0/6	0/5			2.0—?	12 500 +
20	4/4		0.003	5/6	1/6	2/6	3/6	3/6	1/6	3/6			4.4	50
25	0/5													
30	0/5													
40	0/5													
15	5/5	30	0.3	4/7	2/6	3/6	0/6	0/6	0/6	0/6			2.8	2 000
20	5/5		0.003	5/6	3/6	0/5	1/5	4/6	3/6	1/6			4.0	125
25	1/4													
30	0/4													
15	5/5	20	0.3	5/5	1/6	3/5	1/5	0/5	0/6	0/6			2.7	2 000
20	4/5		0.003	8/5	6/6	2/4	2/5	2/5	2/6	2/6			5.6	3
25	2/4													
15	5/5	10	0.003	4/6	3/6	3/6	3/5	1/5	2/5	1/5			4.4	50
20	5/5													
	(1/6)†													

A single preparation of angle centrifuged virus which had 10^{8.5} LD₅₀ doses/0.3 cc. before inactivation provided the material for the different ultraviolet irradiation exposures which were carried out on the same day in 4 different quartz tubes.

* Approximately 3-4 weeks old sexually immature mice were used in this test.

† The intracerebral LD₅₀ titer of this virus was 10^{7.0}/0.3 cc.

‡ Infectivity of same preparation after 9 days storage at 2 to 3 C when it was used as a vaccine.

TABLE 7—*Stability of Lyophilized Angle Centrifuged Formaldehyde Treated Japanese B Encephalitis Vaccine*

Resistance to Intraperitoneal Infection Induced by a Single Dose in One Week.

Lyophilized Angle Centrifuged Vaccine		0.3 Cc. of Indicated Dilution of Virus Injected Intraperitoneally										LD 50 Titer	Immunity Index
Storage	Dose Cc.	10 ⁻²	10 ⁻³	10 ⁻⁴	10 ⁻⁵	10 ⁻⁶	10 ⁻⁷	10 ⁻⁸	10 ⁻⁹	10 ⁻¹⁰	Log of Dilution		
Unvaccinated controls		9/10	7/10	6/10	5/10	7/10	3/10	3/10	0/10	0/10	5.6 *		
Refrigerator 2 to 3 C 29 days	0.3	4/3	0/6	0/5	0/5	1/6	0/6	0/6			2.1 —?	3 200 +?	
	0.03	2/5	0/3	2/4	1/5	1/5	0/6	0/6			2.0 —?	4 000 +?	
	0.003	5/9	2/6	2/4	1/5	2/5	2/5	1/6			3.5	125	
Refrigerator + incubator 2 to 3 C 12 days 37.5 C 17 days	0.3	1/6	0/4	0/6	0/6	0/6	1/6	1/5			1.9 —?	5 000 +?	
	0.03	6/7	2/6	1/6	0/6	2/6	3/6	0/6			3.5	125	
	0.003	7/9	1/6	2/6	4/6	3/6	3/5	3/6			5.0	4	

The mice used in this test were sexually immature and 3 to 4 weeks old at the time of vaccination.

* The intracerebral titer of this virus was 10^{8.5} per 0.03 cc.

vals in each tube. The data presented in table 6 show that while twenty-five to thirty minutes was required to inactivate the virus, preparations which had been irradiated for twenty, twenty-five, thirty or forty minutes did not vary significantly in their capacity as vaccines. It was thus quite clear that even when the least possible amount of ultraviolet irradiation was used, it was not possible to obtain a better vaccine, and seemingly not even as good a one, as could be prepared by proper treatment with formaldehyde.

Japanese B encephalitis vaccines in which part of the formaldehyde and the acidity were neutralized by ammonium hydroxide were just as unstable on storage in the refrigerator as the St. Louis encephalitis vaccines. Here again it was possible to obtain satisfactory stability by lyophilization according to the

mice are tested for resistance by the intraperitoneal route with tenfold dilutions of virus one week after the first dose of vaccine. The mice are observed for a period of three weeks after inoculation of the virus and the results shown in table 8 indicate that even the 0.001 cc. dose of vaccine produced a significant increase in resistance. It should be noted here that it is difficult to define precisely the numerical value of an immunity index that may be regarded as indicating the least amount of significant resistance in this type of test, but for practical purposes a minimal value of 100 was selected. Because the degree of susceptibility of the mice used in a given test determines not only the titer of the virus in the control animals but also the size of the immunity index, the chief usefulness of the index is limited to a comparison of the values obtained with

different doses of the same or different vaccines in the same test (table 9). Vaccines possessing a minimal immunogenic dose of 0.003 to 0.001 cc., as determined by this type of assay, are the best that have been achieved thus far.

It proved quite difficult to produce significant resistance to infection by the nasal route and even more so to infection by the intracerebral route. At least three doses of 0.2 cc. each had to be administered to approximately 2 month old mice to produce resistance against 10 to 100 intranasal fatal doses, while even five doses, 0.5 cc. each of formaldehyde treated angle centrifuged vaccine failed to give rise to significant resistance to intracerebral infection. However, five doses of 0.2 cc. each of the uncentrifuged vaccines protected the majority of mice against ten fatal intracerebral doses. In general, most groups of mice inoculated with the various types of formaldehyde treated vaccines developed significant amounts of neutralizing antibodies although the titers varied considerably in different groups of animals.

and medical students, received subcutaneously various doses and preparations of one or the other of these vaccines, and tests for neutralizing antibodies were carried out on serums obtained from them before and at various intervals after vaccination. There were no systemic reactions, and when the lyophilized preparations, in which both the formaldehyde and the acidity were neutralized, were administered in 2 cc. doses the pain of the injection and local reactions was also eliminated. There were no hypersensitive local reactions when the second dose of 2 cc. was administered three days after the first, but some were encountered when the interval was one week. Of various types of St. Louis encephalitis vaccines that were tested the uncentrifuged lyophilized preparation was the only one to stimulate antibody production in human beings. Even in this group the antibody response was evident in only 50 per cent of the individuals at two weeks, and there was no difference, in the small group that was studied, between those

TABLE 8—Complete Assay on Japanese B Encephalitis Vaccine

(U. S. C. 100 per cent mouse brain suspension containing 0.2 per cent solution of formaldehyde.)
Mice: 1 to 4 weeks old; 2 to 10 gm. at time of first dose of vaccine.
Vaccination: 11 x 1. First dose of vaccine 1/1/41; second dose of vaccine 1/15/41.
Test for immunity: 1/27/41. Intracerebral I.D. 50 titer of virus used = 10^{-7.0} 0.01 cc.

Dose of Vaccine		Dose of Indicated Dilutions of Virus Injected Intraperitoneally								L.D. ₅₀ Titer*	
Total Cc.	Individual Cc.	10 ⁻¹	10 ⁻²	10 ⁻³	10 ⁻⁴	10 ⁻⁵	10 ⁻⁶	10 ⁻⁷	10 ⁻⁸	Log of Dilution	Immunity Index
Unvaccinated controls		6/11	5/10	4/7	7/10	5/10	5/9	3/10	0/10	4.3	
0.3	0.15 x 2	0/10	0/10	0/10	0/10	0/9				0.5—?	6,400 +?
0.13	0.015 x 2	3/10	0/10	0/10	0/10	0/9				0.7—?	4,000 +?
0.061	0.0015 x 2	2/10	2/9	2/8	1/9	1/10				1.0	2,000
0.001	0.0005 x 2	2/10	1/9	1/10	2/9	2/10				1.3	1,000

* The Reed-Muench accumulation formula for calculating the 50 per cent mortality endpoint was used here despite the fact that the data are not suited for this method because there is no regular gradation from 100 per cent mortality to 100 per cent survival. The method however provides convenient mathematical expressions which may be used for comparative purposes. Actually by inspection of the data it is evident that the adequately vaccinated mice are resistant to 100,000 to 1,000,000 times the amount of virus that is fatal to about 50 per cent of the unvaccinated controls.

EFFECT OF ST. LOUIS AND JAPANESE B ENCEPHALITIS VACCINES ON HUMAN VOLUNTEERS⁷¹

The purpose of testing these vaccines on human beings was to determine (a) the safety with which they may be administered and the type of local or systemic

receiving two doses of 2 cc. or two doses of 5 cc. (table 10). Those who had no response at two weeks were negative also at six weeks, and at least 1 who was distinctly positive at two weeks (A. Ber., table 10) became distinctly negative at six weeks. Since we as well as others have found that resistance to infection with St. Louis encephalitis virus can be present in the absence of demonstrable neutralizing antibodies, we are not inclined to draw any conclusions from the human data beyond the one that two doses of 2 cc. of the uncentrifuged lyophilized St. Louis vaccine contains enough antigen to stimulate a neutralizing antibody response in a certain proportion of adult human beings. For this reason we would also be inclined to use this dosage in any field trials with this vaccine in human beings.

In the case of the Japanese encephalitis vaccine a definite neutralizing antibody response was obtained with angle centrifuged lyophilized vaccine, and one may therefore expect an even better response with the uncentrifuged vaccine. Considerable difficulty was encountered in obtaining suitable human volunteers for the Japanese encephalitis neutralizing antibody studies because tests for this antibody on over 80 "normal" adults from the Cincinnati region, including only a few laboratory workers exposed to the virus, revealed an unusually high incidence of positive results comparable in titer to those recorded for patients convalescent from the disease in Japan. The perplexing character of the data is well illustrated by the results of tests on two

TABLE 9—Summary of Results of a Simultaneous "Complete Assay" on Various Types of Vaccines Prepared from the Same 10 Per Cent Suspension of Japanese B Virus

Type of Preparation	Immunity Indexes with Different Doses (Cc.) of Vaccine				
	0.3	0.03	0.01	0.003	0.001
Angle centrifuged, 0.2 per cent solution of formaldehyde, fluid	6,400	5,000	5,000	125	
Uncentrifuged, 0.2 per cent solution of formaldehyde, fluid*	6,100	4,000		2,000	1,000
Uncentrifuged, 0.4 per cent solution of formaldehyde, fluid	6,400	5,000		3,200	500
Uncentrifuged, 0.4 per cent solution of formaldehyde, lyophilized	5,000	6,400		320	640

* The detailed data of this part of the test are shown in the preceding table (table 8).

reactions that might be expected and (b) the amount that may represent an adequate antigenic stimulus. A total of 51 volunteers, consisting of laboratory personnel

⁷¹ Members of the staff of the Children's Hospital Research Foundation and members of the second and third year classes of the University of Cincinnati College of Medicine offered themselves without any reservation as subjects for these studies.

groups of students from the University of Cincinnati College of Medicine. Among one group of 29 third year students bled on Aug 13, 1942 there were 2 with distinctly positive serums against the Japanese virus (neutralization indexes of 100 to 600) while all the others were just as distinctly negative with neutralization indexes not exceeding a value of 5. The positive results were reproducible not only on the same specimens of serum but also on subsequent specimens obtained on Sept 2, 1942. One of these positive serums also neutralized the St. Louis encephalitis virus while the other one did not. Twelve of the "negative" students were selected to receive the Japanese encephalitis angle centrifuged lyophilized vaccine, and additional prevaccination specimens obtained on August 27 were again negative. Seven of these 12 students however, showed neutralizing antibodies (indexes ranging from 25 to 2,500) two weeks after vaccination. In a search

SUMMARY AND COMMENT

The essential features of the St. Louis and Japanese B encephalitis vaccines described in the present communication are as follows:

1 Strains of virus were selected which yielded high titers in the brains of 2 to 3 week old mice and which were found to be more antigenic than others tested. Various portions of embryonated eggs, and the brains of hamsters and young sheep were found to be unsatisfactory, for one or another reason, as the source of virus for the vaccines.

2 The vaccines consist of uncentrifuged 10 per cent mouse brain suspensions in isotonic solution of sodium chloride in which the virus has been rendered noninfective by 0.2 per cent solution of formaldehyde, the entire process of inactivation having taken place in the cold (2 to 3 C). Other methods of inactivation including ultraviolet light and ozone were unsatisfactory. Vac-

TABLE 10—St. Louis Encephalitis Virus

Character of antibody response among some of the human beings inoculated with a lyophilized uncentrifuged vaccine

Vaccination	Subject	Time in Relation to Vaccination Serum Obtained	Final Dilution of Virus				LD ₅₀ Titer Log of Dilution	Neutralization Index *
			10 ⁻²	10 ⁻⁴	10 ⁻⁷	10 ⁻⁸		
Normal rabbit serum control			5/5	5/5	4/5	0/5	7.4	
2 doses 2 cc each 3 days apart	V Es	18 days before vaccine	5/5	4/4	4/5	1/5	7.5	-1
		Just before vaccine	5/5	5/5	5/5	0/5	7.5	-1
		1 week after first dose	5/5	4/4	1/5	0/4	6.6	6
		2 weeks after first dose	1/5	1/5	0/4	0/5	4.7-?	300+
	A Far	18 days before vaccine	5/5	5/5	3/5	0/5	7.2	2
		Just before vaccine	5/5	4/4	4/5	0/5	7.4	1
		1 week after first dose	5/5	5/5	3/5	0/2	7.2	2
		2 weeks after first dose	5/5	1/5	0/5	0/5	5.6	60
	A Ber	18 days before vaccine	4/4	4/4	5/5	1/5	7.6	-2
		Just before vaccine	5/5	5/5	4/5	1/5	7.5	-1
		1 week after first dose	5/5	4/5	4/5	0/5	7.3	1
		2 weeks after first dose	3/5	1/5	0/5	0/4	5.3	125
	B Ran	18 days before vaccine	5/5	5/5	3/5	0/5	7.2	2
		Just before vaccine	5/5	5/5	4/5	0/5	7.4	1
		1 week after first dose	5/5	5/5	3/5	0/3	7.2	2
		2 weeks after first dose	5/5	3/5	1/4	0/5	6.3	13

* Neutralization index = $\frac{\text{LD}_{50} \text{ titer of virus in control serum virus mixture}}{\text{LD}_{50} \text{ titer of virus in test serum virus mixture}}$

for suitable volunteers to receive the uncentrifuged Japanese vaccine, a group of 21 second year students were bled on Dec 3, 1942 and positive tests for Japanese B "antibody" were obtained on 18 of the 21 serums. Only 1 of these 18 serums also neutralized the St. Louis virus. These positive results with the Japanese virus were reproducible on the same specimens of serum and with one exception also on subsequent specimens obtained on Dec 21, 1942 or Jan 12, 1943. There were even some "rises" in titers in a few instances on subsequent tests, which, if the students had been vaccinated, might have been attributed to the vaccination.

It is obviously difficult to interpret these data. Either the Japanese B virus is widely distributed in the United States and has not yet been isolated (which we doubt) or else certain human beings may possess the capacity of inactivating this virus without having been exposed to it. Certain other studies which we have carried out in this laboratory on hamsters and rats born and raised under isolated conditions and tested for neutralizing antibodies against St. Louis encephalitis or vesicular stomatitis virus respectively indicated that the latter possibility is not altogether improbable.

cines in which most of the brain tissue was removed by centrifugation were not as potent.

3 The vaccines retained their original potency only when they were stored in the cold without neutralization of the residual formaldehyde but not when the formaldehyde and acidity were neutralized sufficiently to permit their use in human beings without undesirable reactions. This difficulty was overcome by lyophilization of the vaccines according to the following procedure: (a) addition of sufficient sodium bisulfite to yield a negative Schryver test for formaldehyde; (b) neutralization of the acidity with sodium hydroxide to a pH of about 7.3 and (c) addition of phenylmercuric borate to a final concentration of 1:50,000 as an antiseptic.

The resulting product is readily rehydrated and on inoculation in human beings is essentially free of pain and local reactions.

4 These vaccines were effective chiefly in producing resistance against infection by peripheral routes such as the intravenous or intraperitoneal. Only when large amounts and multiple doses of the uncentrifuged vaccines were given to mice was it possible to induce resistance to 10 to 100 minimal lethal doses of virus by the intranasal or intracerebral routes. For this rea-

son the antigenic potency of these vaccines is assayed quantitatively in mice by determining the minimal dose required to produce significant resistance to infection by the intraperitoneal route within one week. The potency of the best St. Louis vaccines was such that 0.01 to 0.003 cc. (administered in two doses three days apart) fulfilled this criterion while in the case of the Japanese encephalitis vaccines the minimal immunogenic dose was 0.003 to 0.001 cc. While single doses produced significant resistance to intraperitoneal infection within one week, it was found that the administration of the total amount of vaccine in two equal doses three days apart produced an immunogenic effect within one week equivalent to that obtained with thirty times that amount of vaccine given as a single dose.

5 Tests on human volunteers indicated that two doses of 2 cc. given three days apart could be administered without fear of local or systemic reactions and that this amount of vaccine contained enough antigen to stimulate the development of neutralizing antibodies in about 50 per cent of adults.

It is conceivable that in the face of a very severe developing epidemic of encephalitis proved to be caused by either one of these viruses it may be desired to test the effectiveness of such vaccines in protecting human beings against these diseases. It is obvious that no such tests will be possible unless sufficiently large amounts of these vaccines are prepared ahead of time and maintained under suitable conditions of storage with repeated assays at appropriate intervals in readiness for such an emergency. In contemplating such a step one may keep in mind the Russian experience with a similar vaccine in protecting against the spring-summer tick-borne encephalitis.⁸ From the few details available to us, it appears that the Russian encephalitis vaccine consisted of 0.5 to 1 per cent emulsion of mouse brain in which the virus was inactivated by solution of formaldehyde (1:600 to 1:750) at 2 to 5 C., and that experimentally it was also chiefly effective against peripheral inoculation of the virus. In one prophylactic experiment on human beings two doses of this vaccine (amount not indicated) were administered to 1,527 individuals residing in an endemic zone. Neither local nor systemic reactions resulted from the vaccination, and while only 2 mild cases of encephalitis occurred among the 1,527 vaccinated persons, there were 44 cases including 11 fatalities among the 2,942 nonvaccinated controls.

⁸ Smorodintseff, A. A. The Spring, Summer Tick Borne Encephalitis, *Arch. f. die ges. Virusforsch.* **1**: 168, 1919-1910. New Developments in Knowledge of Encephalitis editorial, *J. A. M. A.* **117**: 1361 (Oct. 18) 1911.

Bread Making—The materials that have been used in bread making range from lotus seeds in Egypt to moss in the Scandinavian countries. Potatoes in Germany, chestnuts in Italy, peas and beans in Mexico and millet in China are other unusual materials used at the present time in the making of bread. Wheat, rye and corn are the cereals most commonly used for this purpose, but barley and oats are also employed to some extent. The first breads were probably unleavened, that is made without the use of yeast or other leavening agents. The Jews, though acquainted with the use of leaven, were enjoined to use unleavened bread at the time of the first feast of the Passover (Exodus 12:15-20, 13:6-7) and its use is still a part of this ceremonial. Barley bread over 4,000 years old, in which the outlines of yeast cells were still clearly visible, has been found in Egypt—Peterson, William H., Skinner, John T., and Strong, Frank M. *Elements of Food Biochemistry*, New York, Prentice-Hall, Inc., 1943.

SOME CURRENT MEDICOMILITARY PROBLEMS

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The war has now progressed to a point where every one is definitely involved in its complexities and ramifications and is committed to playing his part in the holocaust. Physicians, even earlier than most groups, became aware of the inevitable requirements and demands which would be made, or develop, as a consequence of the military, industrial and continuing civilian needs for adequate medical care. All efforts have been directed toward a single fundamental purpose, but the problems which have arisen and required solution have been multiplex and extremely variable as far as the immediate readjustments which their accomplishment has entailed. In every sphere, however, resourcefulness, flexibility of character, ingenuity, determination and at least a modicum of patience and tolerance have been required. The revamping of plans and ambitions, and the personal sacrifices involved in meeting the exigencies of our times, have tested well the normal and physical endurance and the adaptability of each of us.

That all this has been accomplished so speedily and efficiently merits a review of how such things were performed, at the same time setting forth what further will inevitably be required of medicine or physicians to assure the successful termination of this war.

With the threat of war towering and thundering upon us, the first and most urgent problem which arose and required immediate solution was to provide a skeleton crew of physicians to participate in the initial recruitment and induction of military manpower. Members of the Medical Department of the Regular Army, aided by a comparatively small group of reserve medical officers, quickly and efficiently set themselves to the task of selecting the mentally, emotionally and physically qualified nucleus of what has since become an imposing and powerful military machine.

Medical schools and hospitals throughout the country reincarnated the base and evacuation hospitals which were staffed from their ranks in World War I, thus quickly establishing a reserve force of experienced and enthusiastic physicians and surgeons whose services became immediately available. The establishment of this bulwark against epidemic disease and military casualties was cheerfully done in spite of the recognition by the affiliated institutions that the withdrawal from their faculties and staffs would seriously deplete their personnel, require drastic readjustments and impose great hardships on their functional capacities.

More than a year ago the roster of regular and activated reserve medical officers had reached an impressive figure. At present there are on active duty with the various branches of the armed forces more than 40 per cent of the usable medical personnel of the country. The subtraction from civilian life of the medical services represented by this large proportion of the normal total connotes the tremendous burden which has been placed on, and which is being so admirably borne by, the thinned ranks of the remaining civilian physicians. The parallel gigantic industrial expansion has added further to the tax placed on their physical endurance and professional capacity.

All this has been done with minimal and remarkably slight impairment of medical service to the civilian population, albeit luxury and unnecessary medical attention have been curtailed and greatly eliminated, a consequence which has inadvertently been beneficial in establishing and stimulating the development of an improved civilian morale.

The metamorphosis from civilian to military life for physicians has been rapid and has not only required changes in interests but has necessitated special training to prepare them to shoulder new responsibilities. The acquisition of hitherto unpossessed knowledge of military customs and practices has required intensive study, including reeducation in many phases of daily life, professional activities and interests. The training of medical officers has been accomplished by several methods and in various types of military installations. The traditional training ground, the Medical Field Service School at Carlisle Barracks, Pennsylvania, has been expanded to serve as the principal center for tactical and field service, officer pools including the Army Medical Center in Washington and those which have been established at various recently built general hospitals, have fulfilled an extremely useful purpose in orienting recently enlisted medical officers and have also served as liaison agencies in facilitating the staffing of new hospitals and special medical service organizations such as the Auxiliary Surgical Groups, instructional courses at the Chemical Warfare School of Edgewood Arsenal, Maryland, have been conducted in an intensive fashion to acquaint medical officers with the peculiar problems connected with the management of gas casualties, refresher courses in specialized fields of medicine including tropical medicine, general surgery, neurosurgery, thoracic surgery, maxillofacial surgery and orthopedic surgery have been provided through the cooperation of medical schools throughout the country, flight surgeon training to acquaint medical officers attached to the Army Air Forces with the unique phases in the expanding field of aviation medicine, has been greatly augmented to meet present and anticipated requirements. The magnitude of this training program and the rapid and impressive manner in which it has been initiated have been possible only because of the foresight and detailed planning of the Surgeon General and his staff along with cooperating Army organizations, the National Research Council, the universities and the many civilian groups and individuals whose interests and activities have been intimately connected with matters pertaining to the Medical Department of the Army. To promote and improve further the quality of medical service and to insure the interchange of significant observations and newly acquired knowledge, as well as to coordinate the medical and surgical activities both in the zone of the interior and in the various theaters of operations, specially qualified consultants in medicine and surgery have been assigned to the service commands in this country and to the theaters of operations abroad. Already, from the consultant groups, there have been received valuable reports which have made possible appropriate modifications of existing medicomilitary practice and the inauguration of more efficacious innovations.

CHANGE IN METHOD OF PROCURING PHYSICIANS

We have now come to a stage where it has become necessary to apply more selective criteria in the apportionment of civilian, industrial and military personnel. Accordingly, the method of procuring doctors for the

Medical Department of the Army has been changed. The method, which has been described in detail¹ in a recent issue of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, consists essentially in the establishment of an Officer Procurement Service which is the only agency authorized to solicit applications for commissions. The state chairman of the procurement service for doctors will furnish to the national headquarters of that service (the War Manpower Commission) the names of available individuals. The national headquarters will forward to the individual a notice of his availability and a card for him to sign and return to the state chairman, who will prepare proper availability clearance papers which will permit the preparation of proper application. The completely processed papers will then be sent directly to the Surgeon General. By arrangement with the national headquarters of the Procurement and Assignment Service the individual will be contacted and the card previously referred to will be furnished him in order that he may apply through the state chairman of the Procurement and Assignment Service for a commission. In the past such inquiries have been answered directly from the Office of the Surgeon General and application blanks furnished the individual, but such procedure will no longer be followed.

The Army's most urgent need is for young, vigorous and alert medical officers who comprise the vanguard of army medical service and on whom rests a burden of professional performance which must be accomplished under the most trying circumstances and adverse conditions. The duties of these officers, whose versatility must be sufficient to meet their functions as physicians, sanitarians and soldiers, far transcend the prosaic existence with which their position is commonly associated. In their capacity as physicians they must practice the healing art in respect to disease and injury, sustain and bolster the spirit of their troops, anticipate, promptly recognize and correct mental hazards which have been augmented by the extreme mechanization and mobility of modern warfare, and institute careful yet quick appraisal of individual casualties which is required in expeditious triage and in the face of rapidly developing and kaleidoscopically changing situations.

CHANGES IN THE PROGRAM OF MEDICAL EDUCATION

In order to provide sufficient numbers of medical officers to meet the requirements for our continuously expanding armed forces, radical changes in the program of medical education have become necessary. Already two effective steps have been taken. The first of these has been directed toward the acceleration of the curriculums of medical schools to the fullest extent to which such a procedure can operate without imposing undue hardships on medical students or impairing the quality and thoroughness of medical education, this program is now well under way. The second step which is just now being formulated in complete detail is the plan for assuring the constant flow of students into medical schools and subsequently securing their normal medical education. This plan has recently been described by Brig Gen Joseph N Dalton² and consists essentially in the establishment of an Army Specialized Training Division one purpose of which is

¹ Procuring Physicians, Dentists and Veterinarians in the Field J A M A. 122: 151 (May 15) 1943

² Dalton J N. Premedical and Medical Education as Related to the United States Army J A M A. 121: 633 (Feb 27) 1937

to provide carefully selected enlisted men, under government contract, the accepted training in approved schools of medicine for granting them the degree of Doctor of Medicine. The preparatory collegiate training of these soldiers, which must be acceptable to the medical schools but must be concentrated and abbreviated to meet the present exigencies, will also be obtained at contracting institutions.

These departures from established educational schedules and customs pose several problems and contain implications which stimulate thought concerning the matter of trends in medical, as well as academic, education. Many phases of the future of specialized and liberal education have for some time past held a conspicuous position in the minds of national educators. But the need for such deviations must be appreciated and accepted in view of war demand, and indeed that it is recognized by educators, is evidenced by the remarks of President Dodds of Princeton University, who accepts the idea of a moratorium on liberal and humanistic studies and who concurs with the decision that young men with exceptional capability and talent should be directed into channels in which their fullest capacity as scientists and technicians can be employed. At the same time, however, he has expressed the conviction that "the government is duty bound to do all it can to make sure that conversion to a war basis does not mean a death sentence to that part of our educational system not required in the war effort." That changes in our economic structure have already unfavorably influenced endowed institutions and are reasonably liable to cause even more critical effects which may force dependence on government subsidy understandably occasions great concern among educators.

That the mechanism whereby these modifications in the medical educational system necessitated by war should be carefully controlled and well integrated is evident from the reported readjustments already in effect in European countries. Except in England the status of medical education abroad has been subjected to radical reorganization. In Germany, early in 1939, it was considered necessary to effect drastic changes in the program of medical education and hospital training in order to meet the immediate and anticipated expanding needs of the highly militarized and the conquest aspiring Third Reich. Thus, in contrast with the established seven or eight year course of formal medical education which obtained in that country, the Germans considered it expedient not only to concentrate this program into a period of five years but also to add to the curriculum certain subjects deemed indispensable to prepare the graduates to meet fully their sociological duties under the new regimen. This program was extended further to embrace in the undergraduate curriculum the clinical training period in hospitals and thus eliminate internships. The undesirable abbreviations and substitutions entailed in this form of medical education will undoubtedly be followed by many repercussions, the most important of which is the consequent lowering of the standards of medical service. That circumstances affecting us might give rise to a situation approximating that which earlier confronted the Germans should be thoroughly realized. Accordingly, careful thought and deliberate consideration should be given the procedure of medical tutelage and the means of assuring its successful accomplishment without sacrificing unnecessarily the integrity of pedagogic background and clinical apprenticeship.

POSTGRADUATE MEDICAL EDUCATION

Postgraduate medical education as it has evolved to its present high level has already suffered a definite setback and faces further disorganization and recession because of the necessary disturbance in the resident system which constitutes the framework supporting postgraduate medical education. The urgent military need for recent medical graduates who would normally comprise the group from which residents are selected, and the necessary dislocation of those who have partially completed residencies, has inflicted a severe blow which has seriously impaired and temporarily disrupted the entire resident system and has shaken the very foundation of postgraduate medical education. Not only those residents who were called on to forfeit the remainder of their normal period of residency but also those who have been entirely deprived of an opportunity to obtain a residency have suffered by this disintegration of the resident system, and succeeding groups of medical graduates will surely feel its baneful influence until the present emergency shall have passed and postwar reconstruction accomplished. An attempt will be made to have the essential civilian resident positions filled by individuals who are not physically qualified for military service, or by women. Since, however, the majority of physically qualified medical graduates will enter military service immediately after the completion of a one year internship, it is planned that, as far as practicable, opportunities will be afforded in Army hospitals for subsequent training in specialized fields. Of interest in this connection is the fact that appropriate consideration of training and experience gained during military service will be given by the respective specialty boards. This will in some measure compensate for the deprivation of resident training which would have been obtained under peacetime conditions and will to a certain extent obviate the gap in the increasing supply of specially trained physicians. The extent to which this plan must be depended on in training individuals who have been partially or totally denied special training prior to entry into military service will, of course, be influenced by many factors, principal among which is the duration of the war.

INCREASED NEED FOR RESEARCH

That the continuance of medical research during the course of war is an essential function cannot reasonably be questioned. Indeed, the very occurrence of war greatly increases the need for research at an accelerated pace. Opportunities for certain types of research, particularly clinical investigations in traumatic lesions and epidemiologic diseases, are increased manyfold and, if they are accepted and developed, permit the accumulation of data and the formation of principles and practices which find widespread application not only in meeting the immediate exigencies of warfare but also in civilian needs and postwar purposes. The origin and development of surgery have been so intimately connected with and dependent on the experiences gained in war, and the entire field of preventive medicine owes so much of its present vigor to initial strength imparted to it by military endowment, that research must be carefully nurtured and constantly encouraged despite whatever obstacles arise to threaten its integrity and progress. Indeed, in England, where the effects of this war have been felt longer and more intensely, the significance of research has been considered so valuable that medical research sections have been established at home and abroad.

SOCIAL AND ECONOMIC TRENDS

The complex connotations and inevitable implications which have suddenly loomed on the entire medical scene as a result of the drastic changes necessarily associated with war have been magnified by the tremendously forceful socioeconomic trends which characterize our time and which have preceded and still accompany the present military conflict. What effect the war will eventually have in hurrying some and retarding other developments remains conjectural, but that mighty influences are at work to effect epochal changes in the complexion of medical practice is incontrovertible. As physicians we are so engrossed in our purely professional and scientific interests that we are prone to neglect our role in current socioeconomic developments. Indeed some (too many) of us have been reluctant, even hostile, toward accepting this responsibility which is so eagerly desired by certain nonmedical groups. Such an attitude is no longer tenable and would actually jeopardize our vital function and altruistic aims so aptly expressed in a recent editorial³ in *THE JOURNAL*: "The provision of optimum health through the widest possible application of the principles of preventive medicine and the treatment of disease, and through the best possible distribution of medical services." We must face realistically the ineluctable trends in the national and international social and economic structure—trends directionally signaled by already established signposts such as "social security," "sick benefits," "unemployment insurance," "old age compensation" and various alphabetically captioned governmental agencies, and by recently lighted cressets such as certain postwar plans proposed by our government and other governments, which have already received much editorial comment. These and other widely discussed and intensively considered plans for cushioning the transitional shock from wartime to peacetime economy, and proposals for broadening the social security program and extending the nation's economic resources, merely delineate with increasing clarity the current trends in the nation's thoughts and ideas. That we are intimately involved and deeply concerned with these plans and proposals is clearly demonstrated by certain recommendations that the government, in cooperation with the medical profession, take action to enable the individual to budget medical expenses over a reasonable period and "contribute toward the costs of care according to his ability," and that federal aid be extended toward developing an adequate system of regional and local hospitals, maternal and child care and other measures to assure "adequate medical and health care for all, regardless of place of residence or income status." The elucidation of these proposals makes it quite apparent that the old system of medical practice will be considerably modified. Because of this, and the startling realization that the potentialities for both good and evil are so limitless and can be projected so far into the future of medicine both as a science and as an art, it becomes imperative in this transition period that the wise and tempered counsel of the medical profession exert its proper influence. There is some comfort and reassurance in the fact that our leaders are keenly aware of the significance and necessity for organization of medical services and participation in postwar planning.

It is becoming more and more apparent that the responsibilities in the sphere of medical practice during

the coming year will be a matter of ever increasing concern to us and will demand a degree of attention and a measure of effort far beyond that of our predecessors. The perspective and sound judgment which must come from our ranks cannot be gained without an intense interest, thorough knowledge and deliberate action on the part of every one sincerely concerned with the medical security of our country. Each of us must become thoroughly acquainted with the challenges now confronting medicine, challenges which will undoubtedly be multiplied when the current worldwide hostilities cease and the difficult reconstruction period begins. Our success in meeting these challenges will in large measure be determined and sharply delimited by the intelligence, perspicacity and zeal which we manifest in approaching and participating in the evolutionary process.

HISTOPLASMOSIS PRODUCING VEGETATIVE ENDOCARDITIS

REVIEW OF LITERATURE, WITH REPORT OF A CASE

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While studying the natives of Panama, Darling¹ was the first to describe histoplasmosis. This investigator, in fact, reasoned that a condition similar to Old World leishmaniasis should be found in this area, and as a result of these studies infection brought about by histoplasmosis was first recognized as a clinical syndrome. In 1906 Darling proposed the name "histoplasma capsulata", however, in 1908 he used the term "histoplasma capsulatum." He reported 1 case of histoplasmosis in 1906 with autopsy findings. In 1908 he published reports of 3 cases with autopsy findings, which included the case he reported in 1906. Darling found enormous numbers of small ovoid and round bodies in the liver, spleen and lymph glands in each of these 3 cases. The majority of these bodies were intracellular and differed structurally from members of the genus *Leishmania*, that is, they did not contain a chromatin rod or blepharoplast. He proposed that the name *Histoplasma capsulatum* be applied to these small organisms. Two additional reports were made by him on these 3 original cases. According to him the essential pathologic feature of the syndrome was an invasion of the endothelial cells in various parts of the body.

Histoplasmosis was not recognized again until 1926. In that year Riley and Watson² reported the first instance of the disease in the United States proper. This case originated in Minnesota.

From the Section on Surgical Pathology, Mayo Clinic (Dr Broders) and the Division of Medicine, Mayo Clinic (Drs Herrell and Vaughn).

1. Darling S T: A Protezoan General Infection Producing Pseudotubercles in the Lungs and Focal Necroses in the Liver, Spleen and Lymph Node. *J A M A* 46:1231-33 (April 25) 1910. Hisoplasmosis: A Fatal Infectious Disease Resembling Kala Azar. *Ann Intern Med* 2:107-13 (Sept) 1908. The Morphology of the Parasite (*Histoplasma capsulatum*) and the Lesions of Histoplasmosis: A Fatal Disease of Tropical America. *J Exper Med* 11:315-31 (July) 1910.

2. Riley W A and Watson C J: Histoplasmosis of Darling with Report of a Case Originating in Minnesota. *Am J Trop Med* 6:271 (July) 1926.

3. Planning for Postwar Medical Care: editorial. *J A M A* 121:130 (Jan 9) 1943.

Crumrine and Kessel³ in 1931 noted both the intracellular and extracellular phases of the growth of *Histoplasma capsulatum*. They also noted budding of some parasites in the cellular phase. DeMonbreun,⁴ however, was the first to grow the organism *in vitro*. The material used in his study was obtained from the blood of a 6 months old infant whose condition had been diagnosed as histoplasmosis on the basis of observation of the organisms in some of the large mononuclear cells in the blood. This case was reported by Dodd and Tompkins. DeMonbreun observed that on culture mediums the yeastlike form of *Histoplasma capsulatum* gave rise to a typical fungous growth with the production of mycelia and spores. He was further able to inoculate successfully both monkeys and mice with the fungous growth and to observe that the yeastlike structure of *Histoplasma capsulatum* was reproduced in the animal. In 1930 DeMonbreun recovered the organisms from a dog and was able to infect puppies with *Histoplasma capsulatum* by feeding suitable preparations of the mycelial form.

Conant⁵ in 1941 made a very comprehensive study of the life cycle of *Histoplasma capsulatum* and placed the organism in the group Moniliaceae of the fungi imperfecti. He thus recognized the fungous nature of the organism.

In reporting the fourth instance of the disease to be observed in the United States Shaffer, Shaul and Mitchell⁶ in 1939 observed the organisms in the reticuloendothelial cells of a large number of organs. This infection also occurred in an infant. The authors expressed the opinion that the disease was more common than was apparent at that time. Since 1939 the condition has been recognized more and more frequently, although little has been added to the clinical pathologic observations made by the earlier workers. McInerney⁷ in 1940 reviewed the entire subject and collected 32 cases of the disease. He also mentioned 13 cases reports of which had not been published. Early in 1942 Hild¹⁰ reported that the total number of cases reports of which had been published was 37. Seven of the 37 patients were infants less than 15 months of age.

Humphrey¹¹ has pointed out that splenomegaly is the most constant result of infection due to histoplasmosis. Splenomegaly is later followed by the occurrence of small nodules in the lungs, liver and spleen. These nodules represent collections of reticuloendothelial cells containing *Histoplasma capsulatum*. These nodules are essentially granulomas. Henderson, Pinkerton and Moore,¹² as well as Brown, Havens and Magath,¹³

stressed the point that the adrenal body is particularly susceptible to the infection. Henderson, Pinkerton and Moore further emphasized the importance of examination of the stool for the parasite in the presence of any type of undiagnosed enteritis. Reid, Scherer and Irving¹⁴ believed that sternal puncture may be useful in establishment of the diagnosis. Biopsy of a specimen obtained from enlarged lymph glands may be helpful in establishing the diagnosis.

The clinical course of the disease syndrome resulting from infection due to histoplasmosis mimics any severe systemic infection. To date the disease has been universally fatal. Severe anemia, leukopenia and splenomegaly usually are observed. Various organ systems, but particularly the gastrointestinal tract, may be involved. Lesions of the nasopharynx and throat often are present. Generalized or localized abscesses or ulcers of the skin may occur. Histoplasmosis also may give rise to chronic pulmonary infection. Asthenia and anorexia with severe loss of weight are not uncommon.

At the time of this review there was no recorded instance of involvement of the heart valves (vegetative endocarditis) due to the organism *Histoplasma capsulatum*. Such a condition has been observed and forms the basis for this report.

REPORT OF CASE

A white man aged 47, American born, first presented himself at the Mayo Clinic for examination on Nov. 27, 1941 complaining chiefly of unexplained fever of four months' duration. He had enjoyed excellent health during most of his life except for an attack of scarlet fever in his youth. Six months before his admission he had suffered from a peritonsillar abscess. This had been opened

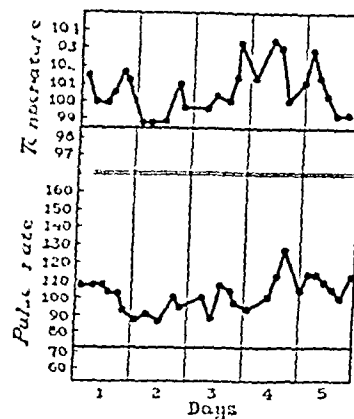


Fig. 1—Record of patient's temperature and pulse rate to the sixth day of hospitalization.

surgically, and his recovery was uneventful. Four months before he was admitted he had been awakened by a dull, band like pain across the lower part of the abdomen which simulated the sensation caused by a distended bladder. He voided with some relief, but the pain continued for two days, extending gradually up to the right costal margin. At that time a diagnosis of disease of the gallbladder had been made, and the patient was hospitalized because of a temperature of 103 F. His treatment had consisted of hot compresses applied to the abdomen. The next day the symptoms had subsided and he returned to work within a few days. A week later he became ill again and the illness was characterized by prostration and a febrile reaction with a daily temperature as high as 102 F. Subsequent to this he had experienced generalized malaise with recurrent episodes of hyperpyrexia.

Complete laboratory studies carried out by his local physician resulted in no definite findings, although a presumptive diagnosis of "endocarditis" was made. At the time of his admission the patient's temperature was normal, although it ranged between 103 F and normal for the next six days after his admission (fig. 1). His weight was 145 pounds (about 66 Kg), which represented a loss of approximately 35 pounds (16 Kg) in four months' time. He did not appear to be acutely ill. Results of examination of the head, nose and throat were essentially negative, except for some evidence of gingivitis and a few injected portions in the lower lip. Results of examination of the thorax were negative. Examination of the heart disclosed tachycardia and a soft systolic murmur which could be heard over the precordium. Examination of the abdomen revealed some degree of tenderness in the left upper quadrant.

3 Crumrine, R. M. and Kessel, J. F. Histoplasmosis (Darling) Without Splenomegaly. *Am J Trop Med* 11: 435-449 (Nov.) 1931.

4 DeMonbreun, W. A. The Cultivation and Cultural Characteristics of Darling's *Histoplasma Capsulatum*, *Am J Trop Med* 14: 93-125 (March) 1934.

5 Dodd, Katharine and Tompkins, Edna H. A Case of Histoplasmosis of Darling in an Infant. *Am J Trop Med* 14: 127-137 (March) 1934.

6 DeMonbreun, W. A. The Dog as a Natural Host for *Histoplasma Capsulatum*. Report of a Case of Histoplasmosis in This Animal, *Am J Trop Med* 19: 565-567 (Nov.) 1939.

7 Conant, V. F. A Cultural Study of the Life Cycle of *Histoplasma Capsulatum* Darling 1906. *J Bact* 11: 563-579 (May) 1941.

8 Shaffer, F. J., Shaul, J. F., and Mitchell, R. H. Histoplasmosis of Darling. Fourth Case to be Reported in the United States. *J A M A* 111: 484-488 (Aug. 5) 1939.

9 McInerney, H. L. Histoplasmosis (Reticuloendothelial Cytomycosis). A Review with Mention of Thirteen Unpublished Cases, *Am J Trop Med* 20: 603-616 (July) 1940.

10 Hild, J. R. Histoplasmosis in Infancy, *Am J Dis Child* 63: 131-139 (Jan.) 1942.

11 Humphrey, A. A. Reticuloendothelial Cytomycosis (Histoplasmosis of Darling). *Arch Int Med* 65: 902-918 (May) 1940.

12 Henderson, R. G., Pinkerton, Henry, and Moore, L. T. Histoplasma Capsulatum is a Cause of Chronic Ulcerative Enteritis, *J A M A* 118: 555-559 (March 14) 1942.

13 Brown, A. E., Havens, F. Z., and Magath, T. B. Histoplasmosis. Report of Case. *Proc Staff Meet, Mayo Clin* 15: 812-816 (Dec. 18) 1940.

14 Reid, J. D., Scherer, J. H., and Irving, H. Systematic Histoplasmosis in the United States, *Science* 91: 264 (March 15) 1940.

The liver was palpable. Results of the rest of the physical examination were negative.

Reported urinalysis disclosed a slight amount of albumin, the persistence of a few granular casts, occasional erythrocytes and occasional pus cells. The value for hemoglobin was 11.7 Gm per hundred cubic centimeters, and erythrocytes numbered 4,180,000. The leukocyte count was never higher than 6900. Differential counts and special blood smears disclosed only a definite shift to the left of the polymorphonuclear leukocytes and some myeloid immaturity. The Wassermann reaction was negative. Roentgenograms of the thorax revealed nothing abnormal. The sedimentation rate was 52 mm per hour. Results of five blood cultures were reported as being negative. Results of complete examination of the sputum were negative. Results of examination of the stools for parasites were negative. Results of agglutination tests for *Brucella melitensis*, *Pasteurella tularensis*, *Eberthella typhosa* and X19 strains of *Proteus vulgaris* all were negative. The tuberculin test was negative. Results of examination of a thick smear

After careful microscopic study of the sections obtained from the liver, one of us (Broders) felt that this material represented a chronic granuloma with multiple small zones of necrosis associated with scattered foreign body giant cells. In the small zones of necrosis were microscopic organisms which

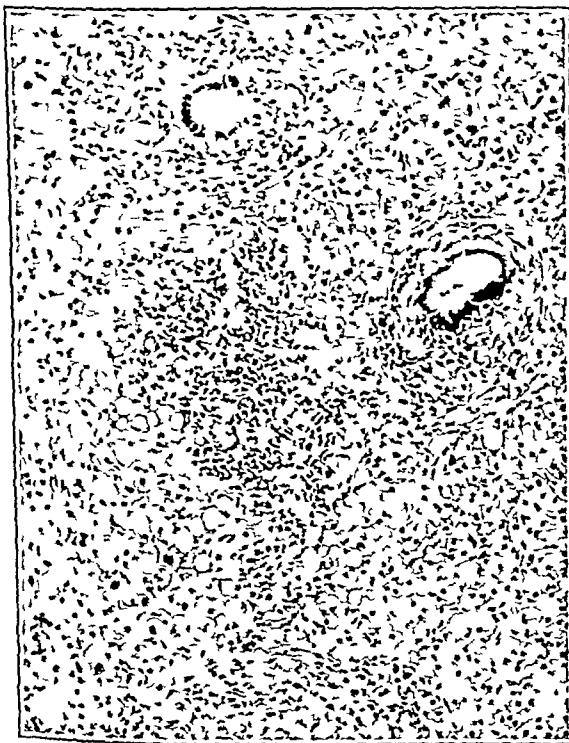


Fig 2—Section of tissue of liver removed for biopsy. Chronic granuloma (hematoxylin and eosin $\times 110$).

of the blood for any evidence of plasmodia were negative. A test for hepatic function revealed retention of dye of grade 2.

Because of the heart murmur and the recurrent febrile reactions, a diagnosis of "subacute bacterial endocarditis" was entertained, although because of the negative blood cultures this diagnosis was never considered to be the final one. In view of the palpable liver, the finding of retention of dye of grade 2 and the history of abdominal colicky pain which extended to the right upper quadrant it was thought wise to perform peritoneoscopy and abdominal surgical exploration to exclude the possibility of primary or secondary hepatic disease. On December 4 Dr. J. M. Waugh of the Division of Surgery carried out abdominal exploration. Enlargement of the liver was found and seemed to be fairly well confined to the right lobe. The colon appendix, stomach, duodenum, pancreas and aortic lymph nodes were all normal. The spleen was definitely enlarged. There was nothing to suggest a hepatic abscess, and although aspiration biopsy of the right lobe of the liver was carried out three times no fluid was encountered. Because of an unusual brownish discoloration, almost of a nutmeg type, specimens of tissue of the liver were taken for biopsy. The operation was terminated as a simple exploration.

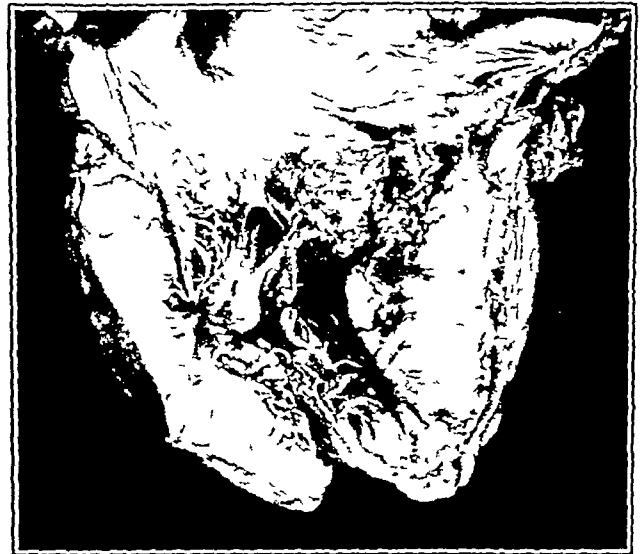


Fig 3—Heart opened to show large vegetation on mitral valve.

to him resembled the causative organism of histoplasmosis (fig 2).

The patient's postoperative course was relatively uneventful. Before the pathologic diagnosis had been received we administered hypodermically to the patient 1 gram (0.065 Gm.) of



Fig 4—Vegetation on the aortic valve showing colonies of *Histoplasma capsulatum* (vegetation on the mitral valve presented an identical picture) (hematoxylin and eosin $\times 1100$).

emetine three times daily for three days. Interestingly enough, the patient's temperature during the time he was receiving emetine was never higher than 99 F. After the pathologic diagnosis of histoplasmosis had been arrived at on the basis of biopsy specimens of the liver, no further antiamebic

therapy was employed. Aside from supportive treatment and general measures for the patient's comfort, no attempt at specific therapy was made. Fourteen days after the abdominal surgical exploration he was dismissed from the hospital and allowed to return home. After his return home he received a course of antimony and potassium tartrate in amounts of 0.5 cc of a 1 per cent solution. This amount was administered daily for a trial period of six or eight days. All attempts at therapy were without avail, and the patient died eleven weeks after his dismissal from the clinic.

PATHOLOGIC DATA

The results of necropsy, reported through the courtesy of Dr. Paul Bertrand Champlin of Find, Okla., revealed definite endocarditis of the mitral valve as well as a small warty lesion on the aortic valve (fig. 3). The only other observation of significance was one infarct in the spleen. The other abdominal viscera were essentially normal. The observations were again suggestive that the fatal termination of the patient's illness was accompanied by subacute bacterial endocarditis with the usual associated findings.

Special studies of the pathologic tissue were made by one of the sections on pathology. Extensive, organized vegetation on the mitral valve of the heart covered approximately a fifth of the surface of the valve. The vegetation extended on the chordae tendinae, and moderate vegetation was seen on the free edge of one of the aortic cusps. Histologically there was definite evidence of old rheumatic fever both in the myocardium and at the base of the valves. Enmeshed in the vegetations were myriads of a yeastlike organism having the typical appearance of *Histoplasma capsulatum* (fig. 4). Examination of the spleen revealed an old healed infarct. An occasional *Histoplasma capsulatum* was demonstrable in the reticuloendothelial cells of this organ. Examination of the kidneys disclosed a moderate amount of arteriolar sclerosis, with an occasional zone of a granulomatous nature in the cortex. These zones were composed of inflammatory cells and foreign body giant cells. Although *Histoplasma capsulatum* could not be demonstrated after special staining, these zones nevertheless were suggestively involved by the organism. Study of a portion of the liver obtained at necropsy revealed nothing but chronic passive congestion. In the specimens of tissue of the liver previously taken for biopsy, however, *Histoplasma capsulatum* could be demonstrated in the granulomatous zones.

COMMENT

From a clinical point of view this case represents primarily another example of the problem of recurrent hyperpyrexia of obscure origin. The patient had never suffered from rheumatic fever, although he had had scarlet fever in his youth as well as "growing pains" as a child. The clinical course, together with the physical findings, was highly suggestive of subacute bacterial endocarditis. Repeated blood cultures were negative, a fact which resulted in our attempt to establish the definite diagnosis by simple abdominal exploration. The finding of *Histoplasma capsulatum* by means of biopsy of tissue obtained from the liver was extremely valuable. There is little doubt that the patient was suffering from what appears to have been one of the few instances of systemic infection due to histoplasmosis. What part the preceding peritonitis played in the onset of the patient's illness cannot be definitely stated. It seems reasonable to assume, however, that this may have been the initial lesion. The subsequent course, as well as the pathologic data, which included an old rheumatic heart lesion and

also the unusual finding of this organism in the vegetative process in the heart, renders this case a rather unusual clinical and pathologic entity. It appears to be the first case of its kind noted in the literature. As knowledge of the organism of infection increases, opportunity to observe similar instances of the disease may be afforded.

SUMMARY

In a case presenting the clinical syndrome characteristic of vegetative endocarditis in which the causative organism was *Histoplasma capsulatum*, the clinical course, laboratory and physical findings were identical to those which accompany subacute bacterial endocarditis. The illness terminated fatally, in spite of attempts at therapy. This appears to be the first case of its kind recorded in the literature.

THE SELECTIVE ACTION OF THIOBISMOL ON INDUCED MALARIA

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One of the problems of the malarial therapy of neurosyphilis has been the need of a drug to reduce the frequency of the paroxysms without eliminating them altogether. Until recently no drug, including the common antimalarials, has demonstrated a reliable selective effect, the administration of the drug causing either no change or a total suppression of the paroxysms. In 1939 Schwartz¹ found that thiobismol (sodium bismuth thioglycollate) would convert *Plasmodium vivax* paroxysms from a quotidian (daily) periodicity to a tertian (alternate days) periodicity. Subsequently other workers² confirmed this observation. However, the age (measured in the number of hours from the last fever peak) at which parasites are affected and therefore the best time to administer the drug have not been definitely established.

The present investigation was undertaken with a two-fold purpose: (1) to determine at what age the parasites are affected by thiobismol and consequently the optimum time of administration and (2) to find whether species of malaria other than *P. vivax* can be controlled similarly.

PROCEDURE

The drug was tested on the strains of malaria which are employed at the South Carolina State Hospital for the treatment of neurosyphilis. Our method of inducing and handling this malaria has been described elsewhere.³

The drug was administered intramuscularly in amounts of from 0.05 to 0.2 Gm. Frequency of administration and amounts of drug given are discussed later. The observations reported herein cover a two year period.

From the National Institute of Health Malaria Investigations, Malaria Research Laboratory, United States Public Health Service (Dr. Young), and the South Carolina State Hospital (Drs. McLendon and Smarr).
1. Schwartz, W. F. The Effect of Thiobismol on Therapeutic Malaria. *J. Pharmacol. & Exper. Therap.* 65: 175-184 (Feb.) 1939.
2. Brunsting, L. A., and Love, W. R. The Tempering Effect of Sodium Bismuth Thioglycollate (Thiobismol) on Therapeutic Malaria. *Proc. Staff Meet., Mayo Clin.* 15: 285-288 (May 1) 1940. Cole, H. V., DeOreo, G. A., Driver, J. R., Johnson, H. H., and Schwartz, W. F. Use of Bismuth Injections to Manage Course of Therapeutic Malaria. *J. A. M. A.* 115: 422-426 (Aug. 10) 1940.
3. Mayne, Bruce, and Young, M. D. The Technique of Induced Malaria as Used in the South Carolina State Hospital, Ven. Dis. Internat. 22: 271-276 (Aug.) 1941.

OBSERVATIONS

Plasmodium Vivax — As with other strains of vivax malaria, our strain (St Elizabeths) often shows multiple broods of parasites, producing quotidian paroxysms. To prevent the patient from weakening unduly, it is desirable to have the paroxysms occur every other day. Therefore thiobismol was tried.

A total of 13 white patients were given one or more doses of thiobismol. The results are presented in the accompanying table.

One patient (J L H) with two broods of parasites was given 0.05 Gm of thiobismol. This dosage had no effect on the paroxysms, and the dosages thereafter were increased.

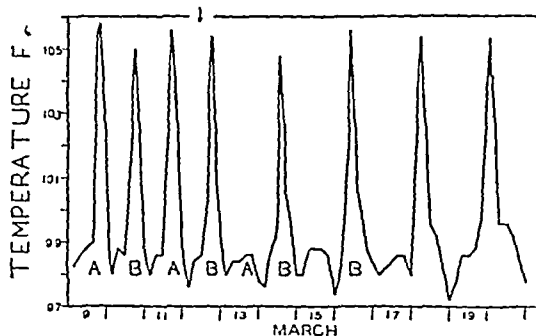
The table shows that an injection of 0.1 or 0.2 Gm of thiobismol given sixteen to twenty-eight hours after a fever peak (column 3) prevented recurrences of the paroxysms caused by that brood of parasites. When the drug was given at the other hours indicated (column 4) either the paroxysms were not affected or the effect was desultory.

The chart (temperature chart of patient W V) shows a typical reaction. The 17 hour old group ceased to produce paroxysms, the 41 hour old group continued to produce them.

In 2 instances, more than one injection of the drug was given at forty-eight hour intervals: patient J L H received two injections and patient D J B received three. However, no advantage was obtained from multiple injections that was not realized from a single injection.

To determine whether the number of broods of parasites influenced the action of the drug, patients with

However, when there was only one brood of parasites and the drug was given when they were about half grown, future paroxysms were prevented. In patients with multiple broods (H B and L H in the table), only the brood about half grown was affected. The foregoing results indicated that the number of broods



Temperature chart of patient W V showing the conversion of paroxysms from a quotidian to a tertian periodicity by one injection of 0.1 Gm of thiobismol (indicated by arrow). The drug was given seventeen hours after the last paroxysm caused by parasite brood A and forty-one hours after the paroxysm by parasite brood B. The A paroxysms were eliminated and the B paroxysms continued.

present did not influence the action of the drug but that the main factor was the age of the parasites.

The parasitologic picture coincided with the clinical picture. When the drug was given at the peak of the paroxysm in a single brood infection (tertian) the parasite density was not materially changed (patient T B S). However, when two broods were present the parasites that were half grown decreased in number and, although the other brood was not affected, the total parasite count dropped considerably. When only one brood of parasites was present and thiobismol was given when these were half grown, the parasite density dropped sharply and, although a few parasites might still be found in the blood stream, the paroxysms usually ceased.

By examining the blood smears at four hour intervals one could see the effects of the thiobismol on the half grown parasites. Within four hours after administration shrunken, fragmentary and irregular staining parasites were found, as well as parasites free from the erythrocytes. Correlating the parasites according to size and age groups revealed that the half grown parasites diminished in number sharply in the twelve hours following drug administration. This observation correlates with the foregoing parasitologic and clinical findings. However, it must be pointed out that although thiobismol seemed to act to some extent directly on the parasite, as demonstrated by the degenerative changes just mentioned, the degree of this action does not seem to be extensive enough to account for all the decrease in the brood affected. There appears to be some other influence as well and the clarification of the exact action of thiobismol against the parasites needs further investigation.

Plasmodium Malariae. — Because of several favorable characteristics quartan malaria is being widely used in the treatment of neurosyphilis. Occasionally, but much less frequently than with *P. vivax*, multiple broods of parasites appear, causing paroxysms oftener than every seventy-two hours. Since such a condition is usually undesirable thiobismol was tried on this strain (United States Public Health Service) of *P. malariae* to see whether some of the broods of parasites could be eliminated.

Effect of Thiobismol on the Different Age Groups of *Plasmodium Vivax* Parasites

Patient	Thiobismol Administered Gm	Age of Parasite Broods *	
		Paroxysms Inhibited	Paroxysms Not Inhibited
T B S	0.2		2
T B S	0.2		0-1
L W	0.2	22	45
R. W	0.2	23	5
D B J	0.1 (thrice)†	24	48-0
J L H	0.1 (twice)†	24	46
H B	0.1	19	37
L H	0.1	23	46
C R B	0.1	20	45
J A B	0.1	16	42
W V	0.1	17	41
N L M	0.1	17	40
L P	0.1		30†
G O G	0.1		12 + 26†
J L H	0.05		26 and 43

* Age is given as the number of hours from last fever peak caused by that brood of parasites to the time of drug administration.

† Drug given at forty-eight hour intervals.

‡ Results desultory. Usually were given several days rest then paroxysms returned as formerly.

both single and double broods were tested. Patient T B S with only one brood of parasites producing paroxysms every other day (tertian) received one injection of 0.2 Gm at the height of a paroxysm. The paroxysm recurred every other day thereafter, as would have been expected if no drug had been given, showing that the drug had no effect. About two weeks later another 0.2 Gm injection was given the patient at the height of a fever with the same results as before.

Thiobismol in 0.1 and 0.2 Gm amounts was given thirty-seven times to 9 Negroes showing either one, two or three broods of parasites. Fifty-three broods of parasites in thirty-three age groups ranging from two to seventy-two hours after the fever peak were involved, so that practically every age group was covered.

No consistent results were obtained. Usually the parasite density decreased for several days. Sometimes several paroxysms would be skipped, but this was not always true. In short, clearcut action against various age groups of *P. malariae* could not be demonstrated.

Plasmodium falciparum.—Occasionally a neurosyphilitic patient is immune to both *P. vivax* and *P. malariae*. In such cases *P. falciparum* can be used, but the patient must be watched most carefully because of its malignant character. Therefore we tested thiobismol on *P. falciparum* to see whether it could be rendered more manageable. The *P. falciparum* used was obtained Oct. 16, 1940 from a young Negro male who was admitted to the hospital suffering from malaria and is hereby designated as the McIndoon strain. Since the isolation of the McIndoon strain of *P. falciparum* it has been used continuously for the treatment of neurosyphilis.

Nine Negro patients received thirteen injections of the drug, ten of these injections were of 0.2 Gm and three were of 0.1 Gm.

No remission of the paroxysms could be demonstrated. The parasite density apparently was not altered by the drug. Of the three species, *P. falciparum* showed the least response to the drug.

COMMENT

Thiobismol in 0.1 and 0.2 Gm amounts exhibited a definite inhibitory effect on half-grown *P. vivax* parasites i. e. about sixteen to twenty-eight hours after a paroxysm caused by that group of parasites. (As the peak of the fever follows the peak of the parasite segmentation by several hours, the actual age of the parasites was several hours greater than the elapsed time from the fever peak.)

The thiobismol did not exert much effect on parasites either younger or older than the sixteen to twenty-eight hour limits. When two broods of parasites were present producing quotidian paroxysms, an injection of thiobismol eliminated the brood about half grown, leaving the other brood to continue producing paroxysms every other day. This tertian periodicity of paroxysms usually persisted throughout the remainder of the infection and in some cases through several subsequent transfers.

If it possible, therefore, to change quotidian paroxysms of *P. vivax* to tertian by giving 0.1 or 0.2 Gm of thiobismol, preferably the former amount, about twenty-four hours before or after the paroxysms to be eliminated. A convenient time to administer the drug is at the fever peak. The quotidian occurrence of paroxysms often taxes the patient so severely that it is impossible for him to undergo a full course of twenty paroxysms. Changing the paroxysms to a tertian occurrence better enables the patient to withstand a full course of malaria. The selective property of thiobismol is of much value in the control of malaria and is a characteristic that so far has not been demonstrated by the commonly used antimalarials such as quinine.

In our work on *P. malariae*, a selective effect of thiobismol on different age broods of the parasites has

not been demonstrated. Usually there was a decrease in parasite numbers following administration.

Against *P. falciparum*, thiobismol seems to have almost no inhibitory effect.

We are not able at present to offer any satisfactory explanation for this difference in the action of thiobismol on the three species of malaria.

Quite often quinine will not prevent the occurrence of paroxysms for several days after it has been started. It has been found useful here in terminating a *vivax* infection to give an injection of thiobismol the day on which quinine is started. The thiobismol will usually prevent the occurrence of a paroxysm the following day. After that the quinine controls the infection.

This combination of thiobismol and quinine might be found useful in malaria infections generally.

SUMMARY AND CONCLUSIONS

1 Thiobismol in 0.1 or 0.2 Gm amounts was found to have an inhibitory effect against *P. vivax* parasites which were half grown, i. e., about sixteen to twenty-eight hours after the last paroxysm caused by that brood of parasites. Parasites older or younger were not affected.

2 On examination of the blood, thiobismol seemed to injure the half grown parasites and to reduce their numbers (density). No such effect was seen when parasites were older or younger.

3 By giving the drug during the sixteen to twenty-eight hour period after a paroxysm, that series of paroxysms was eliminated. Thus paroxysms were converted from quotidian to tertian periodicity.

4 Paroxysms converted to tertian periodicity usually remained so during the remainder of the infection and sometimes through several subinoculations.

5 The occurrence of paroxysms every other day (tertian) instead of daily (quotidian) enables a neurosyphilitic patient better to undergo a full course of malaria therapy.

6 In *P. malariae* infections, a definite action of thiobismol against any particular age group of the parasites could not be demonstrated. The administration of the drug sometimes gave temporary rest and a transitory diminution of parasites.

7 Practically no effect of thiobismol could be demonstrated against *P. falciparum* infections. Neither the course of the paroxysms nor the parasite density was considerably altered by the administration of the drug.

8 For the termination of *P. vivax* infections it has been found that one injection of thiobismol given the day quinine is started usually acts quicker than quinine alone by preventing a paroxysm the following day. It is suggested that this combination might find a wider use generally.

The Need for Oxygen During a High Parachute Jump

—The time of survival without oxygen has been estimated for various altitudes. At 40,000 feet a man would have one minute before he became unconscious, at 35,000 feet he would have three minutes, while at 20,000 feet he may last fifteen minutes. These facts illustrate the need for oxygen during a parachute jump from high altitudes. If a man should jump out of his plane at 40,000 feet and pull the rip cord, he would descend at the rate of 1,500 feet per minute. It would take him ten minutes to reach 25,000 feet and he would be dead from anoxia as a result.—Gemmell, Chalmers, L. *Physiology in Aviation*. Springfield, Ill., Charles C Thomas, Publisher, 1943.

SULFADIAZINE IN RESPIRATORY
TRACT INFECTIONSITS VALUE IN TREATMENT DURING WINTER OF
1942-1943 AT JEFFERSON BARRACKS MISSOURI

LIEUTENANT COLONEL HOWARD A. RUSK

AND

CAPTAIN ARIC C. VAN RAVENSWAAY

MEDICAL CORPS ARMY OF THE UNITED STATES

While it seems well established, both on a clinical basis and from the present concept of the mode of action of the sulfonamide drugs, that these drugs have no effect on virus infections, they are nevertheless being widely used in the treatment of such conditions as the common cold, influenza and atypical pneumonia symptom complexes which are difficult to evaluate clinically from a causative standpoint because of lack of simple laboratory diagnostic procedures but which in most instances are considered to be caused by virus infections.

Such use of the sulfonamide drugs is based on several premises: the prevention of secondary bacterial infections, the danger of withholding treatment in cases of pneumonitis caused by unrecognized sulfonamide sensitive bacterial infections and possibly chiefly because the American physician has become extremely sulfonamide conscious and, as newer and less toxic forms have been devised, has become less hesitant in the use of these substances. In obscure cases, perhaps he relies on them with the same feeling that his grandfather had toward quinine.

Because of the large number of respiratory tract infections which are seen in a large army station hospital under conditions which make possible a more carefully controlled clinical study than is possible in civilian life, three comparable and controlled series of patients with respiratory tract infections with fever and malaise sufficient to warrant hospitalization were studied during the winter of 1942-1943. The accompanying table illustrates the results obtained.

In each of the three series, the patients admitted to one or more wards were treated with sulfadiazine at an initial dose of 3 Gm and subsequent doses of 1 Gm every four hours being given and the latter being continued until convalescence was established or until non-improvement in protracted cases indicated that it should be stopped. The average total dose given was 25 Gm. Those admitted to other and similar wards were given A. P. C. capsules¹ every four hours. In addition, both groups of patients were given the usual supplementary therapy consisting of adequate fluids by mouth, gargles, intranasal medication, cough mixtures and steam inhalations as indicated. Patients with typical follicular tonsillitis were excluded and transferred to other wards. Chest plates were taken of all patients on the third day of hospitalization and at other times as conditions suggested. All patients developing x-ray evidence of pneumonia were excluded from the series.

There was no appreciable difference in the number of cases of pneumonia appearing in the wards in which sulfadiazine was given as compared with the control

wards. The percentage in the former was 14 and in the latter 16. It should be emphasized that probably the majority of cases of pneumonia were in the incubation period at the time of admission and that this is not considered a test of prophylaxis. Patients with obvious pneumonia were sent directly to special pneumonia wards on admission, and while etiologic studies were rendered difficult in the group receiving sulfadiazine, it seems probable on the basis of x-ray and laboratory evidence and sputum studies in the control group, that the bulk of these cases of pneumonia were of the atypical variety.

The patients included in the study, after those in whom pneumonia developed are eliminated, were kept hospitalized for a minimum postfebrile period of seventy-two hours, or longer if troublesome symptoms persisted. Routine urinalysis and complete blood counts were done on all patients. In the series of cases studied there were no reactions from sulfadiazine therapy aside from a few instances of slight nausea.

Comparable Results Obtained in Treatments of
Respiratory Tract Infections

Series	Ward	Treatment	Number of Cases	Percent Developed of Pneumonia	Average Days of Fever	Average Days in Hospital	Percentage of Cases in Which Fever Persisted After 48 Hrs
1	11/17/42 to 12/1/42	Sulfadiazine	46	15	3.2	7.0	
2	12/1/42 to 12/15/42	A. P. C.	60	9	4.1	8.8	
3	12/1/42 to 12/15/42	Sulfadiazine	59	9	2.4	6.5	
4	12/1/42 to 12/15/42	A. P. C.	72	13	2.4	6.7	
5	12/1/42 to 12/15/42	Sulfadiazine	105	16	2.7	6.9	35
6	12/1/42 to 12/15/42	Sulfadiazine	107	16	2.5	8.1	67
7	12/1/42 to 12/15/42	A. P. C.	100	19	2.8	7.2	64
8	12/1/42 to 12/15/42	A. P. C.	52	14	3.3	7.3	52
9	12/1/42 to 12/15/42	Dover's powder	39	30	4.4	8.9	
Summary for sulfadiazine group			317	15	2.7	7.2	
Summary for A. P. C. group			314	14	3.1	7.4	

A study of the table will reveal indications of variation in virulence of the infectious process when series of cases studied at different times during the winter are compared. Sixty patients in November 1942 receiving A. P. C. capsules had an average hospital febrile period of 4.1 days while 72 similarly treated patients in December 1942 had a comparable febrile period of 2.4 days. Comparison of the groups receiving sulfadiazine with the control groups revealed no significant difference in favor of the former.

A third small group of patients were given 5 gram tablets of Dover's powder (powder of ipecac and opium), 1 tablet every four hours. The clinical results were so poor and obstipation so troublesome that this treatment was soon discontinued. The results in this small group are also indicated in the table.

Since no deaths occurred in the series either directly or from complications and since there was no appreciable difference in the complications which did appear in the two groups (atypical pneumonia) the cost factor may properly be considered. Assuming a purely arbitrary number of 100 new hospital cases of respiratory

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The medical officers who conducted these studies in their wards were Captains Willard B. Andrus and Carl D. Marsh and Lieutenants Francis V. Tunisica, Alexander D. Robertson and Ames R. Templeton, all of the Medical Corps at the Station Hospital, Jefferson Barracks, Mo.

¹ A. P. C. capsules contain a grain 315 grains (acetosalicylic acid 0.2 Gm), phenacetin 21 grains (acetophenetidin 0.16 Gm) and citric acid 1 grain (0.032 Gm).

tract infections daily, treatment with sulfadiazine on the basis of 75 cents for 25 gm would cost \$2,250 a month, while A P C capsules, on a basis of 4 cents for 20 capsules would give a comparable figure of \$120 a month. The differential in civilian life would obviously be much greater.

CONCLUSION

In a clinically controlled series of 670 cases of simple respiratory tract infections there was no significant difference, either in the length of the febrile period or in the period of hospitalization, among the group receiving sulfadiazine as compared with the control group receiving symptomatic treatment.

Clinical Notes, Suggestions and New Instruments

BROMIDISM AFTER EXCESSIVE DOSAGE OF PROSTIGMINE BROMIDE FOR MYASTHENIA GRAVIS

J. M. NIELSEN, M.D., LOS ANGELES

The quantity of bromide which can safely be ingested by different persons varies enormously. The variability seems to depend not only on the differences with which various persons retain bromide but on the different concentrations of bromide which cause clinical symptoms of bromidism in different persons. For two reasons therefore, it is necessary for the clinician to guard against bromide intoxication even in instances in which the bromine forms a relatively small portion of the bromide molecule prescribed.

Since the advent of prostigmine bromide as a means of administering prostigmine orally in the treatment of myasthenia gravis, patients with this disease have had a means of steadier relief from symptoms in addition to obviating the necessity for numerous hypodermic injections of prostigmine methylsulfate. The case here reported however, shows a possible danger through bromidism in the self administration of prostigmine bromide—a danger which one would hardly anticipate and one of which I have been unable to find any previous record.

Recently a patient was received for treatment of myasthenia gravis after she had herself increased her dosage of prostigmine bromide to a point generally considered dangerous, but the danger arose from the bromide portion of the molecule instead of from the prostigmine portion. She had taken 30 mg every three hours day and night for months. To her symptoms of myasthenia gravis were added those of bromide intoxication—mental confusion and paranoid symptoms—as well as the physical sign of thickness of speech. As the last named symptom is common to bromidism and myasthenia gravis, the remedy prostigmine bromide may greatly add to the symptoms of the disease being treated.

REPORT OF CASE

Myasthenia gravis, successful treatment with prostigmine bromide, excessive dosage self administered, bromidism, death

Mrs W J O, a white woman aged 32 with an irrelevant history of past illnesses, considered herself well up to March 1941, at which time she had an acute illness diagnosed as streptococcic sore throat. The organism was said to have been isolated and the patient was treated with sulfanilamide. After an apparent immediate recovery she had a relapse in a week or ten days. A second course of treatment with the same drug brought about a complete recovery.

She remained well until September, when she began to have episodes of "talking through her nose." This symptom was considered a sort of complication of her previous trouble.

At Christmas an illness diagnosed as influenza developed, and since that time, she said, she had never been well. In

another month, by January 1942, her arms were so weak that she had difficulty in washing her hair. By March she had difficulty in chewing, swallowing and talking after midafternoon, though she had no trouble early in the day. It was more difficult for her to swallow solid food than liquids, she seemed to lack strength to force food through the esophagus.

In July diplopia developed, first noticed while she was driving her car. By that time she had to confine all her activities to the forenoon. Then, just as she was becoming incapacitated, she had a remission with disappearance of all her symptoms.

After a remission of several weeks her symptoms suddenly returned and she consulted a neurologist who, as part of the examination, gave her an injection of prostigmine methylsulfate, which removed all her symptoms in fifteen minutes. However, her joy was short lived, because he told her that what he had done was only by way of a test and that inevitably she would die of her disease within a year. He prescribed prostigmine bromide to be taken by mouth, and she got along quite well for a few months.

When I saw her she presented typical myasthenia gravis. She was too weak to reach over her head and she could not depend sufficiently on her grip to hold dishes, of which she had broken many. She had an almost constant ptosis and anisocoria and she fatigued very rapidly in general on exertion. The reflexes diminished in less than one minute on repeated testing. The thyroid was not palpable and x-ray examination showed no evidence of enlarged thymus. The heart and lungs were normal. The blood pressure was 118 systolic and 90 diastolic. The pulse rate was 72 a minute. There were no pathologic reflexes anywhere.

To remove the emotional depression due to a hopeless prognosis, I assured her (with her husband's collaboration and understanding) that her illness was no longer serious because of new facts recently discovered. With her new hope she returned home, taking 90 mg of prostigmine bromide daily, and she did remarkably well for a few months.

I saw nothing more of the patient, who lived in another city, until Feb 11, 1943, when she was admitted to a sanatorium in Los Angeles because of mental confusion. Examination there showed decided thickness of speech and other signs of myasthenia gravis but also disorientation and unwillingness to accept any advice. She demanded her discharge, was suspicious of the food served and was unapproachable by any argument. She evidently had a paranoid psychosis.

Because of the altered clinical picture and because the patient had brought a large supply of prostigmine bromide, the husband was asked as to dosage of the drug. He stated that the patient had gradually increased the dosage in desperation for relief until she was taking 240 mg daily. He had bought all she had asked for because he considered the situation hopeless anyway. When questioned about other drugs, he denied that he had given her anything except an occasional tablet of phenobarbital when she was fearful or anxious. For that purpose he had obtained a prescription from a local physician. No one had prescribed bromide or any other medication except as stated.

A blood bromide determination was ordered on that day. During the night the patient died in her sleep. On the following day the laboratory report was obtained, showing a concentration of bromide in the blood amounting to 225 mg per hundred cubic centimeters.

COMMENT

No other instance of bromide intoxication has been found reported in the literature from prostigmine bromide. Of the 240 mg of prostigmine bromide taken daily only a relatively small portion would be bromine, and even if the entire quantity was calculated as "bromide" the dosage would be smaller than that which is ordinarily considered dangerous, yet this small amount accumulated in the patient's blood to cause bromidism.

Doctors using prostigmine bromide in cases of myasthenia gravis should be warned to guard against bromidism. The danger can be avoided by stringent supervision or by an occasional change to prostigmine methylsulfate.

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Special Article

HANDBOOK OF NUTRITION· XXVI

PRINCIPLES OF DIET IN THE
TREATMENT OF DISEASETOM D SPIES, M.D.
CINCINNATI

These special articles on food and nutrition have been prepared under the auspices of the Council on Foods and Nutrition. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the Council. These articles will be published later as a Handbook of Nutrition—Ed

Although the importance of diet in the treatment of disease was emphasized by Greek and Roman physicians, a true conception of the value of food as a therapeutic agent has been gained only in recent years. The many ramifications of our knowledge concerning food could not be listed, let alone described adequately, within the scope of this paper. The administration of indicated foodstuffs or their specific constituents to persons with specific deficiency diseases is followed by

act very efficiently at first and against lesser odds when the detrimental factors are not too protracted. Excessive physical exercise, acute infections and fever affect adversely those factors which tend to maintain nutritional balance. In the beginning of many deficiency diseases, levels of the essential substances in some tissues are decreased at the expense of others. In other words, there is a protective homeostatic control of the storage and distribution of many of these substances vital to the cells. Equilibration becomes more and more difficult to achieve as time goes on. One could say, perhaps arbitrarily, that the dietary deficiency development is under way and that at least a biochemical lesion is present. When this lesion is severe enough, functional disturbances arising from various parts of the body become manifest. Vasomotor instability in the skin, functional disorders of the alimentary tract, nervous system or circulatory system may occur. There is no regular order to the appearance of these symptoms, and presumably they are affected by hereditary predisposition or trauma in the wear and tear of everyday life. Certain it is that the clinical picture is complex and is composed of an infinite variety of symptoms. After many months of severe or persistent symptoms, accompanied perhaps by slight chemical and physiologic

TABLE 1—Nutrition History

Name	Mrs J S	Age	29	Address	Tru sville Ala	Date	Oct 21 1941
Food—Amount used							
Whole milk—1 cup daily							
Skimmed milk—0							
Canned milk—0							
Cheese—0							
Butter—0							
Other fats—pork fat—liberal amount							
Eggs—2 weekly							
Meats							
Lean meat (beef lamb pork)—0							
Liver—0							
Fat meat—0							
Fish—1 medium size serving about once a month							
Fowl—0							
Salt pork—1 serving daily (about 1 ounce)							
Vegetables and Fruits							
Potatoes Irish—3 large servings weekly							
Potatoes sweet—0							
Dried vegetables—1 serving daily							
Greens—3 servings weekly							
Tomatoes—0							
Other vegetables							
Cooked—seldom used							
Raw—seldom used							
Orange—0							
Grapefruit—0							
Dried fruit—0							
Other fruit—0							
Breads							
Cornbread—3 or 4 large pieces daily							
Biscuit—3 or 6 daily							
Loaf bread white—0 whole wheat—0							
Crackers—0							
Cereals							
Rice—0							
Cris—1 serving daily							
Oatmeal—0							
Others—0							
Deserts—0							
Sugar—1 or 2 teaspoons daily							
Syrup—2 tablespoons daily							
Other foods—0							
Yeast							
Other vitamins—0							
Beverages							
Tea—0							
Coffee—2 cups daily							
Soft drinks—							
Alcoholic beverages—0							
Snuff—yes							
Other tobacco—0							
Appetite—poor—some days eats less bread							
How long was this diet used?—past year							
Variations in kind and amount of food used—during winter has had green vegetables only once a week							
Economic status							
Number in family							
Adults—2							
Children—4 (ages 1 3 5 6 years)							
Urban—✓ Rural— Rent—✓ Own—							
Income (source and amount)—Husband works in lumber yard—\$30 per month							
Welfare—0 food stamps—0							
Food supply							
Food produced at home—							
Garden—0 summer— winter—							
Vegetables—							
Dried—							
Corn—							
Potatoes—							
Others—							
Fruit—							
Canned foods—fruit—0 vegetables—0							
Cows—0 milk supply (what months)							
Hogs—0							
Chickens—0							
Eggs (what months)—0							

miraculous improvement. The judicious use of these specific substances as therapeutic agents is revolutionizing the practice of medicine. Even more benefits to mankind would follow the application of this knowledge toward the prevention of these nutritional diseases. Certain it is that proper nutrition is essential for the health and vigor of the higher forms of life and every living cell in the human body requires specific nutrients. Though the cell must have these nutrients, some of them it cannot always make. Accordingly, they must be supplied if the body is to function normally.

Respiration and growth of cells involve the synthesis of complex substances from simple ones. When the available simple compounds are inadequate to supply the needs of the body, as the result of inadequate assimilation, increased demand increased loss or a decreased supply, a disorder is initiated and factors which operate to maintain nutritional balance are brought into play. These beneficial mechanisms may

alterations, structural changes begin to appear in the various tissues, and ultimately the clinical diagnosis can be made.

The practicing physician who at last is called on to treat a case of clinical deficiency disease is faced with a nutritive breakdown. Yet he has little information of the previous nutritional status of the patient, a factor of great importance in restoring and maintaining his health. Since 1936 my associates and I have been faced with the same problem and, like the practicing physician, we realized the necessity of initiating immediate therapy. At the same time however we have been especially interested in devising methods of persistent therapy of a type which would eliminate such dicta as "once a pellagrin always a pellagrin." Accordingly, in treating each patient we began the long and arduous task of determining the factors responsible for his nutritive breakdown for it is only by their elimination that one can avoid recurrences. This paper is concerned

with the principles of practical therapy which have been derived from the application of the methods outlined to thousands of our cases during the past several years. While other investigators have made similar studies, we are somewhat more familiar with what we have done. Accordingly, we are reporting our methods in some

TABLE 2—Case Illustrating Unsatisfactory Diet

Food	Amount Recommended for an Adequate Diet *	Amount Used by Patient
Milk	2 cups daily	1 cup daily
Eggs	1 weekly	1 2 weekly
Meats		
Lean beef, liver, lamb, veal, chicken or pork, chick, or fish	6 small servings weekly	1 medium size serving of fish once a month
Salt pork		1 serving daily (about 1 ounce)
Vegetables and Fruits		
Tomato, or cucumber, or grape fruit	5 servings weekly	1 None
Potato or sweet potato	1 1/2 servings daily	1 1/2 servings weekly
Dried vegetables or nuts	1 1/2 servings weekly	1 1/2 servings daily
Leafy green and yellow vegetables	6 servings weekly	1 1/2 servings weekly
Other vegetable and fruits	6 servings weekly	1 1/2 servings weekly
Bread, enriched or whole grain	At every meal	1 liberal amount, but none of it enriched or whole grain
Cereal, whole grain	At least 1 serving daily	1 1/2 servings daily but not whole grain
Desserts	1 serving daily	1 None
Sugar and syrup	As desired	Moderate amount
Butter or fortified whole margarine	2 table spoons daily	1 liberal amount of pork fat

* Based on Planning Diets by the New York School of Good Nutrition, Bureau of Home Economics, United States Department of Agriculture, Washington, July 1941.

† Indicates foods of which patient did not eat sufficient amounts.

detail with the assurance that they would have the general support of other investigators in the field.

The essence of successful treatment is early and accurate diagnosis. The diagnosis of clinical conditions and the assessment of the nutritional status of a patient and his family can best be made by a conservative interpretation of the data from a dietary and food survey, a complete medical history and physical examination, and special laboratory determinations. The brief outlines which follow serve in our hands to gather partial information of the type needed. As in any other field of medicine, we attempt to gather information about the person as well as his disease, accordingly, it is impossible to give an outline which would suffice in all details for every person.

DIETARY ASSESSMENT

It is of primary importance to obtain a nutrition history when the patient is first seen. If the diet is found inadequate, tentative nutritional deficiencies are suspected, even though there is no diagnostic clinical manifestation at the time. In such instances, repeated dietary evaluation, laboratory studies and general clinical check-ups are made. If the diet seems adequate to meet normal nutritional requirements and the patient has lesions of nutritional failure, we begin our search for some condition which is increasing the nutritive requirements or interfering with the absorption or utilization of nutrients. For several years we have used the type of nutrition history shown in table 1 and have found it satisfactory for the initial studies of a person suspected of nutritional imbalance. Since we have placed ourselves in the position of the practicing physician, we believe this type of history will be a valuable aid to him in collecting data for a precise diagnosis and treatment.

This can best be illustrated by the case shown in table 2. By comparing the food eaten by the patient whose nutrition history is shown here with the food she needs, it is apparent that her diet falls far short of being satisfactory. Although this type of nutrition study does not allow an accurate calculation of the various nutrients in the dietary, it has the advantage of not requiring a great deal of time or special training on the part of the persons taking or evaluating the data.

We have found it desirable to make a thorough inventory of the income and food resources of the patient and his family, though it is time consuming, for not infrequently this material gives us a lead in determining the adequacy of his diet. If the income is low and food resources are meager, it is almost certain that the diet has been inadequate and it is desirable to study the nutritional status of the patient very carefully. We wish to point out, however, that it is fallacious to consider that an adequate or even a liberal income means that the diet has been adequate. Many persons who have liberal funds available for food fail to eat a proper diet. Others whose income is on first glance seemingly too low to provide a good diet, by careful budgeting and a wise selection of food, manage to get what they

NAME	Clinic	Hospital	Examiner	Date
Sex	Color	Age	Weight	
Family History of Pellagra (X had disease D died of disease - negative)				
Mother	Brother	Uncle	Husband	
Father	Sister	Aunt	Wife	Children
Past History:		First attack	No attacks	
Frodooping		Precipitating	Age of children	Length of Lactation
Operations			1	
Infections			2	
No pregnancies			3	
Menstrual			4	
			5	
			6	
			7	
			8	
			9	
			10	
Present Illness:		Chief complaint	Date of onset	
Headache		Tinnitus		
Dizziness		Miscellaneous		
Eyes: Burning, Discharge, Night blindness		Blurred vision, Lacrimation, Photophobia		
Ears: Hearing, Loss:				
Mouth: Teeth: Upper-in, Lower-in, out	Lower-in, out	Tongue sore, red	Onset	Lips sore, red
Sore throat		Salivation	Onset	
Skin: Dermatitis	Location		Onset	
Mental Symptoms: Hallucinations, Insomnia, Nervousness		Onset		
G I: Anorexia, Constipation, Vomiting, Diarrhea, Pain in stomach, Proctitis		Urological	Pain in legs, arms, Parasthesia, weakness of -	
G U: Vaginitis, Urethritis, Perineal lesions		General: Weakness, Easy fatigability, Skin - burning, itching, Weight loss -		
Physical Examination:		Nourished - well, moderately, poorly		
Developed - well, moderately, poorly				
Eyes: Pupils, Conjunctiva, Sclera, Cornea, Ophthalmoscopic, Slit lamp	React to L & A	Circumcorneal injection, Arcus	Inflamed, Pterygium, Nystagmus	
Hair color				
Nose: Sharkskin	Nares	Nasomalar	Nasolabial	

Fig 1—Form for recording history

need to meet their nutritive requirements. But there is a point below which the income and food resources cannot fall and still provide an adequate diet. For example, we found that the minimum cost of the food needed to satisfy National Research Council standards for a family of five, living in this geographic location, to be \$8.60 a week, whereas a particular family we had studied had a food allowance of \$2.50. No other

sources of food, such as a garden, chickens or livestock, were available to them

Frequently trained observers keep an accurate record of the patient's food intake for a period of a week or more at various seasons of the year. From this the nutritive value of the dietary is evaluated and the degree

except by clinical methods. It is customary in our studies to regard each person individually and to vary somewhat the general history, physical examination and special examinations, depending on the nature of the symptoms he presents. In all instances, information which satisfies the complete history and examination forms as listed in figure 3 is obtained. In addition, special organ systems are studied as indicated. Detailed examination of the mouth is particularly stressed.

When we have satisfied ourselves that the infants and children under our observation receive considerably less than the recommended allowance of essential nutrients, we are willing to accept the following symptoms as suggestive though not diagnostic of deficiency states: loss of desire for food and failure to gain weight, poor muscle tone, and aversion to play, abnormal tardiness in sitting, standing and walking, and pain on sitting or standing, insomnia, poor record in school, repeated respiratory infections, chronic diarrhea, photophobia, lacrimation, abnormal dryness and burning of the eyes, pallor, rough skin, fissures and maceration at the angles of the mouth, abnormally red tongue, increased pulse rate, heaving of the ribs, enlarged wrists, square head, serious dental abnormalities, and Vincent's infection.

Likewise, in adolescents and adults, the following symptoms occurring in persons known to have ingested inadequate amounts of required nutrients suggest deficiency states: weakness, lassitude, lack of desire for

Teeth: Caries Pyorrhea
Mucous membranes - buccal Lips (mottling, transverse atrophy) Angles - Cheilosis, crusts, fissures, scars, atrophy, pallor, redness, maceration

Tongue: Edema, atrophy, T & J coated, ulcers, fissures, papillae - slit lap, atrophic, hypertrophic, cobblestone, degree, Red center - number

Palate: soft, hard

Skin: mottling, sweating, purpura, Triple response, -siders

Face: Neck, Chest, Back, Abdomen

Knees: Shins, Feet, Toes, Perineum

Shoulders: Elbows, Forearms, Hands, Fingers

hairs

Chest: Heart, Lungs, B P

Abdomen

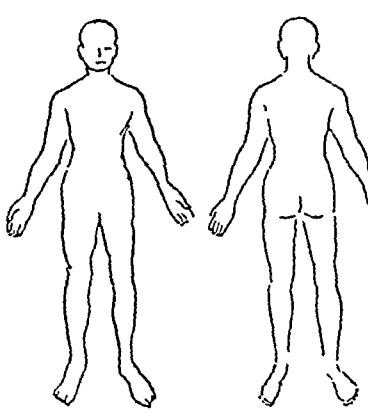
Miscellaneous:

Neurological: R L
Pain on soles, Pain on calf, Knee jerk, Ankle jerk, Babinski, Parasthesia, arm, leg, arm, leg, Vibration, Dynamometer

Remarks

Deficiency: Nicotinic acid, Thiamin, Riboflavin, Vitamin B₆, Iron, Vitamin A, Vitamin C

+ mild
++ moderate
+++ severe



Front Back

Fig 2—Continuation of form for recording history

of deficiency of his diet is correlated with clinical findings and laboratory tests. Although such a study gives interesting results and has been of some value to us in determining the degree of deficiency of the various nutrients in the dietaries of many of our patients, it is too arduous and time consuming to be used as a routine procedure by the practicing physician. It requires the expenditure of a great deal of time both with the patient and in the calculation of the results. Such a method is practical only if the patient is sufficiently intelligent and cooperative to keep an accurate record of his food intake and if the time and services of a trained nutritionist are available to supervise the collection and summarization of the data and to calculate the nutritive value of the dietaries.

No human being is able to give a dietary history as comprehensive as the physician might wish, and if one was to rely solely on dietary assessment he would fall far short of the goal of accurate diagnosis which is the first requirement for satisfactory therapy.

SYMPTOMS AND PHYSICAL SIGNS

Of necessity the physician must place the greatest reliance on a complete history and physical examination (figs 1 and 2), as a diagnosis cannot be made

History and Examination Form

Personal History: Name, Address, Sex, Age, Birth, Marital Status, Occupation, Ancestry, No. Pregnancies, No. Abortions.

Oral Mucous Membranes - Degree of Redness: Table with columns for Cheek, Inside Lip, Gums, B.T. Patch, Hard, Soft, Floor, Glans, Vagina, Uterus.

Periodontal: Gingivitis, Mobility, Pulsion, Calculus, Pus, Pimp, Swelling, Oral Changes.

Dental: Deciduous, Caries, Extraction, and Missing Teeth, Rooted Teeth, Eruption, Arch, Root, Occlusion, Color, Sensation.

Medical: Table with columns for Age, Sex, Height, Weight, Blood Pressure, Heart, Lungs, Stomach, Intestines, Muscles, Nerves, Skin, Eyes, Ears, Nose, Throat, Genitals.

Mental: Table with columns for Sleep, Concentration, Appetite, Weight Loss, etc.

Pain: Table with columns for Location, Character, Duration, etc.

Treatment: Table with columns for Diet, Medication, Surgery, etc.

Dietary Deficiency: Table with columns for Nutrient, Deficiency, etc.

Fig 3—History and examination form

food, loss of weight, failure of mental application, sore mouth or tongue, constipation or diarrhea, nervousness and irritability, paresthesia, night blindness, photophobia, burning and itching of the eyes, lacrimation, general pains in the muscles or joints, Vincent's infection, cheilosis, red, swollen lingual papillae, glossitis, stomatitis, vaginitis, poor muscle tone, loss of vibratory sensation, alteration of tendon reflexes,

hyperesthesia of the skin, bleeding gums, dermatitis, abnormal pigmentation of the skin, particularly over the points of pressure, rachitic chest deformity, anemia, abnormal dryness or conjunctival injection of the eyes, vascularization of the cornea, inability to accommodate properly.

It has been customary to present through textbooks and lectures the manifestations of severe degrees of deficiency diseases. Hence it is little wonder that the milder forms have gone unrecognized and the real incidence is not always fully appreciated. Yet it is highly desirable that the physician make an early and accurate diagnosis in order to initiate therapy which will restore the patient's health before serious structural damage occurs in the tissues. For the most part the arrangement of the descriptive material in the previous chapters has been grouped around one nutrient or one disease arising from a deficiency of a single nutrient. This description certainly is justifiable, but it assumes a degree of simplicity which does not occur in the physician's day to day practice of medicine.

SPECIAL LABORATORY TESTS OF USE IN DIAGNOSIS

After we have analyzed the dietary record, medical history and physical examination and find symptoms in persons whom we suspect of having nutritional deficiency disease, we attempt to gain special information by means of laboratory tests. While they are not all practical for practicing physicians, facilities for some might be available to some physicians.

1 Hemoglobin determinations, red blood cell counts, and packed cell volumes are very important routine measures.

2 X-ray examination of the long bones should be made to detect active and healing rickets, and serum phosphatase and phosphorus determinations to detect early rickets. Serum calcium determinations are also useful.

3 Protein serum albumin determinations by the Kjeldahl technique are especially useful when protein deficiency is suspected.

4 Ascorbic acid determinations on plasma are useful in determining vitamin C subnutrition. Determination of the level in white cells often is made when vitamin C deficiency is advanced.

5 Slit lamp and biomicroscopic examinations of the capillaries in the conjunctiva and cornea are extremely valuable aids.

6 The detection of prothrombin deficiency is applied when vitamin K deficiency is suspected in persons with liver disease, particularly jaundice, or in expectant mothers.

7 The B. E. S. test, the recent colorimetric method described by Beckh, Ellinger and Spies, is of considerable clinical use in detecting small quantities of abnormal pigments in the urine of persons with "sub-clinical" and clinical deficiency states.

8 We frequently do determinations for vitamin A, thiamine, nicotinic acid, riboflavin, pantothenic acid, biotin and pyridoxine. In some instances these laboratory findings can be correlated with the clinical findings, in others, they cannot.

9 Myriads of Vincent's organisms, staphylococci and streptococci can be identified in smears taken from mucous membrane lesions in the mouth or in the vagina. The staphylococci and streptococci often can be isolated

in pure culture from the lesions of riboflavin deficiency. The organisms in these lesions disappear rapidly after specific therapy is given to the patient.

10 Gastric analyses are made before and after histamine injections—we determine free hydrochloric acid, pepsinogen and rennin, and in special cases determine the presence or absence of the intrinsic factor of Castle.

SPECIFIC PRINCIPLES OF THERAPY AND SUGGESTED METHODS OF APPLICATION

The more we have studied diseases arising from nutritional imbalance, the more we have become impressed with the great factor of safety operating to protect the body. Life continues long after deficiency states set in, and there is always a margin of safety between the beginning of ill health and death from nutritional failure. When functions of the tissues become diminished or altered as the result of a deficiency over long periods of time, there is usually quick restoration of function following adequate amounts of specific therapy. Nevertheless there is a limit to the self regulation, and indeed, at times, to the repair which is possible as a result of therapy. These vital substances frequently must come to the human body from an external source, and, since the body does not conserve all, it is important that a person with nutritional deficiency diseases have as little activity as possible while repairs to the affected tissue are under way. The specific agents, whether they are food, yeast, liver or extracts of these substances or synthetic vitamins, serve in a natural manner to perform a natural function. The recommendations which are to be made have arisen chiefly from the gratifying experience of having treated over 5,000 consecutive patients with dietary deficiency diseases without a death. Deficiency diseases are not rare. The apparent mystery surrounding them is due in great part to gaps in our present day knowledge. Nevertheless, the practicing physician should and must apply the best knowledge available to the diagnosis and treatment of nutritional deficiencies. To do so, our experience would lead us to suggest that his diagnosis will depend chiefly on a reliable interpretation of a carefully taken history and a thorough physical examination. When taking the history, the physician should have in mind that deficiencies of the essential nutrients are particularly prevalent in the following four groups.

1 Those who are indigent and have erroneous dietary habits or dietary idiosyncrasies. Many such persons live for a long period of time on a diet low in protein and calories, minerals and vitamins, and relatively high in carbohydrates and fats. These diets often contain far too little milk products, lean meat, fish, green vegetables and fruits.

2 Persons with organic disease. The incidence of deficiency diseases is especially high among persons with chronic tuberculosis, diseases of the alimentary tract and cardiovascular system and diabetes, which interfere with the ingestion, assimilation or utilization of the protective substances present in food. Many of these persons have an opportunity to eat sufficient amounts but because of their disease either have lost their desire to eat or are unable to utilize it properly.

3 Too frequently the overzealous physician in treating a certain type of organic disease prescribes a diet so deficient that nutritive failure is gradually induced. While we do not wish to give the impression that all therapeutic diets are necessarily inadequate diets, we

not infrequently find patients develop nutritional diseases as the result of restriction to diets prescribed for therapeutic purposes. Figure 4 illustrates some of the deficiencies occurring in diets consumed by persons with nutritional diseases who come to us for treatment. We suggest that the physician prescribing special therapeutic diets check the food recommended with that which he knows is required for the adequate diet. If the restrictions are of such nature that the foods permitted cannot provide the essential nutrients in adequate amounts, it is recommended that he supplement those nutrients as required by use of synthetics or concentrates.

4. Persons with chronic alcoholic addiction. Persons who substitute the calories in alcohol for the calories in food are prone to develop deficiency diseases. It, however, a liberal adequate diet is eaten, deficiency diseases are not likely to occur even when large amounts of alcohol are ingested.

It should be kept in mind that in all groups many undernourished people never develop a clinical sign diagnostic of a specific deficiency disease. Irrespective of whether the deficiency develops following poverty, dietary idiosyncrasies, organic diseases, alcoholic addiction, erroneous dietary habits or any combination, the

fat soluble group, occur together in fish liver oils and are customarily used together therapeutically. Vitamin K is usually classified as a fat soluble compound, though water soluble synthetic compounds having vitamin K activity are available. Vitamin K should be considered as a special substance essential for the maintenance of normal concentration of prothrombin in the blood. Except for the hemorrhagic disease of the newborn, a deficiency is usually the result of faulty absorption rather than inadequacy of vitamin K in the diet. Vitamin E is being extensively studied, but as yet its value in the treatment of diseases of human beings is a matter of conjecture. The vitamins of the B complex are water soluble and found especially in such natural products as yeast and liver. Viable yeast and liver cells function as an active laboratory in producing these substances. They appear to be intimately concerned with carbohydrate metabolism. Ascorbic acid is a member of the water soluble group and is specifically concerned in the prevention and treatment of scurvy.

Too often polyvitamin products have not been as useful as they might have been. It seems wise that the amount of vitamins in mixtures should bear a relationship to the normal daily requirements. The physician in turn may then prescribe amounts of these vitamins as

RECOMMENDED ADEQUATE	70	3000	80	12.0	6000	18	75	2.7	18
ALLERGY DIET	36	2200	41	9.4	1724	468	20	624	10
DIABETIC DIET	60	1730	41	13.2	5005	425	166	754	14
KETOGENIC DIET	50	2350	35	10.6	5040	628	57	682	16
LOW CALORIE DIET	50	1090	31	10.5	2575	424	221	780	14
LOW PROTEIN DIET	40	2350	35	8.3	3871	697	64	41	5
SIPPY DIET	60	1720	100	7.9	6576	722	13	153	13
	PROTEIN GRAMS	CALORIES	CALCIUM CG. MS.	IRON ML. GRAMS	VITAMIN A INTERNATIONAL U. TS.	THIAMINE MILLIGRAMS	ASCORBIC ACID MILLIGRAMS	RIBOFLAVIN MG. LIGRAM	NICOTINIC ACID MILLIGRAMS

Fig. 4—Amounts of nutrients supplied by certain therapeutic diets compared with amounts recommended for an adequate diet.

lesions, symptoms, seasonal incidence and methods of treatment are essentially the same.

Foods, dried brewers' yeast, liver concentrates and synthetic vitamins, and certain minerals, are as much a part of the present day physician's armamentarium as arsphenamine and insulin. To consider diet properly the physician should think in terms of enough dextrose, amino acids, fatty acids, minerals and vitamins. The foods in the alimentary tract are altered through successive steps of digestion and absorbed into the blood stream and passed into the tissues. The proteins are absorbed as amino acids, the carbohydrates as sugars, and the fats as fatty acids. The vitamins and minerals are altered little if any. The body can synthesize only about one half of the different amino acids which are required, and the other half must be provided. Amino acids may be turned into urea or their carbon fractions used to form dextrose, or they may 'sacrifice themselves' to protect us from poisonous products. Perhaps they can serve as source material to act with or aid in synthesizing certain compounds of physiologic function still to be identified. Some of these amino acids enter into the proteins of the tissue and, like the dextrose, the fatty acids, the minerals and the vitamins, become for a time parts of our living tissues.

Long ago we learned that the diagnosis of one clinical syndrome denoting nutritional failure necessitates a thorough search for others. While individual vitamins have special functions, they are wisely administered together. Vitamins A and D, which are members of the

multiples of the estimated daily requirement. Recently, the National Research Council has seen fit to make the recommendations presented in table 3.

Where synthetic vitamins, such as riboflavin, nicotinic acid or thiamine, are added to dried brewers' yeast or liver, it is desirable that a substantial amount of the vitamins come from the yeast or liver.

METHODS OF THERAPY

Therapy should be directed along four lines. 1. Conditions causing excessive requirements for nutritional essentials should be removed or relieved wherever possible. 2. Substances should be administered in sufficient amounts to correct the deficiency. 3. Symptomatic treatment and treatment for coexisting diseases should be given. 4. A liberal amount of a well balanced diet which has been discussed in other portions of this book, should be prescribed. It is often necessary to combine specific therapy, symptomatic therapy and the treatment of coexisting diseases in order to treat the patient successfully. The very essence of treatment for nutritional diseases lies in the administration of foods rich in proteins, minerals and vitamins, supplemented by specific therapeutic agents. The foods prescribed will depend on the nature of the deficiency and the age, race, habits, tastes and financial status of the patient concerned. The diet should be supplemented with appropriate preparations in terms of dried brewers' yeast or liver extract, or concentrates thereof, or of synthetics or minerals. More specifically, we find that, where clinical syndromes arise from a deficiency of

vitamins, a deficiency of many other essential nutrients is likely to exist. It is of prime importance in prescribing for every case to insure the ingestion and retention of a diet which meets the patient's nutritive requirements. This diet must be one that the patient can eat, digest and assimilate. It must be remembered, however, that to rely on dietary therapy is inadvisable and impractical. Deprivations of the nutrients usually have existed for years and often the deficiency is advanced so that the food the average person can eat is not sufficient to supply the amount of the food factors necessary to restore his health promptly.

Our clinical experience and controlled studies have led us to adopt a policy of mixed vitamin therapy in treating nutritional deficiencies. The amounts of therapeutic substances prescribed necessarily vary considerably from patient to patient and even in the same patient it varies at different times. It is better to prescribe too much than too little, too soon rather than

TABLE 5—Recommended Daily Allowances of Vitamins

	Vita- min A U S P Units	Vita- min B (B ₁) Mg	Ribo- flavin, Mg	Ascorbic Acid Mg	Vita- min D, U S P Units
Man (60 kg.)					
Moderately active	5,000	15	2.7	15	75
Very active		25	4	25	75
Sedentary		15	2.2	15	75
Woman (50 kg.)					
Moderately active	5,000	15	2.2	15	70
Very active		18	2.7	18	70
Sedentary		12	1.8	12	70
Pregnancy (latter half)	6,000	18	2.5	18	100-500
Lactation	4,000	25	3.0	25	100-500
Children up to 12 years					
Under 1 year	1,500	0.4	0.6	4	50
1-5 years	2,000	0.6	0.9	6	50
6-9 years	2,500	0.8	1.2	8	50
10-12 years	3,500	1.0	1.5	10	60
	4,000	1.2	1.8	12	75
Children over 12 years					
Girls, 13-15 years	5,000	1.4	2.0	14	80
16-20 years	5,000	1.2	1.8	12	80
Boys, 13-15 years	5,000	1.6	2.4	16	90
16-20 years	6,000	2.0	3.0	20	100

too late. Although there are many ways of treating nutritional deficiencies, we have found that the following therapy gives satisfactory results.

In treating the clinical syndromes of beriberi, pellagra, riboflavin deficiency and scurvy, we use a formula containing 10 mg thiamine, 50 mg niacin, 5 mg riboflavin and 75 mg ascorbic acid. If the symptoms of one deficiency predominate we add to the basic formula more of the vitamin specific for the predominating deficiency. In the case of beriberi, 10 mg of thiamine is added daily, in riboflavin deficiency 5 mg of riboflavin b₁ d daily, in scurvy 100 mg of ascorbic acid t i d, and in mild pellagra 50 mg of niacin amide t i d. If the pellagra is severe, the patient is given 150 mg of niacin amide t i d in addition to the basic formula. When the patient is moribund from nutritive failure due to deficiencies of the vitamin B complex it may be necessary to resort to parenteral injections in order to prolong and indeed even to save life. When large amounts of d-glucose are injected daily, we recommend the inclusion of 20 mg of niacin amide, 75 mg of riboflavin and 5 mg of thiamine. In a few instances we have found it desirable to inject 50 mg of ascorbic acid in isotonic solution of sodium chloride.

Dried brewers' yeast powder, liver extract, wheat germ and rice polishings are excellent therapeutic agents for the treatment of diseases arising from a deficiency of the B complex vitamins. These substances are particularly valuable in that they contain significant amounts of protein and other essential nutrients, and probably vitamins of the B complex as yet unknown. The amount administered depends on the severity of the disease. We usually give daily from 4 to 6 ounces of dried brewers' yeast powder or oral liver extract, from three to four doses of 20 cc of parenteral liver extract, or from 150 to 300 Gm of wheat germ. Although other investigators have had success with rice polishings, our experience with it is not wide enough for us to make specific recommendations in regard to its use. Some patients complain of the taste of these materials, in which case we disguise the taste by stirring them into milk or tomato juice or by mixing them with water and adding tomato catsup. They can be added to bouillon, sprinkled over cereals or added to eggnog. We have found that a mixture of approximately 20 per cent dried brewers' yeast by weight added to 80 per cent peanut butter is acceptable to persons who like peanut butter. A mixture of this yeast and peanut butter is practical and if used wisely would go a long way toward correcting the deficiencies of protein, fats, calories and B complex vitamins in the diets of many persons.

In vitamin A deficiency, we give adults 50,000 units of vitamin A daily for at least two months. It may be given in the form of carotene or fish liver oils. The clinical response in vitamin A deficiency is often slow and it may be necessary to continue treatment over a long period of time before beneficial effects are observed.

Children with active mild rickets are given 1,600 I U of vitamin D daily in the form of fish liver oils or irradiated ergosterol. To those with advanced rickets, 5,000 I U is given, while in rare cases of refractory rickets 50,000 I U or more is often administered. We wish to point out that although a daily dose of 800 I U is considered the safe prophylactic dose for full term infants, premature infants may require 3,000 I U. In juvenile, adult and senile rickets large doses of the vitamin D concentrates, 10,000 I U daily, should be given for therapeutic purposes.

In hemorrhagic disease due to vitamin K deficiency in the newborn infant we give 1 mg of vitamin K often by intravenous injection. To adults with vitamin K deficiency we give 1 to 5 Gm usually by the parenteral route. In cases in which bile is excluded from the intestine, orally administered vitamin K, since it is fat soluble, must be accompanied by some bile salt preparation to aid in its absorption.

We never regard the treatment as satisfactory until the patient has gained significantly in strength and his weight has returned to normal. Unfortunately, many physicians take the point of view that deficiency diseases can be overcome by a few days treatment. This is not surprising since the immediate result of therapy is often dramatic. Nevertheless, deficiency diseases which have taken months or even years to develop cannot be eliminated quickly. We have found it wise to keep our adult patients under observation until they return to work and are able to continue to work for several months.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT, WHICH IS A REVISION OF THE REPORT WHICH APPEARED IN THE JOURNAL OF JAN 24 1942 PAGE 295

HOWARD A. CARTER Secretary

ACCEPTANCE OF ULTRAVIOLET LAMPS FOR DISINFECTING PURPOSES

After due consideration of the present status of the use of ultraviolet radiation as a germicide, in consultation with bacteriologists, physicists, chemists, ventilating engineers and other scientists, the Council on Physical Therapy has adopted the following regulations for acceptance of ultraviolet lamps for use as an adjuvant in the disinfection of air.

It is to be noted that a lamp used for disinfecting purposes is a single unit in an installation and that compliance of the ultraviolet output of a single lamp unit with the Council's requirements does not insure adequate radiant disinfection or the safety of the occupants of the room in which an installation of such lamps is in actual use. Obviously the manufacturer and distributor of such lamps must assume some responsibility for the adequacy of the lamp installation for purposes of radiant disinfection of the air and for the adequacy of the protection from injury to the occupants of the space irradiated. Concerning these questions the Council cannot undertake supervision or assume responsibility for the satisfactory performance of any particular installation.

The total amount of direct and scattered ultraviolet radiation incident on the occupants must be kept below the level that will produce conjunctivitis, erythema and any other (at present unforeseen) injurious physiologic effects that may arise from prolonged irradiation. This requirement should be met by a suitable arrangement of the lamp fixtures and light baffles and not by requiring the usual occupants to wear glasses and a special covering of the parts of the body (face hands) normally uncovered.

The efficiency of the emission line 2537 Å (angstroms) in producing an erythema is very high and in contrast the efficiency of this emission line in producing tan is very low¹. As a result of this slow acting protective mechanism (tanning, skin pigmentation) the irradiated occupant of the room may suffer severe burns. The data governing the Council's Acceptance of Sun Lamps show that an intensity of 36 microwatts per square centimeter can produce an erythema in fifteen minutes. If the reciprocity law holds for very low intensities and long exposures, then the total intensity of the ultraviolet radiation (diffusely reflected from the walls and fixtures and emanating directly from the lamp) incident on the occupant for seven hours or less should not exceed five-tenths microwatt per square centimeter ($0.5 \mu\text{W}/\text{cm}^2$) and for continuous exposure (twenty-four hours a day) should not exceed 0.1 microwatt per square centimeter of wavelength 2537 Å. How to design the lamp installation to meet the requirements for adequate disinfection of a room and at the same time protect the occupants is a problem for solution by the sanitary engineer.

At the present juncture the design and installation of ultraviolet lamps in their fixtures for disinfecting purposes is empirical and the adequacy of disinfection by any given installation of lamps must be judged by clinical experience. For example clinical evidence has been submitted to the Council showing that in a scarlet fever ward (size about 60 by 27 by 11 feet) containing sixteen cubicles four lamp units each one emitting a radiant flux of 30 microwatts per square centimeter at 1 meter were found inadequate but eight lamp units in the ward, each unit protecting two cubicles, and a ninth unit at the entrance prevented cross infection. This is a rather high intensity (requiring twenty minutes calculated time to produce a minimum perceptible erythema) incident on a person of average height standing directly under a lamp fixture suspended from a ceiling of average height. A greater number of lamps each one

of lower ultraviolet intensity (say 20 microwatts per square centimeter at 1 meter) and lower power input, more evenly distributed throughout the room should be safer and equally efficient in disinfecting the air. This is a matter of engineering design, beyond the scope of the Council's purview.

PHYSICAL DATA ON DISINFECTING LAMPS

Experimentally, applying equal amounts of energy of different wavelengths, it is found that the spectral band at 2652 Å appears to produce the maximum bactericidal action and that the emission band at 2537 Å is only about 70 per cent as effective. This difference in effectiveness is negligible in the present considerations because in readily obtainable sources of germicidal radiation, especially in the low vapor pressure (high voltage) mercury discharge tube, which is well adapted for killing microorganisms, the ultraviolet radiant power of wavelength 2652 Å is less than 0.2 per cent of that of wavelength 2537 Å, the resonance emission band that dominates the whole ultraviolet spectrum of this type of lamp.

About 90 per cent or more of the total biologically effective ultraviolet radiation of wavelengths shorter than 3,132 Å emitted by the low pressure mercury discharge (whether in quartz or in a transparent glass tube) is concentrated in the emission line at 2537 Å. For this reason the emission line at 2537 Å, logically and by common consent, is taken as the standard of homogeneous ultraviolet radiation for evaluating the ultraviolet output of germicidal lamps, just as the wavelength 2,967 Å in the high vapor pressure (low voltage) mercury arc is taken as the standard of homogeneous ultraviolet erythemogenic and antirachitic radiation in evaluating the ultraviolet output of therapeutic lamps.

The low pressure mercury discharge in a suitable glass tube or in a suitably filter jacketed quartz tube which readily transmits the strong, highly germicidal emission line at 2537 Å but is opaque to wavelengths shorter than about 2,200 Å (that generate ozone) appears suitable to supplement other means of disinfection when operated under controlled conditions and limited to certain types of applications. In other words the room must be relatively free from dust and infecting bacteria, without the use of ultraviolet disinfecting lamps. Ultraviolet radiation is not a substitute for cleanliness.

From the evidence available it appears that a minimum of 5,000 to 10,000 microwatt seconds per square centimeter ($\mu\text{W sec}/\text{cm}^2$ or 50,000 to 100,000 ergs/ cm^2) of homogeneous radiation of wavelength 2537 Å is required to produce adequate (practically 100 per cent) killing of microorganisms, especially bacteria. With an exposure of fifty to one hundred seconds this will require an intensity of 100 microwatts per square centimeter.

The Council has adopted 100 microwatts per square centimeter of homogeneous radiation of wavelength 2537 angstroms as the unit of germicidal intensity (G U) that is $1 \text{ G U} = 100 \mu\text{W}/\text{cm}^2$ of radiation of wavelength 2537 Å.

Since the ultraviolet emission from the low vapor pressure mercury discharge tube is practically homogeneous radiation of wavelength 2537 Å, such a lamp can be readily calibrated in absolute value and used as a standard. The intensity at 1 meter may be only one fifth of the Council's unit or 20 microwatts per square centimeter for safety to the occupants. This will require a minimum exposure of two hundred and fifty to five hundred seconds for adequate disinfection which will depend on the rate of circulation and average distance of the air in front of the lamp. Evidence has been submitted to the Council showing that cross infection in a contagious ward may be prevented by using a sufficient number of lamp units each unit having an intensity of 30 microwatts per square centimeter at a distance of 1 meter from the burner. This will require an exposure of one hundred and sixty-seven to three hundred and thirty-four seconds for adequate disinfection which implies a slow movement of the air in front of the lamp installation.

SCOPE OF THE COUNCIL'S ACCEPTANCE OF ULTRAVIOLET LAMPS FOR DISINFECTING PURPOSES

The Council has given careful consideration to the feeling expressed by manufacturers vitally concerned in the matter that the general acceptance of the use of ultraviolet radiation as a

¹ Luckiesh, Matthew and Taylor, A. H. Production of Erythema and Tan by Ultraviolet Energy. J. A. M. A. 112: 2311 (June 17) 1929.

sanitary agent may necessitate some form of regulation, and that ultraviolet generating units offered to the public and medical profession may be classed with antiseptic agents requiring a degree of control of their potency and keeping qualities.

Under this caption is given an analysis of various proposed applications of ultraviolet radiation as a disinfectant and a statement of the specific applications that appear to fall within the Council's purview.

The advantages and disadvantages of the use of germicidal ultraviolet radiation for sterilizing purposes are summarized in the recent (1941) issue of "The Chemical Action of Ultraviolet Rays," by Ellis and Wells, second edition by Francis F. Heyroth (see p. 718, "The Sterilization of Water"). L. R. Koller (*J. Applied Physics* 10:629, 1939) found that while sterilization of glassware and dishes is possible by means of ultraviolet radiation it was very important to start with fairly clean surfaces. Practically the same results are reported in a recent investigation by J. W. Applin, and I. W. Lerner on the 'Bactericidal Effect of Ultraviolet Rays on Micro Organisms on Restaurant Glassware' (*Proc. Soc. Exper. Biol. & Med.* 47:51, 1941). While they noted decided improvement on irradiation, complete sterilization did not result in every case. In this connection reference is made to an editorial on "Disinfection by Light" (*Brit. M. J.* 2:707 [Nov. 23] 1940) showing that much remains to be done in studying the capacity of such lamps to reduce the dangerous bacterial content of air, not only under controlled laboratory conditions, but also in the more difficult and varied circumstances of practical use.

In this connection it is important to note that in order to kill a micro organism a direct hit by ultraviolet rays of sufficient intensity is required. This is difficult to accomplish on the edge of a drinking cup, also in a liquid containing suspended matter or in air laden with dust particles that shield the organism. To provide adequate sterilization a germicide must effect practically 100 per cent killing. Ultraviolet germicidal rays cannot penetrate deeply and hence may be absorbed by finger marks, saliva, cosmetics or other contamination on a drinking cup. The ultraviolet germicidal lamp, therefore, appears to be an uncertain means of sterilizing solid objects (drinking cups, combs, brushes, shaving utensils, shoes, toilet seats) even if irradiation of the whole surface is possible.

At this time satisfactory evidence is not available to warrant acceptance of ultraviolet lamps by the Council for disinfecting solids. Furthermore, the Council is not fully convinced at the present time that it should assume the responsibility in this matter. The whole subject is too new, too complex and apparently too uncertain where virulent organisms (e. g., typhoid) may be concerned in spreading epidemics.

Some evidence seems to indicate that the ultraviolet germicidal lamp can be used for sterilizing water, beverages and the like but only after adequate removal of suspended material, and it is applicable only to liquids which are highly transparent to ultraviolet germicidal radiation.

In a few cases in which chemical methods of sterilization of water may be harmful, as for example for surgical purposes (mentioned by Ellis and Wells), under certain conditions irradiation with ultraviolet lamps is reported to be useful. This acceptance is not concerned with such applications, which do not appear to be very wide. Moreover, it is not clear wherein sterilization by ultraviolet rays is superior to boiling or distillation of the water used.

The use of ultraviolet radiation for disinfecting air in industrial plants, barracks, school rooms, assembly halls, refrigerators and so on also appears to be outside the Council's purview. In fact, at this juncture the whole question of the use of ultraviolet radiation for disinfecting purposes is too complex and too little understood for the Council to do more than attempt to keep the medical profession informed regarding particular ultraviolet lamps that are acceptable for use in this method of disinfecting air in hospitals, nurseries and operating rooms (relatively free from dust) as practiced by present day empirical methods.

TENTATIVE REQUIREMENTS FOR ACCEPTANCE OF ULTRAVIOLET LAMPS FOR DISINFECTING AIR

Clinical evidence submitted to the Council shows that under properly controlled conditions killing of air borne micro organisms by ultraviolet rays may be used to supplement other methods of disinfecting air for prevention of cross infection in contagious wards in nurseries and hospitals, and for reducing air borne infection of wounds in operating rooms. The deleterious effects of ozone generated by ultraviolet lamps is recognized. The Council therefore requires for acceptability of ultraviolet disinfecting lamps that, under suitable ventilation, in the space near the occupants of the room the concentration of ozone shall not exceed one part in ten million. However, in view of the recent researches by Witheridge and Yaglou² showing that a much lower concentration (1 part in 25 million) is irritating to the mucous membranes of the upper respiratory tract, this specification of 1 part in 10 million is tentative awaiting confirmation of the evidence that a lower concentration of ozone is desirable in nurseries and hospital rooms occupied twenty-four hours a day. If the odor of ozone is distinctly perceptible the Council recommends increased ventilation.

In considering ultraviolet generators for disinfecting purposes the Council makes no distinction between lamps for use in air conditioning ducts and lamps for use in open rooms in which there is only a slow circulation of air. In both cases a sufficient number of lamps must be provided to insure adequate disinfection of the air as determined by approved culture tests or other accepted procedures. So that an ultraviolet output above the minimum value for adequate disinfection may be maintained, the Council recommends that the ultraviolet intensity of each lamp unit be measured at least once a month.

To comply with the Council's requirements the ultraviolet spectral energy distribution of the disinfecting lamp shall be comparable in lethal effectiveness with the low vapor pressure mercury discharge tube, in which the dominant radiation is of wavelength 2,537A.

The minimum intensity at right angles to and at a distance of 1 meter from the plane of the lamp tube in its fixture shall not be less than the germicidal equivalent of 20 microwatts per square centimeter of homogeneous radiation of wavelength 2,537A. The useful life of the lamp shall not be less than four thousand hours. During this period the ultraviolet output shall not fall below the herein specified minimum intensity. To meet this requirement the lamp may be provided with a voltage regulator to compensate for the decrease in intensity of ultraviolet with usage, or the lamp may emit a sufficient excess of ultraviolet radiation when new, so that the output shall not fall below the specified minimum value ($20 \mu\text{W}/\text{cm}^2$ at 1 m) in less than four thousand hours' operation. In either case the installation shall be provided with adequate safeguards against over exposure of the occupants of the room to ultraviolet radiation. The burner of the lamp shall be of glass or of suitably filter jacketed quartz, highly transparent to the emission line at 2,537A, and opaque to radiation of wavelengths shorter than 2,200A, to prevent the generation of an injurious amount of ozone, largely produced by these short wavelengths. To insure compliance with these requirements the lamp may consist of one, two or three tubes, mounted and operated as a unit.

For consideration of acceptance by the Council, the manufacturer shall submit a lamp unit in its fixture, permanently marked as to its useful life, and its radiant flux in microwatts per square centimeter of wavelength 2,537A, at 1 meter under the normal power input used to insure a useful life of four thousand hours or more. In addition the manufacturer shall submit satisfactory clinical evidence, obtained over a period of not less than four winter months, of the effectiveness of an installation of such lamps in maintaining sterilized conditions in the space (hospital, nursery) subjected to radiant disinfection. For statistical purposes in improving installations, included in this evidence (for the present at least) is to be a statement of (1) the size of the room and the average number of occupants (and their ailments), (2) the number and arrangement of the lamp units, (3) kind and amount of ventilation and (4) the procedure to determine and maintain the intensity above the minimum level during the useful life of the lamp.

² Witheridge, W. N. and Yaglou, C. P. *Tr. Am. Soc. Heat & Ventil. Eng.* 45:509, 1939.

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING REPORT

HOWARD A. CARTER Secretary

SUN-KRAFT LAMP (Sunlamp) NOT ACCEPTABLE

Manufacturer Sun-Kraft Company, Inc., 1809 North Ashland Avenue, Chicago

During recent months a great many inquiries regarding the Sun-Kraft Lamp have come to the Council on Physical Therapy, and the Council considered it advisable to prepare a statement of its opinion of the lamp for the information of the profession and the public.

It is apparent both from the description of the unit in the advertising pamphlets and from tests on the lamp that the characteristics of the radiation emitted by the burner would not meet the Council's requirements for acceptance of sun-lamps. According to the advertising statements, 'As its quartz tube does not generate any heat whatever' and 'Uses only 20 watts electricity,' the burner is obviously of the so called 'cold quartz' or high voltage low pressure variety, of which at least 95 per cent of all the radiant energy output in the ultraviolet region is of the 2537 angstrom band. An acceptable sunlamp should be free of these radiations or, in other words, its ultraviolet radiation output shall not differ essentially from that of the natural sun.

The Council examined the Sun Kraft Lamp and reviewed radiometric measurements made on it by a reliable laboratory. The spectral quality and total intensity do not meet the Council's requirements for acceptability as a sun lamp.

Furthermore statements in the advertising indicate that the device must be operated at a distance of less than 6 inches—thus the lamp cannot be very powerful. If much ozone (greater than 1 part in 25 million) is developed near the patient it will cause irritation of the upper respiratory tract because of its high toxicity.

Many unwarranted therapeutic claims are made for the lamp 'Sun-Kraft A Promoter and Preserver of Good Health' is a headline taken from one of the advertising pamphlets. Following are unsubstantiated unacceptable claims made in the copy:

Relieves Dandruff

Sun Kraft generated ultraviolet eliminates itchy dandruff, checks excessive loss of hair. Regular use will induce new hair growths and restore natural hair color and health by increasing scalp circulation and rejuvenating hair glands.

Increases Resistance to Colds

Six minute exposure twice weekly to Sun Kraft ultraviolet promotes generous production of Vitamin D in the body thus increases resistance to colds.

Gives Positive Antisepsis

For positive antiseptic action in treating cuts, wounds, bruises, Sun Kraft Ultraviolet disinfects completely in one minute. In addition it induces quick healing. Its benevolent rays will clear up Athlete's Foot, acne, pimples, psoriasis and blackheads in a few treatments. produce lasting relief from pains caused by arthritis, lumbago and rheumatism.

The outstanding effects are:

- increase of self-disinfecting and protective power of the skin
- Activation of the general body defense mechanisms against disease
- Normalization of the mineral metabolism of the body
- Lowering of blood pressure and increasing blood circulation

In the opinion of the Council the foregoing statements, for which there is no substantiating scientific evidence that the Sun-Kraft Lamps will do these things, lead to a false sense of security on the part of the user of the apparatus and thus are regarded misleading.

The Council on Physical Therapy voted to declare the Sun-Kraft Lamp unacceptable for inclusion in its list of accepted devices because the characteristics of the radiation emitted by the lamp do not meet the Council's requirements for a sun lamp sold to the public and because of the unwarranted therapeutic claims made for the lamps.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH M.D. Secretary

NEO-SYNEPHRINE HYDROCHLORIDE (See New and Nonofficial Remedies 1942, p. 249)

The following dosage forms have been accepted
FREDERICK STEARNS & COMPANY, DETROIT

Neo-Synephrine Hydrochloride Emulsion 1% 15 cc bottle Neo-synephrine hydrochloride 1 per cent, sodium benzoate 0.4 per cent in a mineral oil and water emulsion containing acacia preserved with chlorobutanol 0.5 per cent.

Neo-Synephrine Hydrochloride Emulsion 10% 3 cc bottle Neo-synephrine hydrochloride 10 per cent, sodium benzoate 0.4 per cent in a mineral oil and water emulsion containing acacia preserved with ascorbic acid 10 per cent, sodium bisulfite 0.1 per cent and chlorobutanol 0.5 per cent.

ESTRONE (THEELIN) (See New and Nonofficial Remedies, 1942, p. 377)

The following dosage forms have been accepted
ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Ampoules Estrone Suspension 2 mg in 1 cc (20,000 I U) Each cubic centimeter contains estrone crystals 2 mg in aqueous suspension with gum acacia.

PARKE, DAVIS & CO, DETROIT

Ampoule Theelin Aqueous Suspension 2 mg per cc (20,000 I U)

Ampoule Theelin in Peanut Oil 1 cc (5,000 I U) Each cubic centimeter contains 0.5 mg of theelin.

HALIBUT LIVER OIL (See New and Nonofficial Remedies 1942, p. 577)

The following dosage form has been accepted

THE LUPJOHN COMPANY, KALAMAZOO, MICH.

Capsules Halibut Liver Oil 3 minims Each capsule has a potency of not less than 10,000 U S P units of vitamin A and not less than 170 U S P units of vitamin D.

MENADIONE (See New and Nonofficial Remedies, 1942, p. 584)

The following dosage form has been accepted

SCHIEFFELIN & COMPANY, NEW YORK

Menadione (in sesame oil) 1 mg per cc 10 cc vials Each cubic centimeter contains 1 mg menadione.

SODIUM CITRATE (See New and Nonofficial Remedies 1942, p. 427)

The following dosage form has been accepted

GEORGE A. BREON & COMPANY, INC., KANSAS CITY, MO.

Ampul Solution Sodium Citrate 2½% W/V 50 cc A sterile solution containing in each cubic centimeter sodium citrate-U S P 0.025 Gm (0.38 grain).

SULFATHIAZOLE (See New and Nonofficial Remedies 1942, p. 150)

The following dosage forms have been accepted

PITMAN-MOORE COMPANY, INDIANAPOLIS

Tablets Sulfathiazole 0.5 Gm

Children's Tablets Sulfathiazole 0.25 Gm

DEXTROSE (See New and Nonofficial Remedies 1942, p. 418)

The following dosage form has been accepted

JOHN W. WYETH & BROTHER, INC., PHILADELPHIA

Dextrose Injection, 50% W/V, U S P 50 cc and 100 cc Each 10 cc contains 5 Gm of dextrose in distilled water.

tors or executives at any medical school or scientific institution with a view to their needs for experimental laboratory mammals over a long period of time so that, if it seems desirable and possible, arrangement for production and supply of these animals can be made

THE PRESIDENT-ELECT—HERMAN KRETSCHMER

Herman Louis Kretschmer of Chicago was elected President-Elect of the American Medical Association at the annual session in Chicago, June 9, by unanimous action of the House of Delegates. Dr. Kretschmer was born in Chicago on April 22, 1879. He received the degree of doctor of medicine from Northwestern University Medical School in 1904 from which date he has devoted himself continuously to the advancement of his chosen profession. He became urologist of the Presbyterian Hospital, attending urologist to the Children's Memorial Hospital and clinical professor of surgery in Rush Medical College. From the beginning of his career he became associated with practically all organizations in his specialty, serving as president of the American Board of Urology, chairman and secretary of the Section on Urology of the American Medical Association, president of the American Urological Association, president of the American Association of Genito-Urinary Surgeons and president of the Clinical Society of Genito-Urinary Surgeons. His leadership was also recognized by membership in the International Society of Urologists and election to corresponding membership in the German and Hungarian urologic associations. In 1931 he was president of the Chicago Medical Society and served for some years as a member of its council. For more than ten years he devoted himself in the American Medical Association to his work as treasurer, sitting regularly with the Board of Trustees and giving invaluable advice in the field of investments. He is a fellow of the American College of Surgeons and of the American Radium Society. In 1942 he was cited by Northwestern University School of Medicine as one of its distinguished alumni. His election to the presidency is a recognition of service and of much time and wisdom given to the affairs of the Association.



HERMAN LOUIS KRETSCHMER, M.D.
PRESIDENT-ELECT OF THE AMERICAN MEDICAL ASSOCIATION

MEDICAL PROBLEMS OF TANK WARFARE

Mechanized warfare is fought today with increased speed and power. Col. Daniel L. Borden's¹ study of the medical problems of tank warfare will help medical officers appreciate these changes. A modern tank is a mobile, concentrated source of fire power. Since the first appearance of the tank in World War I on Sept. 15, 1916 the slow tread of 4 miles an hour has been increased to 30 miles an hour, fire power has also increased. The all metal body encloses a high speed engine, ammunition, grenades, bombs, Vercy cartridges, batteries, radio, firearms, fuel oil and an alcohol compass in close proximity to the human crew. Special training is required to render efficient medical service to the personnel of tank battalions. Tank fighters must be youthful, aggressive, courageous, tough, they must not be tall, too heavy or sensitive to dust, nor have a tendency toward claustrophobia.

The elimination of flat surfaces and angles in tanks favors the ricocheting of projectiles and makes a disabled tank a target of great danger to soldiers who seek shelter nearby. One third of the battle casualties in tank crews in the Middle East with the British occurred outside the tank when men were caught seeking shelter near a disabled tank.

Although excessive heat in tanks is a serious medical problem, the British in the Middle East have reported few cases of heat exhaustion, if possible, tank crews

should not be subjected to more than one week of active fighting. Burns constitute from 27 to 30 per cent of the British tank casualties. The crew, particularly the commanders, occasionally protrude their heads out of the turrets and so become exposed to gun fire. Temporary sound deafness results from the roar of engine and tank, aggravated by gun fire within a resounding compartment. The surgeon of the armored forces at Fort Knox, Col. A. L. Gorby, reported that in training there were surprisingly few injuries, the most frequent being the loss of the distal phalanges of the fingers due to slamming of the heavy tank doors, a hazard that has been largely eliminated in the newer tanks. Contusions of the chest and abdomen occur due to sudden stopping at the bottom of a ditch or against a trap. Occasionally,

¹ Borden, Daniel L. Casualties and Medical Problems of Tank Warfare, M. Ann. District of Columbia 12:43 (Feb.) 1943.

a small tree which failed to be knocked down by the tank enters through a porthole and injures the crew. Head injuries result from slipping on muddy tanks while mounting or dismounting. Gunshot wounds may occur in tanks as the result of dropping ammunition. Fatalities occasionally occur when a tank turns over pinning a soldier in the turret or beneath the tread.

The evacuation of wounded from tanks has been the subject of extensive research. The American Armored Forces Board has rejected the British sling method of removing disabled men from tanks. When immediate action is necessary, the wounded are often pulled out by tying feet together and hauling away. A badly injured man may be given the contents of a small ampule of chloroform to inhale until he is unconscious, in order that he may be removed from the tank without pain and with lessened shock. Our army also employs the pistol-belt-suspender method, one belt being slipped under the armpits, tightened and used as a sling and a second belt carried between the back of the sling and the man's body, thus making a hoist device. Other methods of removing the disabled from tanks are being studied. The evacuation of wounded from tanks remains, however, a problem to be solved by any method that will accomplish the purpose under the circumstances.

Another difficult task is that of maintaining medical contact between swiftly moving motorized groups. The battalion surgeon must have at his command a radio-directed armored car or a half-track protected ambulance, and a clearing station, where provision can be made by returning wounded men in airplanes to their base, must be available. The medical department obviously must do more than care for the sick, its training must provide instruction in methods of communication, motor maintenance, identification of hostile aircraft and map reading. The medical officer serving with tank forces must be prepared to be a mechanic with a crowbar for his instrument of approach and a soldier to face shells and bombs, as well as a physician.

TUMOR ENZYMOLOGY

The metabolism of normal tissues is carried on by enzymic catalysis of definite patterns. These patterns may be disturbed by various causes, e.g. nutritional deficiencies, toxic actions and tumors. In the biochemical approach to the cancer problem tumor enzymology¹ is receiving closer and closer systematic attention. Comparisons are made of the enzymic activities of neoplastic, mostly cancerous, tissue and of the normal tissues of origin, also of enzymic processes of normal animals and of tumor-bearing animals.

Greenstein,² in a comprehensive review of work on tumor enzymology, emphasizes that no simple generalization covers the enzymatic behavior of all or any one

group of tumors," certain statements to the contrary notwithstanding. The range of enzymic activity in hepatoma, in lymphoma and in mammary and other tumors in mice on the whole is narrower than in the normal tissues of the sites of origin of these tumors, owing, it may be, to loss in specific function as the normal tissue becomes involved in tumor growth. The interesting question of acid phosphatase activity in normal prostatic tissue as compared with that of primary prostatic carcinoma invites further study. Undoubtedly in time facts will be accumulated on the basis of which generalizations can be made.

Studies of remote and systemic effects on enzymes by tumor growth have given more definite results, but this work is also in the stage of detailed observation. The evidence at hand does not justify any serious attempt at explaining just how such effects are produced. In tumor-bearing animals tissues far removed from the tumor have shown profound changes from the normal in certain enzyme systems. For instance catalase which has been studied most, is nearly always reduced below normal in the liver and kidney in mice and rats with various types of tumors elsewhere. Greenstein recalls that low catalase values have been found in the liver after death from various forms of human cancer. The remote effects of tumor growth on catalase and also other enzymes keep step with the ups and downs in the growth of the tumor, and on the removal or regression of the tumor the catalase content returns to normal. In other words, the effect in question is related directly to the presence of the tumor.

The many attempts to find a general test for cancer based on changes in the blood in the disease have not met with practical success, but objective studies of the blood in cancer are yielding results of scientific as well as clinical value. Greenstein mentions particularly the decrease of serum esterase and lipase activity in tumors of different species, the rise in serum phosphatase, particularly the acid form, in prostatic carcinoma, which is of such special interest these days, and finally the progressive loss of hemoglobin in the course of various animal tumors. Whether the anemic states in human cancer are dependent on the lowering of catalase and of the hemoglobin level as in animals remains to be determined. In connection with the significance of changes in the blood in cancer it is of particular interest to note that serial phosphatase tests of the serum are now essential in the diagnosis and treatment of carcinoma of the prostate.³

The study of the enzymatic phenomena of neoplastic growth has bearings on fundamental as well as practical

¹ Voegtlin, Carl. *Biochemistry of Malignant Tissue*. Physiol. Rev. **17**: 92 (Jan.) 1937. Trends in Cancer Research. J. Nat. Cancer Inst. **1**: 109 (Feb.) 1942.
² Greenstein, J. P. J. Nat. Cancer Inst. **3**: 419 (Feb.) 1943.

³ Huggins, Charles. The Diagnosis of Cancer of the Prostate Including the Interpretation of Serum Phosphatase Values. Bull. New York Acad. Med. **19**: 193 (March) 1943.

cancer problems. The fact that well defined effects are demonstrable in tissues far from the site of a primary cancer raises the question whether cancer is a general rather than a local disease.

Current Comment

THE DISTINGUISHED SERVICE AWARD TO JOSLIN

The Distinguished Service Medal and Award of the American Medical Association for 1943 were conferred on Dr. Elliott Proctor Joslin, world famous as a contributor to our knowledge of diabetes and as an educator in that field. Dr. Joslin was born in Oxford, Mass., June 6, 1869. Following the receipt of the B. A. degree from Yale in 1890 and the Ph. B. from the Sheffield Scientific School in 1891 he was graduated as a doctor of medicine by Harvard in 1895. In 1914 he received the honorary M. A. from Yale and in 1940 the honorary D. Sc. from Harvard. In 1895 he began the practice of medicine in Boston at the same time serving as an educator in Harvard Medical School becoming assistant in physiologic chemistry from 1898 to 1900, assistant in theory and practice of physics from 1900 to 1905, instructor from 1905 to 1912, assistant professor of the theory and practice of physics from 1912 to 1921, clinical professor of medicine from 1922 to 1937 and since that time emeritus professor. He has been at the

same time consulting physician of the City Hospital and medical director of the George F. Baker Clinic in the New England Deaconess Hospital. During World War I he entered as a major in the medical corps in 1918 and was promoted shortly to lieutenant colonel. He is a member of the Association of American Physicians, the American Academy of Arts and Sciences, the American Physiological Society and other scientific organizations. He was chairman of the Section on Practice of Medicine of the American Medical Association in 1924-25 and president of the Interstate Postgraduate Medical Association in 1936. He is honorary president of the American Diabetes Association. Various important lectures such as the Stephen Walter Ransom Lecture of Northwestern University School of Medicine in 1937, the Harvey Society Lecture in Boston in 1930 and the two Malthus lectures and a clinic in Oslo

in 1938 mark his career. From time to time he has traveled throughout the nation extending education about diabetes to the medical profession and to the public. On patients who have survived diabetes for various periods of time he confers bronze, silver or gold medals, recently having conferred such a medal on a woman who had diabetes for more than fifty years. In 1932 Dr. Joslin received the Kober Medal of the Association of American Physicians. As a part of his contribution to education in his field he published in 1916 the first edition of "The Treatment of Diabetes Mellitus," now in its seventh edition, also "A Diabetic Manual" in 1918, which is now in its seventh edition. His publications include more than one hundred smaller contributions to medical literature in his field. The

award to Dr. Joslin of this great honor adds further to the distinguished list of those already recognized, which now includes Dr. Rudolph Matas in 1938, Dr. James B. Herrick in 1939, Dr. Chevalier Jackson in 1940, Dr. James Ewing in 1941 and Dr. Ludvig Hektoen in 1942.



ELLIOTT PROCTOR JOSLIN, M.D.
AWARDED DISTINGUISHED SERVICE MEDAL

CENSORSHIP OF MEDICAL PERIODICALS

A letter from the Office of Censorship in Washington requests the editor of THE JOURNAL to call the attention of editors of state medical journals and of bulletins of county medical societies particularly and also editors of all other medical publications to the fact that it is exceedingly inadvisable to publish uncensored letters coming from doctors in the service, particularly when they include the addresses of

the physicians. Already in several instances such letters have served to reveal the identity of troops overseas. The Code of Wartime Practices for the American Press calls attention to the great danger that is inherent in this practice. All publications are particularly requested to avoid identification of soldiers with their troop units when they are overseas, about to embark or on defense (as distinguished from training) activities in the United States. In the case of Naval personnel the identification of ships and bases is to be especially avoided. Editors of all publications will, we are sure, do their utmost to cooperate with the Office of Censorship in Washington, since the revealing of units to which physicians are attached may be of great value to the enemy in determining the character of the armed force with which it has to deal. When in doubt, editors will do well to get a direct response from the Office of Censorship regarding the release of any special item.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession

FUEL RATIONING AND PUBLIC HEALTH

JOEL DEAN

Director Fuel Rationing Division Office of Price Administration
Washington, D C

When it became clear that fuel oil would be rationed in a majority of the states, grave concern was felt for the effect on the public health. Many and dire were the prophecies of epidemics of communicable disease and of deaths from pneumonia, influenza and other respiratory ailments, and of resulting breakdown of public morale. A study of the medical aspect of fuel rationing was conducted by Bristol,¹ and the findings were used as a basis of ration order 11² (fuel oil), which became effective Oct 22, 1942.

In that report a careful distinction was made between a "minimum standard" which would not jeopardize health for persons in normal physical condition and the "comfort zone" which physicians, engineers and public health workers interested in the subject of indoor heating and ventilation had become accustomed to think of as indicative of ideal combinations of room temperature and relative humidity. Necessarily the fuel oil regulations embodied in ration order 11 were directed to maintenance of the "minimum standard." The report also distinguished categories of persons who could not be subjected even to this "minimum standard." The regulations consequently recognized infancy, sickness and infirmity as reasons for additional fuel rations.

From time to time, especially during the first two or three months, alarming reports of illness, epidemic and death reached the national office. Every such case was investigated promptly in order to provide immediate relief if needed. No single case of death due to fuel oil rationing directly or indirectly has been substantiated nor any epidemic unearthed that could be laid to fuel oil rationing. In almost every report of sickness or other hardship investigation showed either that relief had already been afforded through action of the local war price and rationing board or that the condition had been grossly exaggerated.

Typical of these exaggerated reports was an anonymous telegram stating that children were dying of pneumonia in a tenement of the capital city because of lack of fuel oil. This telegram was referred to the Fuel Rationing Division and an investigation was made in cooperation with police and public welfare agencies. An infant son of one of the tenants had died of pneumonia in the hospital a few days earlier. No other case of pneumonia existed among the occupants of the building, infant or adult. Fuel oil was not used and never had been used to heat the premises. Another typical case was a telegram received toward the close of the day from a householder in northern New England alleging that several sick members of the family were in imminent danger of death because they had no fuel oil and the local board had not issued a ration for the premises. Immediate investigation revealed that the ration had been issued already by the local board and had reached the complainant within an hour of dispatching the telegram, that delivery of fuel oil had been made a couple of hours later and that no member of the household was dangerously or even seriously ill.

Notwithstanding our growing disillusionment we never permitted ourselves to relax our vigilance and every reported case was investigated promptly and thoroughly. With a program operative in thirty-three states and the District of Columbia and administered by thousands of local officials, it was inevitable that some genuine cases appeared, and even a few that had been badly handled. The percentage of these was so small however that the conclusion we reached in the Fuel Rationing Division was that no real detriment to public health had resulted from ration order 11.

We felt nevertheless that before entering on the second heating season under fuel rationing, this conclusion should be checked against the experience of public health authorities throughout the rationed area. On Feb 23, 1943 therefore I addressed a letter to representative health officers requesting information (1) as to how fuel oil rationing had affected public health and (2) as to what changes in the regulations were recommended from that point of view and (3) as to whether a general conference of public health officials should be convened to discuss revision of the rationing plan. Replies were received from city, county and state officers of nineteen states and the District of Columbia.

Significantly the fourteen states not represented in the replies are those which have had less severe weather and from which fewer hardship cases have been reported. It is a reasonable inference that failure to reply is equivalent to a statement that no serious impairment of public health was observed in those states. It is not the experience of the Fuel Rationing Division that it is usual to suffer in silence or to decline an express invitation to complain if there is anything to complain about.

The replies from the nineteen states and the District of Columbia, while frankly reporting some hardship cases and offering some adverse criticism, indicate clearly that in the nearly unanimous judgment of the responding authorities no impairment of public health resulted from rationing fuel oil that ration order 11 needs only minor adjustment to satisfy all requirements of public health, and that such revision is not of sufficient gravity to warrant a general conference of public health officers.

Tabulation of the replies shows the following effects on public health:

DEATH

- 10 per cent reported deaths allegedly due to lack of fuel oil as cause or contributory circumstance but indicated that this was doubtful and had not been investigated.
- 25 per cent stated positively no such deaths had occurred.
- 65 per cent did not report any deaths.

ILLNESS

- 10 per cent reported considerable illness.
- 20 per cent reported some illness due to lack of fuel oil.
- 40 per cent stated positively that no illness had been caused by rationing fuel oil.
- 15 per cent stated that decreased household temperatures had improved public health.

EPIDEMIC

- 100 per cent did not report epidemic situations.

1. Bristol, Leverett D. Medical and Public Health Aspects of Heating Oil Rationing. Am Soc Heating & Ventilating Engineers Journal Section on Heating October 1942.
2. OPA R 1115. Fuel Oil Rationing, Regulations Ration Order No 11 title 32 National Defense chapter XI Office of Price Administration.

The incidence of fuel oil rationing was heaviest in New England and northern New York, owing to the greater severity of the winter there and the greater distance of that area from the source of supply. It was to be expected, therefore, that from this region would come the most adverse reports. Of Massachusetts one reply states that "there appears to have been an appreciable increase in the number of deaths directly attributable to the fuel shortage." In 1 instance in New York, a letter says, "it has been claimed that death occurred in the family due to an insufficient amount of fuel oil for heating purposes." Against these must be set the following two reports by health officers in the same area: 1 "We, in this department, and some of the voluntary health agencies, do not believe that fuel rationing, at least not directly, has affected the health of the community adversely." 2 "No deaths and no illnesses were caused by lack of heat insofar as we are able to determine."

Naturally the principal effects noted relate to respiratory ailments. The majority of all reports received state that there was no increase in the number of these that could be attributed to lack of fuel oil. In New Jersey the state department of health made a survey of local health units, and reports concerning them that "a few state that cases of illness, chiefly respiratory, have come to their attention in which the patient or family alleged that the lack of heat in homes was the cause or contributing factor." Such cases, the reports point out, were few in number, and they conclude "Only a very few complaints have been filed with us during the current winter regarding homes being poorly heated due to our present fuel oil shortage. In each instance our investigation disclosed that the complaints were not well founded as no acute distress or illness existed." Only two replies to my inquiry mentioned pneumonia. Both were from New York. One authority reported "Our pneumonia rate, though a little higher than for approximately the same period last winter, is below the five year average, and we know of no unusual incidence of colds and other respiratory affections commonly referred to as 'grippe'." Another stated "During the month of January there had been a 30 per cent increase in the pneumonia death rate as compared with January 1942. There are so many factors entering into the increase that it would be impossible to say whether or not the fuel shortage had anything to do with it, but this seems to me to be rather doubtful."

Reports from the Southern and Middle Western states are that no illnesses or deaths in those regions were due to lack of fuel oil. No reply reported any epidemic anywhere.

The only point of difference between the conclusion we had already reached in the Fuel Rationing Division and the summary of these replies concerns the possibility that some deaths reported from Massachusetts and one death reported from New York may have been due to lack of fuel oil for heating purposes. Without full investigation the validity and degree of this difference cannot be determined accurately, but it is evident that such cases are highly exceptional and relatively few, even if they can be established.

A recent canvass by Bristol³ of the physicians and health officers who assisted him in his original study indicates no general divergence of opinion from that expressed by the majority of health officers who replied to my letter.

In his original report, Bristol¹ said "The public should be made to understand that, by a reasonable amount of extra clothing, the body adjusts itself readily to temperatures at least 10 degrees below what we in the United States consider the standard temperature for dwelling houses. Experience of those in foreign countries attest this fact. Some medical and public health authorities have indicated that not only would it be safe but actually beneficial to keep temperatures quite a few degrees lower than the commonly accepted standard if additional clothing is worn." Public welfare workers assured us that in their experience small houses and apartments of people in the lower income brackets were frequently heated to an unhealthy temperature.

The Fuel Rationing Division was hopeful that over a long period of time the beneficial results of slightly lower indoor temperatures could be established⁴ but did not anticipate that one year of fuel rationing would be sufficient to demonstrate it. It is an agreeable surprise, consequently, when a health officer writes from Missouri that "It is my opinion that public health has benefitted from fuel rationing in that the temperature of homes was reduced," and another health officer reports of a family in Virginia that they "had kept their house at 60 degrees for the second floor and 65 downstairs through the winter and had been both happier and more comfortable than they were when they had it much hotter the year before." It is also a proof of the underlying wisdom of Bristol's report and of the essential soundness of the fuel oil rationing plan.

3 Bristol, Leverett D. Personal communication to the author.

4 Dean, Joel. Fuel Oil Rationing Protects Public Health, *Am. J. Pub. Health* 32: 1341 (Dec.) 1942.

ARMY

THE OLIVER GENERAL HOSPITAL

The U. S. Army Oliver General Hospital at Augusta, Ga., was formally dedicated on April 18 and the forty minute program was broadcast over radio station WRDW. The commanding officer of the hospital, Col. Hew B. McMurdo, M. C., introduced the speakers, including Brig. Gen. R. H. Mills of the dental corps, who represented the Surgeon General, and Col. Sanford W. French, chief of the medical branch of the Fourth Service Command, and Hon. W. D. Page, mayor of Augusta. The guest of honor was Mrs. Robert T. Oliver, widow of the late Colonel Oliver, in whose honor the hospital was named. Colonel Oliver was chief dental surgeon of the A. E. F. in the first world war, after which he was elected president of the American Dental Association. General Mills presented Mrs. Oliver with a miniature of the Oliver General Hospital flag and a replica of the "Stars and Stripes," which emblems flew together from a staff mounted on a silver base and were a gift from the personnel of the hospital. Following the exercises, Colonel and Mrs. McMurdo held a reception for the guests and others present. This 1,500 bed army hospital is fitted and equipped to carry out general surgery, general medicine and physical therapy. The list of medical officers on the staff of the Oliver General Hospital as of May 10 was as follows:

Col. Hew B. McMurdo, commanding officer
Col. George A. Stewart, chief of surgical service
Lieut. Col. Paul C. Carter, medical inspector

Lieut. Col. John F. Duckworth, executive officer
Lieut. Col. Arthur N. Ferguson, chief of medical service
Lieut. Col. Harold C. McDowell, orthopedics
Lieut. Col. Tyler, J. Walker, chief of dental service
Lieut. Col. Clifford C. Woods, assistant chief of surgical service
Major Samuel E. Bilik, chief of physical therapy
Major Isaac C. East, psychiatry
Major Southard T. Flynn, urologist
Major George Frumkes, chief of psychiatry
Major Grover E. Murphy, chief of eye, ear, nose and throat service
Major David H. Sprong Jr., surgical service
Capt. Gregory N. Brown, chief of laboratory service
Capt. Albert R. Buckelew, dental service
Capt. Joseph M. Cordi, orthopedics
Capt. Robert G. Diess, ophthalmology
Capt. Jack S. Goltman, gastroenterologist
Capt. Frank D. Hazlett, attending surgeon
Capt. Edwin F. Merolla, pediatrics
Capt. Louis T. McAloose, assistant urologist
Capt. Herman Rudensky, chief of chest service
Capt. Jack A. Rudolph, allergist and medical service
Capt. Hans Seidenmann, gynecology and obstetrics
Capt. James D. Wilson, chief of x-ray service
Capt. Eugene G. Wolff, anesthesia
1st Lieut. Abraham I. Beacher, cardiology
1st Lieut. Joseph A. Budetti, ear, nose and throat service
1st Lieut. Laurence B. Felmus, gynecology and obstetrics
1st Lieut. Victor J. Fimia, medical service
1st Lieut. Robert W. Gans, psychiatry
1st Lieut. Andrew E. Plahy, dental service
1st Lieut. Anthony Reiger, physical therapy

AVIATION MEDICAL EXAMINERS

A class of Aviation Medical Examiners graduated on April 22. The didactic portion of the course was conducted at the School of Aviation Medicine, Randolph Field, Texas, of which Brig Gen Eugen G Remartz, A U S, is commandant. The practical portion of the course was conducted at the three Army Air Forces classification centers. The list of graduates follows:

ALABAMA

James E Kendrick Jr, Major, Greenville
William C Kennedy, Captain, Florence

ARIZONA

Harold W Kohl Major, Tucson
Arthur G Nugent, 1st Lieut, Douglas

ARKANSAS

Joe W King 1st Lieut, Helena
Garland D Murphy Jr, 1st Lieut, El Dorado

CALIFORNIA

Clifford A Barber 1st Lieut, Rosemead
Joseph G Campbell Captain, Santa Barbara
Nathan E Carl 1st Lieut Los Angeles
Salvador Castaneda Major, Los Angeles
Walter H Drane Captain Los Angeles
John J Duncan 1st Lieut, Riverside
Alfred S Ehrlich 1st Lieut, Beverly Hills
Hyman Engelberg 1st Lieut Los Angeles
Dewitt W England 1st Lieut Orange
Bernard B Gadwood, 1st Lieut Oakland
Milton J Groat, 1st Lieut Monterey
Wilbur B Hurlbut 1st Lieut, Santa Monica
Kenneth B Jenkins 1st Lieut, Oakland (Piedmont)
Joseph E Kaiser 1st Lieut Santa Monica
Marshall Y Kremer 1st Lieut, Pasadena
Robert Lewis 1st Lieut Berkeley
Luther B Lowe 1st Lieut Crows Landing
Neil P McCloy 1st Lieut Los Angeles
John R Munger 1st Lieut Los Angeles
Maurice S Priver Captain Los Angeles
Layton S Rogers 1st Lieut Whittier
Warren N Steele Jr Captain Modesto
Avery E Sturm 1st Lieut, Yosemite National Park
Joseph F Walsh 1st Lieut Eureka

COLORADO

David R Akers 1st Lieut Erie
Carl B Ermsbar 1st Lieut, Boulder
James G Espey Jr Captain Trinidad

CONNECTICUT

Edward A Abbey Major New Haven
Richard J LaVigne 1st Lieut Hartford
Ward J McFarland 1st Lieut, New Haven

DISTRICT OF COLUMBIA

Jack Bolterud Captain Washington
Joseph T Jana Jr Captain Washington
Frank S Pellegrini 1st Lieut Washington
G Victor Simpson Major, Washington

FLORIDA

Richard H Brooks 1st Lieut, Miami
William H Weems, 1st Lieut, West Palm Beach

GEORGIA

Ronald M Burnside 1st Lieut, Atlanta
Edwin W Turner, 1st Lieut, Emory University

IDAHO

Joseph E Baldeck Captain Lewiston
William R Jacob 1st Lieut, Lewiston
Reginald C Randall 1st Lieut, Kellogg

ILLINOIS

Hanford L Auten, 1st Lieut, Chicago
Edward S Baxter 1st Lieut, Western Springs
Isidore Brill 1st Lieut Champaign
James H Britton 1st Lieut Moline
Herbert P Drexler, 1st Lieut O Fallon
Joseph J Eckert 1st Lieut Chicago
Gilbert J Edwards Captain Pinckneyville
Walter Gaines 1st Lieut Chicago
Philip C Hemming 1st Lieut Elgin
David S Koransky Captain Chicago
Herman B Lander Captain Chicago
Otis H Law 1st Lieut Pontiac
Alfred N Marshall 1st Lieut, Chicago
Clement J Michet Captain Chicago
John S Moffatt Major Rantoul
Joshua Oden Jr 1st Lieut Chicago
William E Rapp 1st Lieut Chicago
Vernon C Voltz 1st Lieut Rockford (Winnebago)
Frederick E Walker 1st Lieut, Chicago

INDIANA

George E Brown 1st Lieut Greencastle
Vance J Chattin 1st Lieut Washington
Marion M Crum 1st Lieut Angola
John M Engle 1st Lieut Portland
Asa H Fender 1st Lieut Warrington
Mars B Ferrell 1st Lieut Indianapolis
Joseph W Freeman Captain, Syracuse
James B Johnson 1st Lieut Greencastle
Leo Kammen 1st Lieut Indianapolis
Samuel A Manalan 1st Lieut Indianapolis
Charles C McLaugh Captain Pendleton
Robert A Nason 1st Lieut Garrett
Charles B Nabb Captain Valparaiso
Harold F Schuknecht Captain Mishawaka
Ben J Siebenthal Captain Bloomington

Lowell C Smith Captain La Fayette (West La Fayette)
William R Tipton 1st Lieut, Greencastle
Ward B Warren, 1st Lieut, Indianapolis
Gerald S Young 1st Lieut Muncie

IOWA

Emmett A Doles, 1st Lieut, Clarion
Draper L Long 1st Lieut, Mason City
Seymour I Shapiro, 1st Lieut, Iowa City

KANSAS

Ernest A Cerv, 1st Lieut, Wichita
Fowler B Poling 1st Lieut, Halstead
Lyle B Putnam 1st Lieut, Wichita
Lee Emerson Reek 1st Lieut, Kansas City

KENTUCKY

Clair G Prindle 1st Lieut, Mayesville

LOUISIANA

David V Brown 1st Lieut New Orleans
Joseph B Deisher Jr 1st Lieut, New Orleans
Lucas L DiGiglia 1st Lieut Lake Charles
Raymond E Lovett 1st Lieut, New Orleans
James B Montgomery 1st Lieut, Lafayette
Arthur J Wallace Jr 1st Lieut, New Orleans
George H Wright 1st Lieut, Hodge (Jonesboro)

MAINE

Sprague Curtis 1st Lieut, North Edgecomb
William B S Thomas Captain, Dover Foxcroft

MARYLAND

Albert J Himelfarb, 1st Lieut, Baltimore
Alfred H Richwine 1st Lieut Chevy Chase
Earl S Scott 1st Lieut, Baltimore

MASSACHUSETTS

William D Barone 1st Lieut, Winchester
Hugh J Bonner 1st Lieut Boston
George H Boynton 1st Lieut Billerica
William B Garlick 1st Lieut, Boston
Oliver J Harris Captain Boston
Joseph R Lounie 1st Lieut Worcester
Arnold Porter 1st Lieut Boston
Edmund J Sullivan 1st Lieut Forest Hills
George S Woodfin 1st Lieut, Boston

MICHIGAN

Richard C Armstrong Captain Ann Arbor
Benjamin Barenholtz 1st Lieut, Elsie
Leslie Caplan Captain Detroit
John P Flanders 1st Lieut, Monroe
Thaddeus S Hummel 1st Lieut, Roseville
Frederick E Lapham 1st Lieut Detroit
Victor E Linden 1st Lieut Durand
Leonard Price 1st Lieut Mukegon
Rex E Whimsey 1st Lieut Detroit
Edward J Zabinski 1st Lieut Detroit

MINNESOTA

David C Dahlin Jr 1st Lieut, St Paul
Richard A Forney 1st Lieut, Rochester

Bernard Halper 1st Lieut, St Paul
Robert D Mooney, Captain St Paul
Nicholas J Musty 1st Lieut, Minneapolis
Frederick D Roth 1st Lieut, Lewiston
Omer E Snyder, Captain, Ely
John D Van Valkenburg 1st Lieut, Floodwood
William T Walsh, 1st Lieut, Minneapolis

MISSISSIPPI

Arthur A Derrick Jr 1st Lieut, Jackson

NEW HAMPSHIRE

John H Kennard Captain Manchester

MISSOURI

Umbert E Anz Captain Kansas City
Arthur R Bortnick, 1st Lieut St. Louis
Samuel J Davis, Captain Kansas City
Daniel W Oungst 1st Lieut, St. Joseph
George G Robinson Captain Hannibal
Harold E Thornell Major, St. Louis

NEW JERSEY

Alan R Bleich 1st Lieut, Trenton
William K Booth Captain Boonton
Louis K Collins 1st Lieut, Glassboro
Ferdinand Fader 1st Lieut East Orange
Aaron J Kaycoff Captain Elizabeth
Joseph M Keating 1st Lieut, Passaic
Justin T Leonard 1st Lieut, Skillman
Meyer E Mackler 1st Lieut, Paterson
Samuel L Pollock 1st Lieut, Greystone Park
Charles E Rosen 1st Lieut, Union City
Bascom S Waugh 1st Lieut, Camden

NEW YORK

David Altman 1st Lieut, Massapequa
Leo S Bell 1st Lieut New York
Charles J Bivona 1st Lieut Newburg
Aaron W Bortin Captain Roslyn
Paul Dooley 1st Lieut Buffalo
Wilfred Dorfman 1st Lieut, Brooklyn
Seymour K Fineberg 1st Lieut, New York
Lawrence H. Gahagan Captain New York
Edward J Gallagher 1st Lieut, Scarsdale
Herwald B Geiger Captain New York (Jackson Heights)
Max P Goodfriend 1st Lieut, New York
Kenneth Gordon Jr, 1st Lieut, Rensselaer
Sidney F Grant 1st Lieut Brooklyn
Walter A Gunkler 1st Lieut Rochester
Max J Halperin 1st Lieut Flushing
Harry H Herschman 1st Lieut New York
Robert W Hunt Major, New York
Eldridge W Johnson 1st Lieut Greene
Harry E Karosnos 1st Lieut New York (Brooklyn)
William J Lazarus 1st Lieut, Brooklyn
Michael L. Lerner Captain Haverhill
George J Mellicone 1st Lieut New York

Robert I McCollom, Major, New York
Joseph J McConnell, Captain, Lima
Raymond S McKeeby, 1st Lieut., Binghamton
Charles P McInane, 1st Lieut., Bethpage
Max B Milberg, 1st Lieut., New York
Sam R Monachino, 1st Lieut., New York
Harold I Pierce, Major, New York
George A Reich, 1st Lieut., Schenectady
Eric D Savage, 1st Lieut., Valhalla
John I Schlechter, 1st Lieut., Brooklyn
Solomon Sherry, Captain, New York
Morris N Silverberg, Major, Brooklyn
Eldred J Stevens, 1st Lieut., Hammondport
Henry H Stroud, Captain, Brooklyn
Louis A Tripi, 1st Lieut., Buffalo
Edward I Walsh, 1st Lieut., Forest Hills
Edwin I Wilson, 1st Lieut., New York
John H Winkley, 1st Lieut., New York
Anthony C Yerkovich, 1st Lieut., Kingston
Milton H Yudell, 1st Lieut., New York

NORTH CAROLINA

Bernard H Hartman, Captain, Asheville
Ralph I Fore, Captain, Fenwick
Walter H Simmons, 1st Lieut., Durham

NORTH DAKOTA

Jesse W Bowen, 1st Lieut., Dickinson
Paul I Cool, 1st Lieut., Valley City
Orvil H Stone, 1st Lieut., Bottineau

OHIO

William B Ayres, 1st Lieut., Dayton
George W Beers, 1st Lieut., Canton
Robert J Deger, 1st Lieut., Dayton
Eugene A Ferreri, 1st Lieut., Cleveland (University Heights)
Marvin S Freeman, 1st Lieut., Cleveland
James A Gavin, 1st Lieut., East Cleveland
Ralph S Grace, 1st Lieut., Hamilton
Charles C Henrie, 1st Lieut., Celina
William J Herman, Cleveland (Shaker Heights)
Luther W High, 1st Lieut., Millersburg
Saul W Kessler, Captain, Cleveland
Edgar A Knowlton, 1st Lieut., Cleveland
David R Lewis, 1st Lieut., Grove City
Bernard S Malasky, 1st Lieut., Cleveland (Garfield Heights)
John H Mowry, 1st Lieut., Conaut
Dan A Nye, 1st Lieut., Columbus
Frank J O'Dea, 1st Lieut., Cleveland
Harold G Overley, 1st Lieut., Cleveland
Elias D Peelle, 1st Lieut., Wilmington
Alexander Pollack, Captain, Columbus
Sanford Press, 1st Lieut., Steubenville
Edward J Purchla, 1st Lieut., Toledo

Henry H Roenigh, 1st Lieut., Cleveland (Lakewood)
Edward A Swain, Captain, Akron
Joseph N Schaeffer, 1st Lieut., Dayton
George I Schectz, Captain, Rockford
Edward I Schumacher, 1st Lieut., Cleveland
Richard H Storm, 1st Lieut., Marietta
John W Smith, 1st Lieut., Grand Rapids
Homer D Underwood, 1st Lieut., Van Wert
Calvin I Warner, 1st Lieut., Cincinnati

ORIGON

Stewart S Merrill, 1st Lieut., Hermiston

PENNSYLVANIA

Leon H Collins Jr, Major, Philadelphia (Marion Station)
Robert I Dickey, 1st Lieut., Northumberland
Warren C Dietrich Jr, 1st Lieut., Bethlehem
Walter I Edmundson, 1st Lieut., Pittsburgh
Saul D Eker, 1st Lieut., Pittsburgh
Joseph H Gahr, 1st Lieut., Chester (Haddonstone)
Thomas K Hepler, 1st Lieut., Danville
Paul I Holl, 1st Lieut., Pittsburgh
Paul C Johnson, 1st Lieut., Monroeville
Charles A Lehman Jr, 1st Lieut., Williamsport
Thomas J Mize, 1st Lieut., Allentown
Orden I Miller, 1st Lieut., York
James H Parker Jr, 1st Lieut., Philadelphia
Ralph I Schwalm, Major, Valley View
Raymond I Smith, 1st Lieut., Pittsburgh
Thomas Thomas, 1st Lieut., Oil City
Harry B Updegraff, 1st Lieut., Lemoyne
Alfred W Wagner, 1st Lieut., Philadelphia
Arthur C Webber, 1st Lieut., Coopersburg
James E Woodhouse, 1st Lieut., Bradford

RHODE ISLAND

Emil J Koenig Jr, 1st Lieut., Providence

SOUTH CAROLINA

William C Alston Jr, 1st Lieut., Greenwood
Isadore I Kolman, 1st Lieut., Ridgeland
Jesse G Scasttrunk, 1st Lieut., Columbia

TENNESSEE

William G Kennon, 1st Lieut., Nashville
Addison T Tatum, 1st Lieut., Memphis
Claud F Yates, 1st Lieut., Memphis

TEXAS

Mortimer H Bannister, 1st Lieut., Pearsall
Howard T Barkley, Major, Houston
Robert P Collins, 1st Lieut., Wichita Falls
Wilbur K Green, 1st Lieut., Houston
James A Hallmark, 1st Lieut., Fort Worth
Salmon R Halpern, Captain, Dallas
Kent N Hunt, Captain, San Antonio
Frank W Kelley, 1st Lieut.,ampa
Bruce A Kniel erbocker, Major, Dallas

Sam A Loeb, 1st Lieut., Sweetwater
Donald H McDonald, 1st Lieut., Abilene
William D Nicholson, Captain, Roschbud
Jim S Phillips, 1st Lieut., Rock springs
Joe L Stevens, 1st Lieut., Fort Worth
Harrison K Wyane, 1st Lieut., Galveston

VIRMONT

Alberic H Bellerose, 1st Lieut., Rutland

VIRGINIA

George S Ferrell, 1st Lieut., Lynchburg
William P Frazer, 1st Lieut., Hamilton
John F Gyle, 1st Lieut., Newport News
Rowland H Robertson Jr, 1st Lieut., Roanoke
Robert R Rudolph, Captain, Roanoke

WASHINGTON

John J Black, Captain, Ellensburg
J Harold Brown, 1st Lieut., Cle Elum
Homer B Frank, 1st Lieut., Fairfield
John L Hardy, 1st Lieut., Endicott
Charles Van K Hillman, 1st Lieut., Seattle

Wendell C Knudson, 1st Lieut., Seattle
William E McClain, 1st Lieut., Seattle
Raphael C McDonough, Captain, Spokane
John O Milligan, 1st Lieut., Seattle
Edward L Perry, 1st Lieut., Seattle
Deane M Pettibone, 1st Lieut., Renton
Robert J Tipler, 1st Lieut., North Bend
Nathaniel D Wilson, 1st Lieut., Tacoma

WEST VIRGINIA

Carlisle B Hughes Jr, Captain, Menden
Joseph S McDede Jr, 1st Lieut., Winona

WISCONSIN

Gordon W Brewer, Captain, Hartland
Frank C Goodwin, 1st Lieut., Wauwatosa
Joseph F Kelley, 1st Lieut., Janesville
Henry M Kleinmans, Captain, Wauwatosa
Arthur A Presti, 1st Lieut., Milwaukee
Philip F Voigt, 1st Lieut., Milwaukee

CANADA

John L Burns Jr, 1st Lieut., Toronto

REPORTED MISSING

Lieut Col William A Hutchinson, M C, who was in command of a hospital in Eritrea in Africa, left there a few weeks ago by plane en route to a new assignment. The plane was last heard from fifty minutes out of Cairo, when a violent storm was encountered. Immediate search failed to reveal any trace of the craft. Lieutenant Colonel Hutchinson graduated from Tulane University of Louisiana School of Medicine in 1924.

The U S Army has also reported missing in action since February 17 Capt Garrold H Nungester of the medical department, who at that time was serving in a North African sector. Captain Nungester was a native of Decatur, Ala., and graduated from Tulane University of Louisiana School of Medicine in 1933.

The U S Navy has reported as missing in action Lieut Felix B Long Jr, a native of Starkville, Miss. Lieutenant Long graduated from Tulane University of Louisiana School of Medicine in 1940.

PRISONERS OF WAR HELD BY THE JAPANESE

The War Department has informed the parents of Capt Joseph D VandeVelde of the medical corps that he is a prisoner of war of the Japanese in the Philippine Islands. Captain VandeVelde practiced medicine in Cleveland in 1937 until he entered the army in May 1941. He left for the Philippines the following August.

The parents of Capt Wilbert W Buckhold of Cleveland have been notified that their son is a prisoner of the Japanese. Captain Buckhold became a reserve officer in August 1940 and was stationed at Fort Knox, Kentucky, till late in 1941, when he was transferred to the U S Army Sternberg General Hospital in Manila.

The War Department has informed the mother of Capt Harold M Immerman, U S Army Medical Department and formerly of Saginaw, Mich., that her son is a prisoner of the Japanese government in the Philippine Islands. Captain Immerman entered the army medical department in February 1941 and after training in Texas and Pennsylvania was sent to the Philippine Islands.

NAVY

NEW METHOD OF MAKING SEA WATER DRINKABLE

The Navy Department announced on June 8 that a simple method of making sea water safe to drink has been perfected at the Naval Medical Research Institute, Bethesda, Md. The method, which appears to be more practical than any other yet devised, except distillation is intended primarily for use on rubber life rafts carried on air craft. The equipment consists of two chemical compounds and four plastic bags each having a capacity of slightly more than a quart. The survivor dissolves one of the chemical compounds in sea water contained in one of the bags, then pours the mixture into another bag that contains a filter sac. The product is emptied into the third bag and the first step is repeated except that the second chemical is used. After the chemical has acted the water is filtered in the fourth bag. Two of the four steps are eliminated if only two of the bags are used. In this case one container serves for dispersion and filtration of each chemical compound. By the new method of de-salination, a survivor who started out with ten of the chemical packets in the necessary bags would be assured of a twenty day supply of drinking water. If there were five persons in the life boat, the supply would be enough for four days.

The composition and design of the bags are the result of several months of experimentation at the Naval Medical Research Institute. The process of removing sodium salts from sea water was discovered by Lieut. (jg) Claire R. Speelman, hospital volunteer specialist and further developed by Lieut. William V. Consolazio, hospital volunteer specialist, chief chemist of the Naval Medical Research Institute and other members of the staff. Research was carried out under the direction of Capt. William L. Mann, M. C. medical officer in command of the Naval Medical Research Institute and Dr. A. C. Ivy, scientific director of the institute, and the new method was announced by Rear Admiral Ross T. McIntire, Surgeon General of the Navy.

BRANCH STOREHOUSES FOR MEDICAL DEPARTMENT

In order to facilitate the issuance of supplies for the medical department branch storehouses of the Brooklyn and San Francisco depots have been authorized. Storehouses under the control of the Brooklyn depot have been established at the U. S. Naval Hospital at Newport, R. I., the N. O. B. at Norfolk, Va., the U. S. Naval Hospital at Charleston, S. C., and the Naval Station New Orleans. Those under the control of the San Francisco depot are located at Pier 41, Seattle, San Pedro,

Calif., and San Diego, Calif. Medical storehouses established for overseas bases are intended to meet the needs of Naval forces operating in those areas, but large medical units and base hospitals, except when specifically authorized, should replenish their stores in the normal manner.

DENTAL REHABILITATION

Owing to the recent lowering of dental standards for enrollees, the Navy Department will undertake to rehabilitate, dentally, personnel requiring prosthetic dental replacements. At recruit training depots throughout the United States, laboratories will be established to carry out this extensive program. Many additional dental officers as well as enlisted personnel skilled in the field of prosthetic dentistry will be required. It is expected that additional building facilities will soon be erected to house these clinics and that present existing dental facilities at these centers will be expanded.

CONSULTANTS STUDY BATTLE CASUALTIES

Dr. Walter E. Dandy, professor of neurologic surgery at Johns Hopkins Hospital, Baltimore, and Dr. Meyer Wiener, professor of clinical ophthalmology at Washington University School of Medicine, St. Louis, both members of the Board of Honorary Consultants to the Surgeon General of the U. S. Navy, are on the West Coast observing battle casualties in the navy hospitals and appraising treatment methods. Dr. Dandy is accompanied by Capt. Winchell McK. Craig (MC) U. S. N. R., chief of the surgical service, Naval Hospital, Bethesda, Md.

SILVER STAR AWARDS

The Bureau of Medicine and Surgery announced on May 26 the Award of Silver Stars to Comdr. Emil J. Stelter and Lieut. Gerald H. McAteer, both of the Medical Corps of the Navy and former senior and junior medical officers respectively of the U. S. S. (aircraft carrier) *Hornet*, from which the Doolittle expedition bombed Tokyo and later was sunk in action in the Southwest Pacific area.

NEW NAVAL HOSPITAL

The Bureau of Medicine and Surgery of the U. S. Navy announced on June 7 that a new 400 bed naval hospital has been authorized to be established in Astoria, Ore.

MISCELLANEOUS

PHYSICIANS ON STRIKE IN THE NETHERLANDS

Reliable sources reported on April 28 that when a number of Dutch physicians were placed in detention for issuing certificates declaring patients physically unfit for guard duty ordered after sabotage had taken place, their colleagues went on strike. All doctors suspended office hours, accepted only urgent cases for treatment, referred accident cases to the municipal authorities, had their wives inform patients that interferences on the part of the authorities prevented the doctors from rendering medical assistance, and asked physicians in neighboring towns not to take their places. The release of the arrested doctors followed quickly.

In another instance a doctor was imprisoned for refusing to violate the medical code by giving information about a patient to a German. The other doctors in town immediately posted the following notice: No consulting hours. A colleague has been imprisoned because he rightly refused to inform an unauthorized outsider about the illness of a patient. As long as this illegal detention lasts, other physicians cannot practice. The doctor was released within two days.

The physicians have warned the mayors that they held the authorities responsible for endangering public health, that they accepted the release of their colleagues as meaning that there would be no repetition of such arrests and that if there were new arrests these would not have the slightest effect on their professional attitude. The doctors have also agreed not to fill out any forms, however innocent the source might appear, if these seemed likely to aid the authorities in collecting data about physicians.

The Stockholm *Svenska Dagbladet* reported that more than 4,000 physicians or 97 per cent of the membership stopped practicing rather than become members of the Dutch Nazi Physicians Chamber. When however dues for the organization were deducted from fees owed them by the health insurance funds, the physicians countered by refusing to perform any services for the funds. The German authorities answered by threatening to impose heavy fines on those failing to treat patients sent by the funds, but physicians removed their name plates and suspended all practice save for treatment of emergency cases. Eventually the authorities were compelled to allow the doctors to practice without membership in the Physicians Chamber.

In the March issue of a Netherlands underground paper, a physician described the attempts of German authorities to nazify the physicians.

"Soon after the occupation of the Netherlands German 'specialists' on organization of the medical profession were sent into the country to advise Dutch Nazis on use of existing medical societies as vehicles for infiltrating the profession with national socialist medical doctrines. The executive committee of the Netherlands Medical Society used every possible means to preserve the integrity of the organization, and when they realized that Nazi control could no longer be avoided, they resigned. Local branches of the society immediately declared their independence of the national organization, which consequently folded up. The Dutch Nazi Party then instituted a 'Physicians Chamber,' proclaiming every Dutch doctor automatically a member. The immediate reaction was that a number of prominent physicians contacted trusted colleagues throughout the country for the purpose of frustrating the Nazis' designs. Their first step was to send a letter to Reichs Commissioner Arthur Seyss-Inquart telling him that the medical profession would have no dealings with the Physicians Chamber or its works. The Germans proceeded with the organization of the chamber and declared every licensed practitioner a member. The chamber continues as more of an irritation than a functioning entity, as it is largely ignored by the physicians."

ESTABLISH NURSING SUPPLY AND DISTRIBUTION UNIT

A Nursing Supply and Distribution Unit has been established in the Placement Bureau of the War Manpower Commission. Chairman Paul A. McNutt announced on May 17. The new unit is designed to effect an equitable distribution of graduate nurses for military, governmental and essential civilian needs, somewhat as does the Procurement and Assignment Service for physicians, dentists, veterinarians and sanitary engineers. Establishment of the nursing unit under government auspices comes as a result of requests received from the nursing profession as represented by the National Nursing Council for War Service. The unit also has the approval of the Health and Medical Committee and the subcommittees on Nursing and Hospitals, Federal Security Agency. State and local Councils for War Service will be utilized for the operation of the unit. Quotas will be set up on national and state bases for the guidance of nurses in accepting service in military, governmental and essential civilian activities. Miss Katherine Tucker, director of the Department of Nursing Education, University of Pennsylvania, has been appointed chairman of an advisory committee to the Nursing Supply and Distribution Unit. Miss Alma C. Haupt, Washington, D. C., has been designated chief, and Miss Louise Baker, San Francisco, associate chief of the Nursing Supply and Distribution Unit.

PUBLIC HEALTH UNDER HITLER

According to *Novi List*, Sarajevo, Yugoslavia, of March 4 the Sarajevo municipality in conjunction with the German military authorities has issued the following health regulations. All travelers arriving at Sarajevo and sojourning there for more than twenty-four hours must be deloused and inoculated against typhus fever. Travelers arriving from Mostar will be deloused at the Alipasin refugee camp and may then continue to Sarajevo and beyond. Transit travelers from the directions of Brod and Visegrad southward beyond Bradina, and not sojourning at Sarajevo for over twenty-four hours, will receive a permit for the further journey from the German station officer at Sarajevo.

Reggeli Magyarorszag, Hungary, of March 6 states that anxiety has been caused in Hungary by the report of an unknown epidemic in Sweden of a disease which begins with a cold and sore throat and which is causing so many deaths that in certain districts (in Sweden) schools have been closed. It is also said that the symptoms resemble those of infantile paralysis. To reassure the public the reporter interviewed Prof. Dr.

Josef Tomsek, who says that so far there have been no reports in Hungary of anything resembling the Swedish epidemic. It is possible that even the Swedish epidemic is one of ordinary influenza accompanied by certain complications. The professor added that the influenza research department of the National Public Health Institute is ready to deal with the epidemic should it occur.

According to *Dagens Nyheter*, France, of February 7 the Vichy correspondent reports, in an article on the decrease in the powers of resistance of the French population, that tuberculosis of the lungs has increased by 30 per cent. The main cause is naturally undernourishment. Growing children in particular are endangered. A large number of young people, instead of increasing in weight, have decreased by 3 to 4 Kg. The weight of infants at birth is mostly well under normal.

Simultaneously with undernourishment, moral dangers threaten the life of the French population. The breaking up of the family, the returning prisoners of war and the refugees who have not returned to their homes have contributed toward a certain demoralization. The Red Cross has set up orphanages in Lyons, Marseilles, Nice and Toulouse, 12,000 children are in homes, 30,000 in unoccupied France and 80,000 in occupied France. Child mortality in 1940 was 91 per cent. At the same time 25,000 stillborn children were announced, a large percentage of these cases being due to syphilis. Over 110,000 of the children born this year were registered as orphans with out parents.

Paris-Soir of February 12 and 16 states that since the great food shortage, people are far more willing than ever before to undergo operations. This is noticeable in the hospital and also in private nursing homes. Today it is necessary to get one's name on a list a month or two before entering a hospital to reserve a place on the "table." An operation means fifteen to twenty days being waited on in comfortable surroundings. That is quite enough to induce people to part with some superfluous part of their anatomy which has been causing them discomfort for years. The actual operation is much more easily performed, as there are no thick layers of fat for the surgeon's knife to hew through. But there is a new difficulty: the accessories and instruments are beginning to run out. There are hardly any new towels and bandages, and there are few needles left for sewing the incision after the operation, they were made in Germany, those that are used in French hospitals today have been in use for three years and they are getting blunt. One surgeon stated that he had sewn up three or four thousand stomachs with one needle. As can well be imagined, nobody leaves lancets or clips inside the patients nowadays; they are far too precious to give to the patient to take away in his inside as a souvenir of his visit!

Besides diseases brought on because of food restrictions, skin disorders such as the itch are prevalent on account of the soap shortage. It happens all too often that sheets from hotel beds are merely swished through the water at the laundry, and the scabies "bugs" come back to the hotel again hungrier than ever after the bath they have had and that the hotel visitor does not get!

There are a distressing number of cases of consumption, and these are most frequent, not among children, but among adults between 50 and 60. They often have in their lungs lesions which are healed, the lack of milk, meat and fats has decalcified their scar tissue, and the bacilli have regained their virulence. They succumb to the disease after spreading the infection to those about them.

According to *Donauzeitung*, Greece, of February 11 vaccination against typhus has been made available to the inhabitants of Athens free of charge. The press made an appeal to the population, warmly recommending them in the interests of the community to avail themselves of the opportunity.

NPD, Germany, of March 31 reports the construction of a special apparatus by which it is possible to produce vitamin C from ordinary pine needles.

ORGANIZATION SECTION

PROCEEDINGS OF THE CHICAGO SESSION

MINUTES OF THE ANNUAL SESSION OF THE HOUSE OF DELEGATES OF THE
AMERICAN MEDICAL ASSOCIATION, HELD IN CHICAGO, JUNE 79, 1943

HOUSE OF DELEGATES

First Meeting—Monday Morning, June 7

The House of Delegates convened in the Red Lacquer Room of the Palmer House and was called to order at 10 a m by the Speaker, Dr H H Shoulders

Preliminary Report of the Reference Committee on Credentials

A preliminary report of the Reference Committee on Credentials was submitted by the chairman, Dr G Henry Mundt, Illinois who reported that about one hundred and forty-four delegates with proper credentials had registered

Roll Call

A motion by Dr Allen H Bunce Georgia duly seconded, to dispense with the normal roll call and accept the registration of the delegates was carried

Dr Olin West, Secretary, announced that it would shortly be necessary to have a ballot, and the Speaker requested the Secretary to proceed with the roll call, after which the Secretary called the roll and announced that a quorum was present

Distinguished Service Award

Dr Roger I Lee Chairman of the Board of Trustees, presented a report of the Board as follows

The Committee on Distinguished Service Awards of the American Medical Association submitted five names to the Board of Trustees

In accordance with chapter VI, section 5, of the By-Laws, the Board has selected by ballot the following names for presentation to the House of Delegates in alphabetical order, and presents a brief statement concerning each of them

Dr A J Carlson is a professor of physiology who for years has been an Associate Fellow of the American Medical Association Dr Carlson is widely known as a great teacher and the contributor of fundamental research in many aspects of medicine

Dr Elliott P Joslin is known throughout the world for his contributions to our knowledge of diabetes and for his educational contributions in this field for both the medical profession and the public He has participated in graduate education and is the author of several books of distinction

Dr Torald Sollmann is professor of pharmacology and has served as dean of the medical school of Western Reserve University at Cleveland Dr Sollmann has been a member of the Council on Pharmacy and Chemistry since it was first organized and has for many years been chairman of that body

On request of the Speaker Dr G Henry Mundt, Chairman stated that the Reference Committee on Credentials had registered 161 Delegates

The Speaker appointed as tellers Drs George A Woodhouse, Ohio Thomas F Thornton Iowa Walter A Howard Oklahoma J H Irwin Montana and James Q Graves Louisiana

The tellers spread the ballot and the Secretary announced that one hundred and forty-seven votes had been cast of which Dr Carlson received thirty seven Dr Joslin ninety-one and Dr Sollmann nineteen

The Speaker declared Dr Elliott P Joslin who had received a majority of the votes cast to be elected by the House of

Delegates to receive the Distinguished Service Award of the American Medical Association, and directed the Secretary to inform Dr Joslin of this action

Adoption of Minutes of Atlantic City Session

Dr E G Wood, Tennessee, moved that the House dispense with the reading of the minutes The Secretary called attention to the fact that Dr Arthur J Bedell, Section on Ophthalmology, had notified him that the name of Dr Bedell should not have been attached to the report of the Reference Committee on Sections and Section Work but that the name does so appear

On motion of Dr Arthur T McCormack Kentucky seconded by Dr H B Everett, Tennessee and carried the minutes were corrected to omit the name of Dr Bedell as a signer of the report of that committee

Dr Arthur J Bedell, Section on Ophthalmology moved that the proceedings of the Atlantic City Session of the House of Delegates as printed and distributed be adopted as amended The motion was seconded by Dr William R Brooksher, Arkansas and carried

Address of the Speaker, Dr H H Shoulders

The Vice Speaker, Dr R W Fouts Omaha presided while the Speaker, Dr H H Shoulders, read his address, which was referred to the Reference Committee on Reports of Officers

Mr Speaker Members of the House of Delegates and Guests

I wish, first to express to the members of the House my gratitude for the honor and privilege of addressing you again as your presiding officer and for your generous attitude toward my shortcomings

I have been led to believe that many if not a majority of the delegates wish to complete the work of this session at the earliest possible moment in order that all may return to urgent duties at home There is no doubt that urgent duties exist for every doctor at home and it is in sympathy with such a wish that my address will be brief

Notwithstanding all the circumstances of this session, it is the regular annual session of the House Business which is eligible for consideration by the House at any regular session is eligible of course for consideration at this session

It seems appropriate, at this time, to call to your attention a provision in chapter IV, section 4, of the By-Laws It reads as follows

SEC 4 TIME OF ELECTION—The election of officers shall be the order of business of the House of Delegates immediately following the final supplementary reports of the Board of Trustees and Committees on the afternoon of the fourth day of the annual session of the House of Delegates (Thursday) provided however that the House of Delegates may change the time of election by action taken at least one day in advance of that to which the election is to be changed and provided further that the motion to change the time of election shall be supported by two thirds of the delegates registered

In this connection I would like to suggest to you the thought that no duty can be more urgent at this time than the duty of conducting the business of this session with all the deliberation necessary to enable the House to arrive at sound conclusions and take the appropriate actions The present it seems to me is no time for hasty or ill considered actions

There is one duty of the Speaker which I perform each year with a sense of dissatisfaction and regret It is the duty of appointing reference committees The By-Laws limit the number of reference committees to ten and the number of delegates on each reference committee to five except when the

House takes action to create additional committees. It is apparent, of course, that only fifty of the hundred and seventy-three members of the House can be appointed to a reference committee. My sense of dissatisfaction grows out of the conviction that the interest of each and every member would be stimulated by opportunity for service on a reference committee. My sense of regret grows out of the fact that I dislike so much to leave any member off of a reference committee.

It is a fact generally recognized that the reference committees perform a most vital function. Their work is arduous and difficult and too often made more difficult by the fact that delegates not serving on a committee attend the sessions of the Scientific Assembly instead of the hearings of one or more reference committees. This very attractive distraction is not present here this year, so I would like to suggest that all delegates who are free to do so attend as many reference committee hearings as possible. Such collaboration should make it possible for reference committees to make reports to the House so complete that little discussion from the floor will be required to establish a thorough understanding of the question and thus enable the House to act promptly.

The House is honored rather frequently by the presence of Fellows of the Association who are not eligible to the floor of the House. It should be understood by them that they are eligible to attend reference committee hearings and be heard if they wish to speak on a question under consideration by the committee.

The minutes of the House show that reference has often been made to the heavy responsibilities which rest on you as the delegated representatives of the entire profession of medicine in this nation. It seems to me that members of the House are fully conscious of their responsibilities. At the same time it is my impression that the importance of your duties and their relationship to the whole of medicine are not always fully appreciated by your constituents. I therefore would like to address myself to this question for a moment. Your functions, it seems to me, are those of a medical statesman. I use the word "statesman" in this connection as embracing all the attributes which distinguish a statesman from a politician, such qualities, for example, as broad knowledge, wisdom, vision, courage and loyalty to high principles. The politician, in the commonly accepted meaning of the term, possesses and exercises skill in the conduct of manipulations to accomplish his purposes without too much regard for their ultimate effects. American medicine has been blessed through the years by the benefits of a high order of medical statesmanship. It was medical statesmanship which wrote and adopted the Constitution and By-Laws of this organization which gave it a body. Wise statesmanship wrote and adopted the principles of ethics of our profession which gave it a soul. Medical statesmanship is responsible for all the actions taken to promote progress in medical education, public health, medical research and the adoption of higher requirements to practice, all of which add up to better medical care for the people. It was medical statesmanship which took all the actions necessary to make the services of the medical profession so available and so effective in the present war effort.

The ultimate effects of all these actions are being reflected in delightful news from every battle front to the effect that our soldiers, sailors and marines are getting the best medical care ever received by the soldiers of any nation at any time.

The quality of medical statesmanship which has been applied to medical problems in the past is entitled to a full measure of credit for the tremendous usefulness of medicine in our present day civilization whether in peace or in war.

As I visualize the future, many new problems will arise to challenge the statesmanship of medicine. In my opinion it occupies a place of importance second to none other in medicine today. The whole future of our profession will be determined not by research, however important its contributions may be, but by the character of the medical statesmanship which is brought to bear on these new problems as they arise. In conclusion, may I say to you that I know of no more trustworthy assurance as to the continued usefulness of medicine as

a science and an art and its continued attractiveness to men of noble intentions in the future, than the record of this House of Delegates in the important field of medical statesmanship.

In Memoriam

In accordance with the established custom of the House of Delegates of taking official notice of the death of Fellows who have served the Association in official capacities, either as members of the House or as Officers of the Association, the Speaker called the roll of those who had passed away since the House met in June of 1942, as follows:

(The dates following the names indicate years of service in the House or as officers of the Association.)

William P. Adamson, Florida, 1929
John B. Alcorn, Ohio, 1938, 1938, Special Session, 1940, 1942
John I. Barnhill, Indianapolis, Section on Laryngology, Otolaryngology and Rhinology, 1905, 1920
Sherman G. Bonney, Denver, Section on Hygiene and Sanitary Science, 1902
D. Chester Brown, Connecticut, 1907, 1914, 1916, 1918, Member, Board of Trustees, 1918, 1934
William L. Brown, Texas, 1911
Howard P. Collings, Arkansas, 1905
Guy L. Connor, Michigan, 1917, 1918, 1920
John I. D. Cook, South Dakota, 1920, 1930, 1932
Frank W. Cregor, Indiana, 1925, 1926, Section on Dermatology and Syphilology, 1929, 1934, Member, Judicial Council, 1923, 1933
George W. Crile, Cleveland, Third Vice President, 1907
J. Rufus Eastman, Indiana, 1912, 1915, 1917, 1919, 1922, 1924
Howard C. Frontz, Pennsylvania, 1930, 1939
David S. Funk, Pennsylvania, 1910
I. N. Grosvenor, South Dakota, 1931
Winfield Scott Hall, Chicago, Section on Pathology and Physiology, 1907
William M. Harshbarger, Illinois, 1905
Arthur D. Hirschfelder, Minneapolis, Section on Pharmacology and Therapeutics, 1919
Edward Jackson, Colorado, 1909, 1912, First Vice President, 1904
Robert W. Knox, Texas, 1904, 1905, 1908, 1927, 1928
Wilmer Krusen, Pennsylvania, 1917, 1919, 1921
Grant C. Madill, New York, 1912, 1913, 1922, 1935, 1937, 1938, Special Session, 1939, 1940
Ben R. McClellan, Ohio, 1911, 1913, 1914, 1916, 1917, 1919, 1923, 1925, 1941
Charles F. McComb, Minnesota, 1909, 1911
Clifton M. Miller, Virginia, 1912
John H. Peck, Iowa, 1921
Reuben Peterson, Michigan, 1907, Section on Obstetrics, Gynecology and Abdominal Surgery, 1919
Herbert A. Potts, Chicago, Section on Stomatology, 1924
John A. Robison, Illinois, 1912
Andrew C. Smith, Oregon, 1902, 1909, Second Vice President, 1906
Alfred B. Spalding, California, 1917, 1919, Section on Obstetrics, Gynecology and Abdominal Surgery, 1923
Smith A. Spilman, Iowa, 1926
Walter R. Steiner, Connecticut, 1919, 1925, 1927, 1929, 1933, 1936, 1940
Thomas Pinckney Waring, Georgia, 1906
Hubert Work, Colorado, 1906, 1907, 1909, 1913, Member, Judicial Council, 1911, 1916, Speaker, House of Delegates, 1916, 1920, President Elect, 1920, 1921, President, 1921, 1922

On motion, duly seconded and carried, the delegates arose and stood in silent tribute to the memory of the deceased delegates and officers.

Reference Committees

The Speaker, before announcing the personnel of the Reference Committees, asked and received permission, on motion of Dr. Arthur T. McCormack, Kentucky, seconded by Dr. Walter E. Vest, West Virginia, and carried, to name two additional reference committees, namely the Reference Committee on Executive Session and the Reference Committee on War Participation. The personnel of the Reference Committees as appointed by the Speaker is as follows:

SECTIONS AND SECTION WORK

Francis F. Borzell, Chairman, Pennsylvania
Benjamin F. Cook, Vermont
Arthur J. Bedell, Section on Ophthalmology
I. G. Christian, Michigan
Olin H. Weaver, Georgia

RULES AND ORDER OF BUSINESS

Raymond L. Zech, Chairman, Washington
George P. Johnston, Wyoming
Edward N. Ewer, California
E. N. Roberts, Idaho
A. A. Walker, Alabama

MEDICAL EDUCATION

Wilburt C. Davison, Chairman, North Carolina
Robert F. Schlueter, Missouri
Charles H. Phifer, Illinois
Walter G. Phippen, Massachusetts
Leon J. Menville, Louisiana

LEGISLATION AND PUBLIC RELATIONS

Thomas A. McGoldrick, Chairman, New York
Lloyd Noland, Alabama
Edwin S. Hamilton, Illinois
Parke G. Smith, Ohio
William R. Melony, Jr., California

HYGIENE AND PUBLIC HEALTH

Warren F Draper Chairman	Don F Cameron Indiana
U S Public Health Service	Ransom D Bernard Iowa
Holman Taylor Texas	Walter W King Colorado

AMENDMENTS TO CONSTITUTION AND BY LAWS

Walter E Vest Chairman, West Virginia	Karl S J Hohlen Nebraska
E G Wood Tennessee	William Weston Section on Pediatrics
L A Buie Section on Gastro Enterology and Proctology	

REPORTS OF OFFICERS

Deering G Smith Chairman New Hampshire	Joseph H Cannon South Carolina
Floyd S Winslow New York	William R Brooksher, Arkansas
	Edward Jelks Florida

REPORTS OF BOARD OF TRUSTEES AND SECRETARY

Louis H Bauer Chairman New York	Andrew F McBride New Jersey
Robert A Peers California	W A Coventry Minnesota
	James R McVay Missouri

CREDENTIALS

G Henry Mundt Chairman Illinois	Alonso A Ross, Texas
J Newton Hunsberger, Pennsylvania	A P Nachwey North Dakota
	Thomas M Brennan New York

MISCELLANEOUS BUSINESS

Charles G Strickland Chairman Pennsylvania	H A Luce Michigan
Albert A Gartner New York	James M Hayes Minnesota
	Stephen E Gavin Wisconsin

REAPPORTIONMENT

Arthur T McCormack Chairman Kentucky	Alfred T Cundry Maryland
L W Larson Section on Pathology and Physiology	William T Ranney North Carolina
	David D Scannell Massachusetts

EXECUTIVE SESSION

John H Fitzgibbon Chairman Oregon	Barney J Hein Ohio
Thomas P Murdock Connecticut	James P Wal' Mississippi
Lucius F Donohoe New Jersey	James C Sargent Wisconsin
	J F Hassig Kansas

WAR PARTICIPATION COMMITTEE

Stanley H Osborn Chairman Section on Preventive and Industrial Medicine and Public Health	Sam E Thompson Texas
Charles H Henninger Pennsylvania	Forrest J Pinkerton Hawaii
	Walter B Martin Virginia
	L B McAfee U S Army
	Harold W Smith U S Navy

SERGEANTS AT ARMS

John Z Brown Utah	Frank E Reeder (assistant) Michigan
Thomas A Foster (assistant) Maine	

TELLERS

George A Woodhouse Ohio	J H Irwin Montana
Thomas F Thornton Iowa	James Q Graves Louisiana
Walter A Howard Oklahoma	

Address of President Fred W Rankin

The Speaker resumed the chair and presented the President, Brig Gen Fred W Rankin, Lexington, Ky, who delivered the following address, which was referred to the Reference Committee on Reports of Officers

Mr Speaker and Members of the House of Delegates

The realization that I am about to relinquish the office of President of this Association prompts me to pass in review our record, crammed with exciting events, and to scan the horizon anxiously for gathering storms which may imperil our course and test further our courage and endurance. That we have kept a steady course set toward the maintenance of the health of the nation and its armed forces during these turbulent times of worldwide hostilities despite hurried preparation, bespeaks our Association's self-sacrificing devotion to duty and emphasizes its indomitable spirit and resolute determination—characteristics distinctly American. Never during its history or, for that matter during the history of our country, has there been the urgent demand which current exigencies have imposed on our special talents and skills. The rapid, thorough and efficient manner in which these demands were met has been due in great measure to the astute foresight of our leaders who, long before that fateful day when our enemies treacherously launched us into this holocaust, began careful preparations for the inevitable requirements which develop as a consequence of the military, industrial and continuing civilian needs for adequate medical care. That these plans were well contrived and intelligently executed is forcibly demonstrated by the continued improvement in the health of our nation and our armed forces despite the fact that about 40 per cent of the usable medical personnel of the country has entered the services, and the added burden

of a parallel gigantic industrial expansion that has been placed on the thinned ranks of the remaining civilian physicians. My deep gratification in reporting this thrilling and inspiring performance is heightened only by my humble respect and intense appreciation for the high honor you so generously bestowed on me as your President in this trying period, and for the distinct privilege of participating in these activities and in associating with the scrupulously sincere, assiduously attentive and particularly competent members of the Board of Trustees and the executive staff of this Association.

During the past year our country has been feverishly engaged in mobilizing and preparing its industries and manpower for war on a scale unprecedented in its history. All efforts have been directed toward a single fundamental purpose—the creation and preparation, as rapidly as possible, of a formidable military machine with irresistible striking power. This has required a national metamorphosis in which the medical profession has participated eagerly and wholeheartedly. Indeed, no other group has shouldered its responsibilities in this emergency with greater self abnegation, more cheerful enthusiasm and more efficient adaptability. On us devolved the obligation of establishing a bulwark against epidemic disease and military casualties, both on the home front and on the farflung battlefields of this globe-encompassing war. Essentially our function is concerned with the conservation and maintenance of health. That we have performed this function successfully is demonstrated by the fact that we have given our civilian workers production superiority in the rapidly expanding war-gear industries, and our armed forces combatant superiority in the jungles of Guadalcanal, on the gale swept North Atlantic and on the blistering deserts of North Africa.

The most difficult and exigent phase of the war, i e rapid mobilization, has been expeditiously concluded. Now our paramount problems are concerned with logistics, production has been achieved. Consideration is already being given to post-war planning even though it may seem little warranted at this time. It should be realized, however, that only by such long range charting can the confusion and disorder which characterize immediate postwar reconstruction periods be averted. The manifold problems arising from these future developments will deeply concern and intimately affect us all. A rational solution of these problems depends on their thorough comprehension, but first they must be sighted as distantly and as clearly as possible. Accordingly we set a watchful gaze on the horizon.

It must now be apparent, even to those who have been most purblindly recalcitrant, that mighty influences are at work to effect epochal changes in the complexion of medical practice. While it would appear that these influences have suddenly loomed on the medical scene it should be realized that they have long been forming and that the present military conflict has merely hurried their development and magnified their significance. That they can no longer be ignored seems difficult to controvert. We must face realistically these tremendously forceful socioeconomic trends which are intimately involved and deeply concerned with the nation's medical problems. The directional sign posts of postwar planning may now be clearly read by proposals already made for broadening the social security program and extending the nation's economic resources to assure "adequate medical and health care for all regardless of place of residence or income status." The complex connotations and inevitable implications of these plans and proposals make it quite apparent that the old system of medical practice will be considerably modified. If the limitless and baneful potentialities that can be projected into the science and art of the future of medicine are to be averted it becomes imperative in this transition period that the wise and tempered counsel of the medical profession exert its proper influence. That our medical descendants should look back and point a culpable finger to our page of history which would read that our actions were too little and too late is a plaguing thought. Our responsibility in approaching and participating in these evolutionary processes is greater than many of us have been willing to admit. Indeed it is intimately involved with the medical security of our country as well as of our profession. Have we so long basked in the luxuriating rays of medicine as the apotheosis of professions that we have become languid and inelastic in our

attitude and hesitant and fearful in our response to existing socioeconomic developments? I sincerely hope not.

Our motives are inherently sincere. They are based on desiderata to which we have held tenaciously and which we must guard assiduously lest future progress toward higher standards in medicine and professional tenets be jeopardized. Our ultimate objectives consist essentially in the provision of the best possible preventive measures against disease, the institution of the best possible forms of therapy and the ceaseless pursuit of advances and improvements in technical procedures and other prophylactic and therapeutic measures for clinical application. It requires no perceptive degree of rationalization to realize that the complete fulfillment of these objectives for the entire nation would necessitate the development of a comprehensive medical service.

It is becoming increasingly apparent that the trends now gathering momentum are directed toward some form of national health service as an integral function of the state. Proposals of this nature by governmental postwar planning agencies, both here and abroad, have been the subject of deep consideration, wide editorial comment and cogent discussion. This mood has been further reflected in recent comments by various medical and nonmedical writers who have penetrated with incisive clarity to the very heart of this controversial subject. It has been stated by some that the financing of this type of medical service is a socioeconomic consideration and not a medical problem. While it may be argued that financial provision for the institution of such a service is a function of the commonwealth, I am impelled to emphasize the fact that the structural character of the organization of any such type of health service is tremendously important to doctors and is vitally concerned with the execution of their professional function. This entire subject must be brought into sharp focus by the light of trenchant and dispassionate thought in order to observe both the desirable as well as the possible apprehensive aspects of the contemplated proposals.

In the national fulfillment of our altruistic objectives it must be recognized that two essential provisions are required, namely professional and financial facilities. It must also be recognized that the successful attainment of these objectives cannot be accomplished in the implementation of any plan or proposal the professional facilities are subjugated to the authoritative management, traditionally dictated by political whimsy, of some legislative council controlling the financial provisions. These two provisions are interdependent and cannot be distinctly separated in approaching our objectives. The successful application of the former requires certain facilities supplied by the latter, which in turn can be guided intelligently only by professional knowledge. These vastly significant facts must be sincerely appreciated by all parties, both medical and nonmedical, concerned with this problem in their approach to its solution.

It is necessary to realize that the establishment of one of these contemplated medical services does not sound the death knell of private practice of medicine. These two forms of medical service are not incompatible, and their consideration must not be regarded in the light of apostasy but rather in the light of realism. They become incompatible only if in attempting their admixture certain undesirable ingredients are added. The problem is too difficult, the time is too short and the stakes are too high for all concerned to allow these factors to influence our actions. All efforts must be harmoniously combined and closely coordinated toward the elaboration of an intelligent program which will permit a democratic as well as a comprehensive medical service with equally high professional and ethical standards.

It should be clearly understood that this embraces the concept of existing freedom of thought and action in the exercise of our profession and our scientific pursuits. No one is more keenly aware, no one more fully cognizant than I, of the resultant stultification of the science and art of medicine which would be occasioned by any loss or curtailment of this freedom. Here is a principle which is more than a heritage; indeed, it forms the supporting foundation of the art of medicine and the guiding light of the science of medicine. It was freedom to think and freedom to express thought in speech and in writing unhampered by the fearful consequences of traditional or legislative authority that permitted medicine to progress to its present

exalted position in the field of science, and it is absolutely essential in its continued advancement. It is a principle, therefore, which we can never relinquish.

Since the challenges now confronting medicine will undoubtedly be multiplied as we approach the termination of this conflict and the commencement of the difficult reconstruction period, it becomes our responsibility and duty, with ever mounting importance and increasing urgency, to prepare to meet them now. In addition to the problems concerned with medical practice, we must be ready to meet the related problems of postwar rehabilitation of physicians—physicians whose entry into service involved personal sacrifices and the revamping of plans and ambitions, and whose return to civilian pursuits will necessitate numerous and variable readjustments and even resumption of specialized training.

These are prodigious tasks with manifold ramifications and far reaching significance, but tasks which we must face with unflinching resolve. Their achievement will demand not only sincerity of interest, integration of effort and clarity of thought but also active and close collaboration with appropriate governmental agencies. We cannot disregard the growing interest of the public, the government and various lay groups in the administration of medical care, nor can we afford to engage in a struggle for domination. The solution to these problems and the attainment of our objectives do not lie in that direction. They can be approached more expeditiously by a willingness to share their responsibilities and a readiness to cooperate in their consideration. The importance and urgency of these various problems commend the immediate establishment by this Association of suitable agencies for their investigation. In the institution of these agencies the purpose and vast significance of their function, the sharp delineation of their problems and the need for their collaboration with others should be emphasized. They must also be impressed with the importance of these studies and their resultant proposals on which so much depends. Indeed, the plan of action which we institute, the attitude which we manifest and the intelligence, zeal and judgment which we employ now in our efforts to solve these problems will greatly influence and actually determine the future standards of the medical service of our country and the cultural standards of our profession.

Address of President-Elect James E. Paullin

The Speaker presented the President-Elect, Dr. James E. Paullin, Atlanta, Ga., who delivered the following address, which was referred to the Reference Committee on Reports of Officers.

Mr. Speaker and Members of the House of Delegates

For the past ten years it has been my privilege to be associated with the official family of the American Medical Association as a member of the Council on Scientific Assembly, as a delegate, as a member of the Medical Preparedness Committee and now as your President-Elect. For the confidence bestowed in me by this body I am deeply grateful. As a member of the Committee on Medicine of the National Research Council and as a member of the Directing Board of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians I have had added opportunity to come in contact with the officers, and with practically all councils, bureaus and boards of this association. I seriously doubt if the members of the House of Delegates or of the American Medical Association realize the vast amount of work accomplished each year by the official bodies of this organization. Particularly have I been impressed with the amount of time and the earnest consideration devoted to the business of the Association by the Board of Trustees. Each member takes his work most seriously; I feel that the Association is under many obligations for the thoroughness with which they transact its business. I have noted with a great deal of satisfaction the contribution which representatives of the American Medical Association have made in a consultative capacity with numerous agencies of the federal government and with pleasure the tendency for all organizations interested in medical care at least to become trustful of one another and to be more willing to combine their efforts for the furtherance of medical care.

We are most fortunate in having the untiring and unselfish service of two valuable officials, who at all times and on all

occasions zealously guard the interests of this organization and constantly strive to increase its usefulness to the profession and to the public. I refer to Dr. Olin West, the Secretary and General Manager, and to Dr. Morris Fishbein, the Editor of *THE JOURNAL*. The war has placed on them extraordinary burdens which they have borne successfully, although not without hazard to their own health.

The creation of the Procurement and Assignment Service as a federal agency has been a great help in solving some of the problems arising as a result of the war and the withdrawal of physicians from civil practice. More frequent conferences between this agency and the War Participation Committee of the American Medical Association will be of benefit in helping to solve some of the problems created by the present emergency. The influence of such cooperation is evident in the effort being made by the Procurement and Assignment Service, together with the War Participation Committee and the United States Public Health Service to relocate physicians in areas of acute need for medical service in numerous areas of the United States. The suggestions adopted by this conference of investigating all reported areas of distress by state committees representing the medical profession, the Procurement and Assignment Service, the Public Health Service, the Office of Civilian Defense, industry and labor have been most effective in establishing essential requirements and in suggesting appropriate methods for the relief of these situations. Continuation of such a cordial relationship will become of increasing importance with the further withdrawal of physicians from civilian practice. It is suggested that the House of Delegates encourage the War Participation Committee to consult with other organizations that may be interested in the development of a program for the emergency care of civilian communities deprived of an adequate number of physicians.

Experience gained in 1936 when a survey of rural health conditions in Georgia was made by the United States Public Health Service in cooperation with the state medical association has convinced me that many problems of medical care for rural communities can be satisfactorily solved by the establishment of health centers placed at strategic areas in communities in great need of this type of service. The establishment of such centers will make hospital and nursing care available to a community and will supply for physicians the necessary facilities for the diagnosis and treatment of disease. This type of service is available now for communities in great distress if applied for through the United States Public Health Service or other federal agencies.

The Council on Medical Education and Hospitals of the American Medical Association is much interested in the plans of the federal government to establish special training courses for the enlisted personnel belonging to either the Army or the Navy. It has been necessary for the council to change certain recommendations without lowering the standards to make possible the accelerated medical training program. The lowering of the draft age to 18 years will bring other changes in the method of selection of premedical students and the distribution of students who may enter medical colleges. No provision has been made for the education of doctors to replace the casualties occurring in civilian practice. An agreement has been reached with the Surgeon Generals of the Army and Navy to allow approximately 1200 students, comprising women and those men physically disqualified for military duty to continue at their own expense the study of medicine. The 4500 other graduates will be used for replacement in the military services.

An increasing responsibility is felt for the continuation of medical education and postgraduate training to be made available to the men in the military service and to civilian physicians. This responsibility is accentuated because for the duration there will be no annual meetings or large national societies which furnished facilities for this type of instruction. To overcome this the Board of Trustees has appointed a Committee on Wartime Graduate Medical Training, which is sponsored by the American Medical Association, the American College of Surgeons and the American College of Physicians. Already this committee has secured a large group of nationally known consultants in various fields of medical activity and has established in twenty-four zones of the United States committees which

will receive requests for and sponsor programs to be submitted at various service hospitals for men on military duty in those particular areas. Such courses will be open to civilian physicians. Some thirty or more subjects have been listed from which each commanding officer of a given unit may choose those which he desires presented. Such a program has the approval of the Surgeon Generals of the Army and of the Navy and is offered to the Army through the surgeon of each service command and to the Navy through the commandant of each naval district. The response to such an undertaking has been most enthusiastic and remarkable. Programs are already being prepared for various installations and it is believed that by July 1 they will be in effect.

The officers and trustees of the American Medical Association have earnestly devoted themselves in recent years to advancement of the policies established by the House of Delegates in the field of social security. The diligence with which they have pursued this task has permitted the people of our country under the leadership of the medical profession to undertake the gradual development or modifications in medical practice leading toward the eventual establishment of plans distinctly our own. We face the postwar period without the restrictions of a state system of medicine, a federal or state system of compulsory sickness insurance or any of the other limitations on medical practice developed by governments abroad as a part of state control in medical care. By the exercise of American initiative we find between twelve and fifteen million Americans now insured voluntarily against the costs of hospitalization and many state and county medical societies, industrial organizations and private insurance companies engaged in extending protection against catastrophic illness. The initiative still rests with the people and with the medical profession in determining the kind of medical care that is to be provided in the future and in assuring the widest possible distribution of medical services to all the people. The importance of sound planning at this time for future developments cannot be over-emphasized. Under the leadership of American medicine all the agencies concerned should cooperate in formulating programs for redistribution of physicians in the postwar period, for the provision of hospitals and medical centers and for the establishment of methods for making available preventive, diagnostic and curative methods as they are developed. In such planning we should consider the obligation that we owe to ourselves and to the peoples of the countries now dominated by the Axis for the supply of needed medical personnel necessary for the rehabilitation of the sick and injured.

The American College of Physicians and the American College of Surgeons have appointed committees on the planning of postwar medical services. The Board of Trustees of the American Medical Association recognizing the importance of this work established a temporary committee to confer with these committees. A meeting recently held explored some of the problems relative to postwar medicine. It is anticipated that at least half of the members of the American Medical Association will be in the government services before the war ends. Many of these members will have been away from their practices for a period of years. The return of these physicians will present many difficult problems relating to those who have never engaged in the practice of medicine, some will desire new locations, others may desire refresher courses or postgraduate instruction, all will find a different world from the one they left.

It is recommended that the House of Delegates approve the action of the Board of Trustees in making plans to meet these problems and authorize the development of a permanent Committee on Planning of Postwar Medical Services to cooperate and collaborate with other agencies concerned with these problems.

There are other problems which will naturally arise during the consideration of many of these activities. It is my sincere belief that this body of physicians entrusted with the protection of the health and welfare of the citizens of our country will be able through its committees, councils, bureaus and boards to offer suggestions and to formulate procedures which will be of the greatest aid in helping to solve many of the problems that face us now and that will arise in the future. For these we must be prepared. American medicine today faces the greatest

opportunity ever offered our organization to make a lasting contribution to the betterment of the health of mankind and the establishment of an enduring peace

PRESENTATION AND ADDRESSES OF DISTINGUISHED GUESTS

Surg Gen Norman T Kirk, United States Army

Brig Gen Fred W Rankin, President, introduced the new Surgeon General of the United States Army, Dr Norman T Kirk, as follows:

Mr Speaker and Members of the House. On Tuesday, June 1, a new Surgeon General of the United States Army was installed. In selecting a man to fill this tremendously important post in these perilous times the Secretary of War and the Chief of Staff presented to the Commander in Chief of the Army the name of a surgeon whose prominent professional reputation and extensive administrative experience in the Army, both in peacetime and in war particularly qualified him for the responsibilities of this office.

Since the Medical Corps is charged with the duty of preserving the health and maintaining the fighting strength of the Army at a peak level required to assure combat superiority, it is particularly fitting that one with unique professional talent should be chosen.

The new Surgeon General is an eminently qualified surgeon, as is attested by his membership in the elite surgical societies of this country as well as the exclusive international surgical societies. His peculiar aptitude for surgery of the extremities and for thoracic surgery and his numerous innovations and contributions to the surgical literature in these fields are well known to all of you.

I have particular pleasure as a former schoolmate of the Surgeon General to be permitted to present him and to testify not only to his extraordinary professional skill but also to his sturdy aggressive spirit, his assiduous industry and his innate integrity.

Gentlemen of the House I give you the Surgeon General of the Army Major General Norman T Kirk.

Major General Norman T Kirk addressed the House as follows: *Mr Chairman General Rankin Ladies and Gentlemen.* I feel it is probably a surprise for you to see me in this high office of Surgeon General. It was to me. I was called to Washington and told that I was nominated for this high office, which I knew brought much honor with it and hard work. I am not used to the former but I am to the latter. I was also told I was going to North Africa immediately. I wasn't given a chance to say no to either. I couldn't have said no to the first because I wanted so much to go to Africa. So I thought it might be of interest to you to have a little story of what has been going on over there.

As you know, the Tunisian campaign has come to a successful conclusion. I happened to be about 5 miles out of Tunisia the morning the Germans unconditionally surrendered. The roads were so full of German prisoners in German trucks driven by German drivers and officers in officers' cars going to the rear that one could hardly proceed up those roads by motor. It was a wonderful sight to see.

I talked after this to General Eisenhower, the commanding general of the forces there, and to General Clark, the commanding general of the Fifth Army, and they both assured me that the outstanding thing that happened in that campaign was the services rendered by the Medical Department. This was done under trying conditions. In North Africa the distances are great. It isn't desert, where that fight went on mainly was north of the Atlas Mountains, with great hills and valleys, certain parts of which remind one of California as one drives through it.

You wouldn't believe it in Africa, but anti-freeze had to be put in the trucks to keep them from freezing last winter when this fight was going on. Our sick and our nurses and our personnel were living in tents under those conditions, and it was cold. In June I slept in a tent under five blankets with all my clothes on but my shoes and was cold then, so it was colder than that in May.

The distances were great there. It is 1,200 miles from the front to our Atlantic base to which our battle casualties had to be evacuated to be carried home by transport. Much of this would have been impossible had it not been for Air Corps evacuation. Airplanes that were used as freighters to a given

area 150 miles behind the line, back to the first base, carried some 13,000 battle casualties. These planes came up as freighters and then were fixed to carry 16 litter patients back to the first base sector.

The units forward did excellent work—the evacuation hospitals that were set up, and the clearing stations—and the death rate was unbelievably low. The death rate in these units, the evacuation hospitals, ran from 25 to 35 per cent. In the last war it ran around 15 per cent, if my memory is correct. Patients were transported back in excellent condition. Only 1 case of death occurred from gas gangrene. There were only 12 cases of gas gangrene, due to primary suturing and tight packing of wounds. Why this low mortality and this excellence of care of battle casualties? First, plasma, which had been made available to us through the Red Cross from volunteers at bleeding stations, the Army processing it and shipping it over there. Second, excellent technical care, proper surgery, supplemented by sulfonamide drugs. I am sure these are the things that helped to give us in this campaign the very low death rate.

In a check of infection before leaving there, there were recorded only 77 cases of osteomyelitis in the two base sectors for this campaign, which has extended since last November. I think you will agree that that is remarkable.

The general health of the command over there has been as good as at home, or better. The sick rate has been less than at home. The venereal rate has been high, particularly in Negro troops. It is getting under control. The malaria season is about to begin. The rains have just finished, they finished in May, a month late. It is always unusual weather anywhere one goes, it was unusual there. When the rains were active, the mud was ankle deep. Our nurses over there are working in coveralls and in the mud wearing general issue shoes that the men wear and wearing soldiers' heavy underclothes to keep warm in the winter months, and they are doing a wonderful job and delighted with it. The only nurses that were in trouble were those that were waiting to get on the job, and likewise the doctors. Unfortunately doctors—all of us—are used to doing something always, and this business of war irks them, their training at home, sitting around waiting to go, or after they are over if they are not actually engaged. In those evacuations they were working twenty hours a day. They refused the auxiliary groups set up, they didn't want them around, they didn't belong to them, they could do their own job. That was their attitude. So it has been a wonderful thing that the Medical Department has done in North Africa.

You would be surprised at the grain crops. Looking at this country as a country, the grain crops are everywhere. The red poppy is everywhere through the fields, it is beautiful. Mountain roads overlook beautiful valleys, but over those mountain roads ambulance drivers drove ambulances to get to evacuation hospitals, maybe 20, 30 miles, so tired they staggered as if drunk, filled up with coffee, and back on the ambulance to the front to get another load. Litter bearers in evacuation hospitals with blisters on their hands from carrying litters were still working.

One man came out to see me from the operating room who had served with me at Walter Reed. The surgeon apologized for his looks. He said "That man hasn't been to bed for two nights." That is the spirit of the men who are over there doing the job.

That is only a beginning of what needs to be done in further campaigns to come. We have scattered throughout the earth, in every country in the earth, Medical Department installations and personnel, except that part of the earth which belongs to the Axis. We are planning now for installations to go in there to take care of the civilian group after we take over. So eventually these Medical Department installations and personnel will be scattered through every country throughout the earth as soon as we take it over piece by piece from the Axis.

I want to thank this organization as a group and as individuals for the wonderful help and support they have given the Surgeon General and the Medical Department. Without it the job would have been impossible. I hope that I may have the same support. There will be times when things look as if they aren't going right, when too many doctors are sitting around doing nothing, and too many nurses, too many empty beds in hospitals, and this and that and the other thing, but it is going to be that way, it can't be any other. The doctor is like a fireman. The firemen sit around playing cards most of the time until they have to get busy. That is the doctor in war. We can't keep them all employed all the time. It there was a

way to give them a barbiturate and keep them quiet until we had to use them it would be fine

I thank you for being able to appear before you this morning, and ask for your support and help and constructive criticism

George M. Morris, President of the American Bar Association

Dr. West presented Mr. George M. Morris, President of the American Bar Association, who spoke as follows:

Mr. Chairman and Ladies and Gentlemen: I happen to be a member of the committee which reorganized the American Bar Association in 1936. At that time the American Bar Association instituted a House of Delegates, almost a direct adoption of the House of Delegates which has been so successfully conducted by the American Medical Association. I made a study not only of the constitutional background of this organization but of its statutory and its regulatory background and here I am today, a good deal like a boy who has read about a famous man never thinking he would meet him and suddenly stepping around the corner, meets the famous man whom he knows all about.

In connection with the formulation of our procedure and fundamental concepts in the American Bar Association the experience of the American Medical Association was an invaluable aid. It always seemed an anachronism to me but nevertheless it was true that here were the lawyers who would be expected to be the pioneers in a legislative group like this taking their lessons from their brother professionals the medics on how to do the job that the lawyers themselves ought to know how to do. It is a great compliment to the men who have had the management of the American Medical Association under hand for so many years that that particular thing should have taken place and we therefore I say on behalf of the American Bar Association, are greatly indebted to you for this example in helping us institute an agency which has meant more to the American Bar Association's successful functioning in its community effort than any single agency that has been brought into that Association in the twenty-one years I have known it.

I also may say that I think the bar is greatly indebted to the medical profession because of the contribution that organized medicine as distinguished from the individual physician and surgeon has made to the growing social consciousness of the organized bar. Organized medicine has blazed the way in this country for voluntary social contributions by organized groups. We are very happy in the American Bar Association to take advantage of the blazes that you have made along the trail.

I am very happy, Dr. West, to have had this opportunity of this introduction by you, sir.

Mr. Speaker, I served as the first chairman for the House of Delegates for the American Bar Association for a term of two years. I know what it is to meet a speaker's schedule. I hope you will forgive me for interrupting yours. Thank you gentlemen.

Dr. T. C. Routley, Secretary, Canadian Medical Association

The Secretary introduced Dr. T. C. Routley, Secretary of the Canadian Medical Association who spoke as follows:

Mr. Speaker and my American Friends: Once again it is my proud privilege and pleasure to bring you greetings from the medical profession of Canada. For twenty years this has been my joy and I can't tell you how stimulating how vitalizing how helpful you in your turn have been to us and I particularly want to pay tribute as I have on other occasions to that grand man of yours, Olin West. When I realized that you were having but a business meeting and we on our side of the line are having the same I couldn't resist the temptation to come over here even for a day.

As I listened to that stimulating address of Major General Kirk which I am sure must have pleased you all I thought of the challenge which constantly stands before the medical profession.

You may have observed in one of our medical journals a recent statement, a composite bit of thinking I understand on the part of the psychiatrists and psychologists that man seeks three things: security, happiness and freedom from pain. Today we find a world gripped in the greatest war of all times a war for what? For security, happiness and freedom from pain. I wouldn't think Mr. Speaker it would require very much

imagination for any man of average intelligence to recognize that the victors who are going to secure security, happiness and freedom from pain must be the United Nations, because we find on the other side those who if they won would plunge the world into a sadistic state the like of which mankind has never heard of. So the challenge to the medical profession surely, Mr. Speaker, a challenge which has always existed, is being exemplified by your people in Africa today, because your people were there. We have it on the authority of the Surgeon General that the troops were able to do a better job and I venture to say they were happier and certainly because of you they must have had much freedom from pain.

When I think of the great American Medical Association and what you represent 150,000 to 175,000 doctors, and when I think of the possibilities that lie before you throughout the world and throughout the ages I am not envious, Mr. Chairman but I only hope that we in our small way in Canada only 12,000 strong may go along with you and that together we may emerge on that white horizon in the not too distant future where security and happiness and freedom from pain will be the lot of all men of good will.

I want to thank you most sincerely for receiving me here today.

REPORTS OF OFFICERS

Report of the Secretary

Dr. Olin West, Secretary, presented his report as printed in the Handbook which was referred to the Reference Committee on Reports of Board of Trustees and Secretary except the proposed amendment to the Constitution which was referred to the Reference Committee on Amendments to the Constitution and By-Laws.

Report of Board of Trustees

Dr. Roger I. Lee, Chairman, presented the report of the Board of Trustees as printed in the Handbook and the following supplementary reports of the Board of Trustees all of which was referred to the Reference Committee on Reports of Board of Trustees and Secretary with the exception of the reports of the Council on Industrial Health and the Bureau of Health Education which were referred to the Reference Committee on Hygiene and Public Health, the report of the Bureau of Legal Medicine and Legislation which was referred to the Reference Committee on Legislation and Public Relations and the statement dealing with Participation in the War Effort, which was referred to the Reference Committee on War Participation.

SUPPLEMENTARY REPORT OF BOARD OF TRUSTEES

DECISION OF THE SUPREME COURT OF THE UNITED STATES

The decision of the Supreme Court of the United States in regard to the case involving the Medical Society of the District of Columbia and the American Medical Association was announced on Jan. 18, 1943 and was published in *THE JOURNAL* on January 23. On the advice of counsel a check for \$2,500 has been sent to pay the fine assessed by the District Court against the American Medical Association. Following further advice of counsel, analysis or interpretation of this decision has not been made.

The policies of the American Medical Association in the standardization of medical education, hospitals or other aspects of medical care are established by the House of Delegates. In the conduct of its defense in this case the Board of Trustees acted on the authority of the House of Delegates in each instance given unanimously.

RESIGNATION OF TREASURER HERMAN L. KRETSCHMER

It is with a great deal of regret that as Chairman of the Board of Trustees I have to announce the resignation of Dr. Herman L. Kretschmer as Treasurer of the organization. Dr. Kretschmer tendered his resignation in a communication dated April 15. This communication came before the Board of Trustees at its meeting on Sunday, June 6, 1943 and was accepted with very deep regret. Dr. Kretschmer has served for ten years as the Treasurer of this Association. In addition to his services as Treasurer he has by his constant presence at all the meetings of the Board of Trustees given that Board the benefit of his wise and able counsel.

The Board of Trustees at its meeting on June 6, 1943 changed the Secretary and General Manager, Dr. Olin West, to carry on the duties of the Treasurer until the election of a new Treasurer by the House of Delegates.

COMMITTEE ON INTER-AMERICAN RELATIONS

The Association was highly honored at its annual session held in Atlantic City last year by the presence of a number of distinguished physicians from countries of South America and Central America and from Mexico, Cuba and Canada. The value of the scientific program presented at the Atlantic City session was greatly enhanced by the contributions made by several of these distinguished guests, and many new friendships were established. For the sake of the cause of scientific medicine in each of the countries of North and South America and in the interest of the promotion of friendly relations with the medical profession in all of them, the Board of Trustees recommends that a Committee on Inter-American Relations be created.

SAFEGUARDING THE HEALTH OF WOMEN IN INDUSTRY

At the 1942 annual session a resolution was adopted by the House of Delegates in which the Council on Industrial Health was requested to give consideration to preparation of a statement pertaining to the health of girls and women engaged particularly in war industries. In accordance with the provisions of this resolution and with further recommendations by the Board of Trustees, the Council on Industrial Health requested the Committee on the Health of Women in Industry of the Section on Obstetrics and Gynecology for suggestions concerning this problem. The committee prepared a report which was presented at the fifth Annual Congress on Industrial Health on Jan. 12, 1943 and was subsequently published in *THE JOURNAL*. Copies of this report have been widely distributed.

COMMITTEE TO STUDY AIR CONDITIONING

The Committee to Study Air Conditioning has submitted a report to the Board of Trustees concerning progress in the particular field with which the committee is concerned but has suggested that, because of the nature of existing conditions, the report be withheld from publication at this time.

COMMITTEE ON AMERICAN HEALTH RESORTS

Conditions created by the war have interfered materially with the work of the Committee on American Health Resorts, and it is probable that duties imposed on members of the committee, both military and civilian in nature, will impede progress until after the war has ended. Dr. W. Paul Holbrook, one of the original members of the committee, resigned because of his active military service. Dr. Euclid M. Smith is also engaged in military service but is continuing to serve as a member of the committee.

During the last year the rules of the committee have been thoroughly revised. Provision has been made for modification of existing rules when necessary so that health resorts included in the official lists of the committee may have reasonable opportunity to comply with modified rulings or voluntarily to withdraw from the listing. One rule provides that the advertising of health resorts shall not exploit the fact that the resort is listed by the Committee on American Health Resorts and that the fact of such listing shall not constitute the principal feature of publicity of any health resort. The revised rules now provide that listing of an institution on its first application shall be limited to a period of one year, that subsequent to that time listing shall be for three years, and that all listings shall be subject to prior review in event of violation of the committee's rules.

Work on the preparation of scientific papers on health resort therapy is being continued, although progress toward the completion of manuscripts is slow because many of those concerned as authors are on active duty with the military forces or have had to assume greatly increased responsibilities of other nature.

Nineteen health resorts have requested application forms, and the superintendent of Hot Springs National Park has asked for twenty forms for the institutions located in that area. Seven applications for the consideration of the committee have actually been filed. One institution which has applied for consideration has been taken over by the federal government, and one has

been closed for the duration of the war, while five applications are now under consideration by the committee. All of the five institutions concerned have been visited by inspectors of the Council on Medical Education and Hospitals. No acceptances for inclusion in the official list of the committee have yet been made.

At the last meeting of the Committee on American Health Resorts Dr. W. S. McClellan, who previously had served as acting chairman, was elected chairman of the committee.

SUPPLEMENTARY REPORT OF THE BOARD OF TRUSTEES DEALING WITH HOSPITAL CORPORATIONS ENGAGING IN THE PRACTICE OF MEDICINE

The subject matter covered in this report is contained in three resolutions submitted to the House of Delegates as follows:

1. The resolutions introduced at the Atlantic City session in 1942 by Dr. E. H. Skinner, Section on Radiology.

2. The resolutions introduced by Dr. Harry H. Wilson, California, at the Cleveland session in 1941.

3. The resolutions introduced by Dr. Lyell C. Kinney, California, at the Atlantic City session in 1942.

The Skinner resolutions assert that group hospitalization plans continue to include certain medical services contrary to the expressed policies of the House of Delegates, that such practice puts corporations into the practice of medicine, that they inject a third party into the personal relationship between the physician and the patient, and that hospitals should not be permitted to practice medicine through the medium of employed physicians or enter into a contract to furnish such services. To correct this situation the resolutions ask that, when professional services are rendered under such conditions, the physician's fee be collected by or on the account of the physician, that the physician's bill be sent directly to the patient served and that hospital services be defined so as to limit them to bed, board, operating room services, medicine, surgical dressings and general nursing care.

The reference committee to which these resolutions were referred recommended the adoption of the resolutions but stated that it saw no new principles not already accepted by the House. It concurred in the necessity for clarification of the existing relations between physicians and hospitals.

The Wilson resolutions, stated briefly, asserted that it was of primary importance that prepayment and other nonprofit organizations make clear the differentiation between medical and hospital services so that the physician-patient relationship of the pathologist, the radiologist and the anesthetist may be preserved. It is recognized in the resolutions that difficulties exist because of the apparent necessity of setting up plans to cover low income groups and it is asked that the House of Delegates instruct the Board of Trustees to appoint a committee to confer with committees of the national hospital associations for the purpose of working out and submitting reports to their respective organizations designed to clarify the situation, that the Board of Trustees proceed as expeditiously as possible and that any agreements arrived at be submitted to the next session of the House of Delegates and in the interval the respective agencies involved be advised of the tentative agreements.

The reference committee reporting on these resolutions approved the first portion asking for the appointment of a committee to confer with the national hospital associations in an effort to set up platforms or principles that would clarify the relations between the groups involved and stated with regard to the second portion of the resolutions, which was emphatically approved, that it found that much investigation would be necessary which might overtax the administrative personnel of the Association because of the medical preparedness program in connection with the war effort. With regard to the third part of the resolutions, the reference committee advised that pathologists, roentgenologists and anesthetists be requested to refrain from entering into contractual relations with hospitals until the matters under consideration could be clarified.

The Kinney resolutions assert that a dangerous situation exists, to wit, that certain insurance companies covering hospital and health insurance schemes pay for medical services billed under the misnomer of hospital services. It is feared, continues the resolutions, that this abuse will lead to further inclusion of the physician's services in hospital bills, and requests

that the House of Delegates ask the insurance companies to cooperate with the medical profession, to pay for medical services only on the receipt of bills for such by physicians rendering the service, and asks that physicians in turn cooperate by seeing to it that professional charges and hospital charges are clearly separated.

The reference committee reporting on these resolutions said that it did not recommend passage of the resolutions in their present form, since it felt that there were difficulties involved which would require much investigation to get the facts and that delicate negotiations would be required, and referred the matter to the Board of Trustees for study, for the weighing of the feasibility and scope of procedure and for ways and means of accomplishing the desired result.

COMMENT

In reviewing these resolutions, it becomes apparent that all the questions involved in the same or similar form have previously been considered and acted on by the House of Delegates. By way of example the reference committee, handling a resolution on the administration of anesthetics introduced in the 1937 session, said in substance "Your reference committee believes that in principle the administration of anesthetics, the interpretation of roentgenograms, the interpretation of laboratory findings and the application of physical therapy measures constitute the practice of medicine and should be confined to those who are licensed practitioners of medicine. However, your reference committee believes also that in practice it is at present inexpedient to urge the enforcement of the provisions of this resolution."

Again at the 1937 session reporting on resolutions involving group hospitalization, the reference committee stated "Your reference committee would refer to the report of the Board of Trustees, page 22, principle 4, which was adopted by this House of Delegates. In that paragraph the limitations of hospital service are well defined. Your reference committee reaffirms this definition of hospital care and recommends its application to contracts for group hospitalization. In regard to certain benefits offered by many hospital insurance plans, combining professional and technical services, your reference committee is in complete sympathy with those who would make every possible provision to prevent inclusion of any and all types of service involving medical care."

Reporting at the 1936 session on resolutions concerning the practice of medicine by hospitals through the agency of employed physicians the reference committee stated "the principle enunciated by the House of Delegates at Cleveland in 1934, 'that the practice of radiology, whether for diagnostic or therapeutic purposes, constitutes in fact the practice of medicine' and recommended that 'all services connected with the practice of radiology be under the direct control and supervision of the medical profession and this same principle pertains to other technical and professional services'."

Concerning the ethical consideration involved in these resolutions the Judicial Council of the Association has made certain pertinent observations. For instance in the Council's report in 1929 it stated "The American Medical Association cannot control legislation or the administration of law. The remedy must be sought at the hands of legislatures in the several states and it would seem to be the responsibility of the constituent state association to instigate measures seeking relief if the initiative to that end is not taken by the law makers and the administrative officers of the state."

Reporting at the 1930 session, the Council stated "The development of industrial medicine, the activities of corporations in medical fields the expansion of public health programs especially those of unofficial agencies the organization of so called hospital associations and cooperative diagnostic laboratories the creation of funds and foundations concerned in some manner with medical practice or public health the workings of compensation laws and many other factors have given rise to many new questions and have produced many perplexing problems of which final solution is not easily possible. To all of these coming to its attention the Council is giving earnest consideration and is attempting to be helpful in devising plans of action that will safeguard the integrity of the medical profession and contribute to the public welfare."

At the 1941 session under the heading of 'Principles, Not Laws' the Council states "Furthermore, the membership of the Council, even though spread over the United States from New York to Washington and from Ohio to Texas, cannot be familiar with local laws, customs and needs, all of which must be taken into consideration in an interpretation of the Principles as applied to a specific situation. The Principles of Medical Ethics of the American Medical Association in all its statements is based on and covered by the first section, namely, 'A profession has for its prime object the service it can render to humanity, reward or financial gain should be a subordinate consideration'."

The principle is the same in all sections of the country, but what may be ethical in one place may be unethical in another as the result of different laws different customs different needs of the people. The Judicial Council cannot have knowledge of all these. Each constituent state medical association should have the knowledge in its own state which the Judicial Council lacks, and many of the inquiries coming to the Council should have been addressed to the state associations, the officers of which, because of proximity, are better qualified to advise." In the same report this Council continues "it cannot be said too often that these principles are not laws to govern but are principles to guide to correct conduct."

It would thus appear that such questions as the patient-physician relationship the corporate practice of medicine, the separation of medical from hospital services in group hospitalization contracts, have been, as illustrated, repeatedly considered and acted on by the House of Delegates. These actions stand now as before, as expressions of principle. But, since local conditions with regard to accepted local practices, economic conditions, availability of qualified specialists in certain fields and public and professional attitudes vary widely, the difficulty arises in the practical application of the principles involved to the problems to be solved. The truth is that our code of ethics and our laws as approved by the House of Delegates governing our relationship to the public and to one another are as the Judicial Council has stated, more in the nature of principles than ironclad blueprints. A moment's reflection will suggest the wisdom of such standards. Conditions and circumstances surrounding a given question vary widely in different jurisdictions. Circumstances may lead to the adoption of a course of action as just in one section, whereas the absence of such conditions would veto a similar course in another. When it is borne in mind that it is to public interest that medicine everywhere is primarily intended to serve, it becomes apparent that no rules of conduct or standards of procedure that are in conflict with such primary intent could with consistency be maintained. It is because medicine accepts this arrangement and urges its faithful application that our governing bodies, state and national have always refrained from inflexible enunciations. Reduced to its essence, medical organizations in this country are in spirit and in fact decentralized with the responsibility placed where it belongs—on the state and county medical society level. Only general principles are enunciated by the national body, and these as just stated are subject to modification when in the judgment of a constituent society local conditions require it. The crux of the question can be stated in another way, namely that the supreme aim of medicine and all its pronouncements ethics and guiding principles is to furnish a high quality of medical service to all the people regardless of economic status.

On the other hand in our effort to avoid the exploitation or either the public or the profession we must ever be watchful lest the privilege of definitive action accorded state and county societies be not used as license for the popularization or abuses. Where such already exists local societies should act. They have the implements for such action and no new pronouncements are necessary. It is true that we have learned in these troublesome times that the destroyers of the nation's institutions work silently by methods now popularly known as infiltration tactics. The guardians of the people's liberties and their institutions such as free medical practice, must have their initiative whetted and their sense of observation sharpened by constant awareness. The presentation in the House of Delegates of such resolutions as are now under consideration are timely and commendable. They reemphasize the necessity for eternal vigilance.

CONCLUSIONS

1 In the solution of a given abuse, whether concerned with exploitation of the physician or with exploitation of the patient, actual facts must be established and local conditions must be understood before the adjudicating body can act. Constituent associations and component societies are in a better position than are the national bodies to obtain and to act on these cardinal necessities.

2 Conditions vary widely in the respective jurisdictions requiring the weighing of circumstances before the letter of the principle or the approved action of the House of Delegates can be equitably applied.

3 The local society is better able than is the national body to do justice to a situation that is colored by so many factors.

4 No new principles are involved in the resolutions under consideration, and no new pronouncements would appear to be necessary.

5 The responsibility for the correction of abuses rests primarily on component county medical societies and constituent state or territorial medical associations empowered to govern themselves in local matters, while they may reasonably be expected to abide by the authority of the House of Delegates in matters of general policy.

6 The obligation to prevent the exploitation of the patient while protecting the prerogatives of the physician bears with equal responsibility on our profession.

7 Special societies are in position to help in the equitable solution of these urgent problems by securing the understanding and cooperation of their members. Attempts to devise remedial measures at the national level would appear to be unwise.

SUPPLEMENTARY REPORT OF BOARD OF TRUSTEES DEALING
WITH PROGRESS REPORT OF THE COMMITTEE TO STUDY
THE RELATIONSHIP OF MEDICINE AND LAW

In accordance with the provisions of the resolution submitted to the House of Delegates at the Cleveland session in 1941 by Dr. Walter G. Pluppen, delegate from Massachusetts, a Committee to Study the Relationship of Medicine and Law was appointed in January 1942 by the Board of Trustees. The committee consisted of Dr. Edward R. Cummitt, Mr. J. W. Holloway Jr., Dr. Harrison S. Martland and Dr. Alan R. Moritz, Chairman.

The first meeting of the committee was held on Jan. 24, 1942 and was attended by Prof. Rollin M. Perkins and Mr. Louis S. Colanic representing the committee of the American Bar Association designated to collaborate with the committee of the American Medical Association.

As a result of an exhaustive discussion of the scope of the assignment, it was decided that of the various relations that exist between medicine and law no activities are more important than those closely integrated medical and legal activities that have as their common purpose the investigation of deaths in the interests of justice and public safety. It was decided to divide the problem into three major components, each of which was assigned to a subcommittee for study and investigation pending the next meeting of the committee. One of these was to define the medical desiderata of such a public service. Another was to define the legal desiderata. The third was to survey the various types of coroner and medical examiner systems now operating in the United States in order to determine in what respects they conform to or fall short of the optimal scientific and legal objectives.

The second meeting of the committee was held on Aug. 15, 1942, at which time the various subcommittee reports were presented and discussed. At the request of the committee, Dr. Timothy Leary and Dr. Thomas A. Gonzales attended the meeting and participated in the discussion. The Chairman was instructed to prepare from the findings of the subcommittees a provisional report for submission to the committee of the American Bar Association for criticism. Such a provisional report was prepared and sent to the various committeemen as well as to the members of the corresponding committee of the American Bar Association.

Since August 1942 various criticisms and suggestions have been made for improving the preliminary report. One was

that a survey should be made of the relative costs of operating coroner and medical examiner offices in urban and rural districts. Another was that the committee should draw up various types of model legislation for the improvement of coroners' or medical examiners' offices. At the present time both of these latter projects are being undertaken. Letters of inquiry and questionnaires have been sent to a large number of county treasurers, coroners and medical examiners and to various federal, state and college bureaus concerned with studying the costs of county government. Several months will probably be required for the acquisition of sufficiently complete information to permit the completion of a final report.

During the past year legislation designed to replace the office of county coroner with that of medical examiner has been introduced in three states. In two of these, members of this committee have been actively concerned in an advisory capacity.

It is the intent of the committee to submit a final report of its activities to the Board of Trustees at some time during 1943.

Respectfully submitted,

ALAN R. MORITZ, Chairman

SUPPLEMENTARY REPORT OF BOARD OF TRUSTEES DEALING
WITH REPORT OF PROCEEDINGS OF THE JOINT COM-
MITTEE MEETING OF NATIONAL HOSPITAL ASSO-
CIATIONS AND REPRESENTATIVES OF THE
BOARD OF TRUSTEES OF THE AMERICAN
MEDICAL ASSOCIATION

FACTUAL DATA FROM CONFERENCES

In compliance with the resolution of the House of Delegates which directed the Trustees to "explore" and "clarify" the relationship of medical service in hospitals, the following report is submitted.

In the past three years the Board of Trustees of the American Medical Association has had repeated conferences with the hospital associations and with representatives of groups representing special activities in medicine including pathologists and radiologists. On Dec. 19, 1941 representatives of the laboratory groups of chemistry and of pathology met with the Executive Committee of the Board of Trustees. On Nov. 19, 1942 representatives of the three hospital associations met with the Board. Present at this conference were Edgar Blake Jr., Rev. Joseph A. George and Mr. Albert G. Hahn, American Protestant Hospital Association; Rt. Rev. Mons. Maurice F. Griffin, Dr. James A. Hamilton, Dr. Robin C. Buerki, Mr. Frank J. Walter and Dr. Bert W. Caldwell, American Hospital Association; and Rev. Alphonse M. Schwitalla, Rev. John W. Barrett and Mr. M. R. Kneisl, Catholic Hospital Association. Dr. Herman G. Weiskotten represented the Council on Medical Education and Hospitals. Lieut. Col. Harold C. Lueth, the liaison officer of the Surgeon General's Office, also was present. The national hospital conferees represented the joint committee of the three hospital associations. At this meeting problems of technicians in the several activities of the hospitals and the fundamental principles of medical practice, as well as the inclusion of medical services in hospital contracts, were discussed. The discussions as to hospitals and medical practice, through the emphasis of the resolution of June 1942, were focused on radiology, but it was repeatedly pointed out that the problem is broader and concerns the relationship and customs of practice which have grown up over the years as laboratory procedures and, more particularly, radiology have come to occupy a more and more important place in the procedures and finances of hospitals.

At the conclusion of this conference of November 19 it was agreed that a further conference be held by a subcommittee appointed by the Chairman of the Board, to explore further the relationships of hospitals to medical practice.

The following committee was appointed: James Hamilton, Chairman, and Bert W. Caldwell, American Hospital Association, Father A. M. Schwitalla, Catholic Hospital Association, Edgar Blake, Protestant Hospital Association, and R. L. Sensenich and E. E. Irons, Trustees of the American Medical Association.

Mr. Hamilton later indicated that he would not be present, and Dr. R. C. Buerki was appointed by him, in his place. Dr. Buerki served as chairman of the committee. This committee and Dr. Olin West, Secretary of the American Medical

Association met on Sunday, April 11, 1943 together with representatives of the American College of Radiology L S Gorn V W Archer, W E Chamberlain F J O'Brien E L Jenkinson Fay Squire, B R Kirklin Dr Stone and Mr Mac F Cahal

Toward the conclusion of the sessions of this subcommittee at which the views of radiologists and of hospitals were stated there was discussion as to who should write a report and to whom it should be sent. It was pointed out that this group is a subcommittee of the conference committee consisting of the Joint Committee of the Hospitals and the Board of Trustees of the American Medical Association. Owing to the divergence of views as expressed by radiologists and hospital conferees it was evident that an agreed report could not be formulated.

The hospital associations indicated that at least two of them would hold annual meetings after the week of June 7 1943. It was also pointed out that the hospital members of this subcommittee were appointed through the Joint Hospital Association committee and not by the individual hospital associations, and that hence any report should go to the Joint Committee. They also preferred to have a report come to them for presentation to their associations. In order that progress might be made without further delay it was agreed that the report would be made by the representatives of the Trustees of the American Medical Association for submission to the Board of Trustees and through them to the House of Delegates and to the three hospital associations.

In addition to certain general broader considerations of medical practice such as the increasing activities of technicians in various laboratory procedures and the practice of anesthesias pathology, and so on it concerns chiefly a factual report of views expressed in the conference of Sunday April 11 1943 by representatives of radiology and of the hospital associations initiated by the Board to explore and clarify the relationship of medical and hospital practice.

It will appear that present practices have grown up over the years with the development of more and more laboratory procedures in hospitals, the introduction of more specialized subgroups in medicine and the organization of various forms of group and individual hospital insurance plans.

The resolutions of the House of Delegates of June 1942 were read as follows:

WHEREAS The House of Delegates approved a resolution introduced by Dr Harry H Wilson at the 1941 session instructing the Board of Trustees of the American Medical Association to confer with similar committees representing the American Hospital Association and the Catholic Hospital Association of the United States the joint committees to study and submit reports to their respective national bodies in which would be outlined platforms or principles designed to clarify the relation of medical services that may be offered in prepayment hospitalization and similar plans the same to be in line with the basic principles laid down in the past by the House of Delegates and other authorities of the American Medical Association and

WHEREAS The Board of Trustees was requested in the same resolutions to proceed to these matters as expeditiously as may be possible and

WHEREAS Evidence of continued encroachment of hospitals into the practice of medicine is manifest in numerous group hospitalization plans which offer certain medical services on a service basis as a part of hospital care and in plans adopted by numerous hospitals which include certain medical services in an all inclusive per diem rate for hospital care now therefore be it

Resolved That the House of Delegates reaffirms the principles enunciated in official resolutions over a period of many years opposing the practice of medicine by corporations or the interjection of a third party into the personal relationship and financial transaction between doctors and patients and be it further

Resolved That hospital corporations should not be permitted to engage in the practice of medicine through the medium of employed physicians or to enter into contracts with any individual group or agency whereby the hospital agrees to furnish any medical services and be it further

Resolved That to the end that hospitals be discouraged from offering services of licensed physicians to patients on a contract or service basis all fees for medical services rendered in hospitals should be collected by or on account of the physician rendering such service and all physicians concerned in the care of a patient should give or send directly to the patient or other responsible party a statement showing charges for professional services rendered provided however that an exception to the foregoing principle may be made in the case of a formally organized partnership of physicians which acts in the capacity of an individual and be it further

Resolved J That the definitions of medical service and hospital service as applied to the principles stated herein shall be consistent with those applied in previous declarations of the House of Delegates in which

medical services are construed as the services rendered by licensed practitioners of medicine and hospital service as limited to hospital accommodations such as bed operation room medicines surgical dressings and general nursing care and be it further

Resolved That the Board of Trustees be urged to proceed to the clarification of these problems as requested by the House of Delegates at its last annual session

It was pointed out that at the conference in December 1942 the agenda called for consideration in addition to radiologic relationship to hospitals of the effects of increasing lay influence in hospital practice by technicians in pathology, physical therapy etc and that gradually attention became focused on radiology (under the foregoing resolutions) as symptomatic of a number of other situations in which the same principles are involved.

Radiology is a department of medicine and the practice of radiology is the practice of medicine.

This principle is accepted by hospitals.

This principle does not seem to be carried out in practice when hospitals include radiologic services in a comprehensive hospital insurance rate plan.

The House of Delegates has defined hospital care and this definition does not include radiology and other medical practice.

During the discussions, the following facts and suggestions were developed:

However, a patient enters a hospital requires radiologic service. The hospital is responsible for the machinery, for technicians, etc., and at the same time may pay the radiologists salary.

Where is the line of technical and professional service to be drawn?

One solution would be to treat radiology like surgery. Charge operating room and anesthetic fee, etc. The surgeon sends his own bill. Likewise the radiologist might send his own bill but if so then he should give up his salary. The hospitals maintain that by accepting a salary (and often this is not a small one) the radiologist gives up the right to send his bill.

Salaries of Radiologists—One summarization of the radiologists of the radiologist-hospital relationship was as follows:

1 Radiology is practice or medicine.

2 Blue Cross plans should not include medical service.

3 It was assumed that all radiologists are more or less in agreement in opposition to the general principle of a salary arrangement between radiologists and hospitals.

The enforcement of the salary matter must be cooperative.

There was no agreement to the statement as to salary. It was believed by some who were present that a salary arrangement could be satisfactory.

Still another radiologist maintained that salary arrangement is satisfactory provided the hospital does not profit from the operation of the x-ray department.

The disposition of hospital profits from x-ray departments was discussed and it was noted that in some hospitals x-ray profits are used only for further development of the x-ray department. In other hospitals profits from x-ray service are used in other departments.

X-Ray Charges and the Cost of Medical Care—X-ray charges constitute a considerable traction of the patient's hospital bill.

It was stated that the high charges by hospitals for x-ray work are maintained because they do not wish to compete with the radiologist in his downtown office. Owing to large volume hospitals might well reduce their charges.

It was stated that one state association of radiologists had sent its official charges to the hospitals with the idea that no hospital should charge less than that.

Radiology and Treatment—Most of the discussion concerned x-ray service in diagnosis.

It was pointed out that many of the difficulties had arisen as a part of radiologic diagnosis.

Radiologic therapy requires the direct attention of the radiologist and yet the hospital treats x-ray diagnosis and therapy on the same basis and bills the patient for both.

The discussion returned to the question as to whether hospitals can properly include radiology admittedly the practice of

medicine, is a hospital benefit in insurance plans. It was maintained that the hospitals should not hire the radiologist.

The following statement was presented as a solution by one of the conferees: "This committee recommends that all radiologists give up their salaried positions and that no hospital in good standing will be approved by the American Medical Association that hires its radiologist."

One of the radiologists present stated that he had no right to endorse any such plan but that he thought that radiologists would do so if the hospitals would agree. Regret was expressed that the radiologists do not have a degree of control over their membership which could enforce such a plan, and that the same is true with respect to hospital groups. It was also noted that American Medical Association approval of hospitals concerns educational matters only.

In the discussion that followed it was pointed out that neither the radiologists nor pathologists nor other groups have observed the principle under discussion.

The American Medical Association cannot settle the difficulty unless the members in these various groups will themselves live up to the principle. Men in special fields who have connections with hospitals whereby they are paid salaries or commissions and the hospitals furnish machinery and apparatus, have stated that if they are compelled to observe the principle for which the American Medical Association has stood they will get out of the American Medical Association.

Types of Radiologist-Hospital Contracts—1 The radiologist is employed on a salary by the hospital.

2 The radiologist leases space and apparatus from the hospital as a private practitioner.

3 The radiologist operates on some sort of commission basis. Or variations or combinations of 1, 2, and 3.

A It was stated that 37 per cent of all radiologists are employed on a salary basis. (Later it developed that this figure included radiologists in government hospitals and in other full time positions.)

B Nine per cent lease the departments on fixed rental.

C Fifty-four per cent share gross receipts or net receipts with the hospital. Of this 54 per cent about half (27 per cent) are under legal relationships which make the radiologist a tenant, and about half (27 per cent) an employee of the hospitals. In either of these the radiologist can be on a percentage basis. The hospital is not legally liable for the radiologist if he is a tenant. With respect to technicians, the great proportion are employees of the hospitals. About 10 per cent of radiologists appoint and pay their own technicians.

At this point the following suggestions were offered:

1 That the per diem paid by the patient for hospitalization may not include radiologic services or any other medical services.

2 That bills to patients for radiologic services should be presented on the billhead of the radiologist and not on the billhead of the hospital.

The advantage of billing by the radiologist would be (a) The patient would feel that he had personal service of the radiologist. (b) The radiologist would feel a greater sense of responsibility to the patient.

In objection, it was suggested that this billing by the radiologist would run counter to principles set forth by the Judicial Council of the American Medical Association in that the proceeds of the radiologist's bill would subsequently be split with the hospital. To avoid this the radiologist would have to give up his salary.

Nineteen per cent of the radiologists collect the fees in their own departments of the hospitals.

Blue Cross Plans—The discussion next turned on Blue Cross plans. It was stated that one of the bases for approval of Blue Cross plans was that they should have the approval of local and county medical societies.

The College of Radiology has always maintained that radiologic service should not be included in hospital service, yet of

seventy-seven Blue Cross plans approved by the American Hospital Association half of them guarantee medical service to subscribers.

A representative of the American Hospital Association stated that, in New York, Blue Cross plans were approved by the New York Medical Society. This was denied by the radiologists, in that vociferous objections have been raised. The five borough societies and the state society of New York have not officially approved the inclusion of medical service by the Associated Hospital Service of New York.

In Philadelphia the Philadelphia Medical Society went to court to prevent the inclusion of medical service in group hospitalization plans.

The difficulty seems to be that many members of county medical societies put their influence behind these group hospital plans, irrespective of any action they may have taken themselves as members of the societies.

If group hospital plans had not entered the picture, the other phases of relation of radiologists to hospitals might have been corrected slowly by evolution.

But if group hospitalization comes in and cements a branch of medicine as a part of hospital care and guarantees to subscribers not only bed, food and nursing care but also the services of a doctor, then the correction of other less objectionable features of historical origin becomes impossible.

The American Medical Association for years has pointed out the dangers which have developed in these plans, both group hospital and medical service plans, and has been called obstructionist and reactionary.

Another objection to the inclusion of x-ray service in hospital service plans is that such inclusion inevitably leads to deterioration in quality of radiologic care. There is overutilization of the radiologist's services, with a hick and promise type of radiologic care.

If the hospitals would take a stand against inclusion of radiology in the per diem charge, real progress toward a solution of the difficulties would be made.

Instances of overutilization were cited.

The radiologists then asked that the representatives of the hospital associations recommend to their organizations that Blue Cross plans do not include professional services, i. e. radiology, etc.

In the discussion it appeared that the American Hospital Association is willing to include medical services for sale by the Blue Cross plan if the local society approves it.

The American Hospital Association "has to deal with the practical thing that is happening." "The local medical society in Michigan through the Blue Cross plan is selling medical care."

"The Blue Cross plan in many respects is a measure of the attitude toward medical practice in the given community."

The Blue Cross plan is a name under the control of the Hospital Commission of the American Hospital Association.

"If a hospital plan refuses to abide by the rules laid down by that commission, the commission can deny that plan the right to use the words Blue Cross plan and participate in national publicity."

"The Council of the California Medical Society rebuked the Intercoast Association and threatened to withdraw the approval, and they said 'Go ahead, we will still settle contracts'."

"The Commission on Hospital Service of the American Hospital Association on February 11 adopted a uniform national contract recommending to all Blue Cross plans the inclusion of complete pathologic service and anesthesia and radiology up to \$15."

It was stated that the American Hospital Association has not yet approved this recommendation but it is under consideration. The Blue Cross plan included medical service as a "selling point." Blue Cross plans have to compete with old life insurance.

In the discussion of the nature of a report that might be offered by those representing the hospital associations and the

Board of Trustees of the American Medical Association the following proposals were considered "The report might well call attention to and say a word of caution about the general encroachment into the field of medical responsibility by non-medical people as a danger to the future health of the country, as a danger to the medical profession

Secondly, to call attention and to condemn the institutional practice of medicine through certain staff appointment procedures that have since taken place

Thirdly, the implication of hospital contracts for medical practice, and the validity and ethical character of those contracts must be judged by the principles laid down by the Judicial Council for the regulation of contract practice of the physician. In other words, just because a physician makes a contract with a hospital is no reason why the principles laid down by the Judicial Council for contract practice are to be held in abeyance. Those are fundamental in medical practice

Fourthly, perhaps, emphasize the vast extent of medical responsibility in certain technological procedures that are now being entrusted to nonmedical people in the hospital"

Question was raised as to whether points 2 and 3 would be kindly received by the American Hospital Association"

HISTORICAL REVIEW AND COMMENT

The subject matter considered followed the direction of resolutions presented to the House of Delegates

1 The resolutions introduced by Dr E H Skinner, Section on Radiology at the annual session of the House of Delegates at Atlantic City, N J, June 8-12 1942

WHEREAS The House of Delegates approved a resolution introduced by Dr Harry H Wilson at the 1941 session instructing the Board of Trustees of the American Medical Association to confer with similar committees representing the American Hospital Association and the Catholic Hospital Association of the United States the conjoint committees to study and submit reports to their respective national bodies in which would be outlined platforms or principles designed to clarify the relation of medical services that may be offered in prepayment hospitalization and similar plans the same to be in line with the basic principles laid down in the past by the House of Delegates and other authorities of the American Medical Association and

WHEREAS The Board of Trustees was requested in the same resolutions to proceed to these matters as expeditiously as may be possible and

WHEREAS Evidence of continued encroachment of hospitals into the practice of medicine is manifest in numerous group hospitalization plans which offer certain medical services on a service basis as a part of hospital care and in plans adopted by numerous hospitals which include certain medical services in an all inclusive per diem rate for hospital care now therefore be it

Resolved That the House of Delegates reaffirms the principles enunciated in official resolutions over a period of many years opposing the practice of medicine by corporations or the interjection of a third party into the personal relationship and financial transaction between doctors and patients and be it further

Resolved That hospital corporations should not be permitted to engage in the practice of medicine through the medium of employed physicians or to enter into contracts with any individual group or agency whereby the hospital agrees to furnish any medical services and be it further

Resolved That to the end that hospitals be discouraged from offering the services of licensed physicians to patients on a contract or service basis all fees for medical services rendered in hospitals should be collected by or on the account of the physician rendering such service and all physicians concerned in the care of a patient should give or send directly to the patient or other responsible party a statement showing charges for professional services rendered provided however that an exception to the foregoing principle may be made in the case of a formally organized partnership of physicians which acts in the capacity of an individual and be it further

Resolved That the definitions of medical service and hospital service as applied to the principles stated herein shall be consistent with those applied in previous declarations of the House of Delegates in which medical services are construed as the services rendered by licensed practitioners of medicine and hospital service as limited to hospital accommodations such as bed operation room medicines surgical dressings and general nursing care and be it further

Resolved That the Board of Trustees be urged to proceed to the clarification of these problems as requested by the House of Delegates at the last annual session

2 The Reference Committee on Legislation and Public Relations in joint meeting with the Reference Committee on Miscellaneous Business considering these resolutions reported that the resolutions introduce no new principles not already accepted

by this House at former sessions and ask only definite clarification and study by the Board of Trustees The joint committee recommended the adoption of the resolutions

3 The concluding paragraph of Dr Skinner's resolutions refers to resolutions introduced by Dr Harry H Wilson, California, at the Cleveland session of the House of Delegates in 1941

Resolutions Requesting Appointment of Committee to Confer with Committees of Hospital Associations

Dr Harry H Wilson, California presented the following resolutions which were referred to the Reference Committee on Legislation and Public Relations

WHEREAS In the drafting of policies or contracts to cover medical and hospitalization services of nonprofit and other prepayment organizations it is of primary importance that the agreements or contracts shall make a clear differentiation of medical and hospitalization services that will permit physicians who give pathologic laboratory x-ray laboratory anesthesia or similar services to maintain their physician patient relationship and their own status as physician specialists and

WHEREAS In many plans designed to promote more adequate service among lower income groups of citizens it has seemingly been difficult to maintain the necessary professional distinctions concerning such medical work and the ways and means whereby compensation shall be made therefor now therefore be it

Resolved That the California Medical Association through its constituted authorities herewith requests the House of Delegates of the American Medical Association to instruct the Board of Trustees of the American Medical Association to appoint a committee of such number as may be deemed advisable to confer with similar committees representing the American Hospital Association and the Catholic Hospital Association of the United States the conjoint committees to study and submit reports to their respective national bodies in which would be outlined platforms or principles designed to clarify the relation of medical services that may be offered in prepayment hospitalization and similar plans the same to be in line with the basic principles laid down in the past by the House of Delegates and other authorities of the American Medical Association and be it further

Resolved That the Board of Trustees be requested to proceed in these matters as expeditiously as may be possible and to submit the committee's report with such suggestions and/or recommendation that the Board of Trustees may wish to attach thereto at the next annual session of the American Medical Association the Board of Trustees to be authorized in the interim to advise the constituent state associations of the American Medical Association concerning tentative or other agreements that may have been reached

The reference committee recommended the approval of the resolutions and added

Medical Service Plans and the Specialty Societies Your reference committee further recommends that the specialty societies such as those composed of radiologists, pathologists and anesthesiologists recommend to their members that they defer entering into contractual relationships with hospitals involved in medical service plans until the relationship has been thoroughly clarified as requested in the resolutions from the California Medical Association

4 The resolution presented by Dr Lyell C Kinney California at the Atlantic City session June 1942

Resolutions on Improvement of Relations Between Physicians and Insurance Companies

WHEREAS It is desirable that physicians and insurance companies cooperate to the fullest extent especially in the interest of persons covered by health and accident insurance and

WHEREAS A serious situation has arisen in the administration of certain health and hospitalization schemes whereby medical services are being billed under the term hospital services and are being paid for by insurance companies as they are labeled hospital services and

WHEREAS The continuation or extension of such practices will inevitably lead to the inclusion of any type of medical service under the label Hospital Service at the convenience of the corporations involved and to the detriment of medical care now therefore be it

Resolved That the House of Delegates of the American Medical Association hereby requests insurance companies to cooperate with the organized medical profession to the end that hospitalization policies shall include only hospital benefits If the inclusion of indemnity for medical services such as surgery or radiology is desired then payment of such shall be made only on receipt of certified statement from a physician that he has rendered such Fees for medical services should be paid to physicians via indemnity to the assured or by check payable jointly to assured and physician This practice should be maintained irrespective of whether a hospital chooses to bill for medical services as a part of its hospital bill and be it further

Resolved That the House of Delegates of the American Medical Association requests hospitals and physicians to cooperate with it in this important step by seeing that bills for hospital and medical services are clearly distinguished the latter should bear the name of the physician rendering the service to indicate clearly that the charge is for medical service.

5 The Reference Committees on Miscellaneous Business and Legislation and Public Relations acting jointly reported that these resolutions involve many additional technicalities and require prolonged and delicate negotiations with insurance carriers which will be time consuming and difficult of attainment. So before committing our organization definitely to the line of action which these resolutions demand, your joint committee recommends that the resolutions be referred to the Board of Trustees for study by itself and the Bureau of Medical Economics as to the facts, feasibility of action requested and as to ways and means of accomplishing the desired results. Your joint committee does not at the present time recommend the passage of these resolutions in their present form. A separate report is being submitted by the Board of Trustees concerning these recommendations.

6 As the three resolutions quoted in similar terms requested study, clarification and outlining of principles and referred to resolutions introduced in earlier years it was obviously necessary to examine the records of previous actions by the House of Delegates, reports of the Board of Trustees and Bureau of Medical Economics and the extensive studies of various hospital and insurance plans continuously being carried on by that Bureau.

Reports of the Council on Medical Education and Hospitals, the Judicial Council, Bureau of Legal Medicine and Legislation and the Committee on Legislative Activities were also studied. To enumerate or copy in their entirety all the actions of these respective agencies of the American Medical Association relating to the subject matter of these resolutions would be too lengthy for this report.

As early as 1931 the Judicial Council in its report to the House of Delegates disapproved of the collection by hospitals of fees for professional services to patients and payment by them to the attending physicians. The House of Delegates suggested that this matter be studied by the Judicial Council or some special committee. The matter was referred to the newly created Bureau of Medical Economics, whose earliest activities were directed to methods of distribution of medical care.

REPORTS OF STUDIES OF PLANS AND ADVICE IN AVOIDANCE OF DANGEROUS PATTERNS FOLLOWED EACH YEAR

In 1934 at the Cleveland session a resolution introduced by Dr. Albert Soiland, Section on Radiology, stated that some hospitals were doing "collective bargaining for x-ray business" to the detriment of their staff roentgenologists. The reference committee considered "the questions involved in the resolution as being primarily ethical rather than truly economic and for this reason, while recognizing the evils, refrains from direct comment concerning them and recommends that the resolutions be referred to the Council on Medical Education and Hospitals for such action as its wisdom may indicate."

As a result of study by the Bureau of Medical Economics, the ten basic principles for guidance in the formulation of any method of distribution of medical service were presented to the House of Delegates at the 1934 annual session and approved by it as follows:

First All features of medical service in any method of medical practice should be under the control of the medical profession. No other body or individual is legally or educationally equipped to exercise such control.

Second No third party must be permitted to come between the patient and his physician in any medical relation. All responsibility for the character of medical service must be borne by the profession.

Third Patients must have absolute freedom to choose a legally qualified doctor of medicine who will serve them from among all those qualified to practice and who are willing to give service.

Fourth The method of giving the service must retain a permanent, confidential relation between the patient and a "family physician." This relation must be the fundamental and dominating feature of any system.

Fifth All medical phases of all institutions involved in the medical service should be under professional control, it being understood that hospital service and medical service should be considered separately. These institutions are but expansions of the equipment of the physician. He is the only one whom the laws of all nations recognize as competent to use them in the delivery of service. The medical profession alone can determine the adequacy and character of such institutions. Their value depends on their operation according to medical standards.

Sixth However the cost of medical service may be distributed, the immediate cost should be borne by the patient if able to pay at the time the service is rendered.

Seventh Medical service must have no connection with any cash benefits.

Eighth Any form of medical service should include within its scope all legally qualified doctors of medicine of the locality covered by its operation who wish to give service under the conditions established.

Ninth Systems for the relief of low income classes should be limited strictly to those below the "comfort level" standard of incomes.

Tenth There should be no restrictions on treatment or prescribing not formulated and enforced by the organized medical profession.

In 1935 at the Chicago special session, in a resolution presented by Dr. Albert Soiland, the House of Delegates was asked to emphasize again particularly the necessity for separate provision for hospital facilities and the physician service and that payment for medical services, whether by prepayment plan, instalment purchase or so-called voluntary insurance plans, must hold an absolutely distinct remuneration for hospital care on the one hand and the individual personal scientific ministrations of the physician on the other hand. The matter was referred to the Bureau of Medical Economics for study of existing plans.

At Atlantic City in 1935 the House of Delegates approved the report of the Bureau of Medical Economics cautioning against the national development of such schemes as would lead sooner or later to an inclusion of medical service in one form or another with inevitable deterioration in the quality of service.

At this meeting also the sixth one of the basic principles was changed to read "In whatever way the cost of medical service may be distributed, it should be paid for by the patient in accordance with his income status and in a manner that is mutually satisfactory."

In 1936 at the Kansas City session of the House of Delegates resolutions were introduced by Dr. Albert Soiland, Section on Radiology, titled Resolutions on Taking Steps That Will Result in Practice of Medicine Being Conducted by Physicians and Not by Hospitals.

WHEREAS Certain lay groups in this country are arranging for attempting to arrange for the provision of diagnostic medical services along with and as part of hospital services and

WHEREAS The provision of such diagnostic medical services must inevitably foster fundamental changes in the practice of medicine and

WHEREAS The American Medical Association is of the opinion that the practice of medicine should at all times be confined to fully licensed physicians, and

WHEREAS Chapter III article VI section 4 of the Principles of Medical Ethics sets forth the following

"It is unprofessional for a physician to dispose of his professional attainments or services to any lay body, organization, group or individual by whatever name called or however organized, under terms or conditions which permit a direct profit from the fees, salary or compensation received to accrue to the lay body or individual employing him. Such a procedure is beneath the dignity of professional practice, is unfair competition with the profession at large, is harmful alike to the profession of medicine and the welfare of the people and is against sound public policy.

Now therefore be it

Resolved, That the House of Delegates of the American Medical Association is unalterably opposed to such practices, and be it further

Resolved That the House of Delegates of the American Medical Association is opposed to the division of any branch of medical practice into so-called technical and professional portions, and be it further

Resolved That the Council on Medical Education and Hospitals of this Association be and is hereby authorized and directed to take such steps as will result in the practice of medicine being conducted by physicians and not by hospitals and be it further

Resolved That the said Council be and hereby is directed annually to report to this House of Delegates such progress as it is able to achieve from time to time

Resolutions also introduced at the 1936 session by Dr Edward M. Pallette, California, titled Resolutions Disapproving Division of Any Branch of Medicine into Technical and Professional Portions, stated that certain lay groups are endeavoring to arrange for the provision of diagnostic medical service along with and as a part of hospital service and pointed out that such fundamental changes in the practice of medicine may well result in deterioration of our present medical standards and especially in deterioration in the quality of medical care furnished to hospital patients and that it is the official policy of the House of Delegates that it disapproves of the division of any branch of medicine into technical and professional portions. It directed also that the resolutions be brought to the attention of the American Hospital Association and its affiliated groups to the end that existing arrangements permitting division in medical practice be terminated as speedily as possible.

At the same session Dr Francis F. Borzell, Pennsylvania, introduced resolutions referring to the previous actions of the House of Delegates in defining the practice of radiology for diagnostic or therapeutic purposes as the practice of medicine. They referred also to action of the Council on Medical Education and Hospitals in establishing a standard for a radiologic department in approved hospitals and requiring that the department be under the supervision and control of a competent radiologist. The resolutions stated that it was alleged that certain hospitals were proposing to divide the practice of radiology into professional and technical services. The House of Delegates took action disapproving any efforts to divide the service in that manner as being detrimental to the best interests of the public, the medical profession and the hospitals. The action further directed that copies of the resolutions be sent to the American Hospital Association, the Catholic Hospital Association, the American College of Surgeons and the American College of Radiology.

The reference committee to which the resolutions of Dr. Soiland, Dr. Pallette and Dr. Borzell were referred reported as follows:

1 It reiterates the principle enunciated by the House of Delegates at Cleveland in 1934: That the Practice of radiology, whether for diagnostic or therapeutic purposes, constitutes in fact the practice of medicine. The action of the House of Delegates in 1925 establishing a section on radiology confirms this principle.

2 It further recommends that all services connected with the practice of radiology be under the direct control and supervision of the medical profession and thus same principle pertains to other technical and professional services.

In 1937 at the Atlantic City session the Bureau of Medical Economics in its report to the House of Delegates presented a comprehensive statement of its study of the various group hospitalization plans and submitted ten principles of organization and administration for guidance in establishment and direction of group hospitalization plans.

1 The plan of organization should conform to state statutes and case law. The majority of the governing body of the hospital insurance plan should be chosen from among members or official hospital groups and members of medical societies. Great care should be taken to assure the nonprofit character of these new ventures.

2 The plan should include all reputable hospitals. The qualifications of the participating hospitals should be closely supervised. Member hospitals should be limited to those on the Hospital Register of the American Medical Association or to those approved by the state departments of public health or other state agencies in those states in which there is approval registration or licensing of hospitals.

3 The medical profession should have a voice in the organization and administration of the plan. Since hospitals were founded to serve as facilitating means to the practice of

medicine the medical profession must concern itself intimately with plans likely to affect the relations of hospitals to physicians.

4 The subscriber's contract should exclude all medical services—contract provisions should be limited exclusively to hospital facilities. If hospital service is limited to include only hospital room accommodations, such as bed, board, operating room, medicines, surgical dressings and general nursing care, the distinction between hospital service and medical service will be clear.

5 The plan should be operated on an insurance accounting basis with due consideration for earned and unearned premiums, administrative costs and reserves for contingencies and unanticipated losses. Supervision by state insurance departments has been advantageous for both the buyer and the seller of insurance contracts. Laws permitting the formation of hospital service corporations should not remove the benefits of such supervision nor violate the principles enumerated.

6 There should be an upper income limit for subscribers. If group hospitalization plans are designed to aid persons with limited means to secure hospital services they should render such service at less than regular rates. If no consideration in rates is made for persons with limited means, group hospitalization plans lose their altruistic purpose and there may be little justification for an income limit.

7 There should be no commercial or high pressure salesmanship or exorbitant or misleading advertising to secure subscribers. Such tactics are contrary to medical and hospital ethics and are against sound public policy.

8 There should be no diversion of funds to individuals or corporations seeking to secure subscribers for a profit. The moment hospitals lose their traditional character as institutions of charity and humanitarianism the entire voluntary hospital system will break down.

9 Group hospitalization plans should not be utilized primarily or chiefly as means to increase bed occupancy or to liquidate hospital indebtedness. Such plans if they are necessary should place emphasis on public welfare and not on hospital finances.

10 Group hospitalization plans should not be considered a panacea for the economic ills of hospitals. They can serve only a small portion of those persons needing hospital services. Hospitals must continue to develop efficient methods of administration and service independent of any insurance method or selling their accommodations.

At the same session a resolution introduced by Dr. C. W. Stone, Ohio, requested the House of Delegates or the American Medical Association to clarify its policy in the question of group hospitalization, especially in the matter of defining and enumerating the services which should not be included because they are definitely medical services. This resolution was introduced after action by the House of Delegates or the Ohio State Medical Association because of stated confusion and controversy in many group hospitalization plans.

The reference committee reported that it is advisable to define hospital facilities rather than to attempt a comprehensive definition of medical practice.

"It is recommended therefore that the contract benefit provided by group hospitalization insurance should be limited to the room, bed, board, nursing facilities and routine medicines ordinarily provided by hospitals.

Your reference committee would refer to the report of the Board of Trustees, page 22, principle 4, which was adopted by this House of Delegates. In that paragraph the limitations of hospital service are well defined. Your reference committee reaffirms this definition of hospital care and recommends its application to contracts for group hospitalization. In regard to certain benefits offered by many hospital insurance plans, combining professional and technical services, your reference committee is in complete sympathy with those who would make every possible provision to prevent inclusion of any and all types of service involving medical care.

It is the opinion of your reference committee that further conference between interested medical groups and the American Hospital Association would be of definite value in clarifying the twilight zone between hospital service and medical care.

The report of the Bureau of Medical Economics discussed group hospitalization plans at length. In considering the reasons leading to the formulation of principles for guidance of those seeking to establish group hospital plans, the Bureau report stated "Notwithstanding the efforts of medical societies and this Bureau, as well as the reports of the Judicial Council and the action of the House of Delegates on group hospitalization at the Kansas City session to develop principles for the guidance of the group hospitalization movement, few, if any, of the plans exclude all medical services from their group hospitalization contracts. The extent to which medical services are included in the hospital service contracts is shown in the report of the Bureau."

The report of the Council on Medical Education and Hospitals to the House of Delegates in 1937 stated "In cooperation with the Judicial Council, efforts are being made to secure information concerning the tendency of some hospitals to engage in the practice of medicine through the device of hiring physicians to care for patients while the hospital itself collects the fee for the services rendered."

In the same session the report of the Judicial Council stated "The 1935 House of Delegates recommended that the 'Council on Medical Education and Hospitals together with the Judicial Council, formulate a plan whereby all those associated in the delivery of medical service be included in the investigation of hospitals for classification and that approval be based in the future on the ethical practices in the institution as well as on its scientific work.'"

Consequently the Judicial Council met with the Council on Medical Education and Hospitals in February this year and after thorough discussion presented the basis of a plan for the desired cooperation of the two councils.

The problem, which involves many difficulties, will require some time for its solution."

Continuing, the report states "Economic subjects invariably involve ethical questions."

The report of the Judicial Council further discussed paragraphs from article VI, chapter III, Principles of Medical Ethics, referring to "compensation," "conditions of practice," "contract practice" and certain features or conditions which if present make a contract unethical. Minor changes were made chiefly in the order and heading of certain paragraphs. Section III was made to read "By the term 'contract practice' as applied to medicine is meant the carrying out of an agreement between a physician or a group of physicians, as principals or agents, and a corporation organization, political subdivision or individual, to furnish partial or full medical services to a group or class of individuals on the basis of a fee schedule, or for a salary or a fixed rate per capita." The House of Delegates approved the changes.

The 1938 session of the House of Delegates at San Francisco was given a large amount of factual material by the Bureau of Medical Economics as a result of the national survey of need for medical care. Group hospitalization was also reported on and a comprehensive study of "Group Hospitalization Insurance was published." The background for some unsatisfactory relations between hospitals and physicians was discussed and it was pointed out that efforts to improve hospital finances must not destroy the quality or opportunity for improvement of medical services. The following paragraphs are quoted as a clear statement of some reasons for opposition to dangerous tendencies "It is unethical, and therefore contrary to good public policy, for hospitals to participate in the practice of medicine in order to obtain an income to finance other hospital activities or to attempt to lower the cost of special medical services by methods that impair the quality of the service or prevent the development of an improved service. Where such a situation exists the patients may be overcharged for the medical services of the medical department, the medical specialists may be receiving an insufficient income, or the services may not be maintained at a proper standard because of the use of cheaper technical assistants or because of inadequate equipment or insufficient or underpaid personnel. The proper method of remuneration for the hospital and the physician should enable the hospital to provide adequate building, equipment and personnel without necessitating an attempt to control or to employ physicians and should permit the physician to schedule his charges so as to make it possible for all patients to have easy access to necessary special medical

services. In keeping with the ethics of the medical profession, both hospitals and physicians must place service first and financial considerations second."

The reference committee approved the report of the Bureau of Medical Economics and recommended that the ten principles adopted in 1937 as the policy of the American Medical Association be amplified by the addition of the following statements to principle four "If for any reason it is found desirable or necessary to include special medical services such as anesthesia, radiology, pathology or medical services provided by out patient departments, these services may be included only on the condition that specified cash payments be made by the hospitalization organization directly to subscribers for the cost of such services."

At the same meeting of the House of Delegates in San Francisco, Dr. Francis F. Borzell, Pennsylvania, introduced the following resolutions:

WHEREAS the American Medical Association has through its House of Delegates and its various bureaus and councils from time to time propounded certain principles of ethics and established standards of relationship looking toward the maintenance of the highest quality of professional service both in private practice and in hospitals, and

WHEREAS, Many of these pronouncements refer specifically to those special branches of medicine involving somewhat unusual relationship between hospitals institutions and the physician practicing these specialties in the hospital, and

WHEREAS Certain usages have sprung up which are tending to involve ethical and legal considerations and

WHEREAS It would appear to be highly desirable and in the best interests of good medical practice and sound public policy to have certain of the aforementioned pronouncements clarified, codified and in some instances reiterated, be it

Resolved, That the Council on Medical Education and Hospitals be requested to study the status of clinical and pathologic laboratories, radiologic departments and physical therapy departments in hospitals and institutions with a view toward standardizing the relationship of these services to these institutions and when necessary reaffirming principles of ethics involved in these relationships, and be it further

Resolved, That the Council be authorized to confer with such agencies as are deemed necessary to arrive at these conclusions

The Council on Medical Education and Hospitals, to which these resolutions were referred, reported as follows:

"The resolutions of Dr. Francis F. Borzell, Pennsylvania, Dr. Charles H. Goodrich, New York, and Dr. E. H. Skinner, Section on Radiology, which were referred to the Council on Medical Education and Hospitals, all dealing more or less with the same subject, were considered together. The proposers of these resolutions, the delegates from the Massachusetts Medical Society, members of the California Medical Association and others met with the Council to express their views concerning the problems that concern the practice of medicine in hospitals by radiologists, pathologists and anesthesiologists. These problems have been rendered more acute by the rapid extension of systems of group hospital insurance within the last few years.

"The Council believes that these problems are of vital concern to the medical profession, that unwise decisions at this time may lead to consequences that would be disastrous to physicians and to the public alike, and that, therefore, a serious study should be made of existing relationships between hospitals and the physicians practicing therein, especially in the departments of anesthesia, radiology, pathology and physical therapy, with a view to standardizing the relationship of these services to the hospital and, where necessary, of reaffirming the principles of ethics involved.

"The Council recommends that it, jointly with the Bureau of Medical Economics, be authorized to undertake these studies and to confer with other interested agencies in order that it may be in a position to establish ethical standards for the practice of medicine by physicians holding positions in hospitals and to prevent the exploitation of either the public or the profession. If during this study it is revealed that hospitals registered and approved by the Council are exploiting the public or the profession, such approval may be revoked."

At the 1939 session of the House of Delegates in St. Louis the Council on Medical Education and Hospitals reported that, owing to extra work created by the National Health Conference and action against the Association in the District of Columbia, the Council was not in a position to make a complete report on medical practice in hospitals in accordance with the instructions of the House of Delegates in 1938 but stated that an

agreement has been reached with a representative group of radiologists as to the definition of the function of the radiologist in the hospital." This definition is incorporated in the Revised Essentials of a Registered Hospital.

These Essentials of a Registered Hospital are familiar to you. Radiologic standards for service to the patients and educational purposes are clearly defined. It is stated also that "It shall not be the policy of the hospital to make a profit from the department of radiology." Conformance to the Principles of Medical Ethics of the American Medical Association is also required to become eligible for registration.

The Bureau of Medical Economics reported at length on the progress of Group Hospitalization Plans.

It was also reported that "The American Hospital Association at its last session approved the extension of hospital care insurance plans to include medical fees in hospital practice when the arrangements are approved by the local county medical society." It was stated also that a joint report of the three national hospital associations has suggested that federal legislation be sought to permit the licensing of hospital service corporations similar to the federal licensing of credit unions. It was contemplated that such federally licensed hospital service corporations would be the proper agencies to enter into contracts with the government for the hospital care of the indigent sick.

These matters were discussed at a conference of the board of trustees of the American Hospital Association and representatives of the Catholic Hospital Association and the American Protestant Hospital Association on the invitation of the Board of Trustees of the American Medical Association at the offices of the American Medical Association on Feb. 15, 1939. The following paragraphs are taken from the report to the House of Delegates: "Various matters of mutual interest to the groups represented were frankly discussed, and it was most gratifying to note that there was decided unanimity of opinion with respect to many phases of the general subject of medical care in hospitals even though there may be some differences between the basic policies of one or more hospital associations and those of the American Medical Association."

"Among questions that received consideration at this conference were those having to do with group hospitalization and an apparent tendency on the part of some of the hospital groups to include both special and general medical service in contracts offered to their members as well as other questions of major importance and present interest." During the conference the following resolution was unanimously adopted by the representatives of the three hospital associations:

"The representatives of the American Hospital Association, the Catholic Hospital Association and the American Protestant Hospital Association here present desire to express to the Board of Trustees of the American Medical Association their confidence in the leadership of the medical profession in furthering the excellence of medical service and in aiding the solution of problems of the distribution and provision of medical care."

At a later time the following resolution was approved by all those who participated in the conference:

"It is moved that the following be the sense of this meeting: This gathering of the Trustees of the American Medical Association with representatives of the American Hospital Association, the Catholic Hospital Association and the American Protestant Hospital Association expresses its gratification on the unanimity of opinion developed concerning many phases of the health problems of the nation achieved by mutual discussion. It is recommended to the American Medical Association, the American Hospital Association, the Catholic Hospital Association and the American Protestant Hospital Association that such joint meetings of their representatives be held for the consideration of problems of mutual concern."

It was not possible that all matters of mutual interest to those who participated in the conference could be fully considered nor did it seem wise to undertake at the time to examine minutely the reasons for some possible differences in the policies of all the organizations represented in the conference. There seemed to be unanimous agreement that the physician is supreme in the hospital in all matters pertaining to medical service rendered in hospitals.

A tabulation of information was submitted under the title of Economics of the Practice of Radiology in 1939. This was in response to a recommendation by the House of Delegates that a joint study be made by the Council on Medical Education and Hospitals and the Bureau of Medical Economics to determine the existing relations between the hospitals and physicians practicing in them. Departments of anesthesia, radiology, pathology and physical therapy were especially to be studied in order that ethical standards might be established to prevent the exploitation of either the public, the hospitals or the physicians.

This report was based on completed schedules returned by 876 out of 1,434 members of the four radiologic societies, the American Roentgen Ray Society, the American Radium Society, the Radiological Society of North America and the American College of Radiology. The tabulation contains much valuable factual material and has been made available to those interested.

The Council on Medical Education and Hospitals at the 1940 session referred to the report of the Economics of Radiology but stated that it was not yet in a position to make a final report on the practice of pathology, anesthesia and physical therapy.

Mobilization of the profession for army and civilian medical care and problems connected with medical education and personnel have prevented a complete resurvey of this matter by the Bureau of Medical Economics and the Council on Medical Education and Hospitals. However, information has been accumulated and reports have been made from time to time. Apparently no new principles are involved and present developments may be described as a continuation of tendencies previously pointed out.

The hospital associations have repeatedly restated their confidence in the leadership of the medical profession in maintaining high standards of medical service and in aiding in the solution of problems of distribution and provision of medical care.

In 1939 the American Hospital Association published the Principles of Relationship Between Radiologists, Hospitals and Pathologists. Those concerning the relationship of radiologists and hospitals are as follows:

1 The radiological service of the hospital shall be maintained primarily for the benefit of the sick.

2 Every hospital radiological department should be under the direction of a competent radiologist, preferably a diplomate of the American Board of Radiology or one who is working toward that objective. If, because of size or isolation, such arrangement be not feasible, some member of the general medical staff trained in radiology should be in charge and a consultation service arranged with a nearby radiologist.

3 The radiologist is entitled to recognition as a professional member of the medical staff and as head of a hospital department.

4 The preservation of the unity of the hospital and its component departments and activities is an essential administrative principle. This principle can be maintained without any infringement on professional rights or professional dignity.

5 Inasmuch as no one basis of financial arrangement between a hospital and its radiologist would seem to be applicable or suitable in all instances that basis should be followed which would best meet the local situation. This may be on the basis of salary, commission or privilege rental but in no instance should either the hospital or the radiologist exploit the other or the patient.

6 When an arrangement is effected whereby the radiologist of the hospital pays rental for space and service cares for non-pay patients and in return retains all private fees collected such contract should clearly cover the matter of depreciation of equipment, replacements and additions should protect the radiologist against excessive nonpay work and should take into consideration the good will by virtue of which a large proportion of the paying clientele is attracted.

These principles were reported to have had the approval of (1) the board or trustees of the American Hospital Association, (2) the Radiological Inter-Society Committee (officially representing the American College of Radiology, the American

Röntgen Ray Society, the Radiological Society of North America and the American Radium Society), (3) the Council on Medical Education and Hospitals of the American Medical Association and (4) the American College of Surgeons.

It was not stated that the following paragraph was submitted to the American Medical Association for approval:

"The American Hospital Association and the Radiological Inter-Society Committee view with disapproval the proposal that the actual cost of films and associated overhead be separated from the professional charges of the radiologist or that the responsibility for this department be divorced from the hospital. While in many instances this would be a financial relief to the hospitals it would probably result in frequent omission of the radiological consultation with a specialist in radiology, would mean less efficient radiological service with potential legal complications and would tend to create difficulties with national and other organizations requiring supervision of the radiological work by a competent radiologist."

The American College of Radiology prepared a "Manual of Desirable Standards for Hospital Radiological Departments" and this was submitted to the Council on Medical Education and Hospitals of the American Medical Association which was reported to have expressed accord with these statements on May 17, 1939. There is no record that the standards of this manual were approved by the various hospital associations. Fiscal arrangements are defined as follows:

Radiology is a special type of medical practice and the physician practicing radiology requires special training just as do his fellow medical and surgical specialists. His conduct shall be subject to the same principles of medical ethics (those of the American Medical Association) as govern his fellow physicians.

The practice of radiology in a hospital is essentially the same as in an office building. Assuming that the executive medical staff of the hospital has selected the radiologist or radiologists whom it regards as the most desirable for its institution, the said radiologist or radiologists should conduct his or their practice in respect to private patients just as do his or their colleagues. It is desirable that the physician bill his private patients on his own billhead, adjusting his fees according to the ability of his patients to pay and making his own collection arrangements. When for purposes of convenience, the fee is collected by the hospital cashier, it shall be done on the physician's billhead or under his name in order to comply with the professional nature of the service.

The fees charged for radiological services shall be under the control of the radiologist. All systems of rebates, discounts, etc., shall be considered unethical, except that, where the patient's economic status is the determining factor, the radiologist like his fellow physician in medicine or surgery, may waive part or all of the fee.

"In the average private hospital the most satisfactory arrangement is one in which the radiologist leases the space or space and equipment from the hospital, paying the latter a monthly rental therefor. The amount of the monthly rental should be determined after a fair appraisal of the cost for maintenance of the department by a cost accountant, and should include every reasonable item. Provisions should be made for an amortization fund for replacement of equipment, if this is owned by the hospital. Some institutions may find it more convenient to base the hospital cost upon a patient basis. In such cases the cost per patient should be determined and the radiologist practicing in the department should pay the hospital that amount for each private patient whom he examines or treats in the department. Under either of these plans the hospital is protected against any loss, and the medical staff is permitted to carry on its practice in the most ethical and satisfactory manner for all concerned.

"If, pending the clarification of details concerning the lease agreement, it is decided by the hospital and the radiologist that a percentage arrangement should be made, such an agreement may be ethically reached. Inasmuch as a hospital is not entitled to profit from the fees earned by physicians practicing in its purview, it should not be the policy of the hospital to make a profit from the x-ray department. However, the hospital should receive a reasonable interest return on its investment in space

and such equipment as it furnished. The percentage division should be applied to the gross receipts of the department and not the net, as this would give prima facie evidence that the hospital was enjoying a profit from the professional services rendered by those in the department. The distribution will vary according to the nature of the institution, the amount of charity work handled, the actual cost of maintenance of the department, and other items, in the great majority of institutions, however, the hospital's cost should be defrayed with 50 per cent of the gross receipts, or less.

"In a few institutions (for example, where all staff members are on a salary and such an arrangement is countenanced by the American Medical Association) it may be necessary to adopt a fixed compensation plan. This, however, is the least desirable of the three acceptable types of fiscal arrangement and provides opportunity for strife and misunderstanding between the medical staff and the hospital administration. While it may be possible in some institutions, under a salary arrangement for the radiologist directing the department to build and maintain an outstanding department with entirely adequate service, such is actually exceptional. The department will grow more rapidly in usefulness and competency if the radiological staff is permitted to practice as private practitioners instead of as salaried employees of the hospital.

In no instance and under no arrangement is a hospital corporation entitled to any portion of the net profits earned by the radiological staff in the practice of its profession. Under percentage and salary arrangements it is difficult to adhere strictly to this principle. Nevertheless, it can be done, and the accounts of the department should be reviewed frequently by the hospital administrator and the radiologist in order that adjustments may be made to take care of fluctuating conditions that could result in a profit or a loss to the hospital corporation. Where a percentage or salary arrangement is in use, the accounts pertaining to the roentgen department should, of course, be open to members of the radiological staff at all times.

"By adopting a rental arrangement or by adhering to the principles outlined above, there should be assurance that adequate personnel, equipment, and supplies will be available in the roentgen department at all times. Professional personnel should be added to the department as rapidly as the income permits. In the case of large and busy hospital radiological departments it will obviously be necessary for several radiologists to be on duty or on call at all times in order that adequate service may be maintained.

"In the case of teaching institutions where the bulk of the work in the department is free of clinic work, the cost of the latter should be borne as is the cost of the free or clinic work in other departments. In the great majority of hospitals the clinic work amounts to less than 30 per cent of the total work of the department, and under these circumstances the radiologist or radiologists should contribute his or their professional services as do their colleagues. However, in the case of large teaching institutions, where the heads of departments are customarily paid an honorarium for supervising and conducting the teaching and routine clinic work of their departments, it is obvious that similar arrangements should be made with the radiologists.

"FEES

"The fees charged for radiological services shall be under the control of the radiologists and should be within the range for the locality. They shall be treated as are other medical fees, that is to say, varied according to the ability of the patient to pay. It is contrary to the ethics of the American Medical Association for physicians to issue fee schedules, it is equally unethical for a radiologist to permit a hospital to issue a fee schedule, even though he is not issuing it himself.

"The manual quotes from the Manual of Hospital Standardization of the American College of Surgeons:

"Fee splitting is transaction for financial gain practiced under contract, understanding, or by consent—silent or spoken—through which a portion of the compensating fee that a specialist or practitioner receives from a patient (presumably for his own services) is paid directly or indirectly to another individual or agent who was influential or instrumental in bringing the patient to the specialist or practitioner for operation or treatment.

It is the duty of the hospital management to exercise continuous vigilance to prevent fee splitting under any guise. The institution which harbors fee splitting must share the guilt with the perpetrator of the crime, and the onus of guilt when question arises, is also shared by the hospital.

From the standpoint of medical and nursing education, a fee splitting atmosphere in a hospital is detrimental to the proper cultural development of the intern, the medical student, and the student nurse inasmuch as they are in the formative years of their professional lives. While technical training is vitally important, it can count for nothing without a good background of ethics and respect for scientific medicine. Professional ethics and ideals of vocation cannot be implanted and developed in an environment which condones fee splitting.

The evils of fee splitting are well known to the medical profession and to hospitals. They must realize that the best interest of the patient can be properly protected only when service rendered is ethical as well as efficient. In this respect the service must be entirely free from any element of commercialism. With the practice of fee splitting this is impossible for too frequently the monetary aspect is more influential than the guiding forces of scientific medicine.

GROUP HOSPITALIZATION

In this connection it is emphasized that medical services of any type must not be included as a part of hospitalization benefits. They may be included along with hospital benefits provided that direct cash payments are made to beneficiaries of group hospitalization said beneficiaries then to remunerate their radiologist for such services as he has provided. Radiologists shall not permit the inclusion of their services in any type of health medical or hospitalization insurance not approved by their local county medical society and state and national medical organizations. Only in this manner can the health and welfare of the public at large as well as of the patients in that particular institution be adequately protected. The radiologist shall at all times cooperate with the governing board of the hospital in the development of all recognized plans tending to lower the cost of medical care and improve the quality of medical diagnosis and treatment.

APPENDIX B

'Excerpt from Essentials of a Registered Hospital' by the Council on Medical Education and Hospitals of the American Medical Association

General Statement—Hospitals should be organized and conducted primarily for the purpose of providing facilities where the sick and the injured of the community may be given scientific and ethical medical care.

Registration is a basic distinction between all recognized hospitals and those that are refused recognition. It is a prerequisite to the consideration of a hospital for approval for interns or for residencies in specialties.

The registration of hospitals, the approval of hospitals for interns, approval for residencies in specialties, and all other service of the Association regarding hospitals is carried on by the Council on Medical Education and Hospitals. Separate essentials have been adopted for each of these types of approval.

It is the desire of the Council to cooperate in every way for the improvement of hospital service, whereby the sick and injured may be provided with scientific and ethical medical care.

The Council does not have nor does it assume legal authority over any hospital. It recognizes clearly that the officers in charge of such institutions have the unquestioned right to conduct the hospitals in any way they may deem wise. If a hospital desires to have its name appear on the American Medical Association Hospital Register and thus have the endorsement of the Association it should be willing to comply with the principles which the Council on Medical Education and Hospitals considers necessary.

Radiology.—The responsibility for all radiologic examinations must rest on the physician roentgenologist who is head of the department. His findings and conclusions for all examinations should be placed in the patient's chart. Nothing in this

provision should preclude additional study and interpretations by qualified attending physicians on the staff. 2 The physician-roentgenologist should be preferably one who is a diplomate of the American Board of Radiology or a physician whose qualifications are acceptable to the Council on Medical Education and Hospitals of the American Medical Association. 3 It shall not be the policy of the hospital to make a profit from the department of radiology.

APPENDIX C

Principles of Financial Relations in the Professional Care of the Patient

Excerpt from the 'Manual of Hospital Standardization,' American College of Surgeons

1 Each doctor who participates in the care of a patient is entitled to compensation from the patient commensurate with the services rendered.

2 Whenever practicable and possible the attending doctor should acquaint his patient with his financial responsibility to those concerned with his care.

3 Each doctor concerned in the care of a patient should give or send directly to the patient a detailed statement showing charges for professional services rendered.

4 Combined statements should be avoided, as they may constitute subterfuges for fee splitting.

5 Each doctor who participates in the care of the patient should send a personal receipt directly to the patient for all moneys received from the patient or other legitimate or authorized source.

6 In so far as possible, a third person should not enter into the financial relations between doctor and patient, and to this end hospitals should be discouraged from determining or collecting fees for doctors.

7 An exception to the foregoing principles must, of necessity, be made when there is a formally organized clinic or legal partnership which in effect may be regarded as an individual and which acts in that capacity. This principle should apply also when the clinic and hospital are combined and under the same ownership.

8 The practice of having the referring doctor act as assistant or anesthetist in an operation should be discouraged unless he is competent for either or both of these duties by virtue of his training and continuous experience.

9 A surgeon who has a regular assistant at operations may pay him directly. When the assistant has referred the patient to the operating surgeon he should follow the procedure outlined in paragraph 3.

The American Hospital Association sets up certain requirements in its Approval Program and Standards for Blue Cross Hospital Service Plans as follows: First Adequate Representation of Hospitals, the Medical Profession and the General Public. Trustees or board members of the hospital service plan should receive no remuneration for service as trustees or board members. The interests and the responsibilities of participating hospitals make it necessary that a majority of the policy making body be hospital trustees and administrators. Trustees or Board Members of the Hospital Service Plan should receive no remuneration. Second Nonprofit Sponsorship and Control are required. Third Free Choice of Hospital and Physician suggests that all institutions of standing should be given choice of hospital and physician. Fourth Hospital Responsibility for Service to Subscribers describes the economic responsibilities to subscribers. Fifth Accounting Records defines accounting methods. Sixth Adequate Statistical Records and Actuarial Data enumerates required statistical records. Seventh Adequate Financial Support and Working Capital refers to working capital and financial statement. Eighth Reapproval Based on Record of Community requires annual review for reapproval. Ninth Equitable Payments to Hospitals refers to hospital costs and community economic needs. Tenth Disincentive Promotion and Administration requires designed promotion recognizing professional ideals and sound practices. Eleventh Hospitals and adjacent Blue Cross plans suggests definition of territory. Twelfth Subscriber Benefits Based on Hospital

Practice reads as follows: "Hospital service provided through a hospital service plan should be determined by the practices of the member hospitals of the particular plan. Member Hospitals are urged to cooperate with Blue Cross plans in providing complete hospital care to service beneficiaries under the subscribers' certificates. Thirteenth, Noninterference with Professional Relationships: Hospital service plans should not interfere with existing relationships between physicians and patients. Fourteenth, General Policies: A hospital service plan should, in all respects, meet with the general approval of the Board of Trustees of the American Medical Association."

C. Rufus Korem, Ph.D., director of the Commission on Hospital Service of the American Hospital Association, quotes the following as part of a statement issued on June 18, 1936 by the trustees of the American Hospital Association:

"Present practices of hospital organization have been developed in response to public need, and for many years fostered by the professional associations of this country, including the American College of Surgeons, the American Medical Association and the American Hospital Association.

"More than 10,000 physicians are now employed by hospitals on a full time or part time basis for the care of the sick or for laboratory services. Such intimate relationships are particularly common in the laboratory and x-ray departments from which diagnostic services are requested by other physicians. The discontinuance of these relationships between hospitals and physicians would make it necessary for each patient to establish business relations with, and pay fees to, each physician contributing directly or indirectly to his care in the hospital.

"The primary obligation of the hospital is to provide and organize all the services necessary for the diagnosis, treatment and rehabilitation of the patient.

"Provision of medical services in hospitals is part of the responsibility of the hospital and is consistent with the rights, privileges and obligations of the hospital staff physicians under their medical licensure. The performance of diagnostic and therapeutic procedures by staff members constitutes the practice of medicine in hospitals; it is not the practice of medicine by hospitals.

The Bureau of Medical Economics of the American Medical Association in its report to the House of Delegates in 1933 stated: "The medical profession is opposed to any plan that will destroy the basic features of medical service or will permit hospitals to enter the practice of medicine. If hospitals are permitted to include medical care in their contracts for hospital service, the precedent is set for institutionalized contract medical practice with all its destructive effects on the art and science of medicine."

At the same meeting the Judicial Council reported the following: "Whether the scheme (meaning the group hospitalization) is or is not financially or economically sound is not the problem of our organization, but it is our business to see that the furnishing of medical service is not included in the sale of insured hospital accommodations. This can be done if a strong stand is taken and maintained by the organized medical profession, which must keep a watchful eye to see that medical care is not initially or later included when the usual sales efforts demand increased benefits to purchasers. At the Atlantic City meeting of the House of Delegates in 1942 a resolution on Medical Service Plans, introduced by Dr. Charles E. Mongan, Massachusetts, carried the following: "Resolved, That the state and county units of the American Medical Association in undertaking medical service plans at the behest of the parent organization will have their hand supported if medical service contracts as well as cash indemnity contracts are given equally frank direct approval by the House of Delegates."

The reference committee recommended that the following resolution be adopted in substitution of the original resolution introduced by Dr. Mongan: "Resolved, That the House of Delegates of the American Medical Association approves that principle of medical service plans on a service basis when sponsored by a constituent state medical association or a component county medical society in accordance with the recommendations relative to medical service plans adopted by the House of Delegates."

There is a very close association between Blue Cross Hospital Plans and medical service plans in many places and it is reported that in some communities the hospital plans collect from subscribers to medical service plans sponsored by medical societies. The method of payment to physicians varies. The extent to which approval of some Blue Cross Hospital Plans by county medical societies as referred to in the resolution adopted by the House is equivalent to sponsorship of methods of providing medical service contrary to principles adopted by the House is subject to question. It must be recognized that many of the plans sponsored by component county or constituent state societies are based on legislation in which directing boards are made up of lay and professional members. In many instances the professional members are in the minority, and the interpretation of the authority and methods to which sponsorship was voted becomes still more confused. Without the examination of the legal background and organization structure in each of the local communities it would be impossible to judge the status of the individual plans from the basis of the principles set up by the House of Delegates.

The record of official actions, approved principles, published reports and manuals for guidance in formulating policies and plans were presented for the purpose of comparison and better appraisal of conditions now existing. Conferences were arranged by the Board of Trustees including the American Hospital Association, the Catholic Hospital Association, the Protestant Hospital Association and representatives of the Inter-Society Committee for Radiology and the American College of Radiology.

Existing relations between radiologists and hospitals were discussed. It was stated that about 9 per cent of the radiologists lease the department from the hospital on a fixed rental basis. Approximately 37 per cent of all radiologists are employed on a salary basis by the hospitals in which they work. The remaining 54 per cent share the gross receipts or net receipts with the hospitals. In some instances this is a combination of fixed salary and percentage. Therefore in about 9 per cent of contracts the radiologists employ or appoint and pay their own assistants. In almost all the other plans the hospitals employ the technicians. In the roughly 37 per cent of instances in which the radiologists operate the department on a percentage basis the hospitals employ and pay the technicians. In some instances the radiologists are given the responsibility of selecting and discharging their technical assistants, but the hospital pays the employees.

It was estimated by the representatives of the radiologists that not more than 19 per cent of the radiologists collect the fees of their own departments in hospitals. That estimate included the 9 per cent who operate the department as tenants. Therefore 10 per cent of those operating on a salary or commission or combination plans collect bills for their services. It is obvious that 90 per cent of the radiologists referred to are employed in some plan of contract practice.

In discussion of the medical ethics involved, it was noted that the Principles of Medical Ethics states that "contract practice, per se, is not unethical. However, certain factors or conditions if present make a contract unethical." The section continues with an enumeration of many factors which determine the ethical or unethical character of the relations. The concluding paragraph of section 3 reads: "Each contract should be considered on its own merits and in the light of surrounding conditions. Judgment should not be obscured by immediate, temporary or local results. The decision as to its ethical or unethical nature must be based on the ultimate effect for good or ill on the people as a whole."

In a recent communication by the president of one of the larger hospital service plans it was stated that "the present hospital practices and traditions were evolved over the years through the cooperation of hospital administrators and their medical staffs long before the advent of the plan. The plan at no time since its inception has attempted to direct hospital practices. The sole function of the plan is to act merely as a medium whereby hospital services may be provided to the public on a budgetary basis. The hospital services are identical both for plan subscribers and for nonsubscribers."

"It is not possible for the plan to dictate hospital or medical practices. It would seem desirable that the formulation of

hospital and medical practices should remain the responsibility assumed by the medical profession and the hospital administrators. Would it not be in the best interest of the modern practice of medicine if medical problems arising in hospital practice could be carefully studied and solved through the cooperation of local hospital associations and the county medical societies?"

Continuing in part, it was stated. One of the basic and best features of the plan would be destroyed if the recommendations proffered by the Joint Council resolution were to be put into effect, in that is at all possible. If subscribers were required to pay professional fees for all x-ray, laboratory and anesthesia services rendered in the hospital there would be but half a plan and probably no plan at all after a short period. If the plan were to pay for those services on an individual fee basis this would prove unsatisfactory because of the varying rate schedules among our member hospitals and enormous difficulties of control.

The main problem, it seems to me, is the lack of uniformity in hospital practices to say nothing of the lack of uniform accounting.

It may be possible to enumerate the individual charges for x-ray and laboratory examinations, etc., and to make this information available to the physician rendering such services. In any event, A. H. S. is always eager to extend to the medical profession the utmost cooperation in the solution of mutual problems."

Eleven million people are reported at this time to be subscribers to Blue Cross Hospital Plans. Of the seventy-seven plans to which this group are subscribers 50 per cent include as a part of the hospital service the service of doctors and 90 per cent of the hospitals are including radiology as a part of the hospital service.

Hospital representatives as well as the statements of those responsible for the policies of the Blue Cross plans call attention to the standards for approval and note that they are not so organized that they can control local groups or plans, that the local plans should follow local community practice and that even if a local group were refused approval in the Blue Cross plan it could still continue to operate.

However, it has been reported that a uniform national contract has been proposed by the Commission on Hospital Service of the American Hospital Association recommending to all Blue Cross plans the inclusion of complete pathologic service, anesthesia and radiology to the amount of \$15. The manner in which this inclusion is to be financed merits discussion.

The public hospital should not use the hospital created monopoly control of radiologic service as a source of profit beyond the normal provision for replacement department development and proper proportion of over-all costs of operation of the hospital. Nor can it rightfully use per diem charges against all of the hospital patients to support a radiologic department devoted to creating bargains in radiologic service in order to make hospital group insurance attractive. On the other hand, the radiologist should not use the hospital created monopoly in such manner as to effect for himself an unfair profit or to permit deterioration of equipment and service.

Hospitals or radiologists employing personnel may be responsible for impairment of standards of radiologic work and exploitation of the public by not providing sufficient medical attention to the patient and by delegation of too much responsibility to technicians in their efforts to care for a large volume of patients with the least expense in professional personnel.

The Council on Medical Education and Hospitals of the American Medical Association does not have the authority to police hospitals considered for intern training. It inspects them only as to educational standards and facilities. Although this Council must give attention also to unethical practices in the hospital it is not in a position to rule on a question of such magnitude as the contractual relations of the radiologic departments in hospitals.

Hospital plans should be sold on their own merits. The statement that because of their unpredictable costs radiologic fees must be included to make the plans more attractive suggests that hospital plans cannot well be sold on their own

merits. This is not borne out by experience in communities in which the Blue Cross Hospital Plans do not include services of radiologists.

Administrators of the large group hospitalization plans and administrators of hospitals operating under these plans are beginning to recognize the abuses that develop. One state with a medically sponsored plan has concluded to discontinue the laboratory features because of the demand for unnecessary radiologic service. Many insured patients take the attitude that in carrying the insurance they have acquired the right to demand every service that the plan provides whether the attending physician deems it necessary or not.

Another abuse that is increasing greatly is that of applying for hospitalization for treatment of some condition for which laboratory study and x-ray examination have been advised. The subscriber remains in the hospital only the number of hours necessary for these examinations and then leaves the hospital. Some plans have endeavored to prevent this abuse by stipulating in their contracts that hospital service benefits will not be extended in those instances in which subscribers are admitted primarily for diagnostic x-ray or laboratory examinations or other diagnostic studies. Despite efforts to enforce this provision so that subscribers do not receive benefits for procedures which do not require hospital bed care and which could be performed by a physician outside the hospital, the abuse is increasing and cannot be completely prevented. Only the most complete cooperation of the physicians and hospitals can save these plans from steadily increasing abuses.

Hospital boards and administrators need guidance and support in maintenance of medical standards, necessary discipline and regulation of hospital practice, and formulation of policies. A medical staff acting as a committee or the whole made up of specialists may not be interested in dealing with the multitude of problems of hospital operation or care to give time or thought to its policies. A smaller group, advisory committee, appointed by the board of trustees and acceptable to the staff is often needed. Very many hospitals have similar plans of organization and find them useful in meeting the multitude of problems accompanying the rapid evolution of hospitalization.

Advisory committees can give valuable advice and guidance to lay boards and support to administrators and can assist the boards in presenting the problems of institutional operation to the medical staffs. In turn these advisory groups may give more time and thought to medical practices in the hospital and assist in interpreting the medical thought of the staff to the administrators and boards. Such advisory committees can also be better informed and helpful in discussing hospital policies in conference with county medical societies.

This is not a detached matter but is only one portion of the broader subject of hospital-physician relationship. Hospitals are buildings and equipment with trained personnel and are useful only when their facilities are utilized by physicians for the treatment of patients. Physicians in turn cannot give medical service of high standard without the facilities provided by hospitals. Therefore they must continue to cooperate as in the past, unselfishly, in promoting the development of scientific methods and sound practices directed to better care of the sick without exploitation of each other or the patients they treat.

Each community has its own peculiar problems and the answers are necessarily influenced by geographic location by educational factors, by economic limitations, by customs, community prejudices and influential personalities. These factors cannot be fairly evaluated by individuals at distant points who are not familiar with them. Patterns as outlined by general principles are national. Details are essentially local. The application of the code of ethics to local relationships and practices is a local responsibility.

Action of the House of Delegates at each meeting throughout a period of ten or more years as reported must be recognized as evidence that action of the House declaring certain conditions of practice unethical is not sufficient to correct them. Any remedy must depend on the acceptance of basic principles and their application to local problems by the whole medical profession of that community. It is noted that little reference has been made at any time to representation of the physician who is responsible for admission of the patient to the hospital although he requests the radiologic service and thus presumably

represents the patient to some extent in that transaction. Too often it is assumed that the hospital and the radiologist are the only ones interested.

Inasmuch as radiology must be a monopoly in the hospital, the position of the radiologist and the department of radiology is somewhat different than that of other specialties, such as surgery and medicine. The standards and conduct of that monopoly are, however, a matter of interest to all physicians who must depend on that department in making decisions of the utmost importance to their patients and themselves.

Many hospital representatives have indicated that they may change their group hospitalization plans and place the radiologist on the same plane as any other physician, making a definite charge for use of equipment and technical service. Necessary supervision of technical service is to be provided by the radiologist on a salary basis. Consultant service is to be charged to the patient by the radiologist and preferably be collected by him. Some hospital representatives state they prefer not to have radiologic charges appear in the population mind as costs of hospital care.

It is the considered judgment of some good observers that the expansion of the activities of hospitals into the practice of medicine by increased employment of medical personnel could inevitably lead to necessary legal restrictions and other changes. These changes would be of such character as to destroy eventually the present status of hospitals as independent agencies providing high standards of facilities for care of the sick.

In considering the present status of the radiologist it is evident that he cannot occupy the triple position of an employee of the hospital, a partner participating in the profits of the department through sharing its receipts, and still retain the position of an independent contractor with the patient, such as pertains in the accepted patient-physician relationship. The situation becomes more involved when the hospital partner sells its services and his to the public through another agency—group hospitalization. Loss of his professional identity to the public makes his future dependent entirely on his employer. This statement cannot be construed as in opposition to group hospitalization to which medical approval has been given repeatedly. However, the Board of Trustees has been requested to make efforts to clarify the relationship of radiologists, anesthesiologists, pathologists and others with hospitals. The relations differ somewhat in each group. Radiologists and hospitals have been discussed here. Other studies may follow.

In 1937 the House of Delegates approved the following principle: "The subscriber's contract should exclude all medical services; contract provision should be limited exclusively to hospital facilities." Certainly this statement is clear and, until changed by the House of Delegates, represents the policy of the American Medical Association. An unselfish and realistic approach to the problem by all concerned would do much to hasten a not impossible solution of the problems under discussion.

Report of Judicial Council

Dr. George Edward Follansbee, Chairman, presented the following report, which was referred to the Reference Committee on Amendments to the Constitution and By-Laws:

To the Members of the House of Delegates of the American Medical Association

The activities of the Judicial Council during the past two or three years have been confined largely to acting on applications for Fellowship and to the consideration of inquiries submitted by individuals or groups. There have been almost no appeals from disciplinary actions of constituent associations for the Council to adjudicate. This is quite different from the situation five to ten years ago, when component county medical societies and constituent state medical associations were sensitive to infractions of their by-laws and the Principles of Medical Ethics and were active in bringing offenders to account. During that period the Council was seldom without an appeal to be heard from a decision by a constituent association. The question naturally arises as to the causes underlying such a condition. Are our organized societies more actively governing the ethics of the practice of their membership or has the stress of the times resulted in indifference to our ethical principles?

It might be inferred from the number and the nature of the problems which have come up for decision by the Council in the last two or three years with respect to Fellowship that in

many instances a more or less complete disregard for the principles of ethics has been exhibited by individual members and that societies having original jurisdiction have failed to take proper action. The Constitution of the American Medical Association provides that the judicial power of the Association shall be vested in the Judicial Council and "shall extend to and include all questions involving Fellowship in the Scientific Assembly or the obligations, rights and privileges of Fellowship." The By-Laws provide that any member properly qualified by education and the payment of current annual Fellowship dues shall, on application, "be inducted into the Association as a Fellow unless the application is disapproved by the Judicial Council." The time of the Council at its meetings held in the interim between the annual meetings of the House of Delegates has been largely occupied in considering applicants for Fellowship about whom the biographic file of the Association contains some information which the Council feels must be satisfactorily explained before it can approve the application for Fellowship. The Council makes no "snap" judgments on these applications. The information appearing in the file is transmitted to the applicant, and he is asked to make any statement he desires to the Judicial Council, which is considering his application. When such statement is received, the matter is then fully investigated by correspondence, which often extends over a period of several months or even years. Frequently the applicant asks to be heard by the Council, which request is always granted. The persistence with which these applicants pursue their endeavors to become Fellows is the best evidence of the value that the profession in general places on Fellowship in good standing in the American Medical Association. Many such applications are disapproved. It also may be said, in passing, that reference to the constituent state or component county medical society where the applicant resides and practices in many instances fails to obtain any information or, in some instances, even a reply!

In these times of war with regulation of living, working, traveling, eating, spending, saving and almost everything except thinking, it is probably inevitable that the moral tone of the whole world has suffered to a greater or lesser degree. It could hardly be otherwise when we consider that the brutality of the present most destructive war of lives and property is in progress. The medical profession is less involved in this destruction than is the great percentage of the people of the world. This we should expect whether in peacetime or wartime.

We know that from the time of Hippocrates, the "Father of Medicine," the practice of the healing art has had ethical ideals and obligations higher than any other occupation or profession. It has always, since that time, been the duty of the physician to make the welfare of his patient his first consideration. That is the basic principle in our Principles of Medical Ethics. Every member of our organization is in duty, and by his own consent, bound by them, and those of our profession who are not members of our organization accept them as their guide to right action.

Very probably the maelstrom in which we are all living is confusing our morals, this also may explain the condition which the Council believes to exist, but it does not excuse it. It must always be remembered that the medical profession has gained and maintained its present position of high favor in public opinion through the exercise of these principles of right action through hundreds of years of growth since Hippocrates wrote his famous oath. Let us not, as individuals or as an organization, by either wilfulness, carelessness or indifference jeopardize the fair reputation our profession has built.

Respectfully submitted,

GEORGE EDWARD FOLLANSBEE, Chairman
JOHN H. O'SHEA
EDWARD R. CUNNIFFE
WALTER F. DONALDSON
LLOYD NOLAND

Report of Council on Medical Education and Hospitals

Dr. Charles Gordon Heyd, Acting Chairman, presented the report of the Council on Medical Education and Hospitals as presented in the Handbook, together with the following supplementary report, all of which was referred to the Reference Committee on Medical Education.

SUPPLEMENTARY REPORT OF COUNCIL ON MEDICAL EDUCATION
AND HOSPITALS ON ESSENTIALS OF ACCEPTABLE SCHOOLS

The Council on Medical Education and Hospitals presents herewith for ratification by the House of Delegates the following Essentials

1 Essentials of an Acceptable School for Clinical Laboratory Technicians The only change that was made was in the first sentence in the second paragraph under the heading III Faculty

2 Essentials of an Acceptable School for Physical Therapy Technicians These essentials have been completely revised

3 Essentials of an Acceptable School of Occupational Therapy These essentials have been completely revised

4 Essentials of an Acceptable School for Medical Record Librarians In June 1942 a resolution was introduced to the House of Delegates requesting that the American Medical Association inspect and approve or disapprove present and future schools for the training of medical record librarians This matter was referred to the Board of Trustees, which subsequently voted that the Council on Medical Education and Hospitals be asked to supervise the inspection of such schools In accordance with this request, the Council has now completed a survey of ten medical record librarians schools and has prepared Essentials of an Acceptable School for Medical Record Librarians which are submitted herewith for ratification by the House of Delegates

Respectfully submitted,

RAY LYMAN WILBUR, Chairman.
RUSSELL L. HADEN
CHARLES GORDON HEID
J. H. MUSSER
HARVEY B. STONE.
REGINALD FITZ
H. G. WEISKOTTEN, Secretary

1 ESSENTIALS OF AN ACCEPTABLE SCHOOL FOR CLINICAL
LABORATORY TECHNICIANS

PREPARED BY THE COUNCIL ON MEDICAL EDUCATION AND
HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION
WITH THE COOPERATION OF THE AMERICAN
SOCIETY OF CLINICAL PATHOLOGISTS

PREAMBLE

Two organizations are primarily concerned with the training of clinical laboratory technicians the Council on Medical Education and Hospitals of the American Medical Association and the Board of Registry of Medical Technologists of the American Society of Clinical Pathologists The Council functions by inspecting, reporting and approving these schools while the Board of Registry investigates and certifies the competency of the technicians

The Council with the cooperation of the Board of Registry, has promulgated standards for this type of training for the information of physicians, hospitals, prospective students and others and for the protection of the public

Technicians are being trained in these schools to work under the direction of qualified physicians and not as independent practitioners of laboratory work

I ADMINISTRATION

1 Acceptable schools for training laboratory technicians may be conducted by approved medical schools¹ by general hospitals or by state health laboratories affiliated with hospitals where the majority of the student's practical training is received This arrangement should not discourage affiliations between the hospital and universities colleges public health laboratories or other hospitals

2 All training of technicians shall be under competent medical control

3 Sources for continued operation of the school should be insured through regular budgets gifts or endowments but not entirely through students' fees Experience has shown that com-

mmercial schools operated for profit frequently do not adhere to proper ethical and educational standards and therefore are not acceptable

II ORGANIZATION

1 Adequate space, light and modern equipment should be provided in the laboratory department A library containing up-to-date references texts and scientific periodicals pertaining to clinical laboratory work and pathology should be maintained, or be readily accessible to the institution

2 Satisfactory record systems should be provided for all work carried on in the department Monthly and annual classifications of the work of the department should be prepared

3 Transcripts of high school and college credits and other credentials must be available Records should be kept of each student's attendance and grades as well as the number and type of tests performed In addition a synopsis of the complete curriculum should be on file in the office of the laboratory director This curriculum should include the rotation of assignments, the outline of instruction supplied by the laboratory and a list of the prepared specimens which are used to augment the experiences of the student

4 At least two or more students should be enrolled in each class Approval is automatically withdrawn if a school does not have any students for a period of two years, unless a satisfactory reason for this is given

III FACULTY

1 The school should have a competent teaching staff The director must be a graduate in medicine who holds the certificate of the American Board of Pathology or who has had the equivalent in training and experience He shall take part in and be responsible for the actual conduct of the training course He shall be in daily attendance for sufficient time to supervise properly the laboratory work and teaching

2 In laboratory practice the enrolment should not exceed two students to each member of the teaching staff The staff should include not less than one salaried instructor who is a registered technician or eligible for registration, in addition to the laboratory director In order to be considered as an instructor, a technician must have had three years of experience while members of the hospital staff or visiting instructors must have regular assignments that cover a complete course prescribed in the Essentials

IV PREREQUISITES FOR ADMISSION

Candidates for admission should be able to satisfy one of the following requirements

(a) Two years of college work, including chemistry and biology from an accredited college or university

After Jan 1, 1943, this requirement shall read Two years of college work including general chemistry, quantitative chemistry and biology from an accredited college or university Bacteriology may be substituted for biology Organic chemistry and physics are highly recommended

(b) Graduation from a school of nursing recognized by the state board of nurse examiners and in addition college chemistry

After Jan 1 1943 requirements for nurses shall include one year of college work—30 semester hours (45 quarter hours)—including courses in chemistry and biology

V CURRICULUM

1 The course of training should be not less than twelve months in duration and should include the following subjects biochemistry hematology bacteriology parasitology histology, and serology The training should also include a course in record keeping

2 The instruction should follow a planned outline similar to the Model Curriculum of the Board of Registry of Medical Technologists and should be accomplished by text assignments lectures or informal discussions demonstrations supervised practice quizzes and written oral and practical examination

¹ Ratified by House of Delegates in June 1942

VI CLINICAL MATERIAL

Each student should receive practice training, adequate in kind and amount, under competent supervision, in a hospital laboratory. The hospital should be registered and be otherwise acceptable to the Council on Medical Education and Hospitals of the American Medical Association and have a minimum of 2,000 yearly admissions. A sufficient amount of clinical material should be available to permit the student to comply with the requirements of the Board or Registry. If the hospital is not able to supply all of this material through its routine tests and examinations, artificial mediums should be provided.

VII ETHICS

1 Exorbitant fees and commercial advertising should be considered unethical.

2 Schools conducted primarily for the purpose of substituting students for paid technicians will not be considered for approval.

2 REVISION OF ESSENTIALS OF AN ACCEPTABLE SCHOOL FOR PHYSICAL THERAPY TECHNICIANS PREPARED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

I ORGANIZATION

1 Acceptable schools for training physical therapy technicians should be conducted by accredited universities, medical schools, colleges or hospitals.

2 The Council has promulgated standards for this type of training to supply physicians, hospitals and prospective students with reliable information and for the protection of the public.

3 Responsibility for schools in hospitals should be placed on the hospital administration rather than the director of the department. In colleges and universities this responsibility is on the controlling board as for other schools or departments.

4 Resources for continued operation of the school should be insured through regular budgets, gifts or endowments, but not entirely through students' tuition fees. Experience has shown that commercial schools operated for profit frequently do not adhere to proper ethical and educational standards and are not acceptable.

5 There must be available records of high school, college work and other credentials of students. Attendance and grades of students together with a detailed analysis of their clinical experience shall be carefully recorded, by means of which an exact knowledge may be obtained regarding each student's work.

6 At least four students should be enrolled in each class. One or more classes may be enrolled each year.

II FACULTY

7 The school should have a competent teaching staff. Appointments should be based on thorough education, training and experience. The course of instruction shall be under the direction of a graduate in medicine who is qualified in the field of physical therapy. The staff should include not less than one qualified salaried instructor and in each institution where clinical practice is carried on not less than one qualified physical therapy technician for each six students. The question of full time and part time appointments is not as important as the qualifications of the instructors, who should be specialists or exceptionally well trained and well qualified in the lines they are teaching.

III FACILITIES

8 Provision should be made for each student to receive clinical practice adequate in kind and amount under the supervision of a physician qualified in physical therapy in a hospital or other institution acceptable to the Council on Medical Education and Hospitals of the American Medical Association.

9 Adequate equipment should include anatomic charts, models and other aids to effective teaching. It is suggested that the student dissect at least a lateral half of the human cadaver or have the benefit of demonstrations of such dissections, supplemented by the use of the skeleton and disarticulated bones.

10 A library of adequate space and availability and containing up to date references, textbooks and scientific periodicals pertaining to physical therapy should be maintained.

IV ADMINISTRATION

11 There should be careful and intelligent supervision of the entire school by an executive officer who, by training and experience, is fitted to interpret the prevailing standards in physical therapy education, with sufficient authority to carry them into effect.

12 The admission of students to the physical therapy school must be in the hands of a responsible committee or examiner, whose records shall always be open for inspection. Documentary evidence of the student's preliminary education should be obtained and kept on file. When the physical therapy school is an integral part of the university, this work usually devolves on the university examiner.

V REQUIREMENTS FOR ADMISSION

13 Candidates for admission should be able to satisfy one of the following requirements:

- Graduation from an accredited school of nursing
- Graduation from an accredited school of physical education
- Two years of approved college training including satisfactory courses in biology and other sciences

Courses in general physics and chemistry, as well as biology, are highly recommended for all who seek to enter training in physical therapy.

14 Advanced standing may be granted to students for work done in other acceptable physical therapy schools or hospital departments, provided the entrance requirements and other essentials herein set forth have been met. Official verification of the student's previous physical therapy work should be obtained by direct correspondence with the schools previously attended, and his preliminary qualifications should also be verified and recorded in a similar manner as for the first year students.

15 Health—All applicants should be required to submit a physical health report including evidence of successful vaccination. All students should be given a medical examination under the supervision of the official school physician as soon as practicable after admission and this examination should include a roentgen examination of the chest.

VI PUBLICATIONS

16 The school should issue, at least annually, a bulletin setting forth its organization, resources, entrance requirements, tuition fees, clinical facilities, affiliated hospitals, a detailed description of the courses, and the names of the members of the faculty with their respective qualifications.

VII MINIMUM CURRICULUM

1 Length of Course—The minimum length of full time training for the course should be thirty-six weeks.

2 Distribution of Time

Subject	Clock Hours		Qualifications of Instructors
	Theory	Practice	
a Applied Sciences		210*	MD or other instructor qualified in specialty
Anatomy	30		
Pathology	30	45	
Physiology	15		
Psychology			
Physics	Correlated with other subjects		
b Procedures	25	40	Qualified technician
Electrotherapy	5	5	
Radiation therapy**	5	15	
Hydrotherapy	10	45	
Massage	30	75	
Therapeutic exercise			
c Physical Therapy as Applied to			MD for theory Qualified technician for practice
Medicine	15	30	
Neurology	10	15	
Orthopedics	15	30	
Surgery	15	30	
d Ethics and Administration	5		Qualified technician
e Electives		50*	MD and qualified technician
f Clinical Practice		400*	
Totals	210	660	330
	1,200 hours		

* Theory and Practice

** X-ray and Radium Therapy not included in course for physical therapy technicians.
Suggested electives: asepsis, bandaging, first aid, history of physical therapy, hygiene, joint measurements, journal club, public health, routine, occupational therapy records, social service.

3. ESSENTIALS OF AN ACCEPTABLE SCHOOL OF OCCUPATIONAL THERAPY PREPARED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

PREAMBLE

Two organizations are primarily concerned with the training of occupational therapists—the Council on Medical Education and Hospitals of the American Medical Association and the American Occupational Therapy Association. The Council establishes standards, inspects and approves schools and publishes lists of acceptable schools. The American Occupational Therapy Association is concerned with the promotion of educational activities and the registration of qualified therapists.

The Council, in cooperation with the American Occupational Therapy Association, has established standards for this type of training for the information of physicians, hospitals, schools, prospective students and others, and for the protection of the public.

Therapists are being trained in these schools to work under the direction of qualified physicians and not as independent practitioners of occupational therapy.

I ORGANIZATION

1 A school of occupational therapy should be incorporated under the laws regulating nonprofit organizations. The control should be vested in a board of trustees composed of public spirited individuals having no financial interest in the operation of the school. The trustees should serve for reasonably long and overlapping terms. If the choice of trustees is vested in any other body than the board itself, this fact should be clearly stated. Officers and faculty of the school should be appointed by the board.

2 Affiliation with a college, university or medical school is highly desirable but is not an absolute requirement. When such an affiliation exists, an advisory committee should be established including representatives from the school and from the departments of the college, university or medical school which participate or cooperate in the teaching of occupational therapy.

3 Hospitals are required for clinical practice but should not attempt to operate a school of occupational therapy independently.

II RESOURCES

Experience has shown that an adequate school of occupational therapy cannot be maintained solely by the income from students fees. No occupational therapy school, therefore, should expect to secure approval which does not have a substantial additional income.

III FACULTY

The school should have a competent teaching staff, graded and organized by departments. The staff should include, among its regular salaried instructors, an administrator or coordinator of the course who should be a registered occupational therapist or eligible for registration preferably employed on a full time basis. In addition to professional training it is desirable that the administrator should possess an academic degree.

IV PLANT

1 The physical plant should provide adequate lecture rooms, class laboratories and administration offices. Equipment should be adequate for efficient teaching in the various departments.

2 A library of adequate space and availability and containing standard texts and leading periodicals in occupational therapy should be provided.

V ADMINISTRATION

1 Supervision—There should be careful and intelligent supervision of the entire school by a director or administrator with sufficient authority to maintain the established standards.

2 Records—There should be systematic records showing credentials, attendance and grades of the students.

3 Credentials—The admission of students to occupational therapy schools should be in the hands of a responsible committee or examiner. Documentary evidence of the student's preliminary education should be obtained and kept on file.

4 Advanced Standing—At the discretion of the administration, advanced standing may be granted for work (or experience) required in the occupational therapy curriculum which has been done in other accredited institutions. Official verification of

previous work (or experience) should be obtained by direct correspondence. Preliminary qualifications should also be verified and recorded.

5 Number of Students—The number of students admitted to the training course should be limited by the facilities of the school. In practical work of a laboratory nature the number of students that can be adequately supervised by a single instructor is, in general experience, about fifteen, in lectures the number may be larger. A close personal contact between students and members of the teaching staff is essential.

6 Discipline—Each training school reserves the right to drop a student at any time for any cause which the school authorities deem sufficient.

7 Publications—The school should issue, at least biennially, a bulletin setting forth the character of the work which it offers. Such an announcement should contain a list of the members of the faculty with their respective qualifications.

VI PREREQUISITES FOR ADMISSION

1 Education—Colleges offering training courses in occupational therapy which are combined with work leading to a bachelor's degree should require the candidates for this combined course to comply with the regular entrance requirements of the school concerned. Other candidates should furnish proof of having completed one year of college education or its equivalent.

2 Character—All candidates should be required to present evidence of good character, general fitness and emotional stability.

3 Health—All applicants should be required to submit a physical health report including evidence of successful vaccination. All students should be given a medical examination under the supervision of the official school physician as soon as practicable after admission and this examination should include a roentgen examination of the chest.

VII CURRICULUM

1 Length of Course—The minimum length of full time training for the course should be one hundred weeks. The course should include not less than sixty-four weeks of theoretical and technical instruction and not less than thirty-six weeks of hospital practice training as set forth in succeeding sections.

2 Distribution of Time—The period devoted to theoretical and technical training should include not less than sixty semester hours, of which not less than thirty semester hours should consist of didactic instruction and not less than thirty hours of technical instruction in therapeutic activities.

The curriculum should be so arranged that students placed in hospitals for practical training before the completion of their theoretical and technical instruction should have covered those portions of the curriculum which pertain to the clinical fields to which they may be assigned for practical instruction.

(a) Theoretical. The hours devoted to theoretical training should be still further subdivided as follows:

Required Subjects	Semester Hours
(1) Biologic Sciences to include Anatomy Kinesiology Neurology Physiology Psychiatry Psychology	15
(2) Social Sciences to include Sociology Individual Readjustment Social and Educational Agencies	4
(3) Theory of Occupational Therapy to include Interpretative courses covering the principles and practice of occupational therapy in relation to orthopedics, pediatrics, tuberculosis, psychiatry, general medicine and surgery and other special fields	4
(4) Clinical Subjects to include Blindness and Deafness Cardiac Diseases Communicable Diseases General Medical and Surgical Conditions Orthopedics Tuberculosis	4
(5) Electives	3
Total	30

(b) **Technical** Because of the increasing demands of the medical profession for qualified therapists trained in special fields applicable to the education and training of disabled persons as well as to the treatment of the sick, there should be a certain amount of flexibility in technical requirements.

A minimum of 30 semester hours should be devoted to technical training. The major portion of these thirty semester hours may be in one of the following fields, with survey courses in the other fields:

- (1) Arts—Fine and Applied Design, Leather, Metal, Plastics, Textiles and Wood
- (2) Education—Special and Adult, Home, Economics and Library Science
- (3) Recreation—Music, Dramatics, Social Activities, Gardening and Physical Education

(c) **Clinical Training.** The time devoted to clinical training should be not less than thirty-six weeks in the following types of hospitals:

Mental hospitals	Not less than eight weeks
Tuberculosis sanatoriums or services	Not less than four weeks
General hospitals	Not less than four weeks
Children's hospitals or services	Not less than four weeks
Orthopedic hospitals or services	Not less than four weeks

The remaining twelve weeks optional.

VIII. HOSPITAL AFFILIATIONS

1 Hospitals or institutions affiliating for clinical training should be carefully selected by the board of directors of the school concerned and be acceptable to the Council on Medical Education and Hospitals and should not be considered eligible for training of students unless the director of the occupational therapy department is a competent occupational therapist qualified to supervise students.

2 The occupational therapy director of each training department should be considered a member of the training school staff.

3 A well defined program of lectures, clinics or staff meetings should be offered by the hospital to all students in occupational therapy affiliating with the hospital. This should be supplementary to the required theoretical and technical courses given in the school.

4 Written records and case studies must be submitted by each student. Students must obtain satisfactory rating in clinical training before a diploma is granted.

5 The occupational therapy director should maintain records especially covering the students' personal adjustment and general ability. Copies of these records should be sent to the school at frequent intervals and all reports filed in the individual student's record at the school.

METHOD OF APPLICATION

Application for approval of occupational therapy schools should be submitted to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago. Inquiries regarding the registration of qualified therapists should be addressed to the American Occupational Therapy Association, 175 Fifth Avenue, New York.

4. ESSENTIALS OF AN ACCEPTABLE SCHOOL FOR MEDICAL RECORD LIBRARIANS

PREAMBLE

There are two organizations primarily concerned with the training of medical record librarians. These are the Council on Medical Education and Hospitals of the American Medical Association and the American Association of Medical Record Librarians. The Council establishes standards, inspects and approves schools and publishes a list of acceptable schools. The American Association of Medical Record Librarians is concerned with the promotion of educational activities and the registration of qualified librarians.

The Council with the cooperation of the American Association of Medical Record Librarians has established the following standards for the information of schools, hospitals, prospective students, physicians, educational directors and for the protection of the public:

I. ADMINISTRATION

1 Acceptable schools for the training of medical record librarians may be conducted by general hospitals having adequate teaching material and personnel which will be described in succeeding sections. Approval may also be extended to colleges, universities and medical schools having suitable hospital facilities.

2 Resources for the continued operation of acceptable schools should be available through regular budgets, gifts or endowments but may be obtained in part through students' fees. Schools charging exorbitant fees or indulging in commercial advertising are considered unacceptable.

3 Training in the handling of records should be under the direction of a qualified medical record librarian.

4 Schools conducted primarily for the purpose of substituting students for paid librarians will not be considered for approval.

II. ORGANIZATION

1 Adequate space, light and equipment should be available for the general and educational activities of the hospital departments used in the training of medical record librarians. A library containing current references, textbooks and periodicals pertaining to the work of medical record librarians should be readily accessible to the students.

2 The medical record library should maintain serial and alphabetic files of patients' records, statistical data on births, deaths and autopsies, diagnostic and operative classifications and physicians' index. A modern system of classification should be employed with supplemental classifications and files for teaching and demonstration purposes. Such files should include serial and unit number systems, phonetic classifications, Standard Nomenclature of Disease, Standard Nomenclature of Operations and other acceptable classifications.

3 A record of the curriculum, teaching plans and a procedure book should be available. Records of the students' prerequisite training should be filed in the department. To these should be added the details of attendance and grades as well as a list of the experiences obtained by individual students.

4 A minimum of two students should be in training. However, the maximum number admitted for practical instruction should be determined by the amount of available space, teaching material and properly qualified instructors.

III. FACULTY

1 A competent teaching staff should be supplied by the school. Its director shall be responsible for the actual conduct of the training course and shall devote sufficient time for proper supervision of the students. An adequate number of instructors should be available so that students may have immediate guidance and supervision in all of their assignments.

IV. PREREQUISITES FOR ADMISSION

Candidates for admission should be proficient in typing and shorthand and in addition should fulfil one of the following requirements:

- (a) Completion of two academic years of study in a college of liberal arts approved by a recognized accrediting agency.
- (b) Graduation from a school of nursing recognized by a state board of nurse examiners.

V. CURRICULUM

1 The course of training should include not less than thirty-six weeks of practical hospital experience.

2 Theoretical instruction may be presented by informal conferences or formal lectures and should include the following:

Anatomy and physiology	60 clock hrs
Medical terminology	25 clock hrs
Hospital and medical ethics	20 clock hrs
Fundamental principles and practices of medical record library science	50 clock hrs

3 Practical training should involve all activities associated with the care of medical records. This should include the filing of records, the mechanism of admission and discharge of patients, the methods of cataloguing, medical dictation, observation of clinical procedures and dictation, and outpatient department records. Sufficient time should be devoted to each

assignment so that students may become familiar with all functions of the medical record library. Additional experience in the handling of records in the pathology and radiology departments is recommended. To augment the training program field trips should be arranged when possible to visit other hospitals and study their record library equipment and methods.

VI CLINICAL MATERIAL

1 In order to be eligible for acceptance the general hospital where training is obtained should be registered and otherwise acceptable to the Council on Medical Education and Hospitals and have a minimum of six thousand annual admissions. These admissions should include an adequate distribution of patients in the various clinical services commonly found in general hospitals. If adequate facilities are not available, affiliations may be established with other hospitals to supplement clinical record instruction in such special fields as mental diseases, tuberculosis and outpatient service.

VII ADMISSION TO THE APPROVED LIST

1 Application for approval of a school for medical record librarians should be made to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago, Ill. Forms will be supplied for this purpose on request. They should be completed by the administrator of the institution requesting this approval.

2 Approval may be withdrawn whenever in the opinion of the Council a school does not maintain an educational service in accordance with the above standards. Whenever a training program has not been in operation for a period of two consecutive years, approval may also be withdrawn.

Report of Council on Scientific Assembly

Dr. A. A. Walker, Chairman, presented the report of the Council on Scientific Assembly as printed in the Handbook which was referred to the Reference Committee on Sections and Section Work.

Report of Committee on War Participation

Dr. Walter F. Donaldson, Chairman, presented the following report, which was referred to the Reference Committee on War Participation:

To the Members of the 1943 House of Delegates American Medical Association

The War Participation Committee of the American Medical Association originated from the report of the 1941-1942 Committee on Medical Preparedness to the 1942 House of Delegates of the American Medical Association. The latter committee suggested that it be discontinued and a new committee created for the purpose of keeping in close touch with all war related policies affecting the quality and efficiency of medical service both to the armed forces and to the civilian population.

The accomplishments of the American Medical Association Committee on Medical Preparedness from June 1940 to June 1942 under the chairmanship of former President Irvin Abell will throughout the years reflect great credit on the entire Association as an outstanding voluntary contribution by the organized medical profession to the winning of World War II.

Paced by Dr. Abell's American Medical Association committee, the constituent medical associations served equally well their country's war needs through the instrumentality of similar committees as did hundreds of component county medical societies.

Since the summer of 1942 medical activities throughout the states and territories of the Union have been succeeded by the now familiar task of the Procurement and Assignment Service contributed usually by the same personnel which earlier served so well under Medical Preparedness.

The heavy responsibilities of the Procurement and Assignment Service as earlier known have become more complex with doubled accent on the accessibility of adequate medical service to war industries, to thinly populated districts and to essential institutions. Since the Federal Manpower Commission has merged the Procurement and Assignment Service under the chairmanship of former President Frank H. Lahey, Dr. Lahey has twice turned to the American Medical Association War Participation Committee for cooperation. Similarly the Procurement and Assignment Service in the various states may

turn to the State Medical Society War Participation Committee and doubtless the response will be prompt and understanding.

In our committee's communications the functions of the War Participation Committee of a constituent state medical association were recommended as follows:

The proposed Committee on War Participation should keep in close touch with all policies affecting the quality and efficiency of medical service both to the armed forces and to the civilian population.

It should feel free to express comments and criticism of policies relating to the participation of the medical profession in the war effort.

Without authority to act only to advise it becomes a committee to express the views of the medical profession on such proposals as are made which may have a direct bearing on the Principles which the American Medical Association regards as fundamental in the provision of good medical care.

A War Participation Committee should at all times encourage and support to the fullest wise proposals to sustain the highest possible quality and efficiency of medical service both to the armed forces and to the civilian population, not failing at the same time to be looking to the situation in the years immediately following the determination of peace.

Obviously, a War Participation Committee may serve well at times by asking pertinent questions of all those in authority who during the war emergency (1) may seek disposal of precious medical service or (2) may be assigned control of medical education and training.

Avoiding impertinent and asking only pertinent questions will not in any way interfere with the winning of the war. Our own committee held its first meeting at the American Medical Association headquarters on Aug. 18, 1942 for the purpose of discussion with a subcommittee of the Procurement and Assignment Service headed by Dr. Clarence D. Selby of Detroit. The topic of Industrial Medicine sparked by the remarks of Commissioner Paul V. McNutt before the 1942 House of Delegates at its Atlantic City session led to the conference of August 18 which was participated in by representatives of the Board of Trustees of the American Medical Association, the Council on Medical Education and Hospitals and the Council on Industrial Health. At the conclusion of the discussion the Committee on War Participation requested the Association through its Council on Industrial Health to continue its pace making lead in connection with the profession's contribution to the winning of the war through its organizational and individualized efforts at keeping war workers well. After this meeting our committee with the aid of Secretary Olin West made an effort to encourage the development of war participation committees in the various state associations for the purpose not only of stimulating the endeavors toward keeping war workers well but of cooperating with the Procurement and Assignment Service to meet the needs for medical care in all communities where shortage of physicians is demonstrable. It is a pleasure to be able to confirm published reports indicative of the great progress made in a considerable number of states in the spread of instruction in industrial medicine at county levels.

The second meeting of the War Participation Committee of the American Medical Association was held in Washington, D. C. with the directing board of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians and with representatives of the United States Public Health Service on Dec. 14, 1942. Plans were presented whereby the United States Public Health Service could help to meet the need for medical services in so-called critical areas. At that conference the War Participation Committee of the American Medical Association recommended that state medical societies cooperate with the State Procurement and Assignment Service and with the state boards of registration and licensure in determining areas that lack medical services and in developing plans for medical services in such areas when the need arises.

A proposed statement of operating policy submitted by Surg. Gen. Thomas Parran of the United States Public Health Service was after discussion and some alteration unanimously adopted and reads as follows:

The Public Health Service and the Procurement and Assignment Service will jointly undertake studies of war industries and extra cantonnement areas from which shortages of medical and allied professional personnel are feared. These studies shall be made jointly by the appropriate corps area chairman or P & A state medical and dental chairman of P & A and representatives of U. S. P. H. S. either

the district director or some one detailed by the district director or by the Surgeon General. Also the state medical society and the state health department each will be invited to designate a representative to participate in such studies as well, where needed, the state dental society.

In a number of states the problem of supplying medical service in new war defense or war industry areas, or in rural areas denuded of medical service through the entry of practicing physicians into the armed forces, has, throughout much of the year 1943, been a serious one. Representatives of the U. S. Public Health Service have been helpful in the making of surveys confirmatory of localized needs for additional medical service, as submitted by the citizenry or by industries. Doubtless, in many instances, these needs will be filled by medical personnel recommended by the U. S. Public Health Service.

This type of cooperation has been consolidated in at least one state by the inclusion in act No. 15 of its 1943 legislature of a provision for the issuance of temporary permits to doctors of medicine legally licensed in other states to practice medicine and surgery under certain conditions for a limited period of time. We quote from said act:

The provisions of this act are intended to supply medical services communities where because of the drain of war needs on such services that are normally available there exists a need for medical services that may become a threat to public health. In order that this purpose shall be most effectively carried out the Board of Medical Education and Licensure in applying the provisions of this act shall cooperate with the Procurement and Assignment Service in Pennsylvania or the War Man Power Commission and with the committee on War Participation of the Medical Society of the State of Pennsylvania and shall give due consideration to the recommendation of either of such agencies.

A difficulty in the provision of adequate medical service in a number of critical areas seems to have arisen from the desire of other physicians in a given county that the physician newly locating in such an area will do so on a locum tenens rather than on a permanent basis, against the day of the return of the absent soldier-physician to his home practice.

The spirit of all home front doctors of medicine who thus condemn that which they may interpret as the selfishness which inspires a doctor to leave or to pass over a community which needs his professional services during this emergency, in order to relocate in a more promising community, is to be commended, provided in each instance full consideration with material results is first given to meeting the actual and existing health and sickness service needs of such a community.

Our committee is greatly indebted to the representatives of thirty-eight constituent state medical associations that responded to the committee's brief questionnaire addressed to them last April. From these replies it is evident that a large percentage have assigned the duties of their respective war participation committees to the preexisting committee on medical preparedness or Procurement and Assignment Service, without change of title or personnel. In some states, and in a larger proportion of counties, it is feared that the current War Participation Committee personnel, heavily engaged, possibly since 1940, in meeting the responsibilities of a committee earlier known as the Committee on War or on Medical Preparedness with its manifold duties, or later as the Committee on Procurement and Assignment Service equally heavily involved in specific duties, is likely to overlook some of the more generalized responsibilities of a War Participation Committee as defined by the 1942 House of Delegates of the American Medical Association.

Should we not be sure in each instance that the more definite duty of indicating which local or state physicians are believed to be "available" for service with the armed forces, or, on the contrary, are "essential" to home service, that a committee with combined duties may not be overlooking, for instance, the purely advisory duties of a War Participation Committee? Aside from direct war needs proposals are being made from time to time which have a direct bearing on the principles which the American Medical Association has for many years regarded as fundamental in the provision of good medical care to the 100 million people of this country who up to the present time are not directly employed in federal projects of combat, of farming or of industry, or in any other way specifically connected with the war effort.

Shall we not give consideration to definite organizational and individual responsibilities through War Participation Com-

mittees of nation, state and county directed toward helping the public to learn the truth about bureaucratic tax supported medical service in order that they may eventually eliminate its evils? This will require of each of us a rigorous knowledge of the truth and a considerable expenditure of effort. However, the necessity is so great, and the adverse consequences may prove so bitter for the people, even more than for the physician, that such leadership becomes our solemn duty.

Does it seem a far cry to discuss this particular duty while representing a War Participation Committee? The advisory function of such committees applies to the protection of adequate medical service for the civilian population and surely no federal commitment to regimented medicine should be made during the nation's war effort or while upward of fifty thousand of our younger colleagues are absent and serving with the colors.

Nominations for Affiliate Fellowship

The Secretary presented nominations for Affiliate Fellowship, which were referred to the Council on Scientific Assembly.

Visitors from Brazil

The Secretary announced the attendance of the following visitors from Brazil: Dr. Mario Kroeff of Rio de Janeiro, Dr. August W. Koenig of Rio de Janeiro, Dr. Nelson Guedes Muniz of Rio de Janeiro and Dr. A. L. Cancado and Dr. D. M. Cardozo, the first of Rio de Janeiro and the second of São Paulo.

NEW BUSINESS

Resolutions on Giving Intelligent Instruction in Science and Biology to the Youth of America

Dr. F. F. Borzell, Pennsylvania, presented the following resolutions, which were referred to the Reference Committee on Hygiene and Public Health.

During the last few decades the United States has witnessed the paradox of tremendously increasing knowledge and its applications in all fields of science along with steadily diminishing teaching of the principles and practices of science in our high schools. Many scientists and teachers of science have noted, written and spoken about this inconsistency.

The diminution in the teaching of sound biology in high schools to a near vanishing point in many schools is shown in data compiled in reports by a committee appointed for a survey by the Union of American Biological Societies.

Study of these data shows that the places of science in general and biology in particular have been taken by other subjects, many of which come under the head of "social studies." Most of the subject matter in these studies is of highly controversial nature. Both the yes and nay are equally derivable by emotional argumentation. There is no arbiter except "authority," notorious for its unreliability and changeability. Many of these subjects afford a false discipline for unformed minds in methods of study and learning for they present half truths, deceptive, elusive or entirely nonexistent statements and relations.

It is believed, therefore, that the organized medical profession of the country should adopt means of cooperating with the teachers of science, particularly biology, in endeavors to restore the teaching of science to its proper place in the high schools. With a sound background of biology the essential teaching of health topics will be on a sound basis and therefore more effective.

WHEREAS, The appropriate teaching of biology in the secondary school is essential to child's nutrition, his health and adaptability to changing environment, and

WHEREAS, The source of medical knowledge is logically the medical profession, therefore be it

Resolved, That the American Medical Association endorse the principle that every child in the United States be given four years of sound instruction in science with at least two years of biology in high school, and be it further

Resolved, That the American Medical Association through its Bureau of Health Education encourage close cooperation between the constituent state medical associations and the component county medical societies and the teachers of science in their respective communities to the end that intelligent instruction in science and biology be given the youth of America.

Resolution on Having Copies of the Boy and Girl Scouts' Manual in Physician's Waiting Rooms

Dr. James Q. Graves, Louisiana, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business.

WHEREAS, The House of Delegates of the Louisiana State Medical Society has adopted favorably a recommendation that members of the Louisiana State Medical Society have a copy of the boy and girl scouts manual in their waiting rooms therefore be it

Resolved, That the House of Delegates of the Louisiana State Medical Society respectfully have the Louisiana delegates request the House of Delegates of the American Medical Association to adopt a similar resolution in regard to members of the American Medical Association.

Resolutions Establishing a Committee on Medical Service

Dr W A Coventry, Minnesota, in behalf of the delegates from the Minnesota State Medical Association, presented the following resolutions, which were referred to the Reference Committee on Legislation and Public Relations

WHEREAS The medical profession is conscious of its responsibilities in providing timely and adequate medical services to all of the American people, irrespective of race, creed or financial status and

WHEREAS It believes it to be its duty and right to make available scientific facts data and medical opinion with respect thereto and to make known the role that the science and art of medicine plays in the daily lives of all Americans and

WHEREAS The medical profession of the United States is ready to offer constructive leadership in the advancement of medical principles that will further medical service to all of the people and to preserve not only the science and art of medicine but the standards associated with the practice of medicine in America now therefore be it

Resolved That there is hereby created by this House of Delegates a Committee on Medical Service which shall be composed of the following members

- 1 The President of the American Medical Association ex officio
- 2 The Immediate Past President of the American Medical Association
- 3 The Secretary of the American Medical Association ex officio
- 4 A member of the Board of Trustees of the American Medical Association designated and selected by the Board of Trustees
- 5 One member of the American Medical Association elected as herein after provided from each of the following nine geographic subdivisions of the United States

New England Maine New Hampshire Vermont Massachusetts Rhode Island and Connecticut Middle Atlantic New York Pennsylvania and New Jersey East North Central Ohio Indiana Illinois Michigan and Wisconsin South Atlantic Delaware Maryland District of Columbia Virginia West Virginia North Carolina South Carolina Georgia Florida and Puerto Rico East South Central Kentucky Tennessee Alabama and Mississippi West South Central Arkansas Louisiana Oklahoma Texas and Panama Canal Zone West North Central Minnesota Iowa Missouri North Dakota South Dakota Nebraska and Kansas Mountain Montana Idaho Wyoming Colorado New Mexico Arizona Utah and Nevada and Pacific Washington Oregon California Alaska Hawaii Philippines and Pacific Islands

The members of this House of Delegates from each of the foregoing geographic subdivisions of the United States shall elect one member of the American Medical Association to serve on said committee three of said nine members shall serve for one year three shall serve for two years and three shall serve for three years the respective terms of office of the nine members first elected shall be decided by lot and thereafter the said terms shall be for three years each The expiration date for the first one year term shall be at the next ensuing annual session of the House of Delegates of the American Medical Association Expiration dates for all terms shall coincide with the dates of the regular annual session of the House of Delegates of the American Medical Association be it further

Resolved That the duties of the Committee on Medical Service shall be

1 The making available of scientific facts and data and medical opinion with respect to timely and adequate rendition of medical care to the American people

2 To integrate the activities of the Committee on Medical Service with respective state and county committees on like activities

3 Establish relationships and cooperation with other allied groups who are likewise engaged in the rendition of medical care in its various branches to the American people

4 The Committee on Medical Service shall hold at least two meetings per year one shall be held at the time and place of the annual meeting of this House of Delegates the other meeting shall be held in the city of Washington D C and called at the direction of the chairman and such other meetings as may be necessary to be called by the chairman on the written request of the majority of the committee

5 The committee shall forthwith and annually thereafter elect from its own membership a chairman and a vice chairman

6 The Committee on Medical Service shall establish and maintain an office in Washington D C and shall further be empowered and directed to employ a full time executive director who shall act as secretary of the committee and whose duties shall be specified by the committee Such executive director shall be a physician who has been actively engaged in the private practice of medicine for not less than five years during the previous ten years and furthermore be informed and qualified to act as a liaison representative of said committee

The Committee on Medical Service is further authorized to hire such legal and administrative help as is necessary be it further

Resolved That the Committee on Medical Service shall submit a budget for its expenses for the fiscal year to the Board of Trustees of the American Medical Association and it is the consensus of opinion of this House of Delegates that the Board of Trustees shall forthwith appropriate not less than 50 cents nor more than 1 dollar for each member of the American Medical Association so that adequate funds will be available for such committee to carry out its work on an honorable and ethical plane in keeping with the standards of American medicine be it further

Resolved That this committee shall submit an annual report to the House of Delegates at the annual session and be it further

Resolved That these resolutions on their adoption by the House of Delegates shall be forthwith transmitted to the Board of Trustees with the request that the Board of Trustees report back its action to the House of Delegates within twenty four hours as provided for in the Constitution and By Laws of the American Medical Association

Resolutions Requesting the Establishment of a Council on Medical Care

Dr E H Skinner Section on Radiology, presented the following resolutions, which were referred to the Reference Committee on Amendments to the Constitution and By-Laws

WHEREAS The medical profession is conscious of its responsibilities in providing timely and adequate medical services to all of the American people irrespective of race creed or financial status and

WHEREAS It believes that its duty and right is to make available scientific facts data and medical opinion with respect thereto and to make known the role that the science and art of medicine plays in the daily lives of all Americans and

WHEREAS The medical profession of the United States is ready to offer constructive leadership in the advancement of medical principles that will further medical service to all of the people and to preserve not only the science and art of medicine but also the standards associated with the practice of medicine in America now therefore be it

Resolved That section 3 of chapter VII of the By Laws shall be and hereby is amended by adding thereto a new paragraph to be designated as paragraph (d) reading as follows (d) Council on Medical Care and be it further

Resolved That chapter IX of the By Laws shall be and hereby is amended by adding thereto a new section to be numbered section 4 reading as follows

SEC 4 COUNCIL ON MEDICAL CARE—The functions of the Council on Medical Care shall be (1) to take over all the functions and personnel of the Bureau of Medical Economics as now established (2) to investigate all matters pertaining to the economic social and public policy aspects of medical care for all citizens (3) to suggest means and methods for the distribution of medical services to the public consistent with the principles adopted heretofore and hereafter by the House of Delegates (4) to execute other functions which may from time to time be delegated to such Council by the House or Delegates (5) to develop assist and coordinate committees on Medical Care and Public Policy originating within the state and county societies of the American Medical Association (6) in cooperation with the Board of Trustees to establish and maintain a Bureau of Information on Medical Services at Washington D C and be it further

Resolved That the membership shall be nine in number elected as hereinafter provided from each of the following districts New England Maine New Hampshire Vermont Massachusetts Rhode Island and Connecticut Middle Atlantic New York Pennsylvania and New Jersey East North Central Ohio Indiana Illinois Michigan and Wisconsin South Atlantic Delaware Maryland District of Columbia Virginia West Virginia North Carolina South Carolina Georgia Florida and Puerto Rico East South Central Kentucky Tennessee Alabama and Mississippi West South Central Arkansas Louisiana Oklahoma Texas and Isthmian Canal Zone West North Central Minnesota Iowa Missouri North Dakota South Dakota Nebraska and Kansas Mountain Montana Idaho Wyoming Colorado New Mexico Arizona Utah and Nevada and Pacific Washington Oregon California Alaska Hawaii Philippines and Pacific Islands

The members of this House of Delegates from each of the foregoing geographic subdivisions of the United States shall elect one member of the American Medical Association to serve on said committee three of said nine members shall serve for one year three shall serve for two years and three shall serve for three years the respective terms of office of the nine members first elected shall be decided by lot and thereafter the said terms shall be for three years each The expiration date for the first one year term shall be at the next ensuing annual session of the House of Delegates of the American Medical Association Expiration dates for all terms shall coincide with the dates of the regular annual session of the House of Delegates of the American Medical Association

Resolutions Giving Public a Voice in House of Delegates and Establishing a Bureau of Medical Care

Dr F S Crockett Indiana, presented the following resolutions which were referred to the Reference Committee on Legislation and Public Relations

The Council of the Indiana State Medical Association directs its delegates to present the following communication to the House of Delegates of the American Medical Association calling attention to the serious situation confronting the medical profession and suggesting remedies. Evidences of this situation not alone are found in Indiana but are manifest in nearly all sections of the country

Throughout the rank and file of the profession there are many who feel that this House of Delegates has failed in large measure to reflect truly the wishes and thinking of the profession nor have they been sparing in their comments in reference to the Trustees and other executives of this Association Causes underlying this feeling are many The past decade has witnessed a gradual encroachment of government in the field of medical care which our leadership has been unable

to stem. Witness the loss of the Supreme Court decision, the report of the Pepper committee and the criticism of a powerful section of the press to mention only a few.

In the minds of many who are not actively connected with the conduct of this Association we have been and are continuing to be defeated in our efforts to preserve our way of life. As these defeats continue, the demand for new leadership will increase. Reference is here made to an editorial appearing in the May issue of *Medical Annals of the District of Columbia* which says in part: "What the profession as a whole needs at this time above anything else is leadership which inspires confidence—able, constructive leadership. It needs the confidence which is inspired by elected leaders who can speak for them effectively without arousing unnecessary antagonisms. It needs in its national organization a quicker response to the heart beat of the doctors and the times. It needs the elimination of reactionary tendencies at the top."

In the past this House and the Board of Trustees have on occasion shown vision and leadership of a high order such as its adoption of Principles for Medical Care in 1939 and the Military Preparedness program at the New York session. To meet the rising tide of public criticism some way should be provided to give the public a voice in the deliberation of this House. That voice might be that of some individual of national standing, whose wise counsel could share in molding the future of medicine in harmony with sound public policy. Whereas the Board of Trustees is an executive not a policy making body, the interpretation of policy which is a function of the board is influenced profoundly by the liberal or conservative thinking of its members. This phenomenon has been observed repeatedly in the past whenever new members are elected. There are many duties of the Board which are solely the concern of the Association but there are occasions when a voice reflecting the lay public mind in interpreting policy would be extremely valuable.

Some 40,000 of our most active members are temporarily in the armed forces. The hasty mobilization of such members has created many situations needing correction which the usual military channels seem inadequate to solve. These officers are members of this Association who expect to return to civilian practice. They properly look to us for sympathetic understanding.

It is proposed that a military morale unit be created by this Association with the consent and approval of the Office of the Surgeon General of each service. This unit should be headed by some nationally known physician who should have the confidence of the men in service and who could speak for the American Medical Association. He should have a staff of capable assistants visit military medical establishments at home and abroad and be able to talk to any medical officer free from military restraint. All complaints should be analyzed carefully and placed before the appropriate authority with suggestions for correction.

The Bureau of Medical Economics has done a fine job. It should now be made the Bureau of Medical Care. It should include the ablest economist obtainable who should be able to give the public, in their language, sound information on medical care problems. The problem of medical care requires attention now. The plan should be something that will enlist the active interest and participation of all citizens.

The plan endorsed by this House at San Francisco in 1938 proposed community action covering a wide variety of health activities, preventive and educational. It was a plan wherein each community would be encouraged to develop its own program suitable to the local needs. This plan brought up to date to meet present conditions can serve as a basis for a nationwide medical program.

The Bureau of Medical Care should establish a council or committee to rate communities according to their achievements in the preventive medical field just as the Council on Medical Education and Hospitals rates medical schools and hospitals for intern training. Communities outstanding in their preventive activities and results might receive some sort of award like the Army and Navy Es, given for excellence in production of military supplies. The ceremonies incident to giving these awards might be the background for a civic celebration that would make the public appreciate the splendid job being done by the profession under the aggressive leadership of this Association and the state medical societies in cooperation with the local profession.

Another important factor in improving our standing with our federal government would be the maintenance in Washington of an office for the convenience and information of Congress, manned by some one capable of representing the best in medicine. Proposed legislation affecting the interest of the medical profession directly and indirectly is being introduced into Congress with increasing frequency, and executive bureaus, commissions and other instrumentalities of the federal government issue rulings many of which may affect the practice of medicine.

In line with the facts and suggestions just enumerated we submit to this House of Delegates the following resolutions:

Resolved That some provision be made whereby the lay public should have a voice in the deliberations of this House and in the Board of Trustees, wherever the public interest is involved,

Resolved, That a military morale unit be created with the consent and approval of the Office of the Surgeon General of each service, to visit military medical establishments at home and abroad to help in solving difficulties experienced by our members in service,

Resolved, That a Bureau of Medical Care be established to encourage communities in all the states to cooperate with their state and local medical societies in developing health movements covering the field of preventive, corrective and educational activities, and

Resolved, That the Bureau of Legal Medicine and Legislation be enlarged to enable the maintenance in Washington of some one capable of representing this Association who will be available at all times for the purpose of supplying information and developing better relations with Congress and other branches of our federal government.

Dr. A. A. Walker, Alabama, suggested that resolutions be read without preliminary speeches.

Recommendation Requesting Establishment of a Legislative Bureau of the American Medical Association in Washington

Dr. Wells P. Eagleton, New Jersey, presented the following recommendation, which was referred to the Reference Committee on Legislation and Public Relations:

With respect to the recommendation about to be introduced on behalf of the New Jersey delegation, we should mention that immediately following the annual meeting of the Medical Society of New Jersey held May 25 and 26, and pursuant to a resolution adopted at this meeting, a letter from the secretary of our society, containing the resolution regarding the establishment of a legislative bureau of the Association in Washington, together with a brief in support of this proposal was sent to all of the listed Delegates of the Association, and since our arrival we have attempted to place in the hands of the other Delegates the material referred to.

We shall reserve further arguments in support of this proposal for the hearing before the reference committee, but we should like to emphasize that in making this recommendation it is not to be assumed that this in any wise is a reflection on the Bureau of Legal Medicine and Legislation. We believe from our experience and our relations with this Bureau that it is doing an excellent job within the setup now existing. The Legislative Committee of the Medical Society of New Jersey is particularly appreciative of the fine cooperation given by the Director of the Bureau, Mr. Holloway, in relation to some of our state problems, and has a high regard for his ability and judgment.

In referring this recommendation we should appreciate it if the Speaker will permit these remarks to be attached.

Resolutions Supporting Establishment of Committee on Medical Service

Dr. Karl S. J. Hohlen, Nebraska, introduced the following resolutions, which were referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, A resolution will be introduced in the House of Delegates of the American Medical Association during the annual assembly convening June 7, 1943 in Chicago which provides for the creation of a committee to be known as the Committee on Medical Service, and

WHEREAS, The House of Delegates of the Nebraska State Medical Association in annual assembly May 4, 1943 is heartily in accord with the principles expressed in that resolution, therefore be it

Resolved That the house of delegates of the Nebraska State Medical Association urge the House of Delegates of the American Medical Association to adopt the resolution, be it further

Resolved, That the Constitution and By Laws of the American Medical Association be amended, if necessary, in order that the above mentioned resolution can be adopted, and be it further

Resolved That the delegates of the Nebraska State Medical Association to the House of Delegates of the American Medical Association are hereby instructed to do all in their power to effect the adoption of the resolution and, if necessary, amend the Constitution and By Laws.

Resolution Requesting Changes in Administration of Federal Security Law so as to Assure Payment of the Physician

Dr. Walter P. Anderton, New York, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, Experience in New York State has shown that doctors rendering authorized care to recipients of relief in those categories which are covered by federal reimbursement regulations are in many cases particularly in old age assistance, not receiving payment for their services because of the failure of the recipients of such services to pay to the physicians the money given them for such payment, and

WHEREAS, The house of delegates of the Medical Society of the State of New York has gone on record as favoring such changes in the administration of the Federal Security Law as are necessary to assure payment of the physician, and

WHEREAS, The house of delegates of the Medical Society of the State of New York has gone on record as requesting the aid of the American Medical Association, therefore, be it

Resolved That the House of Delegates of the American Medical Association memorialize the proper authorities to secure such changes in the administration of the Federal Security Law as are necessary to assure payment of the physician.

Resolutions Requesting Establishment in Washington, D. C., of Office of Information of American Medical Association

Dr. Arthur S. Risser, Oklahoma, introduced the following resolutions, which were referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, The American Medical Association is the parent organization of all state medical associations and is therefore looked to for leadership by the public in matters pertaining to health and welfare and

WHEREAS, The office of the American Medical Association and its executive officers are located in Chicago, Illinois, and therefore it

easily accessible to the Congress of the United States and other departments of the federal government dealing with matters of health for the people now therefore be it

Resolved By the house of delegates of the Oklahoma State Medical Association that its delegates be instructed either to introduce or to support a resolution such as that proposed by the National Conference on Medical Service and the Federated Medical Boards of Examiners, which will establish an office of information of the American Medical Association in Washington D C with full time personnel in attendance in order that the Congress and bureaus of the federal government may have the advice and guidance of the American Medical Association on health legislation at all times it is further

Resolved That the delegates of the Oklahoma State Medical Association to the American Medical Association be instructed to work to the end that any committee council bureau or board appointed by the Board of Trustees of the American Medical Association to act in an advisory capacity to a Bureau of Information in Washington D C be of sufficient size to have representation on it of physicians taken from geographic localities of the United States and that these physicians be in the majority to any other physicians appointed to a committee council bureau or board and it is still further

Resolved That any appointments to any committee council bureau or board by the Board of Trustees be made on the recommendations of the delegates from the states represented in the different geographic divisions

Resolutions Expressing Approval of Federal Assistance to Wives and Children of Service Men as Outlined in Plan Under Consideration by Federal Children's Bureau

Dr John H Iitzgibbon Oregon presented the following resolutions which were referred to the Reference Committee on Legislation and Public Relations

Resolved That approval be expressed of federal assistance to the wives and children of service men as outlined in the plan under consideration by the Federal Children's Bureau provided however that the constituent state medical associations which are members of the Pacific States Medical Executives Conference be requested to consider carefully the merits of the procedure proposed by the Oregon State Medical Society wherein any allocations for professional services agreed on as compensation for obstetric work involved shall be given to the wives of enlisted men such patients then to secure the services of physicians as they themselves deem proper the fee for professional services to be decided by mutual agreement between the patients and the attending physicians and

Resolved That the conference secretary send outlines of the Oregon plan to the constituent state associations and further

Resolved That the suggestion be made that a special committee composed of representatives of the Pacific states medical associations be brought into being if possible to consider further the aforementioned Oregon plan

Resolution Urging the Creation of a Federal Department of Health

Dr Thomas A McGoldrick New York introduced the following resolution which was referred to the Reference Committee on Legislation and Public Relations

WHEREAS Coordination of all agencies working for the maintenance of health and the prevention and cure of disease is becoming increasingly important in our daily lives and

WHEREAS The problems of medical care could best be coordinated and correlated under the guidance of a central agency be it

Resolved That the American Medical Association urge with all the power at its command that a federal Department of Health be created to be headed by a Secretary of Health who shall be a properly qualified doctor of medicine who is a member of a component county medical society

Resolution Approving Proposed Changes in Regard to Medical Services of the American Red Cross in Disaster Relief

Dr Arthur T McCormack Kentucky presented the following resolution which was referred to the Reference Committee on Legislation and Public Relations

WHEREAS This Association approved the policies of the American Red Cross in disaster relief at its session on July 2 1938 and

WHEREAS The American Red Cross is proposing the following changes in its handbook setting forth its policies in regard to medical services in disaster now therefore be it

Resolved By the House of Delegates of the American Medical Association that the proposed changes in regard to medical services of the American Red Cross in disaster relief be approved as follows

RELATIONSHIP WITH PHYSICIANS DENTISTS AND HOSPITALS

III 3 The primary responsibility for the care of the sick and injured in disasters rests with the local physicians Red Cross medical service does not substitute for the services of local physicians and dentists but cooperates with them and assists by organizing and directing the medical relief work and by providing the facilities which they lack and need for the emergency Every effort is made to maintain and reestablish as

quickly as possible the predisaster relationship between physicians and dentists and their patients In the first few days it is often necessary to apply aid on a mass basis in emergency medical stations This practice is discontinued as soon as possible and patients are referred to their own physicians and dentists

Red Cross medical and dental assistance is intended only for those who are ill or injured because of the disaster or whose condition is aggravated by the disaster and who are unable to obtain care because of lack of resources Exceptions may be made in certain emergencies obstetrics for example when medical service is not otherwise available

III 4 It is hoped that physicians and dentists like other community leaders engaged in various phases of disaster relief work will give their services on a volunteer basis for patients unable to pay during the emergency period On approval of the director actual expenses incurred and cost of the supplies used by physicians and dentists may be paid those volunteering their services in the emergency period Unless they have been previously employed for that purpose physicians should not be paid for work during this emergency period

After an emergency period the duration of which is to be determined by the disaster director advised by his medical director after conference with representatives of the county medical society the Red Cross recognizes its responsibility to the medical profession for paying reasonable fees to physicians who treat disaster victims Reasonable fees shall be interpreted as ward clinic or county rates and shall be worked out by mutual understandings between medical directors and state and local medical societies prior to or during a disaster operation

III 5 Reasonable hospital rates including ordinary service medicine dressings operating room x rays serums antitoxin and other biologics may be paid on a case work basis for the care of patients with disaster caused illness or injuries or those whose condition is aggravated by the disaster Blood plasma which cannot be replaced from stocks accumulated for that purpose or from volunteers who are willing to replace that used from local blood banks may be paid for at cost Ward rates are generally considered reasonable Commitments shall not be made until agreements have been approved by the disaster director Verbal agreements between hospitals and the Red Cross shall be given written confirmation by the medical director

Resolution Requesting Study of Nursing Licensure Requirements

Dr Stephen E Gavin Wisconsin presented the following resolution which was referred to the Reference Committee on Medical Education

WHEREAS For many years there has been a continuous and meritorious effort to elevate the requirements for nursing licensure in the several states and

WHEREAS These efforts directed toward the establishment of a unified and recognized field of nursing provided with such safeguards as to assure the maximum protection to the public health have resulted in increasing difficulties in securing an adequate number of enrollees in the various nursing schools and

WHEREAS There is a current shortage of nurses and because of the reciprocal arrangements between states an inability exists on the part of the individual states as such to make such changes in their laws as would facilitate the enrolment and graduation of trained nurses now therefore be it

Resolved That the House of Delegates of the American Medical Association request the Council on Medical Education and Hospitals to study the nursing licensure requirements of the several states and the problem created by the war emergency and in cooperation with the several state medical associations to suggest such changes as may be indicated on the national level consistent with good public health protection and so designed as to increase the availability of nurses within the country

Resolution Requesting Constituent Associations and Component Societies to Consider the Establishment of Some Form of Dues for Their Members in Service

Dr James C Sargent Wisconsin presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business

WHEREAS Motivated by the finest sort of patriotic interest our component county medical societies and constituent state medical associations everywhere throughout the land have acted to recruit for the duration the dues of those of us who have been called to the colors and

WHEREAS A realistic view of the enormous military program to which our country is committed surely suggests that this action may over some protracted years undermine the financial structure of many of these local organizations and

WHEREAS It is most important to the future of American medicine that the already large and ever growing block of physicians temporarily dislocated from home and practice be kept intimately connected with and an active part of their local professional organizations be it hereby

Resolved That this House of Delegates urge on each of its constituent state associations and through them each of the component county medical societies of which they in turn are composed to give consideration to the establishment of some form of dues for their members in service which will not be great enough to blight in the least the financial position of their organization as well as the active interest and participation of their absent members.

Resolution Authorizing Establishment of an Executive Office of American Medical Association in Washington, D C

Dr. Barney J. Hein, in behalf of the Ohio State Medical Association, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations

WHEREAS The medical profession is conscious of its responsibilities in providing medical services to all of the American people, and

WHEREAS The medical profession believes that it is its duty to make available scientific facts, data and medical opinion with respect to existing and proposed medical and health programs and is ready to offer constructive leadership on such matters, and

WHEREAS Many proposals relating to medical and health services during the postwar era are under consideration at Washington involving legislative and regulatory procedures, and

WHEREAS It has become increasingly important that first hand information on such matters should be made available to the medical profession generally and vital relationships established between the medical profession and members of the legislative and executive branches of the federal government so that the views of the medical profession can be transmitted promptly to proper officials of such branches, therefore be it

Resolved That the House of Delegates of the American Medical Association authorize the establishment of an executive office of the American Medical Association at Washington, D C, in charge of a full time director who shall be directly responsible to the Board of Trustees of the American Medical Association in serving as a liaison on legislative and governmental activities pertaining to medical and health matters

Resolution on Technical X-Ray Training Courses

Dr. E. H. Skinner, Section on Radiology, presented the following resolution, which was referred to the Reference Committee on Medical Education

WHEREAS It is the function of the American Registry of X-Ray Technicians to elevate the standards and improve the training of x-ray technicians, and

WHEREAS The American Registry of X-Ray Technicians has established a list of approved training courses for x-ray technicians which have been investigated and deemed adequate for their purpose, and

WHEREAS The recognition of such training courses by the Council on Medical Education and Hospitals of the American Medical Association

is desirable for the proper inspection and maintenance of these courses, therefore, be it

Resolved That the House of Delegates of the American Medical Association recommend this to the Council on Medical Education and Hospitals for proper action

It was moved by Dr. Francis F. Borzell, Pennsylvania, that action on all resolutions referring to the establishment of a bureau or service in Washington be reported in Executive Session. The motion was seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, and carried.

Report of Reference Committee on Rules and Order of Business

Dr. R. L. Zech presented the following report, which on motions of Dr. Zech, duly seconded and carried, was adopted section by section, the second section of the report by more than a two-thirds vote of the members registered

1 Your Reference Committee on Rules and Order of Business recommends that on Tuesday, June 8, after completion of routine business, the House shall enter into Executive Session

2 WHEREAS Section 4, chapter 4 of the Constitution and By Laws provides for the election of officers on Thursday, the fourth day of the meeting of the House of Delegates, and

WHEREAS The same section 4, chapter 4, provides that the election of officers may be held at another time provided for in the same section, and

WHEREAS It is important that the physicians attending this session of the House of Delegates be able to return to their practices at an early date, therefore be it

Resolved That the House of Delegates hold the election of officers on Wednesday, June 9, 1943, immediately following the completion of routine business

Respectfully submitted,

R. L. ZECH, Chairman
E. N. ROBERTS
GEORGE P. JOHNSTON
EDWARD N. EWER
A. A. WALKER

The House recessed at 2:05 p. m., to meet at 9:30 a. m.
Tuesday, June 8 (To be continued)

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status—H. R. 2536 has passed the House, a bill to provide for the promotion of vocational rehabilitation of persons disabled in industry or otherwise. H. R. 2713 has passed the Senate, making appropriations for the Navy Department and the naval service for the fiscal year ending June 30, 1944. This bill as passed by the Senate retains the language under which appropriations made available for the Navy Department may be utilized to pay commissioned medical officers who are graduates of reputable schools of osteopathy.

Bills Introduced—S. 1130, introduced by Senator Thomas, Utah, proposes to enact the "War-Area Child-Care Act of 1943." A federal appropriation of \$1,500,000 will be authorized for the fiscal year ending June 30, 1943 and an appropriation for each fiscal year thereafter of \$20,000,000 for allotments to the states, with the proviso that the program will expire six months after the end of the war. State plans for day care services must be submitted by the state public welfare agency and approved by the chief of the Children's Bureau, and state plans for extended school services must be submitted by the state educational agency and approved by the United States Commissioner of Education. A state plan for day care services, among other things, may provide for care through foster family home services or in day care centers, community-wide information and advisory services for mothers, health services for children, and other auxiliary services necessary to assure proper use of day care facilities and to safeguard children receiving care under the plan. H. R. 2832, introduced by Representative

Gearhart, California, proposes to amend the Nationality Act of 1940 so as to permit naturalization proceedings to be had at places other than in the office of the clerk or in open court in the case of sick or physically disabled individuals. H. R. 2892, introduced by Representative Sparkman, Alabama, provides that during the present war and for six months thereafter there shall be included in the Medical Departments of the Army and Navy such licensed female dentists as the Secretary of War and the Secretary of the Navy may consider necessary. Those appointed will be commissioned in the Army of the United States or in the Naval Reserve and will receive the same pay and allowances and be entitled to the same rights, privileges and benefits as members of the Officers' Reserve Corps of the Army and the Naval Reserve of the Navy with the same grade and length of service.

STATE MEDICAL LEGISLATION

Alabama

Bill Passed—Substitute for S. 22 passed the Senate, June 1. It would require the state board of health, with the assistance of the committee on cancer control of the Medical Association of the State of Alabama, to formulate a plan for the care and treatment of indigent persons suffering from cancer and to establish and designate standard requirements for the organization, equipment and conduct of cancer units or departments in general or private hospitals or private clinics of the state. The board would also be required to formulate and put into effect an educational plan for the purpose of preventing cancer.

throughout the state, aiding in the early diagnosis of cancer and informing hospitals and cancer patients of the proper treatment

Bill Enacted—S 35 has become Governor's Act No 89 of the Laws of 1943. It provides for the creation and establishment of a four year school of medicine in the state to be under the sole management, ownership and control of the Board of Trustees of the University of Alabama and to be known as 'The Medical College of Alabama'

California

Bills Enacted—S 1023 has become chapter 1001 of the Laws of 1943. It prohibits the possession, transportation or use of any local anesthetic of the cocaine group, including but not limited to natural or synthetic drugs of this group, such as allocaine, apothesine, alpine, benzyl carbinol, butyn, procaine, nupercaine, beta-eucaine, novol or anestubes, within a horse racing inclosure except on a bona fide veterinarian's prescription with complete statement of uses and purposes of the same on the container. A 573 has become chapter 1047 of the Laws of 1943. It prohibits the board of osteopathic examiners from issuing any drugless practitioner's certificates and provides that all persons holding such certificates may continue to practice thereunder and may renew them, subject to the provisions of the law. A 829 has become chapter 871 of the Laws of 1943. It amends the law relating to premarital examinations by providing that certificate forms furnished by other states having comparable laws will be accepted for persons who have been examined and who have received serologic tests for syphilis outside of California provided such examinations and tests are performed not more than thirty days prior to the issuance of a marriage license. The amendment further provides that certificates furnished by the United States Army or Navy will be accepted for military personnel provided such certificates are signed by a medical officer commissioned in the United States Army or Navy and provided the certificates state the examinations and serologic tests for syphilis were performed not more than thirty days prior to the issuance of the marriage license. A 1191 has become chapter 914 of the Laws of 1943. It amends the welfare and institutions code by providing that no person shall maintain an establishment for the mentally ill without having obtained a license from the state department of institutions. A 1335 has become chapter 977 of the Laws of 1943. It amends the law relating to the use and sale of poisons by, among other things adding the following poisons to schedule C 1: acetylstyrene, sulfonated methanes, paraldehyde, sulfanilamide except in tablets of 30 grams or more designed for stock purposes only and so labeled, sobisminol, amidopyrine, cinchophen, ergot, diethylstilbestrol, provided that they may be sold only at retail on order or prescription of a physician, dentist, chiropractor or veterinary surgeon duly licensed to practice in California and shall not be refilled without order of the prescriber, to schedule C 2: amphetamine, thyroid, phenylhydantoin or their compounds provided they are sold only at retail on the written order or prescription of a physician and surgeon, dentist, chiropractor or veterinary surgeon licensed to practice in the state but such prescription may be refilled for the person for whom originally written.

Connecticut

Bill Passed—Substitute for S 484 passed the senate and the house on May 19. To amend the law relating to the labeling and sale of drugs it proposes to add narcotic drugs to the list of drugs which a physician, veterinarian or dentist is prohibited from prescribing except for emergency use.

Bills Enacted—S 257 has become chapter 291 of the Laws of 1943. It amends the medical practice act by requiring applicants for license to show that they have received the degree of doctor of medicine rather than merely a diploma of graduation from an approved school. S 804 has become chapter 280 of the Laws of 1943. It amends the chiropractic law by eliminating the requirement of professional study for a period of four years or thirty six weeks each and substituting therefor the requirement that such course consist of four years or eight months each totaling not less than three thousand six hundred hours. H 1195 has become chapter 301 of the Laws of 1943. It requires each physician to report in writing to the health

officer of the town, city or borough in which such case shall occur, within twelve hours after his recognition thereof, each case of cholera, yellow fever, typhus fever, leprosy, smallpox, diphtheria, typhoid fever, scarlet fever, all forms and stages of syphilis, all forms and stages of gonorrhea, chancroid or other contagious or infectious diseases occurring in his practice.

Florida

Bill Enacted—S 580 was approved, June 1, 1943. It provides that the several colleges and universities located and operating in the state of Florida shall be authorized, directed and required to waive the last two semesters of preparatory college work required for entrance to the various professional schools operated by them in all instances where the applicant for admission and study in such professional schools has completed all preparatory college work required for such admission except two semesters or less of study in the preparatory subjects and where such applicant has failed to complete his or her last two semesters or less of preparatory study by reason of his or her having been inducted into any branch of the armed forces of the United States during or after the month of January 1940.

Illinois

Bill Introduced—H 802, to amend the medical practice act, proposes that the entry of a decree by any court or competent jurisdiction establishing the insanity of any person holding a license to practice medicine would operate as a suspension of such license until such time as a committee of physicians should find that the licensee has been restored to sanity.

Massachusetts

Bill Passed—H 1820 passed the house, June 2. To amend the premarital examination law, it proposes to authorize the execution of the required certificate by a physician registered or licensed to practice in any other state of the United States, territory or District of Columbia, in addition to Massachusetts licensees.

Bills Enacted—S 470 has become chapter 421 of the Laws of 1943. It amends the existing law authorizing any license permit or certificate of registration issued by any department, division, board, commission or officer that expires while the holder thereof is serving in the military or naval service of the United States to be renewed within six months after the termination of such service and by providing further that no fee shall be charged or collected for the period between the expiration of the certificate and the renewal thereof. H 1754 has become chapter 375 of the Laws of 1943. To amend the law relating to policies of insurance against legal liability for loss or damage on account of bodily injury or death it permits such policies to be amended so as to insure any person in respect to medical, surgical, ambulance, hospital, professional, nursing and funeral expenses. H 1755 has become chapter 384 of the Laws of 1943. It amends the law relating to physical examinations of school children by requiring examinations of the feet of such children to be made by the school physician to ascertain any defects which might unfavorably influence the child's health or physical efficiency during childhood, adolescence and adult years. H 1791 has become chapter 387 of the Laws of 1943. It amends the law relating to the registration of nurses by providing that during the existing war applicants for registration need only be 20 rather than 21 years of age.

Missouri

Bill Introduced—H 590 to amend the law relating to the practice of osteopathy was amended in the house so as to define the practice of osteopathy as the system, method, art or science of treating diseases, injuries or defects of the human body as taught and practiced by the American School of Osteopathy of Kirksville, Mo. The amendment would further provide that any person now licensed or who may hereafter be licensed to practice osteopathy in Missouri and who is a graduate of a reputable school of osteopathy which at the time of graduation offered a full course in medicine and surgery in addition to the regular course of osteopathy and which school had entrance requirements facilities in instruction and training of a standard equivalent to the recognized medical colleges of the state, may

on a finding by the state board of health that such person had met the basic requirements, be permitted to take the examination, and, on successfully passing same, to practice medicine and surgery is osteopathic physicians and surgeons

Nebraska

Bill Enacted—Bill No. 295 was approved, May 29. It provides that any county or group of counties may establish a county or district health department with a medical director at its head, who shall be required to give his entire time to the duties of his office, and such other necessary qualified full time medical health officers and such sanitary inspectors, public health nurses and clerical assistants as may be necessary to carry on the activities pertinent to a county or district health department.

Pennsylvania

Bills Enacted—S. 209 has become act 212 of the Acts of 1943. It amends the osteopathic law by providing, among other things, that the board of examiners, by inspection or otherwise, shall examine and fix the rating of all colleges and hospitals outside the state whose graduates or interns desire to obtain osteopathic licensure in Pennsylvania. The standards for approval of osteopathic hospitals in Pennsylvania, however, shall be required in fixing the rating of out of state institutions.

H. 214 has become act 217 of the Acts of 1943. It provides that for the duration of the war a minimum of nine months shall constitute the necessary training for an intern in a hospital approved for intern training to qualify for admission to an examination for licensure by the osteopathic surgeons' examining board to practice major surgery in Pennsylvania. S. 371 has become act 250 of the Acts of 1943. It provides that for the duration of the present war and one year thereafter certain persons eligible to registration as a nurse prior to 1938 may be registered by waiver or examination on proof that she meets the Pennsylvania requirement as of the time of her graduation, and without examination if, prior to 1912, she graduated from a reputable hospital, sanatorium or training school in which a systematic course of practical instruction in nursing was given. S. 531 has become act 249 of the Acts of 1943. It authorizes county commissioners of second class counties to enter into contracts with the proper authorities of any city within the county for the hospitalization of persons suffering from any infectious disease and makes appropriations for such purposes. H. 668 and H. 669 have become act 167 and act 168 respectively, of the Acts of 1943. They amend the law regulating and supervising nonprofit medical service corporations by providing, among other things, that subscribers earning more than a certain specified sum shall be liable to doctors of medicine registered with the corporation and rendering services to such persons for the full amount of the usual fees and charges for such services made by doctors of medicine and any payment made by the corporation to doctors for rendering such services shall be a payment on account only and not necessarily

in full. H. 823 has become act 182 of the Acts of 1943. It amends the law relating to the physical examination of school children by providing that for the duration of the present hostilities and for six months thereafter the examination may be made by any physician licensed to practice medicine in Pennsylvania if the parent or guardian or employer is willing to pay for the same. Previously the examination had to be made by a physician employed by the board of school directors of the school district in which the minor resided or by a physician employed by the state department of health.

South Carolina

Bill Enacted—H. 518 was adopted, April 1. It is a resolution providing for the appointment of a committee to examine into the advisability of establishing a cancer clinic and hospital in the state.

Texas

Bill Enacted—H. 20 became a law without approval, June 1. It provides for the creation of a separate state board of examiners for chiropractors and defines chiropractic to be the science of analyzing and adjusting the articulations of the human spinal column and its connecting tissues without the use of drugs or surgery. Under this law chiropractors will not be allowed to treat any person for infectious or contagious diseases or engage in the practice of medicine. S. 230 was approved, May 22. It provides that no person shall operate or cause to be operated in any emergency ambulance, public or private, or any other vehicle commonly used for the transportation or conveyance of the sick or injured, without first securing a permit therefor from the state board of health. Every such ambulance shall be equipped with a first aid kit and traction splints for the proper transportation of fractures of the extremities and shall be accompanied by at least one person who has acquired theoretical or practical knowledge in first aid as prescribed and certified by the American Red Cross and evidenced by a certificate issued to such person by the state board of health.

Wisconsin

Bills Enacted—S. 36 has become chapter 247 of the Laws of 1943. It amends the law relating to coroners so as to provide for the appointment of medical examiners. S. 195 has become chapter 172 of the Laws of 1943. It amends the law relating to deputy state health officers by increasing the annual salary thereof from 3 to 4 thousand dollars. A. 433 has become chapter 195 Laws of 1943. It provides for an appropriation by county boards toward the maintenance and support of duly organized and bona fide nursing associations in the county, such associations to have at least one qualified nurse. A. 486 has become chapter 125 of the Laws of 1943. To amend the law relating to positions in the unclassified civil service in certain counties in the state, it provides that students and interns in medical or professional specialties shall be included within the list of unclassified civil service positions.

MEDICAL ECONOMIC ABSTRACTS

PRESCHOOL CHILD MORTALITY

One of the best tests of success in maintaining the health of the public is child mortality. During the greater part of the nineteenth century it was frequently stated that more than half the deaths in any community were those of children under 5 years of age. Even at the beginning of the present century "the death rate for the 1 to 4 year age group was 198 per thousand children,"¹ but by 1940 this rate had fallen to 29, or one ninth of the rate forty years previously. Not only do a much larger percentage of the children born reach the age of 4, but the increase in life expectancy indicates that "the preschool child of today will probably live, on the average, about six or seven years longer than the preschool child of forty years ago."

There are still sharp racial differences in child mortality so that "in general the life expectancy of the nonwhite child is

about ten years less than for white children of the same sex." There are also significant sectional differences, varying from a rate of 49 per thousand in the West South Central states to 19 in Minnesota, Iowa and Wisconsin. Cities of over 100,000 show a uniformly lower death rate than the smaller cities and rural districts, a condition which is accredited to "the opportunities of generally better and more nearly adequate facilities for medical care in the cities. The specific immunization to some of the more important childhood diseases is of particular importance in this connection."

Certain of the diseases most deadly to children in 1900 have shown significant declines in importance. While influenza and pneumonia, diarrhea, enteritis and tuberculosis are still important as causes of death among children, the toll of these diseases has been decreased to a fraction of what it was forty years ago, while accidents now rank second as the cause of fatalities.

¹ The Preschool Child, Bureau of Census, Vital Statistics, Special Reports, Mortality Summary, Feb. 19, 1943.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

ARKANSAS

District Meetings—The eighty-first semiannual meeting of the First Councilor District Medical Society of Northeast Arkansas was addressed, May 27, in Jonesboro by Drs Herbert H McAdams, Jonesboro on 'Appendicitis' and Neuton S Stern, Memphis Tenn, 'Heart Neurosis' The district society is composed of Clay Craighead, Crittenden, Greene, Lawrence, Mississippi Poinsett and Randolph counties—The Fifth Councilor District Medical Society was addressed at Magnolia, May 20 by Drs Charles Robert Watson and George V Lewis, Little Rock on 'Neurosurgical Conditions in General Practice' and 'Treatment of Burns,' respectively The fifth district includes Calhoun Columbia, Dallas Lafayette, Ouachita and Union counties

CALIFORNIA

Changes in Health Officers—Dr Concessa L Craviotto has been appointed health officer of Oroville succeeding Dr Charles Benninger Jr—Dr Dean Eldon Hart Oakland was appointed health officer of Emeryville succeeding Dr Charles Newell Mell Oakland—Dr James L Faulkner has replaced Dr Russell G Grey as health officer of Red Bluff

New Dean of College of Medical Evangelists—Dr Newton G Evans professor and head of the department of pathology and a member of the board of trustees of the College of Medical Evangelists Loma Linda-Los Angeles, on May 5 was unanimously elected dean to succeed the late Dr Edward H Risley Loma Linda Dr Evans who graduated at Cornell University Medical College New York in 1900 has been head of the department of pathology for thirteen years He is also chief pathologist of the Los Angeles County Hospital

Quarantine on Mussels—The state department of public health on May 1 placed a quarantine on all mussels along the ocean shores of California including the bay of San Francisco from the Oregon-California boundary line on the north to the California-Mexico boundary on the south The taking sale or offering for sale of mussels in or from the area specified is prohibited with the exception that permission may be given to take mussels to be used for fish bait if such mussels are rendered unfit for food purposes by processing with salt These processed mussels must be placed in containers labeled 'For Fish Bait Only—Unfit for Human Consumption' The quarantine will be in effect until October 31

DISTRICT OF COLUMBIA

Physician Indicted on Narcotic Charge—Dr Homer K Butler Washington was indicted May 24 on charges of violation of the Harrison Narcotic Act According to the Washington Post Dr Butler was charged with writing prescriptions for about 60 grains of morphine between July 1942 and January 1943 The prescriptions are alleged to have been written for the same person but under different names

Pathologist Dies—Gilbert T Crech DVM since 1912 veterinary pathologist in the division of pathology of the U S Department of Agriculture died on June 2 in Garfield Memorial Hospital aged 63 Dr Crech received his DVM at the Kansas City Veterinary College in 1910 and joined the department of agriculture the same year first serving as veterinary inspector in the field and meat inspection division of the bureau of animal industry

ILLINOIS

Personal—Effective July 5 Reuben F Reider passed assistant surgeon reserve serving in Illinois on loan from the U S Public Health Service is the state's district health superintendent for the counties of Coles DeWitt Douglas Edgar Macon McLean Moultrie and Piatt, with headquarters in Decatur Dr Reider replaces Dr Wilmer M Talbert Decatur who has been granted a military leave from state service to enter the U S Navy

Chicago

League for Planned Parenthood—Dr Eugene A Edwards was chosen president of the Illinois League for Planned Parenthood at the recent annual meeting and Mrs William B

Goltra as secretary Mrs Ben Humphries Gray is the executive secretary Among the topics discussed at the meeting were 'Nation, State and Local Planned Parenthood Trends,' 'Planning for Democracy' 'Importance of Planned Parenthood in Peace and War' and 'Understanding the Emotional Responses to Planned Parenthood.'

Meeting of Pathologists—The Illinois Society of Pathologists presented the following program at its meeting in the Palmer House May 18

Lieut Comdr Jerry J Kearns (MC) U S N R Duties of a Pathologist in a Naval Hospital
Joseph M Lubitz assistant surgeon U S Public Health Service Reserve Duties of a Pathologist in the Public Health Service.
Dr Gail M Dack Food Poisoning
Dr Heinrich Necheles and William H Olson Studies on Pathologic Physiology of Burns
Dr Howard C Hopps The Use of Gelatin as a Blood Substitute

The afternoon was devoted to a seminar with cases and microscopic slides being presented by the members The next meeting will be in November

IOWA

Special Society Election—Dr Helen Johnston Des Moines was chosen president-elect of the State Society of Iowa Medical Women at its annual meeting in Des Moines, April 28 and Dr Christine S Erickson-Hill, Council Bluffs, was installed as president Other officers are Drs Gladys A Cooper Red Oak vice president Erma A Smith Ames secretary, and Edna K Sexsmith Harper Greenfield treasurer

Diets and Food Rationing—The Polk County Medical Society Des Moines recently issued a special message to the public listing eight points by which the public could cooperate with the medical profession in providing essential medical care. In addition the society has cooperated with the local ration boards by drawing up special diets to be available during the rationing program These diet lists and instructions of the procedure to be followed by physicians and their patients have been printed in the state medical journal and issued in special bulletins

Sight Saving Program—The general assembly has granted an appropriation to the state board of education to establish a sight saving class at the Iowa School for the Blind when school opens September 7 A classroom will be equipped to meet the sight saving standards set forth by the National Society for the Prevention of Blindness including special artificial lighting window shades, blackboards large type books sight saving desks and bulletin type typewriters A teacher with special training in sight saving will be employed to handle the schoolroom work Children may be considered eligible for sight saving classes if they are in any of the following groups: children having a visual acuity between 20/70 and 20/200 in the better eye after refraction children with progressive eye difficulties, and children suffering from noncommunicable diseases of the eye or diseases of the body that seriously affect vision

KANSAS

Course in Tropical Medicine—The Kansas Medical Society and the University of Kansas School of Medicine opened a postgraduate course in tropical medicine in Emporia May 22-23 the first in a series to be given in cities throughout the state The second was held in Wichita May 29-30 and the third in Salina June 12-13, courses are planned for Parsons, Kansas City and Topeka The instructors include Dr Harry L Douglas assistant professor of medicine University of Kansas School of Medicine Kansas City Herbert B Hungertord Ph D professor of entomology of the University of Kansas Lawrence and Mary E Larson AM assistant professor of zoology of the University of Kansas

MICHIGAN

Personal—Dr Donald M Morrill formerly medical superintendent of the City of Detroit Receiving Hospital has been appointed director of the Malden Hospital Malden Mass Dr Ralph R Piper Detroit has been named acting superintendent for the duration—Dr George H Cook Caro has been appointed medical superintendent at the Ionia State Hospital, Ionia

Proposed Wayne County Hospital Approved—The Ways and Means Committee of the Wayne County Board of Supervisors recently approved the proposed new Wayne University County Hospital and appointed a special subcommittee to make a more careful study of the project The hospital to be operated by the Wayne University College of Medicine Detroit was recently approved by the board of education and

it sanctioned the general plan for the proposed Detroit Medical Center to be constructed on a 50 acre site on Jefferson Avenue near Burns.

Lieutenant Boelkins Wins Fellowship—Dr. Richard C. Boelkins, first lieutenant in the medical corps of the A. U. S. Army Corps, has been awarded the 1943 Edward and Susan Lowe Fellowship at Butterworth Hospital, Grand Rapids. The fellowship is awarded annually to one of the hospital's younger staff members on the "basis of increased ability in diagnosis and treatment, cooperative spirit and willingness to teach others, including the interns." Lieutenant Boelkins graduated at the University of Michigan Medical School, Ann Arbor, in 1937 and interned at Butterworth Hospital.

Malaria Control—Dr. H. Allen Moyer, Lansing, state health commissioner, has invited Charles I. Williams, medical director and chief of malaria control, U. S. Public Health Service, to discuss possible control measures in the Calhoun County area with army, state and county health authorities, it was announced on May 27. Plans are under consideration for the establishment of a mosquito control area in western Calhoun County to lessen the hazard of spread of the disease from soldiers returned to the Percy Jones Hospital, Battle Creek, from the southwest Pacific but elsewhere citizens may have to institute their own control measures, it was stated.

"Proof of Disability" Blank—The Ingham County Medical Society has adopted a "proof of disability" blank which is designed as a time saver for physicians and which specifies that any further information may be obtained by the insurance company for a fee of \$2. At the convention of the state medical society in 1927 the fee was set as a surcharge for the search of records and the compiling of information for a medical insurance proof of disability. The blank may be procured from the state medical society at 2020 Olds Tower, Lansing. Under the stress of war conditions in the practice of medicine, the burden of giving adjustment and investigational information to health insurance companies has become more time consuming than appears to be necessary to furnish adequate proof of disability, an announcement stated.

NEW JERSEY

Princeton Buys Physician's Home—Princeton University, Princeton, has bought the home of its oldest living alumnus, Dr. William H. Vail, 97 years old of Newark. According to the *New York Times*, Princeton has taken title to the house at 141 Second Avenue so the retired physician, last surviving member of the class of 1865, might continue to occupy it "as long as he may desire." The action which was approved by the university's board of trustees, was made possible by gifts from alumni and friends, specifically earmarked for the purpose. Dr. Vail graduated at Princeton at the close of the Civil War after playing on the university's first baseball team. He graduated at the College of Physicians and Surgeons of Columbia College, New York, in 1869, of which he is also said to be the oldest living alumnus. Dr. Vail retired from active practice about thirty years ago. During the past few months he has been ill at home suffering from the effects of a fall.

NEW YORK

Personal—Alfred Einar Sherndal, Ph.D., New York, plant superintendent of Winthrop Chemical Company since 1934, recently received the honorary degree of doctor of science from St. Lawrence University, Canton, for his research work in making possible the synthesis and manufacture of atabrine.

Diabetic Camp Opens July 1—Camp Nyda at Wallkill will open on July 1 to receive about one hundred underprivileged diabetic children of New York, where they will spend a two week vacation under the auspices of the New York Diabetes Association. This year will mark the seventh for the operation of the camp. The medical department of the camp is under the supervision of Dr. Herman O. Mosenthal, clinical professor of medicine at the New York Post-Graduate Medical School and Hospital, Columbia University.

Dr. MacCurdy Appointed Commissioner of Mental Hygiene—Dr. Frederick MacCurdy, superintendent of the Vanderbilt Clinic of the Columbia University Presbyterian Medical Center and professor of hospital administration of Columbia University, on June 3 was appointed by Governor Dewey as state commissioner of mental hygiene. The *New York Times* reported that Dr. MacCurdy's appointment was made possible by the recent enactment of a law repealing the requirement that the commissioner of mental hygiene must have at least ten years of psychiatric experience in a mental hospital. While Dr. MacCurdy once specialized in neurology and psychiatry, he would not have qualified for the commissionership under

the old law. Dr. MacCurdy graduated at Columbia University College of Physicians and Surgeons in 1912. He was formerly president of the state hospital association and is said to be one of the original members of the board which planned and constructed the Columbia Presbyterian Medical Center, serving there since 1928 as superintendent of the Vanderbilt Clinic.

New York City

Crime in Wartime—A symposium on crime in wartime constituted a recent meeting of the International Spanish Speaking Association of Physicians. Among the speakers discussing the various aspects of the crime dilemma in wartime were Drs. George W. Henry, psychiatrist, R. S. Banay, criminologist, and J. Wilder, neurologist. Dr. Ricardo Adolfo de la Guardia, president of Panama, was present at the meeting and accepted the honorary presidency of the association.

Memorial Trees Planted—A tree planting ceremony was held at the Richmond Memorial Hospital, Dreyfus Foundation, Staten Island. Services memorialized with one tree each were the army, navy, merchant marine, marine corps and coast guard. One was named for Dr. Herbert Lynn Halbert, former president of the Richmond County Medical Society, who died April 7, and one for Dr. Harry Eckstem, member of the staff, who died March 21. Other trees honored the memories of a member of the Ladies Auxiliary, a nurses aide on the staff and a maintenance man at the hospital.

Gifts to New York University—More than \$201,000 has been given to New York University during the past three months, according to *Science*, March 26, including \$100,000 from the George F. Baker Charity Trust, half of which will be used to increase the endowment of the Samuel A. Brown professorship of therapeutics. The remainder will be used for the college of medicine at the discretion of Dr. Currier McEwen, dean of the medical school. The Commonwealth Fund gave \$9,784 to the college of medicine for the study of hypertensive and renal diseases, research in obstetrics and gynecology and other uses.

Gynecologist Honored—On June 8 Dr. Hiram N. Vineberg, consulting gynecologist at the Mount Sinai Hospital, was presented with a special volume of scientific writings to mark his completion of sixty-five years in the practice of medicine. The volume is the gift of Dr. Vineberg's colleagues and consists of a three hundred and sixty page issue of the *Journal of the Mount Sinai Hospital*. In 1878 Dr. Vineberg graduated at McGill University Faculty of Medicine, Montreal. In 1894 he was appointed chief of staff in the outpatient department in Mount Sinai Hospital, where he has been ever since, having been appointed consulting gynecologist on his retirement from active service in 1921. In 1918 he was president of the New York Obstetrical Society and in 1926 a vice president of the American Gynecological Society.

Personal—Dr. John B. Lauricella has resigned as medical director of the State Insurance Fund, the *New York Times* reported recently. Dr. David D. Rutstein, Albany, has been appointed deputy commissioner in the New York City Health Department. The Medical Society of the County of Kings and the Academy of Medicine of Brooklyn recently presented Mr. Charles Frankenberger, Brooklyn, with a watch in recognition of his completion of twenty-five years' service as librarian. Dr. Henry Roth, a charter member of the Bronx County Medical Society, was given a dinner on April 7 to observe his completion of fifty years in the practice of medicine. Lorenz J. Brosman, counsel for the Medical Society of the State of New York for about twenty years, died on April 13, aged 49. Vincent du Vigneaud, Ph.D., head of the department of biochemistry at Cornell University Medical College, is the new chairman of the New York Section of the American Chemical Society.

NORTH CAROLINA

State Health Officer Reelected—Dr. Carl V. Reynolds, Raleigh, was reelected secretary and state health officer at a recent meeting of the state board of health, and Dr. George M. Cooper, Raleigh, was reelected assistant state health officer, both are for terms of four years.

State Medical Election—Dr. Paul F. Whitaker, Winston, was chosen president-elect of the Medical Society of the State of North Carolina at its annual meeting in Raleigh May 12, and Dr. James W. Vernon, Morganton, was installed as president. Other officers include Drs. Frederic C. Hubbard, North Wilkesboro, and George L. Carrington, Burlington, vice presidents, and Roscoe D. McMillan, Red Springs, secretary, treasurer and delegate to the American Medical Association. The society voted to hold its 1944 session at Pinchburg.

OHIO

Survey on Availability in Industrial Work—The committee on industrial medicine and health of the Academy of Medicine of Cincinnati is making a survey of its members to learn what physicians are willing to accept a full or part time assignment as physicians in industrial plants. About a year ago the academy assembled similar information, but since then a number of physicians who indicated their willingness to cooperate in industrial activities have gone into military service. The new survey aims to bring up to date the number of physicians that would be willing to assist in this type of service.

Conference on Conservation, Nutrition and Human Health—The second annual conference on conservation, nutrition and human health will be held at Tar Hollow, June 26-27. Among the speakers will be

Dr. William F. Petersen, Chicago: Weather and Man
Dr. Norman C. Wetzel, Cleveland: The Biology of Growth
Dr. George M. Curtis, Columbus: The Role of Iodine in the Nutrition of Soil Bacteria Plants and Animals
William A. Albrecht, Ph.D., Columbia Mo.: Calcium in the Soil for the Nutrition of Microbes Plants and Animals
Dr. Zoltan T. Wirtschafter, Cleveland: The Importance of Minerals in Human Nutrition
John D. Detwiler, Ph.D., London Ont.: Conservation—The Basis of Human Progress
Dr. Jonathan Forman, Columbus: Conservation Nutrition and Human Health

Gov. John W. Bricker will speak Sunday afternoon on "Ohio's Conservation Program."

Physicians Refused Parking Privileges—The city manager of Cincinnati at a conference with Mr. Elmer E. Hunsicker, clerk of courts, and the city safety director, was so definite in his opposition to a proposal that special permits be given to physicians while on emergency calls to park their cars without being cited for violating parking regulations that the plan was abandoned. Mr. Hunsicker believed that some relief should be given to physicians who, especially during wartime, are pressed for time. He took the initiative on behalf of the medical profession and expressed his willingness to speak before the city council. At his request a member of the Academy of Medicine of Cincinnati was assigned to go with him for a preliminary conference with the city manager and the city safety director before taking it to the city council. The manager's opposition was so definite that it was decided to pursue the matter no further.

OREGON

Student Externships Resumed—The University of Oregon Medical School, Portland, has reinstituted student externships in the curriculum of fourth year students. Hospitals where the training is being given include St. Vincent's, Good Samaritan, Emanuel, Providence, Coffey Memorial and Hahnemann, all of Portland.

Honorary Degree to Dr. Fenton—The University of Oregon, Eugene, conferred the honorary degree of doctor of science on Dr. Ralph A. Fenton, Portland, for his work on otology, rhinology and laryngology. Dr. Fenton has been for many years a member of the Board of Trustees of the American Medical Association.

TENNESSEE

Personal—Dr. John S. Freeman, Springfield, is now president of the Tennessee Tuberculosis Association, advancing to this position from the vice presidency succeeding the late Dr. Horton R. Casparis, Nashville. —Dr. Asher R. McMahan, Memphis has been appointed medical director of the Columbian Mutual Life Insurance Company to succeed Dr. James L. Andrews, Memphis, who was vice president and medical director at the time of his death on January 10. —Dr. Joseph E. Wheeler, formerly chief medical officer of the Veterans Administration Facility, Togus, Maine, has been named clinical director at the Veterans Administration Facility, Memphis succeeding Dr. Lewis A. Walker, Memphis. —Dr. Minyard D. Ingram, Dresden, health officer of Weakley County for fourteen years has resigned to accept a similar position in Gibson County. —Dr. Joel J. Hobson is the new editor of the *Memphis Medical Journal* succeeding Dr. Arthur T. Cooper, who after serving in the position since 1934, has resigned to become full time medical director of the outpatient department of the John Gaston Hospital, Memphis.

TEXAS

Greater Medical Center in Dallas—On June 3 a dinner was held in the Baker Hotel by the Southwestern Medical Foundation to observe the establishment of the Greater Medical Center in Dallas. The project which is not completed represents a development financed by the foundation.

State Medical Election—Dr. Herschel F. Connally, Waco, was named president-elect of the State Medical Association of Texas at its house of delegates meeting in Fort Worth in May and Dr. Charles S. Venable, San Antonio, was inducted into the presidency. Vice presidents are Drs. Bertus C. Ball, Fort Worth, Thomas G. Glass, Marlin, and Solon D. Coleman, Navasota. Dr. Holman Taylor, Fort Worth, is secretary and Dr. Khleber H. Beall, Fort Worth, treasurer.

Library Develops Under Celsus Society—The San Antonio Public Library is cooperating with the Celsus Society to act as custodian of books and documents belonging to the society. The books, through the public library will become available not only to physicians but to any one who may have an interest in medical history. The first ten volumes of the *Bulletin of Medical History* have been bound and placed on the shelves set aside for the society and it is hoped that, as the society contributes to the collection, books and manuscripts will be received from persons elsewhere. The Celsus Society was recently organized by a group of San Antonio physicians for the study of the history of medicine. The constitution specified that the organization should be informal with only one officer, president-secretary which office is now held by Dr. Lloyd I. Ross, San Antonio. A recent meeting of the society was addressed by Knox E. Miller, medical director, U. S. Public Health Service, liaison officer, eighth service command, who gave a paper on the "Origin of the Celsus Society," and Chauncey D. Leake, Ph.D., dean and executive vice president of the University of Texas Medical Branch, Galveston whose paper was entitled "Let's Not Forget the Great."

WASHINGTON

Dr. Westman Named Acting Health Commissioner of Seattle—Ragnar T. Westman, surgeon, U. S. Public Health Service Reserve, on April 29 was appointed acting commissioner of health of Seattle. The appointment was made to fill the vacancy that occurred when Dr. Frank M. Carroll, Seattle, resigned after holding the position for two terms of five years each.

WISCONSIN

Changes in Health Officers—Dr. Joseph D. Warrick has been appointed health officer of Sharon to succeed L. C. Kief who according to the state medical society recently pleaded guilty to a charge of practicing chiropractic at Sharon for the past ten years without a license. —Dr. Frederick C. Haney has been named commissioner of health of Watertown succeeding Dr. Harvey G. E. Mallow who has been commissioned a first lieutenant in the U. S. Army Air Force.

State Public Health Appointments—Dr. Stephen E. Gavin, Fond du Lac, has been appointed a member of the state board of health for a term expiring in 1950. The appointment of Dr. Gavin fills the last vacancy on the board. Other members include Drs. Stephen Cahana, Milwaukee, Carl W. Eberbach, Milwaukee, Albert E. Rector, Appleton, William T. Clark, Janesville, Gunnar Gundersen, La Crosse and Ira F. Thompson, Racine. Dr. Charles A. Dawson, River Falls, a member of the state board of medical examiners since 1941 has been named secretary of the board. Dr. Gundersen was recently elected president of the state board of health and Dr. Thompson vice president.

Prize Essay Contests—The Milwaukee Academy of Medicine announces two prizes of \$100 and \$50 for the two best scientific essays in any field of medicine surgery or the allied specialties in its Horace Manchester Brown Memorial prize essay contest. The essays need not represent original investigation but must not have been previously published. There are no restrictions on subsequent publication. The contest is open to all physicians who have graduated from medical school later than June 1933 and are residing in the state of Wisconsin or are in the armed forces at the time that the essay is submitted. All essays are to be submitted to the office of the academy of medicine, 501 North 15th Street, Milwaukee, not later than December 1. They are to be submitted in triplicate and are to be double spaced. In the Rogers Memorial Prize Essay Contest founded by the Rogers Memorial Sanitarium and sponsored by the Milwaukee Academy of Medicine, prizes of \$200 and \$100 for the two most meritorious studies in the fields of neurology, psychiatry and psychosomatic medicine will be offered. The contest is open to all members of the medical profession who are citizens of the state of Wisconsin whether they are actually in residence or not and to those who, not

ordinarily residents of the state, are stationed in Wisconsin in the armed forces. All papers must be submitted in triplicate and double spaced to the office of the academy of medicine not later than October 1.

GENERAL

Exposition of Chemical Industries—The nineteenth Exposition of Chemical Industries will be held at Madison Square Garden, New York, December 6-11.

Courses in Prevention of Blindness—The National Society for the Prevention of Blindness announces that the elementary courses for the preparation of supervisors, teachers, nurses and others concerned with the education of partially seeing children will be conducted at Wayne University, Detroit, June 21-July 30, at Michigan State Normal College, Ypsilanti, Mich., June 21-July 30, and at Teachers College, Columbia University, New York, July 6-Aug. 13. An advance course will also be carried out at Wayne University, June 21-July 30.

Awards to Women—The American Association of University Women recently announced the following fellowship awards among others:

Dr. Yvonne Parigot de Souza, Paulista, Brazil, \$1,500 to study advanced obstetrics at Columbia University and observe child clinics and social hygiene centers on methods of organizing for maternal and child welfare; her return to Brazil. Dr. Parigot de Souza will set up a standard maternity center.

Elizabeth Z. Burkhardt, Ph.D., Clarksville, Ark., to continue her research experiments on endocrinology at the University of Chicago.

Leah Gold, M.A., dental hygienist in the public schools of New Haven, Conn., the Marion Elliot Fellowship to conduct research in the effectiveness of specific dental hygiene methods among students of junior high school age.

Dr. David R. Lyman Awarded Trudeau Medal—Dr. David Russell Lyman, Wallingford, Conn., was presented with the Trudeau Medal for 1943 of the National Tuberculosis Association at its annual meeting in St. Louis, May 5-6. The medal is awarded annually to one who is outstanding in the campaign against tuberculosis. Dr. Lyman is one of the founders of the association and has been continuously active on the board of directors and on numerous committees having had at one time been president. He is currently medical superintendent of the Gaylord Farm Sanatorium at Wallingford. Dr. Frederick H. C. Heise, Ithaca, N. Y., was chosen president-elect of the association and Dr. Lewis J. Moorman, Oklahoma City, was installed as president. Dr. Charles J. Hathfield, Philadelphia, is secretary and Livingston Platt, New York, lawyer, treasurer. Daniel C. McCarthy, for a number of years director of public relations of the association, has resigned, effective June 13, to become assistant director of public relations of the Firestone Tire & Rubber Company, Akron, Ohio.

Board of Obstetrics and Gynecology—Applications for the 1944 examinations of the American Board of Obstetrics and Gynecology are being received at the office of the secretary, Dr. Paul Titus, 1015 Highland Building, Pittsburgh. All applications for the year 1944 must be received by Dr. Titus not later than Nov. 15, 1943, ninety days in advance of the Part I examination date. Candidates are required to take both Part I and Part II examinations. The Part I examination consists of the written paper and the submission of twenty-five case history abstracts and will be conducted on Saturday, Feb. 12, 1944. This examination will be arranged so that the candidate may take it at or near his place of residence. On the successful completion of the Part I examination, candidates are eligible for the Part II examination, consisting of a pathology and an oral examination. This is given at the annual meeting of the board once each year, the time and place of which will be announced later. The Office of the Surgeon General of the U. S. Army has issued instructions that men in service eligible for board examinations be encouraged to apply and that they request orders to "detached duty" for the purpose of taking the examinations whenever possible.

Help Wanted—A new sound film entitled "Help Wanted," presenting basic first-aid information, has just been released by the Bureau of Mines, Department of the Interior. The film is in 16 mm. sound and runs thirty minutes. Copies are now available for exhibition by industrial and civil defense training classes, training courses conducted by or on behalf of the army, navy and maritime service and by schools, churches, colleges, civic and business organizations and other similar groups. In "Help Wanted" effective use is made of animated diagrams superimposed over actual photographs to show blood circulation, pressure points for staunching the flow of blood from a wound and the effect of proper treatment of bleeding. The film also portrays typical mishaps causing bleeding wounds, shock, burns, asphyxiation, fractures and other injuries and methods of treating them. Opening scenes show the patient

entering an operating room and the doctor being questioned about the accident by a news reporter. The doctor emphasizes the value of a working knowledge of first aid and proceeds to give instructions in fundamental applications. Application for free loan of "Help Wanted" should be addressed to the Graphic Services Section, Bureau of Mines, 4800 Forbes Street, Pittsburgh, and should state specifically that the borrower has a sound projector. Although no charge is made for use of the film, the exhibitor is expected to pay transportation charges both ways and for loss or damage other than normal wear.

Social Hygiene Field Representatives Appointed—The American Social Hygiene Association is assigning field representatives in each of the nine army service commands to handle all activities in the development or expansion of a social hygiene program for these areas. The association is working closely with the army, navy, public health service and social protection section of the Office of Community War Service and all official and voluntary agencies. Four field headquarters have been established and by fall it is expected that the remaining five will be operating. The new units are:

Second Service Command (New York, New Jersey, Delaware), American Social Hygiene Association, New York.

Third Service Command (Pennsylvania, Maryland, Virginia, District of Columbia) Dr. Charles H. Miner, in charge, 603 North Charles Street, Baltimore.

Fourth Service Command (North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee, Mississippi and Louisiana) Dr. Thomas A. Storey, in charge, and Mrs. Edna W. Fox, assistant, Georgian Terrace Hotel, Atlanta.

Fifth Service Command (Texas, Oklahoma, New Mexico and Arizona), Biscorn Johnson Jr., passed assistant surgery U. S. P. H. S., in charge, Cliff Towers Hotel, Dallas, Texas.

The field service is under the direction of Dr. C. Walter Clarke, New York, executive director of the American Social Hygiene Association.

CANADA

Tuberculosis Survey of Newspaper Employees—Early in May the first mass survey of the employees of a newspaper in Canada was launched by the tuberculosis prevention division of the Ontario Health Department. This first examination of newspaper employees was an effort to cooperate with the department's plans to take roentgenographic examinations of all people in the province, beginning with every one engaged in industry.

FOREIGN

Sir Frederick Hopkins Retires—Sir Frederick Gowland Hopkins, professor of biochemistry at Cambridge University for almost thirty years, has announced his retirement, newspapers reported, April 12. Sir Frederick, who received the Nobel Prize for medicine in 1929, is noted for his research in vitamins. He is 82 years of age.

East Asiatic Medical Congress in Tokyo—According to a short wave broadcast from Berlin, April 23, the second East Asiatic Medical Congress was held in Tokyo recently with three hundred delegates from all countries of East Asia. Participating in this congress were seventy lecturers who covered the treatment of tropical diseases, malaria and tuberculosis, the raising of the standard of living in the southern territories and the food problems in Manchuria. The congress voted to establish branch medical organizations in Burma, Malaya, East India and the Philippines. The Chinese capital city Nanking was chosen for a similar congress to be held next year.

Personal—The Faculty of Medicine of the University of Berne has conferred the degree of doctor of pharmacy, *honoris causa*, on Arthur Stoll, Basel, Switzerland, in recognition of "his contributions to the chemistry of medicinal plants." *Science* reports that Dr. Stoll was first to describe new methods to isolate active principles of drugs heretofore available only in the form of unstable galenicals. The isolation in pure form of such principles has only widened their therapeutic application but opened entirely new indications owing to specific actions not obtainable with the crude drug (i.e., ergotamine). This is the first time that the faculty of medicine of the University of Berne has conferred this honorary degree. The William Julius Mickle Fellowship of the University of London has been awarded to Edward C. Dodds, D.Sc., Courtauld professor of biochemistry, at the Middlesex Hospital Medical School.—Dr. George H. Macnab has been appointed dean of the Westminster Hospital Medical School, London, to succeed Sir Adolphe Abrahams, who has retired.—Sir Henry H. Dale, president of the Royal Society and director of the laboratories of the Royal Institute of Great Britain with the fullerton professorship of chemistry, has been awarded the Harben Gold Medal of the Royal Institute of Public Health and Hygiene, London, according to *Science*.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 8, 1943

Introduction of an Appointments System for Hospital Outpatients

One of the drawbacks of treatment at the outpatient departments of hospitals is the long period of waiting, running to hours, which patients have to endure. Such loss of time is felt more severely in this war period, when there is shortage of labor of all kinds. The obvious remedy of an appointments system is now being introduced. It has existed for fifteen months for all patients, both new and old, at Guy's Hospital, which dealt with 75,000 cases in 1942. New patients or their doctor may book an appointment by personal visit, by letter or by telephone to the sister in charge of the outpatient department. Old patients at each visit book appointments for the next visit. Appointments are made in hourly blocks. Thus no patient should have to wait longer than an hour before seeing the doctor. The number of appointments per hour is much less for members of the teaching staff, so as to allow time for teaching, than it is for those made for house officers, who do not teach.

The appointment system has other advantages than the saving of the patient's time. It gives him the desirable impression that he is an individual and not merely one of a crowd. It relieves congestion in the outpatients hall. It permits the nurse to prepare more efficiently for the management of the session. It allows alteration in the time table to be made at short notice. It renders restriction possible in the number of cases seen at any one session and therefore allows the attending physician to plan his day better.

A European Association of Clinical Pathologists to Be Formed

Among the refugees in this country from Germany are many physicians. They have found our institution of clinical pathologists worth imitating. A meeting has been held in the Medical School of University College, London, which was attended by about thirty physicians, women as well as men drawn from Austria, Belgium, Czechoslovakia, Britain, Hungary, Italy, Poland and Russia. Dr F Pick of Prague called on Dr S C Dyke, former president of the British Association of Clinical Pathologists, to explain how clinical pathology was organized in this country.

Dr Dyke said that clinical pathology, though a special branch of medicine, was within itself unspecialized and had relations with all branches of clinical medicine. Owing to the relatively unspecialized nature of its proceedings the meetings of the British Association of Clinical Pathologists formed a peculiarly happy ground for the exchange of views between practitioners of the various branches of medicine. He then moved from the chair that there be formed a European Association of Clinical Pathologists.

Prof E J Bigwood of Brussels stressed the importance of establishing contacts between clinical medicine and the laboratory. Dr M Maizels hoped that after the war an interchange of laboratory workers between clinical pathologic laboratories in Britain and on the continent would be arranged. Dr Dyke then read a letter from the president and council of the British association offering the hospitality of all its meetings to the members of the European association. He emphasized the need for a class of physicians capable of taking charge of hospital laboratories. He had found medical laboratory workers from the continent specialized to a degree that made it difficult for them to do this. The meeting appointed a committee consisting

of Drs B L Della Vida of Rome and M Mandelbaum of Munich, F Pick of Prague, F Silberstein of Vienna, J Ungar of Prague and Dr S C Dyke of Oxford to draw up rules.

Heroism of a Naval Surgeon

When the Canadian corvette *Wyburn* was sunk by an underwater explosion the survivors were rescued by a destroyer. A surgeon lieutenant was standing on the destroyer's deck helping survivors from the water, when another explosion occurred and broke both his legs below the knee, with those or more than half a dozen others. He was dazed for a few minutes and then refused to be carried to a cot in the wardroom. He was carried around the deck by three men while he attended the slightly injured there. Then he ordered the men to take him to the wardroom, which was filled with men injured by the second explosion. By each cot he was placed in a sitting position on the floor. He examined the patients and gave orders for treatment to the sick bay attendant. In spite of the pain he suffered every time his legs were moved, he insisted in carrying on without rest. Only when every examination had been made did he allow himself to be placed in a chair, with his legs stretched out straight in front of him for what small measure of relief was possible. He still refused to stop work and sat in the chair for twelve hours until the destroyer reached port, directing the treatment of several men seriously wounded or burned. Doctors and attendants from a shore hospital came on board, and as the procession of stretchers began to move off the ship he called for one for himself. His heroism in attending for more than twelve hours more than 50 wounded or otherwise injured with both his legs broken has been much commended in the press. He is Surg Lieut P R C Evans, the son of a North Wales physician, and is 25 years of age.

Scarcity of Desoxycorticosterone Acetate Physicians Enjoined to Prescribe It Only in Addison's Disease

The Therapeutic Requirements Committee of the Medical Research Council has drawn attention to the need for strict economy in the use of desoxycorticosterone acetate. This is an essential drug for the treatment of Addison's disease, and the supplies available are sufficient only for this purpose. There is no evidence that this substance is essential for any other condition. Physicians are therefore urged not to prescribe desoxycorticosterone acetate for any patients except those suffering from Addison's disease.

Married Nurses Return to Their Profession

The shortage of nurses due to the war is so great that married nurses are returning to their profession. The National Society of Children's Nurseries in conjunction with the Royal College of Nursing and the Association of Sick Children's Hospital Nurses is holding a course in London for nurses who are eligible for the position of matron or sister in wartime nurseries. These posts are suitable for qualified nurses who are married. If they have young children, provision can be made for their care. The course of instruction is under the auspices of the Ministry of Health and is free to registered nurses who intend to take up the work in nurseries.

Experience of a Man Who Lived 130 Days on a Raft

Mr Noel Baker, parliamentary secretary to the Ministry of War Transport, has reported the story of a Chinese seaman whose ship was torpedoed in mid-ocean in the darkness of the night. After swimming about for some time he grabbed hold of a raft, on which he climbed. Emergency rations kept him going for sixty days. He then had become expert in catching fish and birds and rigged up an equipment to catch rain water so that he was able to subsist until rescue on the one hundred and thirtieth day brought an end to what is described as the most incredible experience in history.

SWITZERLAND

(From Our Regular Correspondent)

April 10, 1943

Automatic Regulation of Blood Pressure
and Arterial Hypertension

Prof Dr C Heymans of Ghent, Belgium, discussed the automatic regulation of blood pressure and arterial hypertension before the Medical Society of Basel, Switzerland. Although the factors which control the blood pressure (heart minute volume, arterial an chamber, current resistance of the arterioles and circulating quantity of blood) are changeable, the level of blood pressure is to some extent constant. This is due to an automatic regulation. Pressoreceptors register the pressure at various sites in the vascular system, they conduct nervous impulses elicited in this manner, to the central nervous system and there elicit blood pressure regulating reflexes. The most important pressoreceptors are the terminations of the depressor nerve in the left side of the heart and in the aorta and the sinus caroticus at the ramification of the internal and external carotid. Then there are pressoreceptors in the pulmonary arteries and veins, in the vena cava and in the intestinal arteries. The reflexes which regulate the blood pressure have their points of attack on the heart, the blood vessels, the epinephrine formation of the adrenals and on the blood depots.

The function of the sinus caroticus was analyzed with the method of crossed circulation as well as by varying the pressure in the isolated sinus caroticus. If the pressure in the sinus caroticus rises, the general blood pressure decreases at once. The registration of the action currents of the depressor nerve as well as of the nerve of the sinus caroticus shows action current salvos at each systole. The significance of the intestinal arteries for the blood pressure regulation can be demonstrated likewise by means of crossed circulation, after exclusion of the sinus caroticus and of the aortic nerve. The functional significance of the terminations of the pulmonary nerves has not been experimentally demonstrated as yet. The aortic arch and the sinus caroticus react not only to pressure changes but also to chemical stimuli such as acetylcholine, nicotine, lobeline and carbon dioxide, however, the receptors for the two stimuli are not identical. Whereas the pressoreceptors are located in the vascular wall itself, the chemoreceptors are in the glomus located beside the arteries. The chemoreceptors have an important function in the reflex regulation of the respiration.

The pressoreceptors send impulses to the center not only when the blood pressure changes but continuously. If the four pressoreceptor nerves are excluded, the pressure in a comparatively short time increases to over 200 mm of mercury and stays continuously at this elevated level (observation up to six hundred days). A neurogenic, arterial hypertension is the result. The neurogenic nature is proved by the fact that, after total sympathectomy, hypertension no longer persists.

This form of hypertension is related to essential hypertension in which the removal of parts of the sympathetic nervous system likewise has a reducing effect, but it has also connections with the kidney. According to Goldblatt's experiments, an ischemia of the kidneys resulting from clamping off of the renal arteries leads to chronic arterial hypertension.

Substitutes for Tincture of Iodine

As the result of a deficiency in raw materials, Switzerland has difficulties in supplying its population with medicines. It has been found that the use of iodine preparations and medicines which contain iodine must be greatly restricted. The available supply can be saved to a great extent by using tincture of iodine sparingly. As a disinfectant or an anti-inflammatory remedy, tincture of iodine is readily replaceable. An inquiry of the Swiss Health Office of Swiss clinics and large hospitals revealed

for instance that, for the preparation of the surgical field, picric acids can be utilized in a 1, 2 or 5 per cent alcoholic solution, likewise a 2 per cent alcoholic solution of mercurochrome. Tincture of iodine has lost its significance as an anti-inflammatory remedy and painting of the skin with iodine can now be dispensed with. The Swiss Health Office arrives at the conclusion that great savings of tincture of iodine are possible without harming patients.

Brief Reports

A new periodical, *Schweizerische Zeitschrift für Psychologie und ihre Anwendungen*, has appeared recently in Switzerland. It is edited by Dr W Morgenthaler of Muri-Bern, Prof Dr J Piaget of Geneva and Lausanne, Prof Dr C G Jung of Kuesnacht-Zurich and Dr O Forel of Prangins-Nyon. The periodical is published by Hans Huber of Bern.

At the suggestion of Prof Dr Grumbach of Zurich a Swiss Society for Microbiology has been founded, which recently held its first meeting in Lausanne. The main lecture was given by Prof Hermann Mooser of Zurich, who spoke on the various methods of vaccination against spotted typhus. Grumbach spoke about *Enterococcus*.

A Swiss Paracelsus Society has been founded by research workers interested in Paracelsus. The society has the purpose to investigate the work of Paracelsus and its influence on the various branches of science (philosophy, natural sciences and medicine). The investigations are to be published under the title "Nova Acta Paracelsica". Dr Linus Birchler, who is professor of the history of art at the Technical University in Zurich, was chosen president of the society.

The Swiss congress has granted to the International Committee of the Red Cross a contribution of three million Swiss francs, so that it can continue its activity completely unhindered. In September 1939 the first donation of two hundred thousand Swiss francs had been granted.

The Marcel Benoist-Prize for 1942 was awarded to Prof Dr Hermann Mooser, who is director of the Hygiene Institute of the University of Zurich. Dr Mooser received the prize for his researches on spotted typhus. (See THE JOURNAL of Feb 19, 1938, p 591, for information about this prize.)

Dr L M Pautrier was elected to the chair of dermatology and director of the Dermatologic Clinic of the University of Lausanne to succeed Prof Edwin Ramel, who died recently. Pautrier was formerly director of the Dermatologic Clinic of the University of Strasbourg.

Doctor of Jurisprudence Jacques Brodbeck-Sandieuter, president of Ciba, the pharmaceutical house, was made an honorary doctor of medicine by the faculty of medicine of the University of Basel on the occasion of his sixtieth birthday. Dr Brodbeck has done much to promote studies on the history of medicine and recently made another contribution of a hundred thousand Swiss francs for this purpose.

Marriages

EDWIN NEWTON IRONS, Chicago, to Miss Mary Elizabeth Spring of Crookston, Minn., April 27.

STANLEY F SMAZAL, Townsend, Mont., to Miss Helen Donahue of Davenport, Iowa, May 10.

FRANCIS W HENNINGS, Dickinson, N D., to Miss Beth Barnes of Seattle, recently.

FRANK MERCURIO, New York, to Miss Ann Marie Rossi of Downingtown, Pa., May 10.

PAUL H PERNWORTH, Venice, Ill., to Miss June Holt of Granite City, recently.

ALBERT BEHREND to Miss Elsa Lowenstein, both of Philadelphia, April 3.

Deaths

Arthur Dean Bevan ☉ Lake Forest, Ill., eminent surgeon, leader in medical education and former President of the American Medical Association died on June 10 at his home at the age of 81 of acute myocardial failure precipitated by an acute respiratory infection.

Dr Bevan was born in Chicago on Aug 9, 1861. He completed his studies at the Sheffield Scientific School of Yale University in 1879. After graduating at Rush Medical College in 1883 Dr Bevan joined the U S Marine Hospital Service, where he served until 1888. For one year in 1886, he was professor of anatomy at the University of Oregon Medical School, Portland, but returned to Rush in 1887 to serve until 1889 as professor of anatomy. He was associate professor of surgery from 1889 to 1902 when he became professor of surgery. In 1907 he was made head of the department and in 1934 was named Nicholas Senn professor of surgery. Shortly after his retirement as head of the department of surgery at Rush Dr Bevan's portrait was presented to the college. At the time of his death Dr Bevan was a member of the board of trustees of Rush.

Through his long association with Rush Dr Bevan maintained a close affiliation with the Presbyterian Hospital joining the staff in 1892 as attending surgeon and serving from 1894 until 1934 as head of the surgical service. He was consultant at the time of his death. In 1929 he with his wife announced a million dollar gift to the hospital for its expansion program and principally for the provision of medical services.

On March 14, 1923 Dr Bevan performed in Presbyterian Hospital the operations in which ethylene oxygen was first used clinically as an anesthetic. In 1931 he presented a paper before the American Medical Association entitled 'Present Status of the Anesthesia Problem' in which he discussed the scheme which had been devised to prevent the possibility of static spark in the operating room. His interest in surgery evolved many procedures including the S shaped incision for surgical operations on the liver and bile tracts and the 'hockey stick' incision to expose the gallbladder without cutting through important nerves.

In 1902 Dr Bevan was appointed by President Wyeth chairman of the original committee on medical education. In 1904 when the Council on Medical Education was created, Dr Bevan was chosen the first chairman and occupied the position until 1928. The one interruption to his work on the Council was his service as President-Elect and President of the American Medical Association in 1917-1919. In recognition of his services as President of the Association during World War I Dr Bevan was made an officer in the Legion of Honor of France. He was a member of the House of Delegates of the Association from 1902 to 1903 and chairman of the Section on Surgery and Anatomy in 1906-1907.

At one time he served as surgeon and major in the Oregon National Guard and director of general surgery in the surgical division of Surgeon General Gorgas's office in Washington. His surgical affiliations were many including membership in the American Urological Association, the American Association of Anatomists and the Society of Clinical Surgery. He was a founder and a member of the first board of governors of the American College of Surgeons. He was president of the Chicago Medical Society in 1898, of the Inter-State Postgraduate Medical Association in 1931 and of the American Surgical Association in 1932. He was a member of the founders group of the American Board of Surgery and held at various times many positions in the American Society for the Control of Cancer.

Dr Bevan's numerous contributions to the literature were not confined to his specialty. In addition to the many monographs on scientific subjects Dr Bevan had written many articles reflecting his early interest in medical education, the prohibition movement and other subjects.

Dr Bevan was a man with a driving personality. A forceful character gave strength to his leadership for the advancement of medical education. His disdain of personal criticism and his fearlessness when attacked did much to promote the great success of the Council on Medical Education in achieving its objectives.

Frank B Lane, East Orange, N J. Eclectic Medical Institute, Cincinnati, 1886, president of the board of health of East Orange for sixteen years, formerly chairman of the joint milk commission of the Oranges, a member of the state board of medical examiners from 1894 to 1898, consultant on the medical staff formerly chief of staff and for many years chairman of the board of directors of St Mary's Hospital, Orange, a member of the board of governors of the Essex County Hospital for Contagious Diseases, Belleville, aged 83, died, April 8 in the Orange Memorial Hospital of cerebral hemorrhage.

Howard Johnston Bostetter, Mount Savage Md. University of Maryland School of Medicine, Baltimore 1907, member of the Medical and Chirurgical Faculty of Maryland on the staff of the Allegany Hospital or the Sisters of Charity, Cumberland, aged 61, died March 12 of coronary heart disease, arteriosclerosis and chronic nephritis.

James Barton Bradwell, Chicago, Hahnemann Medical College and Hospital, Chicago, 1902, aged 64, died April 8 in the Michael Reese Hospital of hypertension and congestive heart disease.

Henry F Bright, Alcester, S D. Columbian Medical College, Kansas City, Mo. 1899, aged 65, died March 22 of coronary thrombosis.

Warren P Brockett, Kansas City Kan. Kansas Medical College, Medical Department of Washburn College, Topeka 1898, at one time secretary and treasurer of the Jackson County Medical Society, formerly a physician in the Indian Service at Mayetta, aged 72, died April 9, of coronary occlusion.

Frank Patrick Broderick ☉ Boston. Yale University School of Medicine, New Haven, Conn. 1898, aged 67, died February 26.

Pleasant Lewis Burgess, Bowdon, Ga., Southern College of Medicine and Surgery, Atlanta 1912, member of the Medical Association of Georgia, aged 60, died, March 14, of cardiovascular disease.

Charles Calderine Crawford ☉ Cleveland. University of Wooster Medical Department, Cleveland 1905, also a pharmacist, one of the founders and member of the staff of the Glenville Hospital where he had been president and treasurer of the staff and president of the board of trustees, aged 62, died April 10, at his home in University Heights, Ohio, of heart disease.

William Henry Ewing, Pittsburgh. Western Pennsylvania Medical College, Pittsburgh 1893, member of the Medical Society of the State of Pennsylvania, at one time on the staff of the Reineman Hospital, aged 78, died April 5 of cerebral thrombosis.

George Wallace Fennacy, Kankakee Ill. Bellevue Hospital Medical College, New York 1885, aged 76, died March 13 of coronary sclerosis.

William Rhodes Ferrell, Belle Mo. St. Louis College of Physicians and Surgeons 1892, member of the Missouri State Medical Association, past president of the Gasconade-Marion-Osage Counties Medical Society, medical examiner for the draft board, aged 75, died, March 20, of heart disease.



ARTHUR DEAN BEVAN, M.D., 1861-1943

Louis Fichter, New York, Columbia University College of Physicians and Surgeons, New York, 1904, formerly a member of the city police department and board of health, at one time on the staff of the German Hospital, aged 60, died, March 22, in Stamford, Conn., of septicaemia, peritonitis and intestinal neoplasm.

John L. Freeland, Gudner, Colo., Medical College of Ohio, Cincinnati, 1885, formerly a member of the city board of health of Indianapolis and the Indiana State Board of Health, at one time superintendent of the City Hospital, Indianapolis, aged 82, died, April 4, in Denver.

John O. Garrigus, Terre Haute, Ind., Medical College of Indiana, Indianapolis, 1905, member of the Indiana State Medical Association, served several terms as coroner of Vigo County and at various times as deputy coroner, formerly police surgeon, aged 69, died, April 2, in the Union Hospital of paralysis agitans and arteriosclerosis.

Bernard Joseph Gretsche, New York, Columbia University College of Physicians and Surgeons, New York, 1901, member of the Medical Society of the State of New York, aged 70, died, April 2, of heart disease.

John H. Guthrie, Kress, Texas (licensed in Texas, under the Act of 1907), also a druggist, aged 67, on the staff of the Floydada (Texas) Hospital and Clinic, where he died, March 31, of cardiovascular vascular disease.

Philip Halpern, Philadelphia, Hahnemann Medical College and Hospital of Philadelphia, 1932, aged 41, died recently of gastric carcinoma with metastases.

William Hansell Ⓢ Ottumwa, Iowa (licensed in Iowa in 1892), an Affiliate Fellow of the American Medical Association, on the staffs of the Ottumwa and St. Joseph hospitals, aged 88, died, April 6, of uremia and chronic nephritis.

Hill Wright Howell, San Francisco, University of Nashville (Tenn.) Medical Department, 1909, member of the Medical Association of the State of Alabama, served during World War I, at one time associated with the U. S. Veterans Bureau, Birmingham, Ala., major, medical corps, Army of the United States, not on active duty, aged 56, on the staff of the Veterans Administration Facility, where he died, March 1, of coronary thrombosis.

Howard Wakefield Jewett, Lowell, Mass., Hahnemann Medical College and Hospital of Philadelphia, 1905, member of the Massachusetts Medical Society, aged 63, senior member of the medical staff of the Lowell General Hospital, where he died, March 18, of pyonephrosis.

William Finney Kellam, Onley, Va., Johns Hopkins University School of Medicine, Baltimore, 1906, president and director of the Farmers' and Merchants' National Bank of Onley, a director of the Eastern Shore Public Service Company, member of the state board of fisheries, aged 62, died, March 30, of angina pectoris.

Theodore Charles Koessel, Chicago, Bennett College of Eclectic Medicine and Surgery, Chicago, 1896, member of the Illinois State Medical Society, aged 70, died, April 20, of chronic heart disease.

Henry H. W. Kruse Ⓢ Rockford, Iowa, Thuringische Landesuniversitat Medizinische Fakultat, Jena, Thuringia, Germany, 1922, aged 52, on the staff of the Cedar Valley Hospital, Charles City, where he died, March 28, of carcinoma of the bladder.

Willis Gaylord Lewis, West Palm Beach, Fla., Jefferson Medical College of Philadelphia, 1890, aged 83, died, March 20, following a prostatectomy.

Clinton Eber McKinnis, Seattle, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1908, aged 57, died, March 23, in a local hospital of pneumonia.

George Fremont Miller Ⓢ Belfast, Maine, Tufts College Medical School, Boston, 1908, past president of the Waldo County Medical Society, aged 66, died, March 22, of coronary thrombosis.

William Nelson Miller, Cold Spring, N. Y., University of the City of New York Medical Department, New York, 1895, health officer of Croton-on-Hudson for thirty-two years and school physician for twenty-two years, visiting obstetrician on the staffs of the Peekskill (N. Y.) Hospital and the Ossining (N. Y.) Hospital, for many years surgeon for the New York Central Railroad, aged 72, died, March 23, of cerebral hemorrhage.

John Patrick O'Brien, Jersey City, N. J., Georgetown University School of Medicine, Washington, D. C., 1936, aged 35, on the staff of the Medical Center, where he died, April 2, of heart disease.

Foster Holmes Platt, Brooklyn, University of Vermont College of Medicine, Burlington, 1915, member of the Medical Society of the State of New York, on the staffs of the Prospect Heights and Adelphi hospitals, aged 50, died, April 4, of coronary thrombosis.

Robert Allen Prichard, Boerne, Texas, University of Louisville (Ky.) Medical Department, 1893, aged 78, died, March 7.

George Frederick Puffett, Alta, Iowa, State University of Iowa College of Medicine, Iowa City, 1889, aged 78, died, March 1, of senile dementia.

James F. Reynolds, Bevely, Ohio, Columbus Medical College, 1887, aged 84, died, March 25, of heart disease.

Thomas Carter Richards, Fayette, Mo., Missouri Medical College, St. Louis, 1890, coroner of Howard County, aged 78, died, March 20, in the Veterans Administration Facility, Jefferson Barracks, of cerebral hemorrhage.

Samuel Schwartzman, New York, Cornell University Medical College, New York, 1903, aged 63, died, March 26, of heart disease.

Charles Thomas Slavin, Moravia, Iowa, Barnes Medical College, St. Louis, 1904, member of the Iowa State Medical Society, health officer, president of the school board, aged 70, died, March 31, of myocarditis.

Charles Weaver Stewart Ⓢ Newport, R. I., College of Physicians and Surgeons, New York, 1891, fellow of the American College of Surgeons, chief surgeon at the Newport Hospital, a director of the Newport Trust Company, aged 77, died, March 26, of chronic myocarditis.

Amer Mills Stocking, Macomb, Ill., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910, a retired minister, aged 84, died, March 31, in Bushnell of chronic myocarditis.

Elmer C. Thompson, Marked Tree, Ark., Kansas City (Mo.) College of Medicine and Surgery, 1923, served during World War I, aged 55, died, March 20.

John Philip Throenle, St. Bernard, Ohio, Pulte Medical College, Cincinnati, 1901, aged 74, died, April 3, of coronary disease.

Theodore Toepel Ⓢ Atlanta, Ga., Atlanta College of Physicians and Surgeons, 1899, past president of the Fulton County Medical Society, served as president of the Georgia League for Crippled Children, formerly director of physical training and hygiene in the public schools of Atlanta, on the staffs of the Crawford W. Long Memorial and the Grady hospitals, aged 73, died, March 12, of heart disease.

Honore D. Valin, Chicago, University of Vermont College of Medicine, Burlington, 1879, member of the Illinois State Medical Society, formerly on the staff of St. Peter (Minn.) State Hospital, aged 85, died recently at the Chicago State Hospital of hypertensive heart disease and chronic myocarditis.

Charles Layton Weitz Ⓢ Mount Vernon, N. Y., New York Homeopathic Medical College and Flower Hospital, New York, 1918, served as a first lieutenant in the medical corps of the U. S. Army during World War I, aged 46, on the visiting staff of the Mount Vernon Hospital, where he died, April 13, of nitric acid poisoning self administered.

DIED WHILE IN MILITARY SERVICE

Thomas Joseph Coonan Ⓢ Baltimore, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1925, major, medical reserve corps, of the U. S. Army, aged 41, died, Nov. 3, 1942, of meningitis.

Guy B. McArthur Ⓢ Medical Director, Captain, U. S. Navy, Coco Solo, Canal Zone, Washington University School of Medicine, St. Louis, 1917, entered the medical corps of the U. S. Navy Sept. 6, 1917, medical officer in command of the U. S. Naval Hospital, aged 52, died, March 18, near the U. S. Naval Air Station, Miami, Fla., as the result of an automobile accident.

Harvey Wave Miller Ⓢ Medical Inspector, Commander, U. S. Navy, Portland, Ind., Indiana University School of Medicine, Indianapolis, 1912, entered the medical corps of the U. S. Navy on July 5, 1921, served during World War I, aged 59, died, March 19, in the U. S. Naval Hospital, Corona, Calif., of coronary thrombosis while en route to a new assignment.

Correspondence

TYPHOID SHOCK THERAPY IN RENAL DISEASE

To the Editor—In the March 6 issue of THE JOURNAL, Taylor and Page report on the use of typhoid shock therapy in 2 cases of renal disease malignant hypertension and the nephrotic phase of chronic glomerulonephritis. From their results they conclude that this method of therapy is quite dangerous because of the evidence of severe renal irritation.

From their protocols one might possibly draw somewhat different conclusions. The doses of triple typhoid vaccine used in the case of malignant hypertension appear to be somewhat too high for a first dose. The use of a second dose so soon after the first (which had already produced signs of renal irritation) complicates any conclusions one might draw. The second case is approached more cautiously and might be termed a minor triumph for shock therapy. Six intravenous injections of intravenous typhoid vaccine cured a case of chronic nephritis or over five months standing. Hematuria and a low urea clearance do not seem to be excessive risks for such results.

During the past few years I have treated a number of seemingly hopeless cases of renal disease with typhoid shock therapy (chronic glomerulonephritis with and without edema or uremia periarthritis nodosa active glomerulonephritis associated with pyoderma and malignant hypertension). The results in some instances were gratifying. I have used the infusion method of administering this pyrogenic agent in an attempt to minimize the risk and prolong the fever.

The urinary changes noted by Taylor and Page are possibly similar to exacerbation of a focal infection when the causal mechanism is tapped. In other chronic infections such as arthritis this is considered to be an encouraging sign. Renal irritation occurring with cautiously administered typhoid shock therapy might also fall into this category. One hesitates to condemn a technique which offers the hope of brilliant results in what are otherwise hopeless cases.

HARRY A. SOLOMON, M.D. New York

TETANUS IN THE MIDDLE EAST

To the Editor—The editorial comment 'Tetanus in the Middle East' (THE JOURNAL April 3 p. 1157) cites the experience with this disease in a section of the British army. Because of the finding that 5 patients who had received tetanus toxoid subsequently developed tetanus, the article affirms the impression of the British workers, stating that 'From these figures active immunization while effective in preventing tetanus apparently has definite limitations.' This statement is of course entirely true and needs no confirmation. But as it is stated the statement may result in misunderstanding.

In the first place no one familiar with immunologic processes expects 100 per cent protection following an immunization procedure. The biologic individuality of human beings (like other animals) is such that occasional subjects will fail to respond to any given immunization procedure as has been well established in many studies covering various types of immunization. This property is of course not peculiar to immunization or to the animal kingdom for that matter—duds occur among bombs, automobile tires, vegetable seeds or what you will. Consequently no surprise or change in point of view should be occasioned by learning that a few cases of tetanus occur among the soldiers in the British or any other army.

Secondly the results reported by the British authorities must be differentiated from those which may be expected in the United States Army since the immunization procedures are different in the two armies (London Letter 1104 April 17).

Of the 5 cases of tetanus mentioned I was incompletely reported in 3 there were only two initial immunizing doses of tetanus toxoid and only in 1 was a subsequent booster dose of toxoid given as well as the initial doses. In the American Army the official procedure (Circular Letter 34 S G O Long A P Tetanus Toxoid Its Use in the United States Army *Am J Pub Health* 33 53 [Jan] 1943) is to give two initial doses of fluid toxoid three weeks apart a stimulating dose one year later or on departure for a theater of operations and an emergency stimulating dose on the occurrence of wounds severe burns or other circumstances in which the danger of tetanus is a possibility. This American procedure can be expected to give a higher percentage of protection than the earlier British procedure on which the results referred to were based.

GEOFFREY EDGALL, M.D. Boston

COUNTY SOCIETY PROPOSES CASH SUBSIDY FOR FAMILIES OF SERVICE MEN

To the Editor—The council of the Wayne County Medical Society announces its course of action relative to the program of maternal and pediatric care for wives and infants of enlisted men projected by the government under H. R. 1975 and proposed to be administered by the state department of health.

The council believes that all the families or men in military service requiring assistance for any of the necessities of life should receive a direct contribution from the federal government and that the money thus appropriated should be paid directly to those for whom it was intended namely the wives and children or men in the armed forces.

The council believes that the proposed plan under H. R. 1975 is inadequate in its scope because it is restricted to one particular condition in the mother and to the care of children up to only 1 year of age furthermore that it should not be administered by the state health department because among other things the service should be handled uniformly by an authority that functions actively in every county of Michigan and in many counties there are no health departments.

The council suggests that the program can be administered most readily and without overlapping personnel and new red tape either by the army through the established procedures of paying dependency allowances or through the functioning Army Emergency Relief organization. Simplified procedures and essential records to a great extent already exist in these organizations and assistance is paid directly in the form of cash benefits to those for whom it is intended. Contact so far with personnel of the Army Emergency Relief organization shows that it is favorable to the idea and can function as stated. From the standpoint of the mother this system would be preferred because she already understands it to say nothing of time and effort saved and the fact that she is not classified as an indigent nor is the implication given as in the present proposal that she cannot be trusted with the cash benefit.

If the foregoing is impossible at present the council calls attention to the already existing facilities in Michigan that administer medical and hospital assistance namely the State Social Aid and Welfare Commission the Michigan Crippled Children Commission and the American Red Cross.

The council objects to the intrusion of federal politics and federal domination in the field of curative medicine through the use of the state department of health the concern of which should be solely in the field of preventive medicine.

Report of this action is being sent to the governor and the members of the state administrative board to the American Medical Association to all county medical societies in the state of Michigan and to the National Physicians Committee.

WILLIAM D. BURETT, M.D. Detroit
Pres. Int. Wayne County Medical Society

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *The Journal* June 12, page 463

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II August 24 Part III June and also at different times at various centers having 5 or more eligible applicants Sec, Dr J S Rodman, 225 S 15th St Philadelphia

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYNDIOLOGY Written Various centers Sept 27 Oral Philadelphia, Nov 56 Final date for filing application is August 16 Sec, Dr C Guy Lee, 116 Marlboro St Boston

AMERICAN BOARD OF INTERNAL MEDICINE Oral Chicago, June 9-11 Written Oct 18 Final date for filing application is Sept 1 Asst Sec Dr William A Wersch 1301 University Ave, Madison, Wis

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Part I New Orleans, Oct 8-9 New York, Oct 15-16 Chicago Oct 22-23 San Francisco Oct 29-30 Final date for filing application is Aug 10 Sec Dr Guy A Caldwell 3503 Pryor St New Orleans Louisiana

AMERICAN BOARD OF OTOLOGY AND RHINOLOGY Oral Chicago October Final date for filing application is July 1 Sec, Dr Dean M Fierle, 1500 Medical Arts Bldg Omaha Neb

AMERICAN BOARD OF PEDIATRICS Written Locally Oct 7 Oral New York City Nov 20-21, and Cincinnati, Dec 11 Final date for filing applications is Aug 10 Starting July 1 1943, group I will be abolished Sec, Dr C A Aldrich 707 Fullerton Ave Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY Written Locally, Oct 30 Oral Locally Dec 20-21 Final date for filing application is Sept 30 Sec, Dr Walter Freeman 1028 Connecticut Ave NW, Washington, D C

AMERICAN BOARD OF SURGERY Written Part I Oct 7 Final date for filing application is Aug 1 Sec Dr J S Rodman, 225 S 15th St Philadelphia

AMERICAN BOARD OF UROLOGY Oral Chicago, February Written Various centers, December Final date for filing application is Nov 1 Sec, Dr Gilbert J Thomas, 1109 Willow St Minneapolis Minn

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts Application of Colored Lights as the Practice of Medicine—Dinshah P Ghadiali developed 'Spectro-Chrome-Metry' as "an original science" by the application of which, according to his claims, while he 'does not cure or attempt to cure disease,' he can "'tonate the imbalance' of the human body by attuned color waves supplied by an appliance called a 'Spectro-Chrome,'" for which he has obtained a United States patent The specification filed in the United States Patent Office for that invention stated that the invention "relates to a color wave projection apparatus intended primarily for use in the treatment of diseases by means of color waves emanating from selected portions of the spectrum" Any "imbalance," so Ghadiali claimed, "can be 'tonated' by the proper use of the Spectro-Chrome" Ghadiali wrote a so-called "Spectro-Chrome-Metry Encyclopaedia," which discusses treatments for "most major diseases" These cures, Ghadiali claimed, are effected by exposure of the affected part of the body to colored lights emanating from the Spectro-Chrome

It was Ghadiali's practice, affixing in advertising circulars after his name the title "(Honorary) M D Metaphysician and Psychologist," to conduct an itinerant series of courses in the alleged "original science" he had developed So-called pupils would enroll, according to the forms they signed, "for the study of Spectro-Chrome-Metry, The Science of Automatic Precision, the Measurement and Restoration of the Human Radio-Active and Radio-Emanative Equilibrium (Tonation of Imbalance) by Attuned Color Waves, without the use of Diagnosis, Drugs, Manipulation or Surgery" There was evidence that some, if not most, of the "students" enrolled with the thought that their personal diseases and ailments

would be "benefited" by the course During the course each student would be given a Spectro-Chrome and a copy of the encyclopedia written by Ghadiali As a result of conducting one of these courses in Delaware, Ghadiali was prosecuted for violating the medical practice act of Delaware in that without having a license to practice medicine and surgery he (1) recommended the use of an appliance for the cure, relief or palliation of ailment or disease of mind or body and (2) used the letters M D in connection with his name, implying or designating him as a practitioner of medicine He was found guilty and the conviction was affirmed by the Supreme Court of Delaware in an unreported opinion A writ of certiorari was denied by the Supreme Court of the United States *Ghadiali v Delaware*, 292 US 653, 54 S Ct 864, 78 L Ed 1502 Subsequently, without the aid of an attorney, he instituted an action in the federal district court, district of Delaware, to enjoin the Delaware state medical society, the attorney general of the state and other defendants from preventing him from lecturing on the subject of the alleged science he developed, which restraint, so he alleged, interfered with his constitutional rights as an American citizen

Ghadiali did not point out any particular article of the United States Constitution on which he relied, aside from the provisions of the constitution authorizing the Congress to enact laws relating to the patenting of inventions The court concluded, therefore, that he based his case in chief on the provisions of the fourteenth amendment relating to the right of freedom of speech He attacked the Delaware medical practice act as unconstitutional, asserting in effect that he has the right to say what he pleases He contended that what he had done and what he intended to do in the state of Delaware did not constitute the practice of medicine The rights conferred by the constitution, answered the court, are not absolute and the right of freedom of speech must be so governed as to insure orderly and healthful living The police power is reserved explicitly to the states by the tenth amendment The health of the citizens of a state is a proper subject for the exercise of that power, and a state may license the practice of medicine within its borders in aid of public health A state may define what constitutes the practice of medicine, and the provisions of the Delaware medical practice act defining the practice of medicine are reasonable and present no substantial questions of constitutionality

The next question, then, said the court, is Has the state of Delaware applied the medical practice act arbitrarily to Ghadiali? He is not a physician or a surgeon He claims that he does not hold himself out as a physician He contends that he does not diagnose illnesses, cure sickness or treat ill persons but that he merely sells his patented appliance, the Spectro-Chrome, and therefore is not engaged in the practice of medicine Nevertheless, he claims that the Spectro-Chrome can "tonate" the "imbalance" of the body, that is to say, in medical phraseology, that the Spectro-Chrome applied in accordance with his teachings will cure disease Thus, although Ghadiali claims to be a mere purveyor of machines, he in effect prescribes methods of treatment for disease It is material that he disdains the conventional words "disease" and "cure" and that he disavows the profession of a physician though making use of the words "(Honorary) M D" after his name He offers Spectro-Chrome-Metry as a substitute for medicine for the cure of disease Since he was not licensed by the state of Delaware, he was acting in violation of the statute prohibiting the practice of medicine without a license, and his prosecution and conviction did not deprive him of his right of freedom of speech without due process of law

The court accordingly dismissed the proceedings, in effect leaving the law enforcement officials of Delaware free to proceed against Ghadiali if he continues his activities in the state —*Ghadiali v Delaware State Medical Society*, 48 F Supp 759 (1943)

Society Proceedings

COMING MEETINGS

Montana, Medical Association of, Billings, July 7-8 Dr Thomas F Walker, 206 Medical Arts Building, Great Falls, Secretary

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

25 145-234 (Feb) 1943

Heart Disease in the Argentine P. Cossio Buenos Aires Argentina—p 145

*Patency of Ductus Arteriosus in Adults A. Keys and M. J. Shapiro Minneapolis—p 153

*Results of Surgical Treatment of Patency of Ductus Arteriosus Complicated by Subacute Bacterial Endarteritis A. S. W. Touroff New York—p 157

Physiologic Definition of Acute Congestive Heart Muscle Failure G. Fahr and M. S. Buehler Minneapolis—p 211

Hemiplegia Following Bradycardia and Cardiac Standstill A. T. Steegmann Kansas City Mo. and H. Feil Cleveland—p 244

Patency of Ductus Arteriosus in Adults—There exist records of 134 patients who have had operations for ligation of the duct, nearly half of these have not been reported except by personal correspondence to Keys and Shapiro. Patency of the ductus arteriosus is apparently much more common than was previously believed. The authors themselves have studied 51 such patients in the Minneapolis and St. Paul area. Brief notes are given on 57 adults with postmortem examinations who had simple, typical patency of the ductus arteriosus; a few data on 10 adults with atypical patency of the duct and 4 case reports of adults with postmortem examinations who had simple patency of the duct. In simple patency the cause of death was subacute bacterial endarteritis in more than 40 per cent. 28 per cent died of congestive failure. The death of 2 patients resulted from rupture of a pulmonary aneurysm. After the age of 17, patency of the ductus arteriosus was associated with an average reduction of life expectancy of about twenty-five years. While life lasts it is fairly normal. Right and left sided cardiac hypertrophy occurs but there is no enlargement in at least 10 per cent pulmonary aneurysms are present in about 15 per cent, atheromas and calcareous plaques occur frequently and the aorta is involved almost as often as the pulmonary artery. The ductus was usually short, and in some it was represented by a fistula-like communication between the aorta and the pulmonary artery. Difficult or even inoperable conditions occurred in about 17 per cent. The aortic orifice was usually larger than the pulmonary orifice. Among adults with simple patency of the ductus women represent about three fourths of the cases. In atypical patency this sex ratio seems to be reversed. Analysis of the available data indicates that an attempt at ligation of the ductus is justifiable in spite of the absence of signs of decreasing adjustment to the defect. In adults difficult or impossible operative conditions will be frequent.

Patency of Ductus Arteriosus Complicated by Subacute Endarteritis—During the two and a half years following January 1940 Touroff has surgically treated 11 patients with subacute bacterial endarteritis involving a patent ductus arteriosus. Although not all the patients were cured the value of surgical intervention in properly selected cases was established. The ages of the 11 patients ranged between 9 and 63 years. 8 were women. In 10 the onset of clinical manifestations of infection and the time of operation varied between thirty-one (+) days and five months, in 1 the infection was present for two years prior to operation. Spontaneous pulmonary embolism prior to operation occurred in 5 patients. In 10 chemotherapy prior to operation was without significant effect. At the time of operation the blood cultures of all patients were positive for

Streptococcus viridans. The characteristic "machinery" murmur of patent ductus arteriosus was present in all several had additional soft systolic murmurs (at the apex or base) which were considered to be of little significance, in 2 characteristic murmurs led to the additional preoperative diagnosis of secondary, vegetative valvular involvement. Nine patients survived the operation and 2 died of operative hemorrhage. Of the survivors, 6 recovered from infection without benefit of chemotherapy and 3 did not recover from infection despite chemotherapy. Of the 6 who recovered, none presented evidence of preoperative spread of vegetations and after three to twenty-nine months all are well and their blood cultures have been repeatedly negative. Of the 3 who failed to recover, 2 had evidence of vegetative valvular lesions prior to operation and 1 was assumed to have vegetations at the aortic end of the ductus. One of these 3 patients died of subacute *Streptococcus viridans* endarteritis eight months after operation and 2 are unimproved fourteen and sixteen weeks, respectively, after operation. Ligation or division of the ductus, if performed before vegetations have spread to the cardiac valves or aorta, is an effective and safe method of treating subacute *Streptococcus viridans* endarteritis involving a patent ductus arteriosus. The operation should be done as soon as the diagnosis of superimposed infection is established. A patient with an acutely infected (*Staphylococcus aureus*) patent ductus arteriosus has been operated on successfully.

25 285-428 (March) 1943

William Withering—A Bicentenary Tribute G. Nylin Stockholm, Sweden—p 285

*Angiocardiography and Its Value R. Perez de los Reyes, A. Castellanos and R. Pereiras Havana, Cuba—p 298

Serologic Reaction in Cardiovascular Syphilis W. Beckh San Francisco—p 307

Apparent Causal Mechanism of Primary Thrombosis of Axillary and Subclavian Veins J. J. Sampson San Francisco—p 313

Rate of Peripheral Blood Flow in Presence of Edema D. I. Abramson, S. M. Fierst and K. Flachs Cincinnati—p 328

*Investigations Concerning Vital Capacity D. Gross Santiago, Chile—p 335

*Effect of Intravenous Administration of Lanatoside C on Output, Diastolic Volume and Mechanical Efficiency of the Failing Human Heart J. S. La Due New Orleans and G. Fahr Minneapolis—p 344

Thrombosis of Subclavian and Axillary Veins Report of 46 Cases J. R. Veal and H. H. Hussey Washington, D. C.—p 355

Electrocardiogram in Hyperventilation Syndrome W. P. Thompson Los Angeles—p 372

Angiocardiography—Perez de los Reyes and his associates have employed angiocardiography routinely since 1937 in the examination of cardiac patients. It has proved harmless and its diagnostic value is superior to that of other methods. Angiocardiography utilizes the peripheral veins for visualizing the cavities of the human heart and their large communicating blood vessels. The method was devised with a view of establishing a correct diagnosis of congenital heart disease. Its two main stages consist in the introduction of a thin Lindeman trocar in a vein of the elbow, hand, leg or thigh and the injection of a radiopaque substance (not sodium iodide in a living subject) and exposure of the X-ray film at the end of the injection. From birth until the age of 6 months a 35 per cent solution of a radiopaque substance is used; from 6 months until 2 or 3 years of age the same solution may be used in non-cyanotic patients but in the presence of cyanosis the best concentration is 50 per cent. Injection of the substance must be completed as rapidly as possible and the roentgenogram made while the syringe still contains 2 or 3 cc. of the original 8 to 10 cc. of solution for a newborn infant, 12 to 20 cc. for an infant and 15 to 30 cc. for older children. The technic is easy and can be done wherever roentgenographic equipment is available.

Vital Capacity—Gross describes a new spirometric procedure of investigating the respiratory function; it adds to the factor of volume the factors of time and pressure. By measuring at the same time as the vital capacity the minimal duration of the quickest possible exhalation of a volume equal to the vital capacity the velocity of spirometric respiration is obtained by dividing the vital capacity by the expiration time. The velocity of spirometric respiration is that air volume which enters the spirometer per second. It represents the average of

the quickest possible expiration. Furthermore, the maximal expiratory pressure is measured, this corresponds to the respiratory movement and is, in a sense, identical with the vital capacity. The vital capacity (volume) and the expiratory pressure are independent of each other, whereas the velocity of spirometric respiration depends on the vital capacity as well as on the expiratory pressure. Any decrease in vital capacity that is caused predominantly by heart disease is characterized by prolongation of the expiration time, by decrease in the velocity of spirometric expiration and, above all, by decreased expiratory pressure which in typical cases sinks below half the standard value. Decreases in vital capacity that are caused primarily by pulmonary disease are characterized by prolonged expiration time, by decreased velocity of respiration and, most of all, by normal or hardly altered expiratory pressure. The decrease in expiratory pressure in cardiac insufficiency is explained by a diminution in the strength of the respiratory muscular apparatus. The fact that a person has a normal vital capacity does not prove that he has a normal respiratory function. Other factors such as time, velocity and expiratory pressure, must be considered.

Effect of Lanatoside C on Failing Heart—According to La Due and Fahr the intravenous administration of Lanatoside C to patients with heart failure and normal sinus rhythm usually increased the pulse pressure and reduced the circulation time and venous pressure within two hours. Roentgenkymographic studies of the hearts of 10 such patients showed that the drug significantly reduced the diastolic heart volume of 5 and increased the stroke output of 8. In 2 patients the minute volume of the heart was so great before the administration of the drug that no decided increase could be expected. In the 8 patients in whom the cardiac output, the product of the stroke output and the mean blood pressure was definitely increased, the diastolic heart volume was decreased or unchanged. Since the diastolic heart volume is an index of oxygen consumption, these increases in work which followed Lanatoside C must have represented proportional improvement in the mechanical efficiency of the heart of 8 of the 10 patients. Seven patients who were studied after compensation was established showed a decrease of 200 cc or more in the diastolic heart volume. In 4 the minute volume was greater than at the start of the experiment and in 3 it was less. The most consistent and lasting change produced seemed to be a decrease in the diastolic volume of oxygen consumption.

American J. Digestive Diseases, Fort Wayne, Ind

10 45-80 (Feb) 1943

- Clinical Experiments with Riboflavin, Inositol and Calcium Pantothenate. M. G. Vorhaus, M. L. Gompertz and A. Feder, New York—p. 45.
Oral Use of Amino Acids of Hydrolyzed Casein (Amigen) in Surgical Patients. R. Elman, St. Louis—p. 48.
Relationship Between Roentgenographic Abnormalities of Gallbladder and Constipation. G. H. Frank, J. M. Berzell and A. C. Ivy, Chicago—p. 50.
Giardiasis with Unusual Clinical Findings. Preliminary Report. P. B. Welch, Miami Fla.—p. 52.
*Chemotherapy of Chronic Ulcerative Colitis. M. A. Mills and T. T. Mackie, New York—p. 55.
Significance of Hemorrhagic or Pigment Spots as Observed by Gastroscopy. J. M. Ruffin and I. W. Brown Jr., Durham, N. C.—p. 60.
Generalized Pruritus Due to Carcinoma of Stomach and Cured by Gastrectomy. L. Cardon, Chicago—p. 63.
Thiamine Influence on Laxative Action. S. Loewe, Ida Loewe and R. Knox Jr., New York—p. 65.
Liver Function Tests in the Aged (Serum Cholesterol Phosphatid, Bromsulphalein, Cephalin Flocculation and Oral and Intravenous Hippuric Acid Tests). H. A. Rafsky and B. Newman, New York.
Duodenal Tube Biliary Drainage. Twenty-Five Year Follow Up.
*Report on Anna Ingeber, Penn., the First Person to Undergo Treatment by This Method. B. B. V. Lyon, Philadelphia—p. 69.

Chemotherapy of Chronic Ulcerative Colitis—Sulfathiazole, sulfaguanidine and sulfadiazine were used by Mills and Mackie in the treatment of 109 unselected cases of acute and fulminating to chronic ulcerative colitis from the colitis clinic of the Roosevelt Hospital. Thirty-six patients were treated with only one drug. Sulfathiazole employed in 59 proved most effective in acute cases. Of the 59 patients with the disease in the acute, active, chronic, recurrent and convalescent stages

treated with sulfathiazole 23 were decidedly, 23 definitely and 8 were not improved, 5 were intolerant to the drug. The doses employed included 6 Gm divided into six equal doses for several days, this was reduced to 4 Gm in twenty-four hours. The average total dose administered was 40 Gm per patient. The respective figures for the 71 treated with sulfadiazine were 35, 21, 9 and 6, and for the 91 given sulfaguanidine they were 41, 34, 11 and 5. The present status of the 109 patients is as follows: 15 have been in a sustained remission of the disease for six months to two years, in 35 the disease process is quiescent both on proctoscopic examination and symptomatically but these patients are still on active therapy, 25 are on active therapy with continuing improvement in their disease, 17 are unimproved, 7 have had ileostomies, 4 are dead and the present status of 6 is unknown. The better results occurred in patients without severe and irreversible pathologic changes in the colon.

American Journal of Medical Sciences, Philadelphia 205 157-312 (Feb) 1943

- Issue Culture Studies on Cytotoxicity of Bactericidal Agents. I. Effects of Gramicidin, Tyrocidine and Penicillin on Cultures of Mammalian Lymph Node. W. E. Herrell and Dorothy Heilman, Rochester, Minn.—p. 157.
*Ornithosis (Psittacosis). Report of 3 Cases and Historical, Clinical and Laboratory Comparison with Human Atypical (Virus) Pneumonia. C. B. Favour, Boston—p. 162.
Absorption Rate from Bone Marrow. L. M. Meyer and M. Perlmutter, Brooklyn—p. 187.
Use of Ouabain in Rapid Cardiac Arrhythmias. W. I. Geffer and W. G. Lerman Jr., Philadelphia—p. 190.
*Comparative Value of High and Low Doses of Sulfadiazine in Treatment of Pneumococcal Pneumonia. H. F. Dowling, C. R. Hartman, Washington, D. C., H. A. Feldman, Fort McPherson, Ga. and I. A. Jenkins, Fort George, G. Meade, Md.—p. 197.
Modulating Effects of Nicotinic Acid (Relation to Metabolic Rate and Body Temperature). Grace A. Goldsmith and Shirley Cordill, New Orleans—p. 204.
Relationship of Nicotin (Nicotinic Acid) to Porphyrinuria in the Aged. H. A. Rafsky and B. Newman, New York—p. 209.
*Studies of B Vitamins in Human Subject. VI. Failure of Riboflavin Therapy in Patients with Accepted Picture of Riboflavin Deficiency. F. E. Mitchell and P. R. McDonald, Philadelphia—p. 214.
Relative Absorption and Conjugation of Nine Compounds by Humans During Three Hour Period (Free and Conjugated Blood Level Determinations During Three Hour Period Following Peroral Administration of Acid Salts Alone, Acid Salts with Sodium Bicarbonate and Sodium Salts of Sulfapyridine, Sulfathiazole and Sulfadiazine). C. H. Loughlin, R. H. Bennett, Mary E. Flanagan and S. H. Spitz, Brooklyn—p. 223.
Occurrence of Abnormal Capillary Fragility in Newborn. W. C. Moloney, Boston—p. 229.
*Bilateral Partial Bundle Branch Block. S. Strauss and R. Langerdorf, Chicago—p. 233.
Predictability of Character (Increased or Normal) of Erythrocyte Sedimentation Rate. Survey of 1,000 Cases. J. D. Helm Jr., Philadelphia—p. 241.
Thrombocytopenic Purpura Caused by Sulfonamide Drugs. Report of 3 Cases. L. W. Gorham, S. Propp, J. L. Schwind and D. R. Chimenko, Albany, N. Y.—p. 246.
Effect of Storage at Various Temperatures on Prothrombin Clotting Time of Human Plasma. R. C. Page and E. J. de Beer, New York—p. 257.

Ornithosis (Psittacosis)—Favour has encountered 1 mild, 1 severe and 1 extremely severe case which he has been able to identify as probable ornithosis (psittacosis) by the complement fixation test. Other cases with parallel clinical courses but not due to the virus of ornithosis, suggested close similarity between ornithosis and atypical pneumonia. The 3 cases of ornithosis were observed in the course of eighteen months. Careful questioning of patients with atypical pneumonia about contact with varieties of birds known to harbor the virus and complement fixation tests on acute and convalescent serums should be performed as a diagnostic routine. Atypical pneumonia in patients from whom no etiologic agents have been isolated may be due to a virus of the psittacosis group which has become fixed and is usually incapable of heterologous parasitism. The cases presented are of further interest because a number of animal inoculations did not differentiate ornithosis pneumonia from the human type of virus pneumonia. In the assistance of Dr. K. F. Meyer's laboratory, where the psittacosis complement fixations were done, had not been obtained the cases might have been regarded as human virus pneumonia and the fact would have been missed that ornithosis is probably not a

more common than is suspected. The history of contact with birds was always obtained from the patient; the history was sought chiefly because the hospital staff had been awakened to the ornithosis problem by a visit from Dr Meyer.

High and Low Doses of Sulfadiazine—Eighty-one unselected adults with typed pneumococcal pneumonia were treated by Dowling and his colleagues with an initial dose of 2 Gm of sulfadiazine followed by 0.5 Gm every four hours until recovery was certain or death ensued and an alternate group of 79 with 6 Gm initially followed by 1 Gm every four hours. There was no significant difference in mortality or in the incidence of serious complications in the two groups. In the second group there was a slight tendency for the temperature to fall more rapidly than in the low dose group. The hospital stay for the patients receiving the larger doses averaged three and two-fifths days less than for the low dose group and the incidence of relapse, spread of the pneumonia to another lobe and slow resolution in the high dose group was less than half that in the low dose group. Toxic reactions were infrequent in both groups. Although the higher doses appear slightly more effective definitely smaller doses than are usually recommended can be used without fear of an increase in the mortality rate or of serious complications. At present this is significant as the supply of the sulfonamides may become limited.

Studies of B Vitamins in Man—The experience of Machella and McDonald in the treatment with riboflavin of some of the lesions of 20 patients attributed to its deficiency has been as follows. Cheilosis has not healed with the administration of riboflavin alone but from the observation of others it has become evident that the administration of fractions of the B complex other than riboflavin may be accompanied by healing of the lesion. They have had no significant experience in the treatment of the lesions of the face that have been ascribed to a deficiency of riboflavin. Its administration to 3 patients with acute and to 1 with chronic pemphigus brought about no improvement in the character or decrease in the number of the lesions. The results of treating keratitis of 9 patients with riboflavin were disappointing; only 1 of them experienced permanent subjective improvement. The cutaneous rosacea of 5 patients with rosacea keratitis was uninfluenced by the vitamin. In none of the 6 patients with a purple red or magenta tongue and with flattened or mushroom shaped filiform papillae who were treated with riboflavin were the changes of the tongue significantly altered by the vitamin. In 4 a return to normal occurred after medication with brewers' yeast, in 1 after pyridoxine was administered and in 1 the opportunity to observe the results of vitamin therapy other than riboflavin was not afforded. The conflicting data in the literature and their personal experience make the authors doubt the validity of the syndrome ariboflavinosis.

Bilateral Partial Bundle Branch Block—Strauss and Langendorf report a case of sinus rhythm with intraventricular block which showed variations of the ventricular complexes between the common and uncommon types. This change was associated with advanced partial auriculoventricular block. The alternations are explained by assuming partial block in the two main bundle branch systems with a shorter relative refractory phase of the bundle branch which has the longer absolute refractory phase. When a thorough examination of the conduction system in cases of intraventricular block is made bilateral involvement might become more frequent than heretofore expected.

Archives of Dermatology and Syphilology, Chicago 47 301-466 (March) 1943

- Lipid Proteinosis (Lrbach-Wiethe) J. Ramos e Silva Rio de Janeiro Brazil—p. 301
- Unusual Variant of Epidermolysis Bullosa Recurrent Bullous Eruption of Feet S. B. Frank—p. 327
- Mineral Changes in Neurodermatitis Revealed by Microincineration R. C. MacCardle M. F. Engman Jr. and M. F. Engman Sr. St. Louis—p. 335
- Multiple Basal Cell Epitheliomas Originating from Congenital Pigmented Basal Cell Nevus T. W. Nisbet Pasadena Calif—p. 37
- Auroclerose I. A. O'Leary Rochester Minn. and M. Wai man Chi ago—p. 38
- Keratosis Follicularis with Unusual Involvement of Scalp A. J. Hart Case D. G. Welton Charlotte N. C.—p. 393

Archives of Internal Medicine, Chicago

71 301-442 (March) 1943

- Angina Pectoris and Syndrome of Peptic Ulcer H. Levy and E. P. Boa New York—p. 301
- Protective Action of Vitamin C Against Experimental Hepatic Damage K. H. Beyer Madison Wis.—p. 315
- The Heart in Pulmonary Embolism J. Currans and A. R. Barne Rochester Minn.—p. 325
- Clinical Effectiveness and Safety of New Synthetic Analgesic Drugs Demerol R. C. Batterman New York—p. 345
- Effective Renal Blood Flow Glomerular Filtration Rate and Tubular Excretory Mass in Arterial Hypertension II Effect of Supradia phragmatic Splanchnicectomy with Lower Dorsal Sympathetic Ganglionectomy P. P. Foa W. W. Woods M. M. Peet and Naomi L. Foa Ann Arbor Mich.—p. 377
- Association of Hydrothorax with Ovarian Fibroma (Meigs's Syndrome) W. W. Herrick T. L. Tyson and B. P. Watson New York—p. 379
- Incidence and Causes of Hyperproteinemia Study of 4390 Cases L. Cardon and D. H. Atlas asisted by M. J. Brunner E. Aron and S. L. Teitelman Chicago—p. 377
- Blood Flow in Extremities Affected by Anterior Poliomyelitis D. I. Abramson K. Flachs J. Freiberg and I. A. Mirkin Cincinnati—p. 391
- Serum Cholesterol Level in Coronary Arteriosclerosis A. Steiner and Beatrice Domanski New York—p. 397
- Multiple Bilateral Pulmonary Adenomatosis in Man J. L. Sims—p. 403
- Unusual Sounds Emanating from Chest Cause and Diagnostic Significance of Bubbling Clicking Crunching Knocking and Tapping Sounds Report of 2 Cases of Interstitial Emphysema of Lung and Mediastinum J. A. Greene Iowa City—p. 410
- Value of Sodium Chloride in Prevention of Alkalosis During Sippy Treatment with Calcium Carbonate J. B. Kirsner and W. L. Palmer Chicago—p. 415
- Diseases of Nutrition Review of Certain Recent Contributions H. R. Butt R. M. Hovne and R. M. Wilder Rochester Minn.—p. 422

Multiple Bilateral Pulmonary Adenomatosis in Man—Sims reports an instance of pulmonary adenomatosis in man which resembled the disease jagzickte of sheep. Current opinion suggests that jagzickte is an infectious disease possibly of virus origin. A few similar cases in human beings have been reported previously. The possibility that this lesion as seen in sheep possesses neoplastic characteristics as well as transmissibility must be considered. Further investigation to establish the identity of the condition found in man with that found in sheep is indicated.

Army Medical Bulletin, Washington, D. C.

No. 65 1-240 (Jan) 1943

- Medical and Sanitary Data on British Solomon Islands Protectorate H. M. Horack—p. 1
- Medical and Sanitary Data on Territory of Papua Australian Manda el Territory of New Guinea (Including Bismarck Archipelago) H. M. Horack—p. 13
- Medical and Sanitary Data for Levant States T. F. Whayne—p. 50
- Experiences of Mobile Surgical Unit in Western Desert P. B. Ascroft—p. 75
- Survey of Hemolytic Streptococci in Certain Army Camp F. F. Schwenker—p. 94
- U. S. Army Induction Board Experience November 1940-September 1942 C. D. Williams—p. 105
- Frostbite Immersion Foot and Allied Conditions I. S. Wright and E. V. Allen—p. 136
- Neuropsychiatrists in U. S. Army Their Function in General and in Relation to Replacement Training Center R. D. Halloran and M. J. Farrell—p. 151

Hemolytic Streptococci in Certain Army Camps—Schwenker states that during the winter of 1941-1942 a total of 5405 throat cultures were made at four army posts. 158 or patients 674 or ward contacts and the others of normal carriers. The object was to obtain preepidemic data for comparison with similar studies in the event of an outbreak of streptococcal infections. At first only sporadic cases occurred but in February an epidemic occurred in one of the posts. At this post a single type of streptococcus caused most of the cases but at other the sporadic endemic cases were not caused by any principal streptococcus. Also the incidence of the various types of streptococci among normal carriers was similar. There was a definite relationship between the streptococcus carrier rates in a community and the incidence of scarlet fever. The logarithm of the morbidity varied directly with the carrier rate. This relationship held for the gross and group A rates and for the scarlatinal type since the three rates roughly paralleled one another. Changes in the gross carrier rate were due to variations in the group A rate which in turn were dependent on the changes in rate for the scarlatinal type. During ward outbreaks

of scarlet fever the scarlatinal strain of streptococcus became distributed throughout the inmates in varying degree. Depending on the degree of distribution, it failed to reach a certain proportion of the men, these remained well. Some of the others who came in contact with the scarlatinal strain were resistant to the organism, probably because of an antibacterial immunity. Regardless of their Dick reaction, they remained well and either promptly eliminated the streptococcus or became normal carriers. Those without antibacterial immunity became sick. Scarlet fever developed in the Dick positive individuals, while those who were Dick negative had streptococcal tonsillitis without a rash.

Journal of Infectious Diseases, Chicago

72 1-96 (Jan-Feb) 1943

- Effect of Sulfanilamide on Experimental Leprosy. C. Krakower, P. Morales Otero and J. H. Astoriver, San Juan, Puerto Rico—p. 1
- Effect of Oral Administration of Sulfamylguanidine on Experimental Bacillary Dysentery in Isolated Loops of Colon of *Microrhizobium* and Its Effect When Introduced into the Loops. G. M. Dick and Dorothy Hoskins, Chicago—p. 11
- Sylvatic Plague Studies. II. Fate of Pasteurella Pestis in Flea. J. R. Douglas and C. M. Wheeler, San Francisco—p. 18
- Isolation and Properties of Equine Encephalomyelitis Virus (Eastern Strain). A. R. Taylor, D. G. Sharp, Dorothy Beard and J. W. Beard, Durham, N. C.—p. 31
- Relationship of Eosinophil Response to Factors Involved in Anaphylaxis. D. H. Campbell, Chicago—p. 42
- Vibrio Antigen in Detection of Typhoid Carriers. M. Klein, Philadelphia—p. 49
- Occurrence and Distribution of Salmonella Types in United States. P. R. Edwards and D. W. Bruner, Lexington, Ky.—p. 58
- Sylvatic Plague Studies. III. Lepzootic of Plague Among Ground Squirrels (*Citellus beecheyi*) in Kern County, California. I. C. Evans, C. M. Wheeler and J. R. Douglas, San Francisco—p. 68
- Studies on Activity of Sodium Sulfadiazine Against Bacterium Fulvum. I. Treatment of Experimental Fulvemic Infection in Chick Embryo. J. C. Ransmeier, Nashville, Tenn.—p. 77
- Id. II. Effect on Growth in Vitro. J. C. Ransmeier, Nashville, Tenn.—p. 83
- Reaction of Chick Embryo to Virulent and Nonvirulent Strains of Bacterium Fulvum. J. C. Ransmeier, Nashville, Tenn.—p. 86
- Toxoplasmosis in Wild Rats. F. L. Perrin, Bethesda, Md., G. D. Brigham and E. G. Pickens, Savannah, Ga.—p. 91

Journal of Pediatrics, St. Louis

22 259-386 (March) 1943

- Clinical Results with Use of Agglutinin from Phase I Hemophilus Pertussis as Skin Test for Susceptibility to Whooping Cough. Harriet M. Felton and E. W. Flossdorf, Philadelphia—p. 259
- Obstructive Emphysema and Atelectasis in Tuberculosis of Infants and Children. J. Meneghello, Santiago, Chile, and C. A. Smith, Boston—p. 265
- Early Operation in Premature Cranial Synostosis for Prevention of Blindness and Other Sequelae. Five Case Reports with Follow Up. H. K. Faber and E. B. Towne, San Francisco—p. 286
- Western Equine Encephalomyelitis in Infants. H. Medovy, Winnipeg, Man., Canada—p. 308
- *Prophylactic Use of Sulfaguanidine in Dysentery Outbreak. P. F. Lucchesi and N. Gildersleeve, Philadelphia—p. 319
- Serum Phosphatase Values in Children Showing Retardation in Osseous Development and Low Metabolic Rates. A. M. Hill and J. E. Webber, Grand Rapids, Mich.—p. 325
- Assessing Physical Condition of Children. III. Components of Physical Status and Physical Progress and Their Evaluation. N. C. Wetzel, Cleveland—p. 329
- Association of Gastrointestinal Allergy with Celiac Syndrome. C. F. McKhann, S. Spector and Emily R. Meserve, Ann Arbor, Mich.—p. 362

Prophylactic Use of Sulfaguanidine in Dysentery Outbreak.—Lucchesi and Gildersleeve used sulfaguanidine prophylactically and therapeutically during an outbreak of bacillary dysentery among 118 children confined to bed with scarlet fever. The children in one part of the hospital were in danger of developing dysentery superimposed on the scarlet fever. For this reason, of the 45 children in this half of the building 30, being from cubicles in which a case of dysentery had developed, were given a prophylactic course of sulfaguanidine 0.05 Gm per kilogram of body weight every four hours for one day and then every eight hours for two days. Dysentery did not develop in any of the 45, 1 patient had a slight fever with four stools two days after the institution of sulfaguanidine but mucus, blood or dysentery organisms were not seen. The other wing of the ward was considered protected by its segregation from the infected wing and these patients were not given a prophylactic course of the drug. Dysentery did develop during the succeed-

ing five days in 4. These patients were immediately treated with sulfaguanidine and no further spread occurred. A total of 29 children between 2 and 12 years of age were treated. All had fever, diarrhea and mucus in the stools and usually blood and pus as well, but the dysentery organism was isolated only from 4. The clinical diagnosis was confirmed in 25 by the demonstration of antibodies during the convalescent period. The initial dose was 0.1 Gm per kilogram of body weight administered orally. This was followed at intervals of four hours by 0.05 Gm per kilogram until formed stools had been present for one to two days. Two patients had a mild relapse after the drug was discontinued. Relief was prompt on its readministration. Toxic reactions were negligible. Dietary treatment of all cases consisted of weak tea, ripe banana, scraped apple, fruit juices and, in a few cases, a kaolin-pectin mixture.

Journal Pharmacology & Exper Therap, Baltimore

77 207-310 (March) 1943 Partial Index

- Sulfapyridine Bacteriostasis of Lactobacillus Acidophilus and Its Counteraction. L. J. Teply, A. E. Axelrod and C. A. Elvehjem, Madison, Wis.—p. 207
- Relation of Molecular Configuration to Inactivation of Sympathomimetic Amines in Presence of Phenol Oxidase. K. H. Beyer, Madison, Wis.—p. 247
- *Effects of Atropine, Prostigmine, Adrenalin and Calcium on Movements of Fasting Human Stomach. W. F. Anderson and N. Morris, Glasgow, Scotland—p. 258
- Relation of Extrinsic Nerves of Intestine to Inhibitory Action of Atropine and Scopolamine on Intestinal Motility. W. B. Youmans, A. I. Karstens and K. W. Aumann, Portland, Ore.—p. 266
- Effect of Cocaine on Excretion of Phenol. Clara Torda, New York—p. 274
- *Sulfapyrazine. Its Activity Against Experimental Infections with Beta Hemolytic Streptococci as Compared with That of Sulfadiazine, Sulfathiazole, Sulfapyridine and Sulfanilamide. L. H. Schmidt and Clara L. Sesler, Cincinnati—p. 277
- Effect of Narcotics on Balance Between Central and Chemoreceptor Control of Respiration. R. D. Dripps and P. R. Dumke, Philadelphia—p. 290

Movements of Human Stomach.—Anderson and Morris observed the action of various drugs on the motility of the fasting human stomach. Atropine in small doses had a parasympathomimetic action which increased the frequency and amplitude of the hunger contractions and slowed the pulse rate. Such a dose also had a sensitizing effect whereby an antipara-sympathetic action was obtained from a second small dose. Large doses inhibited the movements of the stomach and quickened the heart rate. Prostigmine had an excitatory effect on gastric motility. Premedication with atropine did not change this action. If given in large doses, the atropine may prevent the stimulating effect of the prostigmine. The effects of atropine were not altered by the previous administration of prostigmine. Epinephrine in small doses occasionally increased gastric motility. Large doses had a sedative action. Calcium had a sedative action on the fasting contractions of the stomach and slowed the pulse rate.

Activity of Sulfapyrazine.—The activity of sulfapyrazine against infections with beta hemolytic streptococci was compared by Schmidt and Sesler with that of sulfadiazine, sulfathiazole, sulfapyridine and sulfanilamide. Sulfapyrazine was usually considerably more effective. The data suggest that the superior activity of sulfapyrazine, and also of sulfadiazine, over equal doses of other sulfonamides is due to the absorption and excretion characteristics of the two drugs, which permit the maintenance of effective concentrations in the blood between treatments. The activity of all five drugs was essentially the same when the average concentrations in the blood were the same.

Michigan State Medical Society Journal, Lansing

42 161-240 (March) 1943

- Pyogenic Infections of Skin, Especially Hydradenitis Suppurativa. L. A. Brunsting, Rochester, Minn.—p. 185
- Modern Management of Infections in Urinary Tract. R. D. Herrick, Chicago—p. 190
- Hyperparathyroidism with Osteitis Fibrosa Cystica. Report of Case. H. M. Andre, E. W. Schnoor, Grand Rapids and A. V. Schaeffer, Grandville—p. 195
- Diagnosis and Treatment of Abdominal Injuries. W. D. Gatch, Indianapolis—p. 198
- Kenny Treatment of Poliomyelitis. Elizabeth Kenny, Brisbane, Australia—p. 204

Minnesota Medicine, St Paul

26 225-320 (March) 1943

- Diagnosis of Corneal Lesion F H Haessler Milwaukee—p 243
Eustachian Tube Function and Deafness J R Lindsay Chicago—
p 250
Acute Suppurative Otitis Media—A Reconsideration C E Connor
St Paul—p 257
Staphylococcal Conjunctivitis T R Fritzsche New Ulm—p 263
Visual Malingering A G Athens Duluth—p 266
Spontaneous Paralysis of Seventh and Eighth Nerves with Recovery
O B Patch Duluth—p 270
Loss of Cilia in Respiratory Tract and Its Relation to Death from
Respiratory Disease Preliminary Report A C Hilding Duluth—
p 272
*Beneficial Effect of Urea in Topical Sulfonamide Therapy I Treatment
of Infected Dermatoses II Effectiveness of Urea Sulfonamide Com-
binations in Sulfonamide Resistant Infections E A Strakosch and
W C Clark Minneapolis—p 276
Treatment of Craniocerebral Injuries in Modern Warfare G S Baker
and A W Adson Rochester—p 282

Effect of Urea in Topical Sulfonamide Therapy—
Strakosch and Clark demonstrated that low concentrations of
urea exert a synergistic action with sulfonamides on *Escherichia*
coli in a synthetic medium and also neutralize the sulfonamide
inhibitory action of methionine and para-aminobenzoic acid.
Urea offers advantages over certain other substances, such as
azochloramid, which neutralize the sulfonamide inhibitor action
and enhance the bacteriostatic action. Twenty-eight instances
of bilateral dermatosis due to staphylococci and/or streptococci
were treated with a urea-sulfathiazole mixture. Each acted as
its own control, one side was treated with a urea-sulfathiazole
mixture and the other with a 5 per cent sulfathiazole ointment
or solution alone. Treatment was applied in the form of an
ointment consisting of 5 per cent of sulfathiazole and 30 per
cent of urea in a base of fatty esters of diethanolamine mixed
with petrolatum, in the form of wet packs of a solution consist-
ing of two parts of water in which was suspended a powder
mixture of 70 per cent of urea, 20 per cent of lactose and 10 per
cent of sulfathiazole or in the form of a mixture of urea and
sulfathiazole in powder form. The condition of only 5 of the
28 patients was not definitely benefited by the urea-sulfathiazole
mixtures as compared with the sulfathiazole alone. In 1 of
the 5 the condition was borderline, treatment in 1 was discon-
tinued because of the caustic action of the sodium salt of sul-
fathiazole and in 3 the causative organisms may have varied in
their response to urea-sulfonamide therapy under the present-
ing clinical conditions. In 2 cases of widespread pyoderma
with organisms which were coagulase positive and hemolytic
Staphylococcus aureus both of which were decidedly sulfon-
amide fast by *in vitro* tests, topical treatment with urea-sulfon-
amide combinations proved effective after sulfonamides alone
were ineffective. Strong urea therapy should be discontinued
when fresh uninfected granulation tissue appears as animal
experiments on cutaneous defects and some clinical experience
show strong urea to be inflammatory. New granulation tissue
contiguous with infected areas, may be protected from continued
urea treatment with ointment.

Missouri State Medical Assn Journal, St Louis

40 61-94 (March) 1943

- Protecting the Newly Born Infant from Tuberculosis P J White
St Louis—p 61
*Pathogenesis of Jaundice of Newborn Infant P G Danis St. Louis
—p 62
Diarrheal Diseases in Newborn Infant M M Cook St. Louis—p 64

Pathogenesis of Jaundice in Infancy—Danis points out
that jaundice of the newborn infant may be caused by infections.
A test for syphilis is indicated on every mother of a baby with
jaundice. When the jaundiced baby has a fever a blood culture
always should be taken. Septic jaundice and syphilitic
jaundice are associated with acute hepatitis but today these
cases are rare as aseptic deliveries are done on thoroughly
examined expectant mothers. It is the baby or a woman with
streptococcal nasopharyngitis in whom sepsis develops. Fever
or jaundice of the newborn infant indicates the need for a blood
culture. Obstructive jaundice of the newborn comes on slowly

after the first five days of life. It presents much the same
picture as that produced by tumor or stone in the adult. It
develops slowly in the newborn period with relatively few
symptoms associated with it during the first week. After a
rather protracted course death is inevitable, as rarely are any
of the ducts patent. Sometimes the ducts from the liver to the
gallbladder are open and cure may be brought about by an
anastomosis of the gallbladder to the duodenum or stomach.
In erythroblastosis lies both the simple so-called physiologic
jaundice of the newborn and the serious syndrome best known
as icterus gravis (erythroblastosis fetalis). The first, occurring
not earlier than the third day and not later than the fifth, is
called physiologic jaundice because of its frequency and its lack
of seriousness. However its frequent presence in the weak
and premature does not justify the term physiologic. Some
slight hepatic insufficiency must be present. The result is an
inability to handle the biliary pigment produced by the destruc-
tion of the unnecessary abundant cells in the baby's circulation.
When this comes to an end the condition improves. Hemolytic
jaundice occurring before the second day of life or even at
birth, after sepsis and syphilis have been ruled out, strikes a
more serious note, as does jaundice which continues to increase
rapidly in intensity or fades only to be replaced by extreme
paleness. The incidence of and mortality from fetal erythro-
blastosis would be reduced if more attention was given to the
icterus of the newborn.

Nebraska State Medical Journal, Lincoln

28 65-100 (March) 1943

- The Senile Heart L Stark Norfolk—p 69
Pain in Spine Thorax Shoulders and Arms Simulating an Anginal
Syndrome F W Niehaus Omaha—p 72
Factors Which Become Evident on Influencing Heart After 50 Years
of Age C Frandsen Omaha—p 73
Blood Pressure as Seen in the Aging Individual and Its Influence on
the Aging Heart C Q Thompson Omaha—p 78
Factors Influencing the Aging Heart E M Walsh Omaha—p 81
Present Day Treatment of New Gonorrhea in Male R A Frary Lin-
coln—p 84

New Orleans Medical and Surgical Journal

95 401-444 (March) 1943

- *Increasing Incidence and Complications of Chronic Bacillary Dysentery
D N Silverman and A V Friedrichs New Orleans—p 401
Vitamin Deficiency States in Louisiana R C Lowe New Orleans—
p 407
Fractures About Ankle Joint R H Alldredge New Orleans—p 414
Medicolegal Relations of Nervous and Mental Disorders C P May
New Orleans—p 423
Use of Various Insulins in Treatment of Diabetes Mellitus R F
Baskett Texarkana, Ark—p 428

Chronic Bacillary Dysentery—Silverman and Friedrichs
state that in New Orleans the prevalence, virulence and inci-
dence of complications of bacillary dysentery have increased.
Strains of the original Shiga bacillus and of the Flexner type
are encountered more frequently. The lactose fermenter reported
ten years ago is now an unusual finding in chronic bacillary
dysentery. The increase in incidence and virulence of bacillary
dysentery in this and other sections of the country assumes
particular significance in view of the aggregation of great
numbers of men in the different camps and the various com-
munities. The possibility of this infection spreading from a
local community to camps is great. Close vigilance should be
observed and if dysentery should appear the patient should be
isolated and every effort made to prevent the spread of this
extremely serious disease.

North Carolina Medical Journal, Winston-Salem

4 77-110 (March) 1943

- Military Environment Primarily in Relation to Changes in Barometric
Pressure as Applied to Clinical Medicine I Effects of Compression
II Effects of Decompression A R Behnke Bethesda Md—p 77
Hormone Approach to Cancer of Prostate E P Myer Durham
—p 89
Infectious Diseases of Heart G T Harrell Winston-Salem—p 95
Chalybeate Springs Mineral Water W J Senter Atlanta Ga—p 93

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Heart Journal, London

5 1-72 (Jan) 1943

- Cardiac Syndromes Complicating Diabetes and Their Treatment
K. Shirley Smith—p. 1
Congenital Heart Block with Dextrocardia D. Levy—p. 8
Congenital Heart Block with Atrial and Ventricular Septal Defect
A. A. I. Peck—p. 11
Congenital Complete Heart Block M. Campbell—p. 15
Tuberculous Pericardial Effusion S. Sumner—p. 19
Signs Simulating Those of Mitral Stenosis C. Brimwell—p. 21
Electrocardiographic Patterns of Combined Ventricular Strain
R. Langendorf, M. Hurwitz and I. N. Katz—p. 27
Paroxysmal Ventricular Tachycardia W. I. Cooke and P. D. White
—p. 33
Partial Heart Block with Dropped Beats M. Campbell—p. 55
Reference of Cardiac Pain to Phantom Left Arm H. Cohen and H. W. Jones—p. 67

Lancet, London

1 225-256 (Feb 20) 1943

- Psychology of Pain I. Guttman and W. Mayer-Cross—p. 225
Innervation and Function of Thoracic Muscles W. B. Hooper—p. 227
Food Tables: Their Scope and Limitations I. M. Widdowson and
R. A. McCance—p. 230
*Treatment of Chronic Empyema P. R. Allison—p. 232
Blast Injury of Lungs with Curious Lesion of Cerebrum P. B. Ascroft
—p. 234
New Method of Administering Pentothal Sodium for Long Period R. I.
Super—p. 235
Clinical Application of Electromyography G. Weddell, B. Feinstein
and R. F. Pittie—p. 236
Spontaneous Hemorrhages in Chronic Nephritis G. Behr—p. 239

Treatment of Chronic Empyema—The operation for chronic empyema described by Allison consists in resecting lengths of one or two ribs at the base of the empyema in order to gain access to the cavity and then stripping the thick parietal layer of fibrous tissue from the overlying intact ribs and intercostal bundles depressing it on to the surface of the lung and holding it there by means of a pack. This obliterates one cavity and makes a second of equal volume but the walls of the new cavity are fresh and heal quickly. Three cases are reported. The operation was devised in the belief that the chronicity of an empyema depended less on the elasticity of the lung than on changes occurring in the chest wall. It seems that something prevents the inflammatory process at the margin of the cavity from causing further adhesion of parietal and visceral layers. Whatever may be the mechanics of this healing process it is obviously carried on mainly in the chest wall as shown by the fact that the fibrous tissue formed there is usually about three times as thick as that on the lung. It may be that the dense fibrous tissue tends to strangle its own blood supply. The operation aims at producing fresh walls to the cavity and a fresh healing edge. Where the operation is applicable it has the advantage over other methods that fewer ribs need to be resected, fewer intercostal nerves divided, there are fewer operative stages and final deformity is less.

1 257-290 (Feb 27) 1943

- *Pathologic Findings in Series of Blast Injuries J. V. Wilson and
R. E. Tunbridge—p. 257
Electroencephalography in Chronic Post-Traumatic Syndromes Mollie E.
Heppenstall and D. Hill—p. 261
Night Visual Capacity of Psychologic Cases P. C. Livingston and
B. Bolton—p. 263
*Slowly Acting Pituitary Preparations in Diabetes Insipidus D. Court
and S. Taylor—p. 265
Gangrene After Arterial Contusion K. H. Pirrie—p. 267
Transfusion of Filtered Liquid Serum S. Ackroyd, G. A. Harrison
and L. E. R. Picken—p. 268
Superficial Atresia of Vulva Report of Two Cases Constance M.
Ottley—p. 269

Pathologic Aspects of Blast Injuries—Wilson and Tunbridge describe the postmortem aspects of the organs of the thoracic and abdominal cavities of 7 adults and 5 children dying primarily as a result of blast injury. Eleven of the 12 persons died immediately and 1, an adult, died after eight hours. The principal macroscopic findings were extensive bilateral pulmonary hemorrhages in all cases, hemorrhage into the peritoneal cavity in 6 cases, hemorrhage into the mediastinum in 3 cases

and rupture of an aortic semilunar valve and hemopericardium in 1 case. The lung hemorrhages extended throughout the lung substance, and the subpleural hemorrhages showed no constant distribution. The principal microscopic observations were widespread congestion of the alveolar capillaries—with red cells in the alveoli and alveolar epithelium—and occasional areas of emphysema with rupture of alveoli. There was no striking difference in the pathologic findings of the person dying eight hours after the incident and of the patients dying immediately. The observations support Zuckerman's experimental evidence that it is the traumatic effect of the percussion element of the blast wave on the body surface that causes the lesions. No evidence is submitted as to the mechanism of death.

Slowly Acting Pituitary Preparations in Diabetes Insipidus—Court and Taylor report the clinical histories of 4 patients with diabetes insipidus. Slowly acting pituitary preparations with powerful antidiuretic properties are now available. The delaying effect has been achieved in two main ways by emulsifying an aqueous solution of the hormone or suspending an insoluble derivative in a suitable oily medium. Preparations of both types can give excellent control. A fluid intake and output not greatly above the average follows an injection once in forty-eight or seventy-two hours. Pituitary emulsion however has some serious disadvantages, the standard dose contains as much as 20 oxytocic units, as the emulsion is solid at room temperature and the hormone thermolabile, preparation of the injection requires considerable care, paraffinomas may develop at the site of injection, probably caused by the hydrocarbons present in beeswax. This unfortunate sequel deserves to be noted, since a similar vehicle has recently been used for epinephrine. Pitressin tannate in oil is free from these drawbacks, 1 cc contains only 5 pressor units, administration is simple and painless, and after six months' careful observation no local deposits have been seen. There is no rise in blood pressure during the ninety minutes after injection or at subsequent periods. Pallor, intestinal cramps, nausea or vomiting commonly associated with injections of the liquid extract have not been observed. Pitressin tannate in oil seems to be the safest and most effective slowly acting preparation of the posterior pituitary lobe so far available for the treatment of diabetes insipidus.

1 291-324 (March 6) 1943

- Unrecognized Congenital Syphilis D. Naborro—p. 291
Psittacosis (Ornithosis) Virus in English Pigeons C. H. Andrews
and K. C. Mills—p. 292
*Analgesic Value of Pethidine by Mouth R. V. Christie—p. 294
*Effect of Pethidine on Pain in Neurologic Cases G. LitzGerald and
B. McArdle—p. 296
Fat Embolism After Compound Fracture of Tibia R. G. Henderon
—p. 297
Restoration of Function in Burnt Hand D. C. Bodenham—p. 298
*Treatment of Lymphogranuloma Inguinale with Anthiomaline W. A.
Law—p. 300
Gynecomastia J. S. Richardson—p. 304
Cerebral Cortical Lesion and Fits in Wernicke's Encephalopathy
A. W. Gill and A. J. McCall—p. 305
Tracheobronchial Cyst Pauline C. Marshall and H. A. Cookson
—p. 305

Analgesic Value of Demerol by Mouth—Demerol (hydrochloride of the ethyl ester of 1-methyl-4-phenyl piperidine-4-carboxylic acid), according to Christie, may be given by mouth, rectum or intravenous, intramuscular or subcutaneous routes. Its effect when given by mouth appears in fifteen to twenty minutes and lasts five to six hours. A clinical trial of the drug was organized by the war wounds committee of the Medical Research Council. The effects of Demerol given by mouth in doses of 100, 50 and 25 mg have been observed in eight hospitals on 335 patients suffering pain. Complete or partial relief from oral administration was obtained in 230. Complete relief was obtained in 55 per cent of patients suffering severe pain and partial relief in 20 per cent, while of those with "moderate" pain, complete relief was obtained in 61 per cent and partial relief in 12 per cent. The effect of the drug was compared with that of codeine in 109 cases. In 40 per cent of these it was clearly superior to a mixture of acetylsalicylic acid, acetophenetidin and codeine, in 21 per cent equal in effect and in 33 per cent inferior. In 13 cases it proved less effective than morphine by mouth. Toxic symptoms from oral

administration were uncommon and never serious. There was no evidence that tolerance to the drug might develop, but a slight danger of addiction has been reported. Demerol given by injection in a few cases seemed to be more effective than by mouth.

Effect of Demerol on Pain in Neurologic Cases—

According to FitzGerald and McArdle Demerol became available in Britain under the name of pethidine in 1941. They gave it to 12 subjects selected as having severe pain arising from diverse neurologic conditions. Some had pain of peripheral origin such as radial neuritis, brachial neuritis, supra-orbital neuralgia, trigeminal neuralgia or sciatica; others had pain of central origin as in thalamic syndrome, painful phantom limb or tabetic crisis, and still others had undergone operations for injection of the gasserian ganglion or had a headache from lumbar puncture or encephalography. To some patients the drug was given intravenously, to others subcutaneously. The response to Demerol was excellent in 8 of the 12 cases; in 3 the relief was considerable although the pain was not entirely abolished and the duration of relief was not beyond four hours. The only patient who did not obtain any appreciable relief was a highly emotional subject who had been accustomed to considerable amounts of opium and rather resented being given a different drug. Adverse side effects—which ranged from transient giddiness to pallor, faintness, sweating, blurring of vision, nausea, tremulousness and anxiety—were noted in 7 of the 10 cases in which Demerol was employed intravenously. Though objectionable, these features were transitory in all but 2. It has been possible to compare the relief gained with Demerol with that following morphine in 7 cases. Morphine gave considerable relief but it was less definite and of a shorter duration than that following Demerol.

Anthiomaline in Venereal Lymphogranuloma—Law reports that 220 cases of venereal lymphogranuloma were treated during eighteen months among both British and African troops in West Africa. The lesions with three exceptions were genital and inguinal in situation and were less extensive than in the female. Cases of rectal involvement with stricture formation were not seen. The primary lesion is small, painless and transitory and is often overlooked; it may accompany other venereal infections. The value of the Frei test in diagnosis was confirmed. In some cases there was spontaneous resolution of the buboes. Anthiomaline (lithium antimony thiomalate), an organic compound containing 16 per cent of antimony, was administered intramuscularly or intravenously. Injections were made two or three times weekly, beginning with 0.5 cc and increasing by 0.5 cc up to 2 cc for a maximum of twenty injections, which should be equivalent to 0.2 Gm. of antimony metal. When anthiomaline was not available, sodium antimony tartrate was injected intravenously as a freshly prepared 1 per cent solution in distilled water. A total of 137 cases were treated by chemotherapy. The average number of injections was ten, and the average time was a little over three weeks. It is advisable to administer eight or more injections even if the lymph node swelling has subsided on a smaller dose. Exacerbation or recurrence of the bubo may occur if treatment is discontinued too early. For comparison a series of cases was treated with sulfanilamide administered by mouth in tablet form. First stage cases responded quickly but no more rapidly than to the antimony therapy. No real advantage could be claimed for this treatment. Some patients were subjected to lymph node excision. In the first stage such treatment was effective. To compare chemotherapy with surgical excision, 1 patient was subjected to excision from the right groin and to anthiomaline injections on the left side. Block dissection was carried out. The wound healed by first intention but subsequently the scar became keloid in part, whereas the left inguinal glands subsided without complications.

Quarterly Journal of Medicine, Oxford

12:1-100 (Jan.) 1943

- Polyps of Stomach and Polypoid Castriti—E. I. Spriggs, with histology and drawings by O. A. Marner—p. 1.
Pneumococcal Endocarditis—R. W. Luxton and G. S. Smith—p. 61.
Contribution to Study of Melorheostosis—Unusual Bone Changes Associated with Tubercle Sclerosis—C. S. Hall—p. 77.

Schweizerische medizinische Wochenschrift, Basel

72:1089-1112 (Oct. 3) 1942

- Pathogenesis of Neurasthenic Syndromes—Dr. R. Brun—p. 1089.
Sugar Metabolism and Diabetes—S. Markees—p. 1095.
Cardiac Damage Caused by Pneumonia—O. Spühler—p. 1099.
Dermatoma (Baader) or Erosive Pluri-focal Ectodermosis in Childhood—H. Störck—p. 1102.
Hypochromic Anemia After Resection of Stomach—G. Hemmeler—p. 1105.

Heart Lesions in Pneumonia—Spühler studied cardiac lesions in cases of pneumonia. He describes 6 selected cases. Case 1 is characteristic of the course of a temporary impairment of the myocardium. Few clinical signs of cardiac impairment were present but the electrocardiogram revealed a myocardial lesion. In case 2 pneumonia was followed by a continuous polytopic ventricular extrasystole. It must be assumed that in such cases myocardial scars have developed and that they are the point of origin of the extrasystoles. They are residues of a mild focal myocarditis. That pneumonia may result in severe myocarditis is demonstrated by case 3, in which there was acute decompensation, enlarged liver, edema of the legs and beginning pulmonary edema. Pericarditis is a frequent complication of pneumonic myocardial impairment. The fourth case was one of a severe pericarditis which terminated in death. Cases 5 and 6 are examples of postpneumonic cardiac impairment. Retardation of the atrioventricular conduction and blockage in the right branch of the stimulus conducting tissue developed in 1 of these. Chronic myocarditis and endocarditis developed in the sixth case. In the majority of cases of pneumonia changes are present indicative of cardiac damage, but these are usually temporary in nature. Serious irreparable damages are possible; there may be a permanent retardation of the conduction branch block and cardiac dilatation. Pericarditic and endocarditic involvement are sometimes observed.

Accion Medica, La Paz, Bolivia

1:1-12 (Nov.) 1942 Partial Index

- Intrapulmonary Foreign Body Causing Repeated Hemoptysis—Removal—F. Mejia G.—p. 6.
Pulmonary Roentgenographic Aspects of Osteoarticular Tuberculosis—P. Guillen—p. 9.

Pulmonary Roentgenographic Aspects of Osteoarticular Tuberculosis—Guillen studied roentgenograms of the lungs of 29 children with osteoarticular tuberculosis. The process involved the spine in 8 cases, the hip joint in 9, the knee joint in 10 and the hands and feet in 1 case each. The roentgenograms indicated that the hematogenic dissemination of the tuberculous process from the osteoarticular foci takes place during the period of secondary tuberculous invasion of the lung. The pulmonary and extrapulmonary lesions run a parallel course either toward healing or toward progression.

Anais d'Fac d' Med d' Univ d' S Paulo, São Paulo

17:357-785 1941 Partial Index

- Pharmacologic Effects of Verin—A. Carvalho da Silva and S. Leal—p. 59.
Hemangioreticuloendothelioma—L. da Cunha Motta—p. 627.
Elimination of Androgens in Urine—Clinical Study—J. Lacaz de Moraes—p. 687.
Mechanism of Healing of Tuberculous Cavitation by Collapse—New Interpretation—A. Correa Netto—p. 775.

Elimination of Androgens in Urine—Lacaz de Moraes made quantitative determinations of androgen elimination in the urine of 20 normal adults and in a group of patients with Cushing's syndrome, adipo-genital dystrophy, hypophyseal tumor, pseudohermaphroditism, hypersexuality, homo exuality and after castration. Utilizing the Zimmerman Evelyn colorimetric test, he found that the amount of androgen excreted was between 11.6 and 13.7 mg. of the substance for each liter of mixed urine of normal adults, between 10.6 and 19.8 mg. in the urine of patients with Cushing's disease, 1.38 mg. in adipo-genital dystrophy, 6 mg. in pseudohermaphroditism, in men, 1.96 mg. in hypophyseal tumor, 0.665 in the urine of castrated men, between 7.5 and 19 mg. in hypersexuality and 0.54 mg. in homo exuality.

Radiología, Buenos Aires

5 101-152 (May-June) 1942 Partial Index

- Intrauterine X-Ray Appearances in Hysterosalpingography C. Gazzotti and A. L. Noguera—p. 108
- *Cranial Abnormality: Large Parietal Defects O. I. Noguera—p. 116
- Thrombosis of the Superior Vena Cava A. J. Burlando and H. Reyes Oribe—p. 119
- Röntgen Therapy of Primary and Secondary Cancer of Lung J. I. Mohinari and A. Lemos Ibañez—p. 125

Large Parietal Foramina—Noguera presents the report of a young adult who had a depression in the posterosuperior part of his head. A younger brother had the same abnormality, although the gap was very small. The rest of the family were normal. Roentgenograms of the patient's skull showed a defect in the posterior part of the cranial vault, a so-called parietal foramen. This is believed to be due to a disorder of ossification of the zones near the posterior fontanel. The abnormality is rare. As a rule it appears as two symmetrical defects in both posterosuperior regions of the cranial vault. The existence of only one large gap without an intermediate septum of ossification is still more rare. The abnormality is congenital and familial. The differential roentgenologic diagnosis of large parietal holes from Hand-Schüller-Christian syndrome, syphilis, secondary neoplasm, cleidocranial dysostosis and circumscribed osteoporosis is based on the X-ray appearances. Large parietal defects manifest themselves as either one or two large gaps in the bony substance. When there are two defects, they are divided by a bony septum. The abnormality is more pronounced in the internal table of the skull. In all other cranial diseases the bone is thinned out, in some cases to a mere film, and the defect is small. In either case the lack of bone is less noticeable in the internal than in the external table of the skull.

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- Chemical Structure and Serologic Problems of Vibrions F. Beato y González—p. 1
- *Starvation: Interrelations Between Edema, Plasma Protein and Diuresis C. Jimenez Diaz, L. Roda, H. Castro Mendoza, E. Ortiz de Landizuri, L. Torante and C. Marina—p. 25
- Libman Sacks Syndrome E. B. Del Castillo, F. Martinez, F. A. De la Balze and J. Reforzo Membrives—p. 13
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- Differentiation of Insular and Peripheral Diabetes C. Blanco Soler, I. Alvarez Lde and A. Quirarte—p. 55
- Arsphenamine Idiosyncrasy by Inhalation M. Quero Morente and J. Gomez Orbaneyra—p. 68
- *Psychosis Observed in Treatment of Malaria by Combination of Atabrine and Plasmochin F. Ayala and G. Bravo—p. 70

Starvation, Edema, Plasma Proteins and Diuresis—Jimenez Diaz and his collaborators studied plasma proteins in their relation to the development of edema in undernourished persons. Tests were made at the time of hospitalization and during the treatment of the malnutrition. It was found that edema may exist in the presence of normal plasma proteins and fractions in the plasma, and that patients with severe hypoproteinemia and inversion of the albumin-globulin quotient may be free from edema. Thus it cannot be assumed that changes in the plasma protein level are the cause of the edema. It is evident, however, that patients with severe edema nearly always have a pronounced hypoproteinemia. Both symptoms are the result of deficient nutrition. There are, however, a number of other factors, such as emaciation, trophic disturbances in the capillary endothelium and excessive intake of fluid, which may play a part in the causation of edema.

Psychosis During Treatment of Malaria with a Combination of Atabrine and Plasmochin—Ayala and Bravo point out that the combination of atabrine and plasmochin in one preparation represents a simplified treatment of malaria. These two synthetic antimalarials appear to be strictly parasitotropic, but now that they have been used on a large scale it appears that they have a moderate affinity for certain organs. The study of this fact is of great importance in ascertaining possible contraindications to their combined administration. The author reports 4 cases in which a psychosis developed following the administration of the two substances. The drug apparently

has an elective tropism for the affective sphere. In the cases described the influence on the affectivity conducted to hyperthymia. The author observed minor degrees of affective alteration in other patients treated with the combination of atabrine and plasmochin. The psychosis is probably not caused by the malaria itself. The atabrine factor may be responsible, since it is known that atabrine exerts a direct toxic effect on the nervous system. Two of the patients had a predisposition to psychosis. The 4 cases described were observed among approximately 1,000 cases treated with the antimalarial combination of atabrine and plasmochin. If the cases of mild psychoaffective disturbances are included, the incidence would amount to 10 in 1,000. In a region in which endemic malaria has been increasing, many patients resort to the atabrine-plasmochin compound of their own accord. On the other hand, all those who develop mental disturbances are usually referred to the doctor by their alarmed families. The incidence of the psychosis is probably not more than 2 or 3 in 1,000.

Lekarz Wojskowy, Edinburgh

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- Organization of Field Surgery in Modern War B. Heyduk—p. 70
- Traumatic Shock A. Jurasz—p. 80
- Principles of Physical Diagnosis of Latent and Preclinical Pulmonary Lesions J. Skladal—p. 87
- *Pathogenesis of True Uremia A. Fidler—p. 92

Pathogenesis of True Uremia—Fidler points out that study at the University of Warsaw on the urinary excretion of nitrogen of well and uremic subjects, respectively, after feeding was approximately 63 and 73 per cent, thus in uremia its excretion is not diminished but rather increased. Further study revealed that the proteins of the serum in true uremia were physicochemically altered, making them more liable to break down. It appears that uremia is a disease of impaired protein metabolism and not of renal dysfunction. The changes in the serum protein might account for the rise in nonprotein nitrogen and the fall in the total protein in the blood. Study of the protein in the blood in chronic diseases of the kidney established (1) increased protein acidity, (2) a sudden accelerated diffusion of crude iron, (3) a change in clotting and (4) a change in the particle size of protein. The second and third of these changes serve as proof that protein is greatly inclined to split.

Klinicheskaya Meditsina, Moscow

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- Pathogenesis, Clinical Aspects and Therapy of Gangrene and Abscess of Lungs V. D. Vyshgorodtseva—p. 10
- *Massive Transfusion of Blood in Acute Hemorrhages from Gunshot Wounds A. V. Kaplan and L. A. Khanin—p. 31
- Osteosclerosis and Leukemia A. V. Rusakov—p. 32
- Changes in Retinal Arterial Pressure in Acute Brain Trauma L. V. Zenkina—p. 63

Massive Blood Transfusion for Acute Hemorrhage from Gunshot Wounds—Kaplan and Khanin emphasize the value of blood transfusion in war, in view of the fact that in past wars the majority of the wounded have died from hemorrhage rather than as a direct result of their injuries. In the Russian army blood transfusion has been extensively applied. While the usual dose recommended for a single transfusion is from 500 to 1,000 cc of blood, the authors have found this amount insufficient in many cases and have been obliged to increase it to 2,000 to 5,000 cc. Measures for arrest of the hemorrhage were applied simultaneously with blood transfusion in all cases. Gunshot wounds of the femoral vessels associated with profuse hemorrhage were especially favorably influenced by massive transfusions of preserved blood. In acute hemorrhage the blood loss is so rapid that compensating factors usually maintaining blood pressure close to normal levels have no chance to function. As a result, the rapid fall in blood pressure decreases vascular tone and impairs cardiac and respiratory functions. Large amounts of blood are required for transfusion in order not only to replace the lost blood and restore the oxidation processes of the organism but also to raise the blood pressure. Drip transfusion is ineffective in most cases of acute hemorrhage. Likewise artificial solutions are inadequate, since they cannot replace blood in its functional capacity.

Book Notices

War Injuries of the Chest Edited by H. Morriston Davies and Robert Coope. Cloth. Price \$2. Pp 131 with 36 illustrations. Baltimore: William Wood & Company, 1942.

The nine contributors to this small volume are members of a chest surgical unit in Britain. In chapter 1 are discussed anatomic and physiologic features necessary for clinical work on the chest. Chapter 3, though short, is exceedingly appropriate since it discusses general considerations, encouraging the physician to survey the injury analytically, so that proper evaluation of the injury and therapy may be attained as rapidly as possible.

A serious error is found on page 41, where the authors advise warming a patient in shock with blankets, hot water bottles and a shock cradle. For the past year or two the profession has realized the danger of heat in shock. However it is gratifying to note that oxygen therapy is strongly advocated.

The need for immediate treatment of patients with sucking wounds, tension pneumothorax, hemorrhage and "stove-in" chest is adequately emphasized. The fact that a patient can easily bleed to death in his pleural cavity is likewise properly emphasized and the method of treatment in such injuries is carefully and adequately described. Although all chest surgeons would agree to the advisability of removal of blood from the pleural cavity after twenty-four hours the danger of infection might be somewhat exaggerated over the impression usually held.

The danger of mediastinal emphysema with methods of relief are adequately discussed. The methods for taking care of the various types of wounds are likewise well discussed. The chapter on anesthesia is adequate, describing the various anesthetic agents and giving their advantages and disadvantages. The authors correctly warn against nitrous oxide because of the small percentage of oxygen possible during anesthesia. The danger of cyclopropane producing cardiac arrhythmia if opium derivatives are used in premedication is likewise described. The last chapter, on after-care, is appropriate but somewhat short. The entire volume is well written and contains much valuable material, indicating that the contributors are experienced in their fields.

A Symposium on Respiratory Enzymes Addresses Given at an Institute Held at the University of Wisconsin, September 11-17, 1941. Cloth. Price \$3. Pp 231 with illustrations. Madison: University of Wisconsin Press, 1942.

This volume of twenty-nine papers covers the activities of the well attended and organized symposium on respiratory enzymes held at the University of Wisconsin in the summer of 1941. In his address of welcome President C. A. Dykstra gave evidence of a genuine interest in the problems and results of science and called attention to the international character of the contributors in this period of bitterest nationalism. The introductory lecture by Otto Meyerhof on intermediate carbohydrate metabolism presents the modern quantitative problems in a clear and masterly way. A lucid, frank and critical treatment on oxidative mechanisms in animal tissues by Eric G. Ball is followed by a group of papers on the mechanism of hydrogen transport by K. A. C. Elliott, E. G. Ball and Fritz Lipmann, Kurt Stern and Erwin Haas and Elmer Stotz. Lipmann also discusses the "Pasteur effect" its inhibition and significance. Kurt Stern gives an inclusive and systematic treatment of oxidases, peroxidases and catalase. The chemistry and structure of nicotinamide nucleotide enzymes is well presented by Fritz Schlenk. T. R. Hogness treats the physical chemistry of the flavoproteins and the mechanism of action and characteristics of cytochrome C reductase. The chemistry of the cytochrome components and the physical chemistry biological action or function thereof is given by Elmer Stotz. The role of phosphoric acid is discussed from the point of view of phosphorylation of carbohydrates by Carl F. Cori and other aspects are treated briefly by H. M. Kalchor, Otto Meyerhof, M. J. Johnson and Fritz Lipmann.

E. A. Evans covers the general subject of metabolic cycles and decarboxylation in a detailed quantitative treatment. Philip P. Cohen presents a systematic treatment of transamination and

adds much from unpublished studies by him and his colleagues. Tumor respiration characteristics are discussed by K. A. C. Elliott, the question of phosphorylation in tumor metabolism by Van R. Potter, glycolysis in malignant liver tumors as compared with homologous adult or growing liver tissues by Dean Burk, and the correlation of the carcinogenicity of azo dyes to the effects of certain diamines on enzyme systems by C. J. Kensler. Bacterial respiration is reviewed by H. G. Wood and R. H. Burris from the point of view of the use of isotopes in experiments, by C. H. Werkman, E. S. Guzman Barron and P. W. Wilson on mechanisms for the complete oxidation of carbohydrates in aerobic bacteria and by F. F. Nord and P. W. Wilson on the comparison of the reactions in cell free enzyme systems with those in the intact cells. The symposium is closed by a series of brief discussions on animal tissue respiration under the chairmanship of C. A. Elvehjem. Ephraim Shorr, K. A. C. Elliott and Van R. Potter and Frederick Bernheim briefly discuss various aspects of the techniques used in studying tissue respiration. A. E. Axelrod presents a note on the action of calcium on the succinoxidase activity, E. S. Guzman Barron outlines pathways of carbohydrate metabolism, and Fredrick J. Stare raises the question of the role of citric acid in the citric acid cycle in muscle respiration. The book is well printed and contains thirteen interesting photographs of participants, taken during the meetings. It is an excellent and timely contribution to this difficult phase of biochemistry.

Annual Report of the Gorgas Memorial Laboratory 1942 Letter from the President Gorgas Memorial Institute of Tropical and Preventive Medicine, Inc. Transmitting the Fifteenth Annual Report of the Gorgas Memorial Laboratory Covering the Fiscal Year 1942. 78th Congress 1st Session House Document No. 31. Paper. Pp 24. Washington D. C.: Government Printing Office, 1943.

A report of the physical and financial features of the institute with a summary of the more important scientific activities. Of special interest is the attempt to control malaria by monthly blood examinations and treatment for twelve consecutive years. It has been found that morbidity can be reduced materially, but there has been little effect on transmission. This is probably the most conclusive investigation ever attempted along this line. The widespread distribution of *Trypanosoma hippicum* in horses of Panama has been shown. It is very fatal to horses and mules but cattle suffer no effects although they harbor the organism. Vampire bats spread the infection and eventually succumb to its effects. The trypanosome infection in cattle caused by *Trypanosoma vivax* is a very serious disease and the probable vector was found to be the horn fly *Lyperosia irritans*. Investigations on the relationship of aquatic vegetation to the breeding of anopheline mosquitoes along the trans-Isthmian highway are under way. Mr. W. H. W. Komp has continued the intensive study on the anophelines of the Caribbean area and the first monograph has appeared. Important taxonomic studies on the Tabanidae are included. Intensive trials on insect repellents have been instituted. The results of immunologic investigations for improved diagnostic methods in malaria are given. For any one interested in tropical and parasitic diseases this annual report is extremely valuable, as it includes the results of investigation on numerous subjects from one of the most active outposts in this field.

Orthopedic Conditions at Birth: Nursing Responsibilities By Jessie L. Stevenson, R.N., Consultant in Orthopedic Nursing, National Organization for Public Health Nursing, New York. Paper. Gratts. Pp. 50. New York: Joint Orthopedic Nursing Advisory Service of the National Organization for Public Health Nursing and the National League of Nursing Education, 1943.

This neatly printed pamphlet is one of a series being prepared and distributed by the Joint Orthopedic Nursing Advisory Service. No one else is better qualified to discuss this subject than is the author, Jessie L. Stevenson. This handbook was prepared for the purpose of assisting nurses in the early recognition of orthopedic conditions which can be present at birth and in the care of patients with these disabilities. The subjects covered include brachial birth palsy, cerebral palsy, congenital deformities of the extremities, torticollis and spina bifida. The material is well written and should be easily understood. Every general duty nurse who may be called on to care for an orthopedic patient should either know, or have readily available, information such as is offered in this small pamphlet.

Vascular Spasm: Experimental Studies. By Alexander John Nedzel, M.D., M.S., Associate Professor of Pathology, University of Illinois College of Medicine. Contribution from the Department of Pathology, Bacteriology and Public Health in the College of Medicine, Illinois Medical and Dental Monographs Vol. III, Nos. 1-11. Cloth. Price \$2.75. Paper. Price \$2.25. Pp. 151 with 161 illustrations. Urbana: University of Illinois Press, 1943.

In this valuable study, published in the monograph series of the University of Illinois, Nedzel presents the histopathologic background of stasis anoxia. The work provides a firm link between form and function and dysfunction, between the environmental impact of varied origin and the equally varied clinical symptomatology that may ultimately reflect the original disturbance.

The thesis that Nedzel has sought to establish finds its first clearcut statement in the hippocratic literature in the following terse sentences: "So in one place the blood stops in another it passes sluggishly in another more quickly. The progress of blood through the body proving irregular, all kinds of irregularities occur."

In our era Pawlinoff was apparently the first to recognize the role of stasis anoxia in inflammation though one fails to find reference to his work in Nedzel's monograph.

Nedzel's studies, which primarily are concerned with a histopathologic demonstration, are really holistic in character for he has approached the problem both from the physiologic and clinical side as well as from the morphologic. He first discusses the significance of localized vascular spasm then the more generalized shift in the blood mass that occurs between the splanchnic and peripheral beds associated with sympathetomy; the latter is illustrated by a series of original observations of temperature changes in various organs under varying conditions.

To simulate the exaggeration of organic rhythm which may find expression in the state of the vascular apparatus in both experimental and clinical conditions which, by individual predilection may be labeled sympathetomy vs. vagotonia or a relative alkalosis vs. a relative acidosis or an adrenal vs. a thyroid preponderance, Nedzel has made use of single or repeated injections of pitressin and at varying time periods after such injections has excised the tissues and examined the microscopic picture.

The material selected for presentation in the monograph includes the endocardium, the stomach, the liver and kidneys and the central nervous system. While focused primarily on endocarditis, ulcer of the stomach, nephritis and multiple sclerosis, the implications cover a wide latitude.

Nedzel first demonstrates that pressor episodes definitely change the endothelial cells at the impact surfaces of the endocardium. These reveal the characteristic histologic changes that are associated with stimulation, fatigue and necrobiosis; they become adhesive for fibrin, platelets and bacteria. With this as a background he demonstrates the mechanism of endocardial localization of bacteria as well as the processes of repair, i.e. the mechanisms underlying endocarditis. He then demonstrates the sequence when, with spasm, the surface of the stomach becomes unduly anoxic (particularly significant under conditions in which there is greater functional demand on the mucosal surface) and patches of necrosis occur. These, if coalescing or with repeated spasm or subject to gastric digestion, provide the background for ulcer formation. At necropsy such alterations are rather common, though often overlooked or disregarded. Because of the interrelation of kidney and liver damage with eclampsia, a flagrant disturbance of vascularization associated with undue spasm, Nedzel presents a brief but suggestive chapter illustrating changes that occur in these organs after pitressin injections. It is a field that should be extended. The final two chapters deal with alterations of the central nervous system and, while oriented about multiple sclerosis and the significance of change in vascular tone for bacterial localization in the central nervous system, the observations are of genuine importance for the neuropathologist.

For many years vascular dysfunction has been considered of significance for the symptom complex which we term multiple sclerosis. Putnam has already called attention to the thrombosis of the small blood vessels that can be observed. Nedzel's observations support the thesis that changes in the specific cells, with later alterations in the supporting components, follow in the wake of vascular change.

The title of the monograph must not obscure the recognition of the associated phase of undue dilatation of the vascular bed that follows vascular spasm. Spasm as well as the subsequent reaction of the tissue (stimulation, fatigue of the endothelium and so on) are associated with regional anoxia. The vaso dilatation, while physiologically a mechanism of reequilibration, may actually augment the disturbance of the oxidative balance particularly when associated with thrombosis.

Nedzel's studies contribute much to an understanding of the underlying mechanisms of disease, not only of the clinically acute forms, but of the so-called wear and tear diseases, when the insidious breakdown of vascular supply and tissue demand is followed by erosion of the parenchyma and the overgrowth of connective tissue cells. It is in this domain that knowledge of repetitive insults by weather and emotion, undue stimulation and fatigue, minor trauma and infection—all of which are of the kind simulated in Nedzel's experiment—becomes of great importance and Nedzel's studies are of particular value here. The text is concise, the illustrations are well selected and unusually good. An adequate bibliography is appended, but an index has not been provided. The contribution is one of the most valuable of the interesting series published by the University of Illinois not only for the pathologist, but for the physician interested in the mechanism of the organic breakdown.

Creatine and Creatinine Metabolism. By Howard H. Beard, Ph.D., Professor and Director of the Department of Biochemistry, School of Medicine, Louisiana State University, New Orleans. Cloth. Price \$1. Pp. 176. Brooklyn: Chemical Publishing Company, Inc., 1943.

This book presents a survey of the progress made in the field of creatine and creatinine metabolism during the last fifteen years since the publication of Hunter's classic monograph on this subject. The author includes, where possible, applications of experimental studies to human metabolism and to certain diseases of man. Detailed instructions are given for the determination of creatine and creatinine in body tissues and fluids by standard procedures, and the newer specific enzymatic methods are briefly discussed.

The question of the precursors of creatine and creatinine in the organism is discussed in detail, the author defending at length his theory that creatine is formed primarily from aminoacetic acid and urea, with subsequent methylation, rather than from aminoacetic acid and arginine as is generally believed by other investigators. The author's finding of an apparent stimulation of creatine formation and creatinine excretion by a large number of widely dissimilar substances is puzzling. Especially is this true in the case of his studies on the methylation of glycocyamine to form creatine, the results indicating that such diverse substances as methyl alcohol, methyl amine and methyl purines can serve as methyl donors. The changes observed in creatine-creatinine metabolism following the administration of various vitamins and hormones are likewise difficult to understand.

Some of the suggested applications of experimental studies to the treatment of certain human diseases appear unwarranted because of a lack of sufficient undisputed supporting evidence. For example, the preponderance of evidence today indicates that in contrast to the observations of the author, aminoacetic acid and gelatin have no consistent value in increasing muscular work output in human subjects. Likewise the suggestions that aminoacetic acid is beneficial in the treatment of certain myopathies, heart diseases, allergy, toxemias of pregnancy and diseases of the eye appear at least premature in view of a lack of sufficient experimental evidence.

The most startling portion of the book is the final chapter dealing with the relation of amino acids, amines and guanidine bases to tumor growth and regression. From studies on rats with transplanted sarcomas the author has graded the known amino acids (except tyrosine) with respect to their abilities to stop the growth of tumors or to cause their disappearance. The author concludes (p. 309) that "creatine and its derivatives or precursors in the body, as well as creatinine in one instance will cause tumors to disappear."

This book will be found of value chiefly for its extensive bibliography on creatine-creatinine metabolism and for bringing to attention many new and puzzling claims for these two important substances and their alleged precursors.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THIS WILL BE OMITTED ON REQUEST.

TREATMENT OF TETANUS EXPOSED PATIENT PREVIOUSLY IMMUNIZED WITH TOXOID

To the Editor—If a patient is given tetanus toxoid for active immunization, what does one do if an injury which would ordinarily require antitoxin occurs six months after the toxoid, one year after the toxoid, two years after the toxoid, three years after the toxoid, eight years after the toxoid, fifteen years after the toxoid? Does the original toxoid give lasting immunity without any further stimulating doses? If not, will semiannual or annual stimulating doses produce that effect? In short, has the use of toxoid now made it unnecessary to use the antitoxic serum?

Louis V. Blum, M.D., Baltimore

ANSWER—The question of whether to depend in a given case on a previous active immunization or to administer a prophylactic dose of tetanus antitoxin is a matter for surgical judgment. Certain general principles, however, can be laid down for guidance. It is now generally agreed that administration of two doses of 1 cc. each of alum precipitated toxoid from one to six months apart will produce basic immunity. After such treatment the reactivity of the person is enormously increased so that a subsequent boosting dose of toxoid given three or six months later will increase the antitoxic content of the blood from twenty to fifty times, giving an immunity of a higher degree and longer duration than that which existed before. The duration of immunity has never been definitely established. It may vary from as short a period as three months to a lifetime. A series of three doses in the course of one year will generally speaking give an immunity which will last two or more years. Because of the great individual variation in response, it is always advisable in the face of definite exposure to give a still further dose of toxoid with the view to rapid stimulation of additional antibody formation. It must, however, be borne in mind that formation of antibodies consumes time. For this reason it is always good judgment in the presence of badly macerated tissues to give immediately a prophylactic dose of antitoxin serum while waiting for the effect of the boosting dose of the toxoid. To particularize, it may be stated that the original toxoid immunization should not be relied on as furnishing lasting immunity without further stimulating doses. Semiannual or annual stimulating doses as suggested in the query will certainly produce that effect. One certainly would resort to additional doses after eight and fifteen years. There will be occasions when it will be necessary and wise to employ the antitoxin serum in addition to the toxoid immunization.

GLASSES NOT NEEDED ON VACATION

To the Editor—A married woman aged 32 has been wearing glasses for ten years. Last summer while vacationing in the Adirondack Mountains in New York she noticed that she was able to do without her glasses completely. However, on returning to her home in New Jersey she was unable to get along without them. I have since learned that her mother had exactly the same experience many years ago. My patient did not know this at the time. Thank you for any explanation.

Lieutenant M. C. A. U. S.

ANSWER—It is not uncommon to hear of patients who get along quite well without glasses when they are on vacations and not using their eyes consistently but who do require glasses when they are doing their regular work, even if this is doing housework. In the case reported the extent of the refractive error is not stated. This would have indicated how much of a handicap the woman is overcoming in going without her glasses. It is quite likely that she had a rather slight refractive error and needed glasses only under conditions of strain. Aside from the relief of this strain during a vacation, any other explanation is doubtful.

VITAMIN K AND DENTAL CARIES

To the Editor—I have recently read a brief statement about the use of vitamin K in the prevention of dental caries. Have you any information as to indications, dosage recommended and results thus far reported?

Louise C. Gloeckner, M.D., Conshohocken, Pa.

ANSWER—It has been found on the basis of *in vitro* and *in vivo* experiments that vitamin K will materially inhibit acid formation in the mouth. However, these studies are still in an experimental stage. The evidence on hand is insufficient to indicate the use of vitamin K as a therapeutic measure for dental caries.

THROMBOPHLEBITIS AND TRANSFUSION OF COMPATIBLE BLOOD

To the Editor—I recently attended a white woman aged 43 who had an intrauterine leiomyoma and who had had a number of repeated and severe hemorrhages before seeing me. Her past medical history revealed that she had suffered from right heart failure about one and a half years before. After a period of time in bed and with medications she was able to live a somewhat restricted life. Some ten years previous to this she had an attack of inflammatory rheumatism after the birth of her last child. Physical examination revealed her to be a short, obese woman with a systolic murmur over the base of the heart. Blood pressure was 112/72. Laboratory examinations showed a hemoglobin of 33 per cent with 2,700,000 red blood cells and 8,600 white blood cells. The differential count showed 66 per cent polymorphonuclears, 26 per cent lymphocytes, 2 per cent monocytes, 4 per cent eosinophils and 2 per cent basophils. The blood smear was showing a definite anisocytosis and some polychromasia. She was sent to the hospital and because of her poor condition a transfusion was performed. She had a type 2 blood and a donor with type 2 blood was used for the transfusion. On cross agglutination there was no reaction. There was no immediate or delayed reaction following the transfusion. Two days later a biopsy was made of the tumor without the use of anesthesia with the exception of morphine. This proved to be a benign leiomyoma. To prevent further bleeding she remained in bed with the foot of the bed elevated. She responded well and her general condition became much improved. Ten days after the transfusion she developed typical thrombophlebitis, first in one leg and then in the other. She was subsequently told by another physician that the thrombophlebitis was due to the transfusion given her from a type 2 donor. He emphasized that the thrombophlebitis was due to her receiving type 2 blood when she was of the same type. I am unable to find any verification of this statement in any available literature. I should like to know if there is any possibility of this complication arising following a transfusion given to a recipient whose blood is type 2 from a donor with the same type of blood. If this is true, what procedure should be followed in transfusing a recipient with type 2 blood?

M.D., Minnesota

ANSWER—It is common knowledge that thrombophlebitis is a not infrequent postoperative complication, particularly in debilitated patients with sluggish circulation. It is significant that the patient gives a history of rheumatic fever with an attack of right heart failure one and a half years before the operation and that at the time of the operation there were signs of mitral insufficiency. To attribute the thrombophlebitis to a transfusion of blood of the correct group given ten days previously is absurd. Incidentally, instead of type 2 the designation group A should be used in conformity with the practice of the armed forces, the Red Cross and all progressive hospitals.

TREATMENT OF UTERINE CANCER IN AGED

To the Editor—A woman aged 82 has been bleeding or spotting for six months to a year. One week ago she had a severe hemorrhage. She was taken to the hospital and under cyclopropane an examination was made. The uterus was not large, the cervix was thin and curettage for diagnosis gave the feeling of polyps, not of cancer. The pathologic diagnosis came back adenocarcinoma, grade 2 of the fundus uteri. Radium was applied to the inside of the fundus and left for seventy-two hours. Since its removal the bleeding has nearly stopped. Considering the age of 82, a normal blood count, a normal urine and a well preserved person both physically and mentally, what is the best type of treatment to recommend? Should treatment be conservative or only one course be given, that of a radical nature?

M.D., Indiana

ANSWER—A patient of advanced age with a cancer of the body of the uterus should be treated with radiation. If radium is employed it should be inserted into the uterine cavity in sufficient amount to come in contact with the entire endometrial surface. The amount of radiation, either at one sitting or interruptedly over a period of a few weeks, is usually a total of at least 3,500 milligram hours. After several months another treatment, preferably a somewhat smaller amount, may be given with advantage.

The curettage may have been necessary to confirm the diagnosis, but curettage in such cases should be avoided whenever possible. If required it should be performed gently and not more thoroughly than necessary to confirm the diagnosis. With curettage there is always a hazard of cancerous spill through the fallopian tubes into the abdominal cavity or extension through the lymphatics and venous sinuses into the broad ligaments and beyond.

High voltage roentgen therapy is a helpful adjunct to intrauterine irradiation in cases in which there is likelihood of extension or the growth beyond the confines of the uterus.

Although radiation for cancer should ordinarily be given as intensively as possible and over a relatively short period of time with an elderly patient it is preferable to be more cautious, interrupted short applications of radium and less frequent x-radiation lessen the morbidity and decrease the hazard.

OCHRONOSIS AND ALKAPTONUREA

To the Editor—I have under my care at the present time a white woman aged 85 in whom the diagnosis of ochronosis has been made because of (1) pigmentation of the ears and sclerotics, (2) urine that darkened considerably on exposure or addition of alkalis and (3) osteoarthritis of the knee joints and spine with the latter showing all the changes described by Pomeranz. A study of the urine revealed the presence of both homogentisic acid and melanin. She has no evidence of melanosis. Have any cases ever been described with the findings of both melanin and homogentisic acid in the urine? Morgan Y. Swirsky, M.D., New York

ANSWER—Certainly the diagnosis of ochronosis seems justifiable in view of the evidence as listed in the question. In the article by Oppenheimer and Kline there is a tabulation of all reported cases, and 1 of these cases presented melanuria "and probably alkaptonuria." A partial bibliography relating to ochronosis:

- Berry, J. I. Exogenous Ochronosis. Clinical Report of New Case. *J. med.* 2: 1157 (Nov. 26) 1932.
Kline, B. S. Pathological Findings in a Case of Ochronosis. *Proc. New York Path. Soc.* 16: 53 (March-April) 1916.
Fandora, Felix. Zur Kenntnis der Ochronose. *Sichsch. Arch. f. path. Anat.* 191: 275 (Aug.) 1904.
Oppenheimer, B. S. A Case of Ochronosis Associated with Melanuria. *M. Rec.* 89: 811 (May 16) 1916.
Oppenheimer, B. S., and Kline, B. S. Ochronosis with a Study of an Additional Case. *Arch. Int. Med.* 29: 732 (June) 1922.
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CYST OF POPLITEAL BURSA

To the Editor—Oct. 7, 1940 a patient had a large painful popliteal bursa excised from the left leg. He made an uneventful recovery. Now the insurance carrier writes that he has presented himself to another physician for treatment who tells him that evidently all of the tumor was not removed in the previous operation and he should have another operation as soon as possible. I have never had any experience with a recurrence of this type of bursa and can find nothing in the literature on the subject that would give me any clue. Can you give me any information on this? M.D., Wisconsin

ANSWER—The pathologic nature of a cyst of the popliteal bursa is quite similar to that of an ordinary ganglion. If all of the cyst is removed, including the stalk, which is nearly always present and frequently extends down between the condyles of the femur posteriorly to the joint capsule and may be patent, communicating with the joint, recurrences are unlikely to occur.

If portions of the wall of the cyst including the lining are left behind, just as is true in the case of an incomplete excision of a ganglion, recurrences will be fairly common.

This condition was described by Baker in the reports to St. Bartholomew's Hospital in London, volume 13, page 245, and volume 21, page 177. It is sometimes called Baker's cyst.

MANUAL LABOR FOLLOWING NEPHRECTOMY

To the Editor—Do you consider a man who has had a nephrectomy (hydro-nephrotic infected kidney with stone found at operation, carcinoma of ureter was preoperative diagnosis) and completely recovered therefrom able to do hard manual labor? If not, why? If so, why? A man aged 51 and such an operation. As conditions which caused the nephrectomy remain uncorrected, he is liable to further renal damage which might possibly disable him. M.D., California

ANSWER—A man who has had a nephrectomy for a hydro-nephrotic infected kidney with stone is probably able to do hard manual labor provided his urinary tract is now completely sterile, he has no evidence of stone remaining in the urinary tract and he was used to doing hard manual labor before his present sickness. There is no reason why a man with one sound kidney cannot carry on as before as far as his kidney function is concerned, as one kidney affords more than adequate function for the body needs and, as far as is known, hard work does not adversely affect its performance if the body is cared for satisfactorily in other ways by conservative living.

It is, of course, important to be sure that this patient has no infection remaining in the urine or in the lower genital tract.

SUCTION METHOD OF CATARACT EXTRACTION

To the Editor—Could you give me information on the Dmitry suction disk for intracapsular cataract extractions? Please let me know whether you think it is an efficient instrument for intracapsular cataract extractions by the suction method. James S. Davis, M.D., Marion, Ill.

ANSWER—The Dmitry disk is a simple and effective instrument for applying suction to the lens capsule. There are certain objections to the suction method of cataract extraction, one of which is that the incision must be quite large and is made to gaps more widely during removal of the lens with any suction apparatus than with the use of forceps. However, in the intumescent stage of cataract the suction method allows intracapsular extraction where other methods fail and in such cases the Dmitry apparatus has proved of definite value. It is, in the opinion of certain ophthalmologists, equal to more elaborate instruments for the suction method.

SOYBEAN MILK AND COW AND HUMAN MILK

To the Editor—Would you kindly tell me the comparison between soybean milk and cow's milk. Could soybean milk be used in place of cow's milk for human infants? How do the proteins, fats and carbohydrates in soybeans compare with those in human milk? I understand that in China and Japan they have no cow's milk and they use soybean milk in its place. James H. Rosecrans, M.D., Hoboken, N. J.

ANSWER—The soybean contains 40 per cent protein, 20 per cent fat and very little carbohydrate. The protein is vegetable protein high in aminoacetic acid and is said to give as normal a growth as the animal protein casein contained in cow's milk. Soybean milk as compared to cow's milk is deficient in fats, carbohydrate, minerals and vitamins. This fault is overcome by several commercial products in which olive oil, arrowroot starch, maltose and dextrose, and salts of dicalcium phosphate, and sodium chloride are added. Such a mixture in the form of a powder when added to water is similar to cow's milk in percentage content and not like human milk. The green and yellow types of soybean have long been a preferred artificial feeding of Oriental infants. It has been used in this country for some time as a food for infants allergic to animal protein.

COCAINE-PHENOL MIXTURE FOR DRUM MEMBRANE ANALGESIA

To the Editor—Is there danger from cocaine reaction in using cocaine, menthol and phenol in equal proportions for local ear anesthesia? I have used it in many cases and have never had trouble with it even in small children. Harold L. Snow, M.D., San Pedro, Calif.

ANSWER—Topical application of this mixture to the drum membrane to make paracentesis less painful has been practiced for many years. A rather careful search of the literature has not discovered any reports of a "cocaine reaction" following the procedure. Absorption of drugs applied to the intact skin is minimal. Failure of this method in some cases to abolish the pain of paracentesis is evidence of this fact.

Probably phenol is the active constituent of the mixture when successful analgesia results from its application.

VACCINES AND TUBERCULOSIS

To the Editor—In reply to a question concerning vaccines for tuberculosis which appeared in *The Journal*, April 24, 1943, page 1419, mention is made of the work carried out by Dr. E. A. Watson, and he is suggested as a source of BCG vaccine. Dr. Watson did some work with BCG a number of years ago, but I believe the only Canadian source of the vaccine at the present time is Dr. Armand Frappier, University of Montreal, Montreal, Quebec. Dr. Frappier learned the technique of preparing BCG from a representative of Calmette's laboratory, and his work was for some time supported financially by the National Research Council of Canada. In the last few years it has been taken over by the department of health of the province of Quebec. Dr. Frappier's vaccine has been used quite extensively in Montreal and elsewhere in the province of Quebec for the vaccination of children and in the last few years has been supplied to Dr. R. G. Ferguson of Saskatchewan who has vaccinated a substantial number of Indian children and hospital employees in that province. In the reply to your inquiry mention was made of a number of early articles on BCG, but there is no reference to what is perhaps the most important paper on the use of BCG in Canada. I refer to a paper by J. W. Hopkins in the *American Review of Tuberculosis* for May 1941, page 581. It gives a brief history of what is perhaps a unique experiment in the vaccination of children with BCG and includes a statistical analysis of the results obtained. I may add that in both mortality and morbidity the vaccinated children showed a favorable effect. Results since that time add weight to the tentative conclusions and it is hoped in a few years to make a further complete analysis of the results of this experiment and publish the findings. F. E. Lathe, National Research Council, Ottawa, Ont.

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THE NEARER CAUSES OF CANCER

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NEW YORK

More than twenty-five years have passed since man first learned how to call forth cancer for his purposes. Throughout the centuries he has seen it follow on exposure to sunlight and watched it arise in old scars, yet only so recently has he felt any need to produce it. By 1915 though the task had become inevitable and insistent to get on further with the cancer problem to grapple with immediate causes the searcher had to study the disease at its origin. Now he can call it forth in any one of many ways and follow its emergence from hour to hour as he chooses. Yet still he is like an Aladdin who calls forth a genie that he does not understand, much less control, and the meetings of societies for cancer research are like gatherings of Aladdins with great talk of how most surely to evoke the genie and of how soonest and from what sort of bottles, and of why the genie come and, having come behave as they do. The present lecture is concerned with these last questions.

Something should be said in preliminary on the place of cancer among the tumors. It is that of an extreme instance no more. The distinction necessarily made in practice between benign and malignant growths, though vital to the patient is not expressive of any basic cleavage save in the case of the teratomas and other self-limited developmental anomalies that manifestly are not true neoplasms. In the days when only human tumors were studied it was noted that some growths in the benign category it let alone would enlarge until they killed, and instances were now and then encountered, e. g. adenomas of the thyroid gland which though orderly and seemingly harmless gave metastases.¹ Later, when the transplantation of animal tumors was undertaken some spontaneous benign growths were successfully transferred and these proved able to grow indefinitely, killing host after implanted host by the sheer bulk of their demands, the Ehrlich chondroma for example. Now with experimental carcinogenesis a busy, laboratory occupation the fact has come to light that the agents which call forth carcinomas and sarcomas evoke as well a wide array of neoplasms from the most malignant to some which have so little initiative as to require aid if they are to exist at all.² Here is more evidence that the benign tumors and the cancers are only individual expressions of a single strongly characterized neoplastic principle.

Deviations from this principle. Kaposi's sarcoma for example, are few and significantly rare. So well do present day investigators realize the essential unity of the tumor problem that they undertake work with experimentally induced hepatomas, papillomas, adenomas and other benign growths in the sure belief that what these may tell will contribute somehow to the understanding of carcinomas and sarcomas. Indeed they apply the term carcinogenic as matter of course to agents which not infrequently call forth a horde of benign neoplasms for every ultimate one that is malignant and they look on such neoplasms as indicators of carcinogenic power. It is often and truly said that the tumors as a class represent a multiplicity of diseases, but this is because the character of each individual growth is largely determined by the specializations and inherent capabilities of the cells from which it has sprung as result of neoplastic change. When this change occurs elements which had appeared identical in form and function may give rise to widely differing tumors, their possibilities gaining different exploitation. Yet the neoplastic principle implicit in them is no less single because of the variety of its manifestations.

Pathologists have realized for a long time that normal cells while functioning may behave for a brief while as if neoplastic, those of the chorion for example. In 1906 it was found that the intradermal injection of oily solutions of certain dyes, notably scarlet R and Sudan III was frequently followed by local downgrowths of the epidermis in narrow strands which penetrated amid the corium and sometimes entered lymph vessels giving a picture which wholly resembled anaplastic squamous cell carcinomatosis except for the droplets of stained oil in the tissue.³ The malignant activities continued only so long though as dye was present, the epidermis eventually forming an orderly layer around the decolorized oil the stimulus experimentally provided had run out, but a further temporary downgrowth could be obtained by repeating the injection. These phenomena not only made it plain that ordinary cells are able to behave as if cancerous in response to extraneous influences but they justified the inference—though this was not made at the time—that an actuating cause for tumors need only work on capabilities which cells innately possess, and go along with them as they multiply in response to its presence. This is not to say that a tumor cell can be regarded as merely a stimulated normal cell whatever causes it to become neoplastic often renders it unhealthy and frequently induces metaplasia. All in all it now seems superfluous and a bit grandiose to assume as has been easy in the past that the cause for the cancerous process is a secret bound up with life itself. There is no need even to sup-

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1. Ewing James. *Neoplastic Diseases. A Treatise on Tumors*, ed. 3 Philadelphia and London W. B. Saunders Company 1928.

2. Rous Peyton and Kidd J. C. *Conditional Neoplasms and Sub-threshold Neoplastic States. A Study of the Tar Tumors of Rabbits* J. Exper. Med. 73: 365 (March) 1941.

3. Fischer B. *Die experimentelle Erzeugung atypischer Epithelwucherungen und die Entstehung bösartiger Geschwülste* München med. Wehnschr. 53: 2041 (Oct. 16) 1906.

pose that tumor cells are the outcome of some inherent, fundamental cell change, though this is a favorite supposition

On scrutinizing a representative list of the agents which act in such a way on tissues that tumors result (table 1), one sees straight off that most of them cannot be the actuating causes of the growths they call forth. The point need not be labored for the mechanical and physical agents—gallstones, ill fitting horse harness, the roentgen rays, heat or freezing, and so forth. These may do their injury and be gone months or years before tumors develop. And animal parasites, tubercle bacilli for instance, *Bilharzia* and the larvae of the worm *Cysticercus* (which become encysted in rat livers with the consequence that sarcomas arise from the cyst wall) are rapidly left behind as the tumors enlarge that they have provoked. Plainly in all such cases one must look to some factor accompanying the cells, or to an intrinsic alteration in them, in accounting for their new state.

Chemical agents of widely diverse sorts will give rise to tumors on test. By painting the skin of mice with weak hydrochloric acid, potassium hydroxide or tar made from human skin it is possible to evoke carcinomas, and the injection of lard or olive oil into the subcutaneous tissues sometimes results in sarcomas, but

TABLE 1—Diversity of the Carcinogenic Agents

Mechanical Irritants (e. g. gallstones, ill fitting bridles or horse harness)		
Röntgen rays	Freezing and thawing	
Radium	Heat (burns)	
Ultraviolet light		
Animal dyes	Extracts of cancerous organs	
Coal tar	Tar from animal tissues	
Synthetic hydrocarbons	Animal fats	
Other complex pure substances	Dextrose	
Hormones (estrogens, pituitary hormone)	Potassium hydroxide	
	Hydrochloric acid	
Parasites (e. g. tubercle bacilli, <i>Cysticercus</i> larvae, <i>Bilharzia</i>)		
Viruses		

all this has no likeness to natural conditions. Such complex materials as tar may contain however something carcinogenic which the body is capable of manufacturing, and actually a hydrocarbon of pronounced carcinogenicity, methylcholanthrene, has been synthesized, which is nearly related chemically to the bile acids.⁴ Furthermore, certain substances normally made by the organism and functioning for it in important ways, the estrogenic hormones in special,⁵ have proved capable of bringing about tissue changes which have tumor formation as their consequence, and extracts of human cancers or of the organs of cancerous individuals will call forth tumors now and again when brought to bear on the tissues of mice.⁶ Some of the polycyclic hydrocarbons do so with striking sureness and rapidity, papillomas and cancers appearing on the skin within a couple of months, and there are viruses which produce growths in chickens and rabbits within a few days after inoculation. In the latter instances the gap between cause and effect would appear on first sight to have

been significantly narrowed. To learn whether this is really the case has become a prime duty of cancer workers.

The pathologist Ribbert, who made rewarding studies of the first stages of human carcinomatosis, used to say that the cancer problem would finally be solved through the utilization of growths arising from the skin, since there one can follow events most closely. The first event after a chemical carcinogen is painted on the skin has proved to be in nearly every instance a non-neoplastic cell disturbance which has many of the features of a low grade, chronic inflammation of ordinary sort and might be taken for such except that out of it tumors come. Observers agree that the neoplastic change is no mere exaggeration of the disturbance but something discontinuous in character, new, strange, abrupt and irreversible, and it does not take place everywhere throughout the expanse of abnormal tissue but only here or there, often at several or many spots, as a seemingly punctate alteration. In microscopic sections from interior organs submitted to the carcinogens one can usually perceive a similar course of events, first a tissue disorder throughout the implicated region, entailing cell proliferation ordinarily, and then a starting forth of growths at one point or another. The happenings are much the same when true tumors appear on the basis of developmental anomalies, the latter being carcinogenic in the sense that they provide a terrain suited to neoplastic change (von Recklinghausen's disease for example, intestinal polyposis, the retinal disturbance preliminary to malignant gliomas⁷). The action of the sex hormones is more various. When contributing to tumor formation they may merely stimulate gland tissue to develop, in this way providing the cells on which other carcinogenic agents can act, or if supplied in excess they may themselves produce the tissue disorder out of which tumors come. And they may do still more: they may urge neoplastic cells on, so that they multiply into tumors, as in the case of those prostatic cancers which retrogress after orchectomy.⁸ Some times they act in all these ways. Little has been learned as yet of the mode of action of the carcinogenic extracts of normal and cancerous tissues,⁹ but this little would seem to indicate that it is of the ordinary sort, the extracts producing a chronic disturbance on the basis of which neoplastic change may or may not supervene after a considerable lapse of time. The only carcinogenic agents which are known to produce tumors by direct action are the neoplastic viruses. And prior to any discussion of how these act it is necessary to ask whether they engender true tumors.

The growths which have been traced to the action of viruses are few in comparison with the multitude of those for which no cause is known, yet their number and variety are not inconsiderable. They are notably frequent in the domestic fowl, and study has proved them to be typical tumors not only in morphology and behavior but in collateral respects, notably in incidence.¹⁰

7 Weller, C. V. The Inheritance of Retinoblastoma and Its Relation to Practical Eugenics. *Cancer Research* 1: 517 (July) 1941.

8 Huggins, Charles, Stevens, R. E., Jr. and Hodges, C. V. Studies on Prostatic Cancer. II. The Effects of Castration on Advanced Carcinoma of the Prostate Gland. *Arch. Surg.* 43: 209 (Aug.) 1941.

9 Des Ligneris, M. J. A. The Production of Benign and Malignant Skin Tumors in Mice Painted with Bantu Liver Extracts. *Am. J. Cancer* 33: 489 (Aug.) 1940.

10 Rous, Peyton. Transmission of a Malignant New Growth by Means of a Cell Free Filtrate. *J. A. M. A.* 56: 193 (Jan. 21) 1911. An Avian Tumor in Its Relation to the Tumor Problem. *Proc. Am. Phil. Soc.* 51: 201 (July) 1912. Gye, W. E., and Purdy, W. J. The Cause of Cancer. London, Cassell and Company, 1931. Claude Albert and Murphy, J. I. Transmissible Tumors of the Fowl. *Physiol. Rev.* 12: 246 (April) 1932. Foulds, L. Filtrable Tumors of Fowls. A Critical Review. *Fu. to Eleventh Scientific Report of the Imperial Cancer Research Fu.* London, 1934.

4 Cook, J. W., Haslewood, G. A. D., Hewett, C. L., Hieger, I., Kennaway, E. L., and Mayneord, W. V. Chemical Compounds as Carcinogenic Agents. *Am. J. Cancer* 29: 219 (Feb.) 1937.

5 Gardner, W. U. Estrogens in Carcinogenesis. *Arch. Path.* 27: 138 (Jan.) 1939.

6 Shabad, L. M. Production experimentale de tumeurs malignes par un extrait benzenique du foie d'un cancerux. A propos de la question des substances carcinogenes endogenes. *Compt. rend. Soc. de biol.* 124: 213 (Jan. 23) 1937. Nouvelles donnees relatives a l'orientation experimentale des tumeurs par un extrait benzenique du foie d'un cancerux. A propos des substances blastogenes endogenes, *ibid.* 126: 1180 (Dec. 18) 1937.

They occur hither and yon like human tumors, their natural distribution seeming all against any relationship of one to another. Sarcomas in wide variety, fibromas, myxomas, osteomas, chondromas, in endothelioma and several kinds of leukemia have all proved due to viruses with carcinomas still to be investigated, and workers in this field have lately concluded that every spontaneous chicken tumor will yield a causative virus if only it can be successfully transplanted and its vigor enhanced by passage in a series of favorable hosts.¹¹

Within the last few years kidney tumors due to a virus have been discovered in the swamp frog (*Rana pipiens*).¹² The growths originate from the epithelium of the renal tubules, and they range histologically from orderly adenomas to invasive adenocarcinomas which metastasize by means of cell emboli. They can be transplanted and they resemble the classic tumors histologically except in one respect—the cell nuclei contain large inclusions in most instances, such as a virus may cause. Inclusions of this sort are rare in human neoplasms though they do occur in certain growths of the central nervous system.¹³ The more orderly of the frog tumors sometimes show no inclusions, then appearing wholly typical, a fact not without significance as bearing on cell-virus relationships.

These tumors of chickens and frogs seem distant from the human problem. But recently a virus has been discovered¹⁴ in the huge keratinized horns and warty excrescences—epidermal papillomas—which western cottontail rabbits sometimes carry on their skin and the growths have been found to exhibit all of the immediate traits which characterize tumors as a class.¹⁵ When the virus is rubbed into the scarified skin of domestic rabbits it gives rise to papillomas which often grow with remarkable vigor and become carcinomatous within a few months.¹⁶ Indeed in its power to bring on rabbit cancer rapidly the virus outstrips all the other carcinogenic agents known.

The papillomas are in general well tolerated by the cottontails which are their native hosts but they may temporarily behave as if malignant, simulating squamous cell carcinomas histologically, invading and replacing the muscle beneath them and penetrating into the blood and lymph vessels and along the latter to the nearest lymph node, like certain carcinomas of the human mammary gland,¹⁷ yet even such growths after a while take on the ordinary keratinizing, papillomatous form and no longer threaten the life of the host. Genuine cancer does occur though as a late and occasional event.¹⁸ The

papillomas are often multiple and the derivative malignant tumors may be multiple too, cottontails have been trapped which carried squamous cell carcinomas in every stage of development as many as sixteen on the skin of a single rabbit each derived or deriving from a separate papilloma. Metastases to the lymph nodes and lungs are frequent.

The papillomas resulting from the inoculation of domestic rabbits—to which the virus is foreign—may attain immense size before cancer develops and bring about death through sepsis and hemorrhage. If the virus-infected cells are inadvertently dislodged or purposely injected into the blood stream, they survive in the lung tissue to which they are transported and form secondary nodules there by intrinsic cell proliferation induced pulmonary metastases as one might say. Always if the papilloma grows progressively—for sometimes it dwindles and disappears—cancer ultimately develops and at many points in the proliferating mass if the animal lives long enough. But the malignant change occurs only after nearly four months at the earliest and usually half a year or more must have elapsed. How the cancers come about will be discussed further on. Here only the immediate effect of the virus will be considered and this regularly finds expression in papillomas.

On looking into the relation of the neoplastic viruses to the tumors they engender one perceives several profound differences from the other known carcinogens. The viruses do not act obliquely or at any remove, but they directly change the cells they infect into neoplastic cells without giving rise to any intermediate tissue disturbance. What is more they accompany the changed cells as these multiply into tumors increase in amount as the latter enlarge and can usually be recovered from the proliferating tissue in a state to produce growths of the same kind in fresh hosts. When they cannot be got, their presence is demonstrable by serologic tests, since they induce the formation of specific antibodies, these appearing in the blood of the hosts. They maintain a working relationship with the cells they have infected continually urge the latter to neoplastic activities and, in short, do precisely what extraneous agents would have to do judging from the observed effects of scarlach R if they functioned as the actuating causes of tumors. None of this holds true of any of the other carcinogens, those already discussed. Some disappear from the tissues before the neoplastic process begins and the others soon afterward. Even the most potent of the chemical agents is diluted out as the tumors due to it increase in bulk, and soon no trace of it can any longer be demonstrated. True extracts of human carcinomas will now and again give rise to tumors in mice. But so too, though less frequently, will extracts of normal tissues, while furthermore the mouse tumors which these materials induce (sarcomas, epidermal papillomas which may become cancerous secondarily) are of the kinds which follow also on the action of various agents that can scarcely have a near relationship to natural neoplastic processes. As already stated, the introduction of foreign fats, e.g. olive oil or lard or the repeated injection of sugar will cause sarcomas to arise in mice (though mouse fat will not), and the repeated application of oleic acid to the skin of these animals¹⁹ and of benzene to

11 Foulds L. Observations on Nonfiltrable Fowl Tumors. The Production of Neutralizing Serums Against Filtrates of Rous Sarcoma I by Noninfective Extracts of a Sarcoma Induced by 1:2:6 Dibenzenanthracene. *Am. J. Cancer* 31: 404 (Nov.) 1937.

12 Lucke Balduin A. Neoplastic Disease of the Kidney of the Frog *Rana pipiens*. *Am. J. Cancer* 20: 352 (Feb.) 1934. Carcinoma in the Leopard Frog. Its Probable Causation by a Virus. *J. Exper. Med.* 68: 457 (Oct.) 1938.

13 Russell D. S. The Occurrence and Distribution of Intracellular Inclusion Bodies in Gliomas. *J. Path. & Bact.* 35: 625 (July) 1932.

14 Shope R. E. Infectious Papillomatosis of Rabbits. *J. Exper. Med.* 58: 607 (Nov.) 1933.

15 Rous Peyton and Beard J. W. A Virus Induced Mammalian Growth with the Characters of a Tumor (the Shope Rabbit Papilloma). I. The Growth on Implantation Within Favorable Hosts. II. Experimental Alterations of the Growth on the Skin. Morphologic Considerations. The Phenomena of Retrogression. III. Further Characters of the Growth. General Discussion. *J. Exper. Med.* 60: 701-723 (Dec.) 1934.

16 Rous Peyton and Beard J. W. The Progression to Carcinoma of Virus Induced Rabbit Papillomas (Shope). *J. Exper. Med.* 62: 523 (Oct.) 1935. Rous Peyton. The Virus Tumors and the Tumor Problem. Harvey Lecture. *Am. J. Cancer* 28: 233 (Oct.) 1936.

17 Handley W. S. Cancer of the Breast and Its Treatment. ed. 2. London: J. Murray, 1922.

18 Syverton J. T. and Berry G. P. Carcinoma in the Cottontail Rabbit Following Spontaneous Virus Papilloma (Shope). *Proc. Soc. Exper. Biol. & Med.* 33: 399 (Dec.) 1935. Kidd J. G. and Rous Peyton. Cancers Deriving from the Virus Papillomas of Wild Rabbits Under Natural Conditions. *J. Exper. Med.* 71: 469 (April) 1940.

19 Twort C. C. and Fulton J. D. Further Experiments on the Carcinogenicity of Synthetic Tars and Their Fractions. *J. Path. & Bact.* 33: 119 (Jan.) 1930.

rabbit skin will cause papillomas to appear.²⁰ Yet though these facts make against the possibility that the extractives from human carcinomas are the actuating causes of tumors, this does not mean that the finding is devoid of significance. On the contrary, it strongly implies that the disordered body may now and again manufacture substances which so disturb the tissues that tumors result.

TABLE 2—*Examples of Summated or Substituted Carcinogenic Action*

Carcinogens	Authority
Beta radiation—benzpyrene	Mottram
Benzpyrene—X rays	Maynord and Parsons
X rays—diben anthracene	Maynord and Parsons
Estrogen—benzpyrene	Mottram, Gilmour, Perry and Ginzton

Not only do the viruses render normal cells neoplastic when inoculated experimentally and maintain a partnership with them subsequently, but everything goes to show that they function in this way under natural conditions. All of them were originally procured from "spontaneous" tumors of one sort or another, and on subsequent inoculation all have given rise to growths essentially like those from which they were first obtained: a virus derived from myxomas producing only myxomas; an endothelioma virus endotheliomas, and so on. In this specificity of effect they are sharply different from the carcinoma extracts just discussed. Their determining influence on the kind of tumor they produce is most striking and it sometimes results in growths of such highly complex character as could only result, one might have supposed, from innate cell peculiarities. They are enabled to produce these growths (for example, osteochondrosarcomas, intracanalicular sarcomas) because they influence cells of certain kinds only and exploit their latent capabilities. Not infrequently they injure the elements they infect, with result in cytologic changes indicative of damage like those occurring in the tumors due to causes as yet unknown.

The other carcinogenic agents thus far considered determine the type of tumor they call forth only so far as they have affinities for certain organs or tissues, which in consequence bear the brunt of their effect, and even when these affinities are pronounced, tumors of several kinds usually result from their action. The carcinogenic azo dyes, which have attracted great attention of late as affecting the liver in special, elicit not only benign and malignant hepatomas and cholangiomas but reticuloendotheliomas as well, and sarcomas of the connective tissue, pulmonary tumors and hemangiomas, mostly amid adipose tissue,²¹ and sometimes papillomas of the stomach and urinary bladder. The estrogens, besides inducing growths in the glands they specifically influence, may call forth spindle cell sarcomas or lymphomas when injected subcutaneously.²² There would seem to be no reason why a chemical carcinogen should not be so selective as to act on only one sort of cell and in some unique way, with result in a neoplasm distinctive of its action, but thus far none has been discovered. Certain of the polycyclic hydrocarbons, notably benzpyrene and methylcholanthrene, are pancarcinogens, capable of bringing about neoplastic changes in

cells of so many kinds that as yet no limit has been reached in this respect. They produce papillomas and carcinomas of the skin, sarcomas of all sorts and at many situations, rhabdomyomas and leiomyomas, bone tumors, lymphomas, tumors of the liver, lung, breast and uterine tissues, the galaxy of brain tumors, and many growths besides, as also leukemias, according to the species and breed of animal and the kind of tissue submitted to their influence. As might be expected from this lack of specificity, it has been found that some carcinogens of wholly unrelated sorts very frequently call forth tumors of identical kind, and that furthermore one of them may substitute for, or reinforce the action of another in so doing (table 2).

These facts fall in with the evidence already cited as showing that the generality of carcinogens do not actually start off a process with which they have no further essential relation. And that this is the true state of affairs is made still clearer by the effects of such agents when acting on animals of different species, or individuals of a single species but of differing inbred strains. Unlike the viruses—which act only on animals of the sort from which they are procured or on closely related species—many of the carcinogens now in question are broadly effective, calling forth growths in a wide range of creatures from the frog to man. Yet what they call forth does not depend on them for its character but on the species of animal concerned and its breed, and even on the potentialities of the individual. Mice of differing inbred strains, when treated identically with a chemical carcinogen, will in some instances develop mammary tumors and in others lung adenomas, or liver tumors, bone tumors, lymphosarcomas or leukemia, according to the peculiarities of the strain to which each individual belongs (table 3). And the local neoplastic response when the carcinogen is brought into direct contact with a tissue (as for instance when tar is

TABLE 3—*Induced Tumors as the Expression of Natural Liabilities*

Animal	Natural Liability	Carcinogen	Authority
Mouse	Lung adenomas	Tar, benzpyrene, dibenzanthracene	Murphy and Sturm, Lynch, Furth, Andervont
Mouse	Hepatomas	Dibenzanthracene, dibenzacridol	Andervont, Smith and associates
Mouse	Leukemia	Benzpyrene	Furth
	Ovarian tumors, lymphoid tumors and myelosis, lymphosarcoma	Röntgen ray	Furth
Mouse	Mammary carcinoma	Estrogen	Lacassagne (and others)
Mouse	Osteomas	Estrogen	Pybus
Mouse	Lymphoid tumors, myelosis, lymphosarcoma	Estrogen	Gardner
Rabbit	Uterine tumors	Dibenzanthracene	Kennaway and Kennaway

applied to the skin) differs widely from animal to animal of the same breed, the experimenter having no control over where tumors will appear in the exposed region, or when, or how many of them there will be. He does not actually produce neoplasms at will in any of these instances but instead is like a fisher who casts a net for what he may draw in. He can be sure of the outcome only so far as he casts a wide and strong net—employs a powerful carcinogen that is to say, on a large expanse of tissue—and casts the net where he knows there are fish—in other words brings the agent to bear on tissues known to respond to it with tumors. Quite different is

²⁰ Personal observation.
²¹ Andervont, H. B., Grady, H. G., and Edwards, J. E. Induction of Hepatic Lesions, Hepatomas, Pulmonary Tumors and Hemangioendotheliomas in Mice with o-Aminoazotoluene, *J. Nat. Cancer Inst.* 3: 131 (Oct.) 1942.

the state of affairs with the viruses. The outcome with them does not depend on the potentialities of the tissues infected on they bring along their own potentialities and selectiveness of action, with the result that they not only engender tumors at each spot where they are brought into contact with susceptible cells but determine the kinds that arise.

Since the generality of the carcinogens elicit neoplastic activities in which they take no further part it is scarcely surprising to find that their effect is disproportionate to the dose, tumors arising only when this is within a certain optimal range. The sarcomas appearing in response to an injection of benzpyrene into the connective tissue usually originate at some distance from where it exists in greatest concentration and a strong solution of methylcholanthrene instead of producing tumors on the area of skin painted with it may do so only around the edge. The viruses in contrast cause neoplastic changes wherever they attain to cells of the right sort and the number of the latter infected and hence involved in tumor formation varies directly with the size of the inoculum.

In table 4 the relation of the viruses to the growths they engender is compared point for point with that of the other known carcinogens. It will be seen that these relations are fundamentally different. The generality of the carcinogens bring about tissue conditions out of which tumors may or may not arise for reasons still undetermined. They may truly be called provocative carcinogens. The viruses on the other hand both initiate tumors and determine their character and behavior. They are actuating carcinogens. This distinction deserves to be stressed because the viruses are often supposed to function in the same way as other carcinogens and hence are dismissed from attention as mere freakish members of a large heterogeneous yet essentially single class of tumor-producing agents.

Certain instances there are in which viruses may function as provocative carcinogens instead of serving as the actuating causes of tumors. A papillomatous growth of man, condyloma acuminatum is due to a virus²² and when pent under a phimotic foreskin and aided by inflammation and maceration it sometimes burrows into the tissues perforating the foreskin and even penetrating to the urethra with result in fistulas. In these days of effective treatment such happenings are rare but they were carefully described and documented by many competent observers in the recent past.²³ Microscopic studies of the aggressive condylomas have shown that they invade and destroy normal structures as if they were malignant. Sometimes they cease these activities and revert to the ordinary state after circumcision is done showing that they were merely stimulated but in other cases they continue to invade and prove themselves to be truly cancerous by metastasizing. The cancers which are squamous cell carcinomas derive from the virus-infected papilloma cells by changes involving such slight morphologic alterations that surgical pathologists examining biopsy specimens, have time and again reported the growths to be invasive condylomas learning their mistake only with the appearance of secondary nodules in the regional glands.

As yet nobody knows how far ordinary condylomas resemble true tumors much less what happens when cancers derive from them. They are obviously infectious in origin, as the typical tumors are not, and furthermore they can seldom maintain themselves unless aided by local conditions such as are provided by bacterial or syphilitic infection with maceration. It may be that the virus responsible for them undergoes a variant

TABLE 4—Relationship of the Carcinogenic Agents to Tumors

The Neoplastic Virus	The Generality of the Carcinogens
have similar general attributes	are of many diverse kind
are procured only from tumors	are mostly extraneous in origin
act directly making cells become tumor cells	act indirectly by provoking chronic nonneoplastic tissue disturbance
increase as the tumors grow and are often recoverable from them	disappear as the tumors grow
are narrowly specific as concerns animals acted on and tumors produced	are largely non-specific as concerns animals acted on and tumors evoked
furnish the potentiality for tumor formation	are effective only if tumor potentialities are already present
then elicits determine the kinds of growth arising	evoke growths representative of preexisting potentialities
have effects proportionate to size of the inoculum	have effects of proportionate to the amount employed
They cause and actuate tumors	They provoke neoplastic change

change now and then becoming a cancer-producing virus or possibly it works on the cells infected with it like an ordinary provocative carcinogen, with the result that they become malignant, owing to an alteration of some sort unknown or perhaps the attendant inflammation and maceration act in this way. There are large practical obstacles to settling the question.

A nearly similar sequence of events, presenting the same possibilities can be observed when virus-induced rabbit papillomas become cancerous, and it has the advantage for study that the growths can readily be experimented with. They have the immediate traits of true tumors as already stated, and the carcinomas originating from them derive directly from the papilloma cells, elements easily discriminated from ordinary hyperplastic epidermis and owing their distinctive aspect to the action of the virus. After becoming malignant, the cells continue to exhibit some of the histologic features indicative of the influence of the latter, until as anaplasia ensues they lose the power to develop them. Often this does not happen the growths remaining malignant papillomas, even in metastases, and their cells showing peculiarities attributable to the virus until the animal dies. Furthermore, rabbits to which the cancers are successfully transplanted become strongly immune to the virus as the growths enlarge, showing that either it or some closely related antigen is present in the neoplastic tissue and increases in amount.²⁴ Inoculation of the skin of the cancerous animals now fails to result in papillomas, and their blood is no longer harmless to the virus when mixed therewith but neutralizes it rapidly and specifically. The antigen responsible for this acquired immunity was still abundant in the cancer even after it had been propagated in a succession of rabbits previously hyperimmunized to the papilloma virus,²⁵

22 Serra A. Studi sul virus della verruca del papilloma del condyloma acuminato (etiologia patogenesi filtrabilità) nota preventiva Giornale mal ven 65 1808 (Dec.) 1924. Findlay G M. Warts in Great Britain Medical Research Council. A System of Bacteriology in Relation to Medicine London His Majesty's Stationery Office 7 252 1930.
23 Frei W. Ueber carcinomähnliche spitze Condylome am Penis Arch Dermat u Syph 160 109 1930. Buschke A. and Lowenstein L. Beziehungen der spitzen Condylome zu den Carcinomen des Penis Arch Dermat u Syph 163 30 (March) 1931. Buschke A. Spitze Condylome am Penis. Tumorartiges Wachstum? Zentralbl f Haut u Geschlechtskr 10 11 (Nov. 20) 1923 1924.

24 Kidd J G. Beard J W. and Rous Peyton. Serological Reactions with a Virus Causing Rabbit Papillomas Which Become Cancerous. I. Tests of the Blood of Animals Carrying the Papilloma. II. Tests of the Blood of Animals Carrying Various Epithelial Tumors. J Exper Med 64 63 79 (July) 1936. Kidd J G. and Rous Peyton. A Transplantable Rabbit Carcinoma Originating in a Virus Induced Papilloma and Containing the Virus in Masked or Altered Form. Ibid 71 813 (June) 1940.
25 Kidd J G. The Enduring Partnership of a Neoplastic Virus and Carcinoma Cells. Continued Increase of Virus in the V2 Carcinoma During Propagation in Virus Immune Hosts. J Exper Med 75 7 (Jan) 1942.

although a similar procedure aids other tumors of the extraneous viruses which sometimes gain access to them and ride along as passengers.²⁶

All this speaks for a continued participation of the papilloma virus or some near relative of it, in the activities of the cancer, and this interpretation of the findings gains further support from what happens when tar tumors are experimentally infected with the virus.²⁷ Most of the epidermal growths which appear on rabbit skin in response to tarring are benign papillomas, and they generally disappear after the applications are left off, if nothing further is done to them, but if the papilloma virus is injected into the blood stream of the host it frequently localizes in them and entirely changes the course of events. Some take on the character of virus papillomas, while others alter straightway to squamous cell carcinomas, and these may show the same histologic stigmas as the cancers of similar sort that derive from papillomas directly induced with the virus. Tar cancers already present are often spurred to sudden, great malignancy by the virus, and some of them show the alterations in morphology just mentioned as indicative of its influence. This disclosure that the virus can profoundly affect epidermal tumors of other origin makes the supposition well nigh untenable that it ceases to have any share in proceedings when the growths which it has itself caused become malignant. As bearing on the possibility that it undergoes variation to become a cancer-producing virus, the fact seems significant that the malignant change, though rare in cottontail rabbits, takes place with notable frequency in species to which the virus is foreign—swamp hares, jack rabbits, snowshoe hares and domestic rabbits especially—in all of which it readily produces papillomas on inoculation, for viruses are most likely to vary when propagated in hosts strange to them, as is well known. No one of many efforts, however, to induce variation of the papilloma virus by submitting it to the influence of methylcholanthrene or roentgen rays *in vitro* or *in vivo*, has thus far produced any qualitative alteration in its effects.

There would appear to be three possible ways to account for the observed phenomena when the papillomas become cancerous: (1) provocative carcinogenesis of the ordinary kind, the virus, or local conditions within the papillomas, acting on the infected cells in such wise that they change to cancer cells. On this supposition the cells swap horses while crossing the stream and emerge on its farther side as malignant, having wholly relinquished one neoplastic motivation for another; (2) provocative carcinogenesis, but with the virus persisting and influencing the cancers; and (3) variation of the virus, with result that it expresses itself in somewhat different terms, making the papilloma cells, which are already vigorously neoplastic, be cancer cells.

An obvious step toward learning the real state of affairs would be to get a virus of some sort from the

cancers, but all attempts at this have failed. For a while the failure seemed wholly attributable to the presence in the malignant tissue of antibodies extravasated from the blood, since they often accumulate in sufficient amount to render extracts of this tissue neutralizing for the papilloma virus when mixed there with. But recently a cancer derived from a virus papilloma has come to grow so fast, as a result of propagation in one favorable rabbit after another, that it furnishes considerable masses of tissue within a few days of implantation, before there has been time for the new host to form antibodies, and extracts of the tissue thus provided fail to yield virus, even when inoculated into skin previously rendered hyperplastic, a procedure which has disclosed the presence of the papilloma virus in many extracts that had seemed devoid of it when tested by ordinary methods. Nor has inoculation of the cancer extracts into epidermis behaving as if carcinomatous in response to scharlach R given any better result. If a variant of the papilloma virus is responsible for the cancers, either it must require conditions of a peculiar sort for its transmission, or else it has undergone such modification as to be incapable of infecting new cells, has become a dead-end virus, in short.

When the tumors elicited by the provocative carcinogens are scrutinized carefully, much that might be taken to imply a virus cause for them can be found. Such tumors can be easily produced in chickens by the injection into the connective tissue of tar, benzpyrene or methylcholanthrene, and in all their visible manifestations they are wholly like the various growths of fowls that are produced by viruses. No agents of the sort have been recovered from them, but this does not mean that such agents are absent. Indeed, as they enlarge the blood of the hosts comes to contain in many instances antibodies which will specifically neutralize one or another of the known chicken tumor viruses, as if this virus or some nearly related agent were contained in the neoplastic tissue.²⁸ The papillomas induced by tarring rabbit skin—indisputable neoplasms from which no cause has yet been got—resemble virus papillomas at all essential points²⁹ and like them may become cancerous secondarily, undergoing similar histologic changes then, with result in squamous cell carcinomas of the same sort. It is as if they were due to an agent somewhat less pathogenic but generally similar to the papilloma virus—which cannot be their cause, since the host animals fail to develop the specific virus-neutralizing antibody directed against it. Recently the tissue of the Brown-Pearce rabbit carcinoma, a transplantable squamous cell cancer long studied as a neoplasm of classic sort, has been found to contain an antigen which has much the same physical attributes as the papilloma virus, though distinct therefrom.³⁰ Like the agent present in the cancers derived from virus papillomas, this antigen induces the formation of an antibody peculiar to itself. Extracts of the neoplastic tissue fail, however, to produce tumors.

These findings indicate that the state of affairs encountered in the cancers derived from virus papillomas may be no unique instance but a representative

26 Living cells protect viruses with which they have become infected and hence the capacity of some of the latter to continue to do harm after the host has developed antibodies against them, and to persist for long periods. The success obtained in ridding tumors of passenger viruses by hyperimmunizing the host argues a less intimate association with the cell than exists under the ordinary circumstances of infection.

27 Rous, Peyton, and Kidd, J. G. The Carcinogenic Effect of a Papilloma Virus on the Tarrred Skin of Rabbits. I. Description of the Phenomenon, II. Major Factors Determining the Phenomenon. The Manifest Effects of Tarring, *J. Exper. Med.* **67** 399 (March) 1938. **68** 529 (Oct.) 1938. The Activating Transforming and Carcinogenic Effects of the Rabbit Papilloma Virus (Shope) on Implanted Tar Tumors, *ibid.* **71** 787 (June) 1940. Lacassagne, A., and Nyka, W. Faible reaction à l'injection intraveineuse du virus de Shope au niveau des papillomes obtenus par bridageonnages au benzopyrene chez des lapins à hypophyse détruite, *Bull. Assoc. franç. p. l'étude du cancer* **26** 156 (Feb.) 1937.

28 Andrewes, C. H. Evidence for the Presence of Virus in a Filterable Tar Sarcoma of the Fowl, *J. Path. & Bact.* **13** 23 (July) 1933. Foulds, H.

29 Rous, Peyton, and Kidd, J. G. A Comparison of Virus Induced Rabbit Tumors with the Tumors of Unknown Cause Elicited by Tarring, *J. Exper. Med.* **69** 399 (March) 1939.

30 Kidd, J. G. A Distinctive Substance Associated with the Brown-Pearce Rabbit Carcinoma. I. Presence and Specificity of the Substance as Determined by Serum Reactions. II. Properties of the Substance. Discussion, *J. Exper. Med.* **71** 335, 351 (March) 1940.

case. And there are other facts which should encourage persistent efforts to demonstrate viruses in neoplastic materials which have thus far yielded only negative results. Chicken tumors which have yielded viruses regularly for a long while may cease for considerable periods to yield any and then is unaccountably do so again.³¹ A transplantable fibrosarcoma of the fowl, from which only inert extracts could be got during ten years of propagation has lately been proved due to a virus by utilizing differential centrifugation to remove a neutralizing antibody from the extracts prior to inoculation.³² Many rabbit papillomas induced with virus yet yielding extracts that proved innocuous on test—growths in which it was supposed to exist in 'masked' nonrecoverable form—have been shown to contain it in pathogenic state by introducing the extracts into skin rendered hypersusceptible to infection by previous preparation. Yet with all said one cannot attribute the general inability to get viruses from most tumors either to neutralizing antibodies or to technical shortcomings. There must be some deeper reason why this has not been possible.

On turning to consider again what the provocative carcinogens do, one finds uncertainties which are astonishing in view of the prolonged intensive work on this theme. Though the early pathologists realized that most cancers arise on the basis of chronic disturbance, no one has yet been able to determine what the local conditions are which bring on neoplastic change, tissue disorders which seem identical histologically are followed in some cases by tumors in others by none. It is plain that discovery must wait on methods whereby subtle cell changes can be brought to light. According to some investigators the chemical carcinogens, when painted on the skin act directly on the epidermis, which after a while responds with tumors whereas others hold that this response is secondary to a pathologic condition induced in the corium. Before growths arise epidermal hyperplasia usually takes place throughout the area affected by the carcinogens, but this is not always true and a good case has been made for the hypothesis that these agents act by bringing about conditions adverse to the cells,³³ with the result that they undergo conversion into tumor cells, presumably by mutant change. Whatever may be thought of this latter assumption—and the character of the recognized somatic mutations speaks wholly against it³⁴—many carcinogens are unquestionably injurious when applied in quantity. The effects of one of the most potent, benzpyrene, have been likened to those of an etching paste,³⁵ and it has even been used as such in Germany to destroy cancers of the face—though with grave danger of bringing on more cancers later, as need scarcely be pointed out. So pronounced is its influence to hamper tumor growth, and that of some other carcinogenic hydrocarbons, at least under certain conditions, that an active search has been begun for related substances which might be used against human cancer without risk of inducing additional tumors.³⁶

The accumulated observations of many workers have lately made plain that the provocative carcinogens in many instances elicit tumors of a sort that the animal is more or less likely to have spontaneously. Thus, for example benzpyrene, applied by a single route, may call forth mammary cancers, or liver or lung tumors, or lymphomas or bone tumors or some other type of neoplasm according as the individual or the breed tends to have such growths naturally (table 3), and the injection of estrogens brings on mammary tumors early and regularly in mice of strains which are prone to have them anyway and greatly increases the percentage incidence of such growths in breeds with lesser liabilities. How far this principle extends is still uncertain. Carcinogens often call forth growths which are rarely seen spontaneously in the kind of animal under test, but this may be only because the environmental influences playing on the organism have not been such as would evoke them. Skin tumors for example seldom arise under the natural conditions of mouse life, although they can be readily elicited by the application of the polycyclic hydrocarbons, but if mice are so placed that they cannot shield themselves from ultraviolet light of the wavelengths found in sunshine, skin tumors develop. And Spanish sunshine will actually call forth such tumors in rats, which almost never have them spontaneously. So well recognized now is the ability of the provocative carcinogens to bring lurking liabilities to consummation that when they produce a tumor of unusual sort under experimental conditions the first task of the investigator is to look into the provenance of the animal host with a view to learning whether its forebears, or others of its breed, may not have developed growths of precisely similar kind spontaneously. All this can only mean that the provocative carcinogens now utilized in the laboratory act through or on, the same mechanism as do the influences responsible for bringing on the tumors that arise under natural circumstances.

The known tumor-producing viruses do not depend on the intervention of the provocative carcinogens for their effectiveness, though possibly this may have been essential when they first caused growths. Mere trauma of the susceptible tissue with which they are brought into contact will suffice to ensure infection with them and its consequence, neoplastic proliferation. Yet nothing is more certain about the origin of most spontaneous tumors than that a disturbance such as the provocative carcinogens produce is an essential prerequisite to their occurrence. This being so, one must conclude that viruses requiring such slight tissue preparation as those now in hand cannot be the cause of tumors generally. And there are other obstacles to the virus theory. Each of the known neoplastic viruses is notably limited in scope, causing tumors in only a single species or in a few nearly related ones, as already mentioned, and with rare exceptions³⁶ each gives rise to growths of but a single sort, subject at most to minor modifications. Attempts to induce alteration of the viruses, with result in a variety of growths, have been fruitless save in an instance³⁷ in which the changes obtained in tumor type were too slight to lessen in any considerable degree the

31 Gye W E and Andrewes C H. A Study of the Rous Fowl Sarcoma No 1. I. Filterability. Brit J Exper Path 7 81 (April) 1926

32 Claude Albert. Preparation of an Active Agent from Inactive Tumor Extracts. Science 85 294 (March 19) 1937

33 Haddow Alexander. Cellular Inhibition and the Origin of Cancer. Acta Union internat contre cancer 3 342 1938

34 Druckrey H. Zur Wirkungsweise cancerogener Stoffe. Arch exper Path u Pharmacol 190 184 (Sept 1) 1938

35 Badger G M, Elison L A, Haddow Alexander, Hewett C L, and Robinson A M. The Inhibition of Growth by Chemical Compounds. Proc Roy Soc London Series B 130 255 (Jan) 1942. Haddow Alexander and Robinson A M. The Association of Carcinogenicity and Growth Inhibitory Power in the Polycyclic Hydrocarbons and Other Substances. Ibid 127 277 (May) 1939

36 Oberling C and Guerin M. Lesions tumorales en rapport avec la leucemie transmissible des poules. Bull Assoc. franç p l'étude du cancer 22 180 (March) 1933. Furth J. Lymphomatosis Myelomatosis and Endothelioma of Chickens Caused by a Filterable Agent. I. Transmission Experiments. J Exper Med 58 253 (Sept.) 1933

37 Dusan Reynals, Francisco. The Reciprocal Infection of Ducks and Chickens with Tumor Inducing Viruses. Cancer Research 2 343 (May) 1942

magnitude of the theoretical problem presented. Must one invoke a whole world of viruses to explain the diversity of tumors? And how account on the virus supposition for those growths which, occurring at wide intervals of time or space, have yet identical peculiarities? Certainly the passing on of a pathogenic agent from one individual to another cannot be responsible in their case. And the evidence is all against the direct transmission of an actuating cause for even the commonest of mammalian tumors. It even seems unlikely that the virus causing the sarcoma known as chicken tumor I, an agent so pathogenic as to produce growths within a few days after experimental inoculation, is ever directly transferred under natural conditions. For not only do no new sarcomas arise when normal fowls are crowded with those carrying growths induced with the virus, but the latter undergoes swift inactivation when separated from the sarcoma cells unless special means are taken to preserve it. The fact that the papillomas of wild cottontail rabbits are so frequent in some localities as to suggest an infectious process renders them exceptional among the neoplasms.

The difficulties of supposing that viruses cause the generality of tumors have forced those interested in the concept to make several assumptions.³⁸ To account for the worldwide distribution of tumors and for the occurrence of growths of peculiar type at widely separate intervals of space or time it has been necessary to suppose that the body carries resident viruses just as it does resident bacteria indigenous viruses as they have been termed, which ordinarily are harmless but now and again become so changed in response to intercurrent conditions as to work on the cells with which they are associated, with the result that these become tumor cells. Such viruses might reach young creatures in early life by transfer from parent to offspring either in utero—as lymphocytic choriomeningitis does in mice³⁹—with result in an infection that is often inapparent—or after birth like the symbiotic bacteria. They would give no sign of their presence in most instances and would in due course be passed on to the young. But if a provocative carcinogen happened to work on the cells with which such a virus was associated thus altering its milieu, it might undergo variation and, taking a hand in cell affairs for the first time, give rise to a tumor. The new pathogenic variant would not be transmitted to other animals under natural circumstances, for reasons as yet obscure, but would be a dead-end virus not concerned in the production of other neoplasms, though the harmless source virus liable to the same or other variations would be passed on.

Recent discoveries have provided an instance in real life which embodies this conception almost point for point. Its history is as follows:

Some years ago geneticists studying strains of mice with a pronounced tendency to mammary cancer in old females found by cross breeding with strains almost free from such cancer that the tendency to the disease came from the mother's side.⁴⁰ This led to tests in which newborn female mice of "high cancer" strains

were suckled by "low cancer" foster mothers. It turned out that in this way the young had been rescued in nearly all instances from mammary cancer, living out their lives free from it, and further work showed they had been prevented from acquiring something which ordinarily comes to the young in the milk of mothers of cancerous strain,⁴¹ the "milk influence" or "mammary tumor inciter," as it has been called. Yet these mothers did not have cancer at the time when they passed on the "influence" nor did the young that they themselves suckled develop the disease forthwith but only long after growing up. Even from the tissue of the mammary cancers nothing could be got that would cause tumors directly though it yielded the "milk influence" on extraction as did also the ordinary breast tissue for that matter. The young of low cancer strain acquiring this "influence" passed it on in due course to their offspring and these in turn to theirs, litter after litter and generation after generation, plain evidence that it underwent increase within the individual body. It not only failed to cause cancer on direct inoculation but it was ineffective unless the mammary glands developed, and the action of the estrogenic hormones was necessary to this. The occurrence of the tumors could be greatly hastened and their incidence increased by administering the hormones in excess. The powers of the estrogens in such respect, as provocative carcinogens had been noted some years before the "milk influence" was discovered.⁴²

Chemical and physical studies of the "influence" have shown it to have a large molecular weight and to be in all probability a nucleoprotein. It passes through bacteria-tight filters, resists drying and has other physical traits such as viruses exhibit. Presumably it enters the blood from the highly permeable gut of the suckling and, reaching the mammary tissue, finds lodgment there. When it is fed experimentally to mice having but a slight natural liability to mammary cancer the incidence of the disease may be increased somewhat but animals of some breeds have shown themselves to be by inheritance unfavorable as hosts for it. Not only must the local state of the tissues (as determined by the estrogenic hormones) be right if it is to give rise to cancer but the individual animal must be of susceptible sort. The conditioning is not unlike that which obtains with many infective agents.

It will be seen that all this corresponds closely with what would have to be true of viruses if they were the actuating causes of tumors generally. As already stated they would have to be widely distributed and pass from one animal to another, presumably early in life, to reside in the tissue and cause no tumors save on special occasion. That is what the "milk influence" does. But if a provocative agent, a carcinogen, so called, happened to work on the cells with which an indigenous virus was associated, then, according to supposition, it might become pathogenic and undergo alteration to a tumor producing virus. Again the facts about the "milk influence" accord with theory. For not only has it been found that the estrogens, when provided in excess, enhance the natural liabilities to "milk influence"

38 Andrewes, C. H. Latent Virus Infections and Their Possible Relevance to the Cancer Problem, *Proc. Roy. Soc. Med.* 33: 75 (Dec.) 1939. Rous.¹

39 Traub, Erich. The Epidemiology of Lymphocytic Choriomeningitis in White Mice, *J. Exper. Med.* 64: 183 (Aug.) 1936.

40 Staff of Roscoe B. Jackson Memorial Laboratory per C. C. Little, Director. The Existence of Nonchromosomal Influence in the Incidence of Mammary Tumors in Mice, *Science* 78: 465 (Nov. 17) 1933. Korteweg, R. Proefondervindelijke onderzoeken aangaande erfelijkheid van kanker. *Nederl. tijdschr. v. geneesk.* 78: 240 (Jan. 13) 1934.

41 Bittner, J. J. Some Possible Effects of Nursing on the Mammary Gland Tumor Incidence in Mice (Preliminary Report), *Science* 81: 16 (Aug. 14) 1936. The Influence of Foster Nursing on Experimental Breast Cancer. *Tr. College Physicians Philadelphia* 9: 129 (Dec.) 1941.

42 Lacassagne, A. Apparition de cancers de la mamelle chez la femme, soumise à des injections de folliculine. *Compt. rend. Acad. Sci. Paris* 195: 630 (Oct. 10) 1932. Hormonal Pathogenesis of Adenocarcinoma of the Breast. *Am. J. Cancer* 27: 217 (June) 1936.

tumors " by producing tissue disorder as is the way with the provocative carcinogens but one of the potent carcinogenic hydrocarbons methylcholanthrene a substance devoid of estrogenic effect makes them appear very soon and in great number when it is applied to mice of a strain in which the "milk influence" exists " The failure to get viruses from some tumors in which there is good reason to believe their presence has led to the assumption that they are dead end viruses incapable of further transmission and that only the harmless virus from which they derive is passed on. The harmless "milk influence" is passed on, yet from the mammary cancers due to its presence in the tissues nothing that will produce such growths has thus far been recovered.

The breast tissue of animals acquiring the "milk influence" differs from the ordinary as time goes on scattered adenomatous nodules forming from one or more of which carcinomas take origin " These latter are the outcome of a two stage process, of a primary neoplastic change which results in benign growth and a superimposed, second one which finds expression in malignancy. So too with many other cancers for example the carcinomas arising from the cutaneous papillomas of unknown cause which appear in response to tar or other carcinogenic hydrocarbons, and those originating from virus-induced papillomas. Once the benign neoplastic change has taken place which results in the papillomas malignant tumors may develop secondarily without further tarring yet this increases pronouncedly the likelihood of cancers and hastens their appearance while as already mentioned methylcholanthrene has similar effects in the case of "milk influence" carcinomas. All this being so it has seemed worth while to inquire whether the occurrence of malignant change in benign tumors of virus origin the rabbit papillomas so often mentioned may not be furthered by the application of provocative carcinogens. This has turned out to be the case " Both tar and methylcholanthrene are notably effective causing multiple squamous cell carcinomas to arise from virus papillomas with unprecedented rapidity. Ulcerating metastasizing cancers have appeared in response to methylcholanthrene as early as seventy-one days after virus inoculation that is to say after sixty-four days of papillomatous growth. Control tests have shown that no ordinary stimulants of cell proliferation bring on the malignant change so soon or with anything like the same frequency.

Whatever the character of the "milk influence" its discovery suggests an explanation for the differing neoplastic liabilities of inbred animals. It has been difficult to understand why a provocative carcinogen should call forth mammary tumors in mice of one strain and lung or liver tumors, or lymphosarcomas or bone tumors respectively in others, and why individuals of identical strain and so alike genetically that the transplantation of normal tissues readily succeeds in them should in some instances develop tumors infrequently and late

in response to a carcinogen while others acquire many growths soon. No such divergences in pathologic response were to have been expected of cells which under normal circumstances perform identical functions and are wholly alike in aspect. But if neoplastic potentialities come to the cells from without, instead of being inherent all at once becomes clear.

The mammary cancers due to the "milk influence" exhibit considerable variety but as yet it is not certain how the agents of the sort are responsible for tumors in general. The liability to leukemia exhibited by some strains of mice is transferred by way of the milk but the tendency to lung and liver tumors seems not to be passed on thus " Recent indications that the influence responsible for mammary cancer may in some part reach the young during uterine life " open a vista of possibilities in relation to other tumors.

Here this discussion of the nearer causes of cancer must come to a close. Those carcinogens which merely provoke the disease are crucial to it nevertheless since without them it would not occur. Many are so powerful the roentgen rays and certain synthetic hydrocarbons for example, that they bring tumors into being which under ordinary circumstances would never occur. They crash the gates of ordinary insusceptibility. Not a few agents to which man unwittingly exposes himself under the circumstances of ordinary life are scarcely less effective. A list of the human tumors which have been traced to the action of provocative carcinogens is in no small degree a sociological document reflecting as it does the ways of life, vocations, avocations, habits and environmental stresses of peoples and individuals. The occurrence of betel nut cancer in Siam, of kangri cancer in Kashmir, of mule spinners' cancer in England and of osteosarcoma due to radium emanation in the United States demonstrates as clearly as the experimental findings in mice that every animal body possesses a myriad of potentialities for tumor formation and that only by good fortune do most human beings slip through life without the realization of a single one of them.

More and more with each recent year investigators have come to realize that the human tumors which seem spontaneous whose method of origin is still obscure, must actually be brought on by provocative carcinogens of one sort or another. Only lately they have perceived that hormones when functioning in excess may render tissues so abnormal as to start tumors off, and now they are asking whether disordered metabolic processes may not lead to the manufacture of endogenous carcinogens. From all sides evidence is coming in to justify the axiom that every spontaneous tumor is an induced tumor. It is an axiom which should spur clinician and laboratory worker alike to be forehanded with cancer.

The episodic discovery that viruses are the certain cause of some growths and probably are responsible for more seems extraneous and discordant when first considered in relation to the ordered progress of thought and endeavor which has revealed, little by little, the decisive share of the provocative carcinogens in the origin of tumors. But in reality it fits into the pattern of things. For workers at the cancer problem have begun to see that they must look beyond the provocative carcinogens for the actuating causes of tumors, the unknowns which make these what they are.

43 Gardner W. U. The Effect of Estrogen on the Incidence of Mammary and Pituitary Tumors in Hybrid Mice. *Cancer Research* 1: 342 (May) 1941.

44 Engelbreth-Holm J. Acceleration of the Development of Mammary Carcinomas in Mice by Methylcholanthrene. *Cancer Research* 1: 109 (Feb.) 1941.

45 Gardner W. U., Strong L. C. and Smith G. M. The Mammary Glands of Mature Female Mice of Strains Varying in Susceptibility to Spontaneous Tumor Development. *Am. J. Cancer* 37: 510 (Dec.) 1949. van Gulik P. J. and Korteweg R. The Anatomy of the Mammary Gland in Mice with Regard to the Degree of Its Disposition for Cancer. *Proc. Nederl. Akad. v. Wetenschappen* 43: 891 (Sept.) 1940.

46 Rous Peyton and Friedewald W. F. The Carcinogenic Effect of Methylcholanthrene and of Tar on Rabbit Papillomas Due to a Virus. *Science* 94: 495 (Nov. 21) 1941.

47 Shimkin M. B. and Andervont H. B. Effect of Foster Nursing on the Induction of Mammary and Testicular Tumors in Mice Injected with Stilbestrol. *J. Nat. Cancer Inst.* 2: 611 (June) 1942.

48 Fekete E. and Little C. C. Observations on the Mammary Tumor Incidence of Mice Born from Transferred Ova. *Cancer Research* 2: 25 (Aug.) 1942.

10 After twenty minutes the rate is slowed to 15 drops per minute. This rate of flow is usually sufficient to maintain even anesthesia. In a few cases a slightly higher rate than 15 drops per minute was found necessary. The level of anesthesia must be carefully watched,

and if the cutaneous anesthesia goes above the umbilicus the procaine hydrochloride is temporarily shut off.

RESULTS

We have used the revised method for labor and delivery in 61 cases. These cases, combined with the 39 cases from our previous series, make a total of 100 cases in which continuous drip caudal anesthesia was given in obstetrics.

The results were good except in a few instances. The one serious complication, the spinal injection of procaine hydrochloride, occurred before we had instituted the saline test. In the great majority labor was painless and delivery ac-

complished without any supplementary anesthesia. A few patients continued to have some discomfort but even they had considerable relief. The length of labor is apparently shortened by continuous caudal anesthesia. The average primipara delivered four hours after the caudal anesthesia was begun and the multipara in two hours. It is to be noted that caudal anesthesia was not given as soon as labor began but, like ordinary analgesia, only after labor was well initiated and when the patient objected to her pains.

Caudal anesthesia does not interfere with a spontaneous delivery. When the time comes, the patient is instructed to bear down properly. It is the policy of this clinic to do a routine episiotomy and low forceps on the primiparous patients, but on several occasions when we desired to demonstrate a spontaneous delivery under caudal anesthesia it was easily accomplished with the cooperation of the patient's voluntary expulsive efforts.

There were four fetal deaths in this series of one hundred deliveries. One fetus was macerated, fetal heart sounds were not present on admission. The second showed congenital absence of the left diaphragm and lung at autopsy. The third lived thirty-six hours, and pneumonia neonatorum was found at autopsy. The fourth was stillborn, and no demonstrable cause of death was found, although two tight loops of cord were present around the neck at delivery. The other 96 babies cried spontaneously, many even before delivery could be completed.

Supplementary anesthesia was given to 7 patients. Three of them did not get sufficient perineal anesthesia, and we electively gave inhalation anesthesia to the other 4 (1 internal podalic version, 1 high midforceps and 2 Kielland forceps with rotation from the transverse). The last 3 cases occurred early in our use of caudal anesthesia, and since that time we have completed delivery in several similar cases without the addition of general anesthesia. The elimination of inhalation anesthesia was very helpful in cases in which labor was complicated by a pulmonary or cardiac condition.

The third stage of labor appeared to be completed with less than average bleeding. There were no instances of extreme hemorrhage, and in most cases the bleeding was minimal. There were 2 cases of retained placenta, 1 required manual removal under general anesthesia.

COMPLICATIONS

We have had about 95 per cent success in inserting the needle into the caudal canal. In a few cases, either because of anatomic variations or because of excessively thick tissues, we have been unable to do so and consequently were forced to resort to some other form of analgesia.

The likelihood of the needle breaking off in the back is becoming less frequent. At first this was not an uncommon occurrence, but as the quality of the needles improved this mishap has become rare. In our last 75 cases only one needle broke and since then new and



Fig. 5—Position of patient under the anesthesia. A flask containing isotonic solution of sodium chloride. B flask containing procaine hydrochloride 1 per cent.



Fig. 6—Needle lost in caudal canal.

better needles have been developed, the use of which is not included in this article. It is a simple matter to remove the needle when the break occurs in the subcutaneous tissue. However, if it is in the caudal canal it is more serious. This happened in 1 of our cases, and despite two hours of exploration by an experienced surgeon the needle was never recovered (fig. 6).

The most serious complication is accidental injection into the subarachnoid space. This occurred in 1 of our cases before the saline test was introduced. This case has previously been reported in detail.³ The patient went into profound peripheral vascular collapse and probably would have died but for prompt therapy by a competent anesthetist. The possibility of dural penetration must always be anticipated and one should be prepared beforehand to combat this catastrophe.

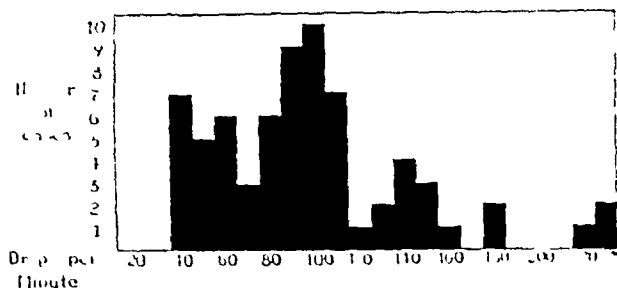


Fig. 7.—Number of drops per minute immediately after administration of saline solution was started in the caudal space (69 cases)

Careful observation of the patient throughout the period of caudal anesthesia is essential. The level of cutaneous anesthesia should be kept at the level of the umbilicus. The level of the anesthesia depends on two factors—the rapidity of administration and the volume of solution used. We have found that when either or both of these factors are ignored the anesthesia may go to so high a level that serious cardiovascular complications may be encountered and an alarming fall in blood pressure and other symptoms of peripheral vascular collapse may occur. If these symptoms appear ephedrine sulfate should be given immediately and the anesthetic temporarily clamped off. The best treatment for this complication is prophylactic; the anesthesia must be constantly supervised by a competent person and the height of cutaneous anesthesia tested at regular intervals.

Sensitivity to procaine hydrochloride has been a minor complication. A few patients have complained of drowsiness, headache or nausea and an occasional patient has vomited, but the majority have not exhibited any untoward effects.

Postpartum complications were negligible. There were no cases of epidural abscess. Low back pain was a frequent complaint until a routine postpartum prophylactic injection of morphine ($\frac{1}{2}$ grain [0.01 Gm]) every four hours for three doses was given. This has virtually eliminated the difficulty. We kept some patients in the lateral position throughout labor, as advocated by Edwards and Hingson, while using the continuous drip caudal but it proved less satisfactory than with the patient flat on her back. Lying on one side tended to produce unilateral anesthesia on the dependent side.

APPLICATION TO OBSTETRIC SURGERY

The continuous drip technic was also applied to obstetric surgical procedures. Five cesarean sections, two abdominal hysterotomies, two Pomeroy sterilizations with appendectomy and two curettages were done.

In order to apply the method to abdominal operations, a few revisions in technic were required. The anesthesia should be started forty-five minutes prior

to the incision and 1 per cent procaine hydrochloride is allowed to drip in at the rate of 30 drops a minute for thirty minutes. The inflow is then reduced to 20 drops a minute and the solution allowed to run at that rate throughout the operation. No inhalation anesthesia or auxiliary analgesics were needed. The patients experienced no pain and their postoperative conditions were excellent. All the babies delivered by cesarean section cried spontaneously.

There were no serious complications. Two patients who underwent cesarean section had a pronounced fall in blood pressure but responded promptly to ephedrine sulfate $\frac{1}{2}$ grain (0.05 Gm). We now are giving ephedrine sulfate routinely in all cases of abdominal surgery preoperatively when continuous caudal anesthesia is to be used.

COMMENT

We have done one hundred deliveries and eleven obstetric surgical procedures under continuous drip caudal anesthesia and the preliminary saline test in the last 69 cases. The differences between the caudal and the spinal rate of inflow were so clearly defined that we did not deem it necessary to continue to subject every woman in labor to the added annoyance of a spinal tap. Therefore after the first 15 cases we no longer took the spinal rate but confined the test to an immediate (fig 7) and then after three minutes a second count (fig 8) of the flow into the caudal canal.

A 150 drop per minute rate of flow after three minutes was used as the upper limit of safety and for that reason the anesthetic was withheld from 2 patients who had a rate of 210 drops per minute even though we could not aspirate spinal fluid from the needle (fig 8).

In doing the experimental work we used the fourth lumbar interspace for our spinal taps. In order to prove that the site of the puncture is unimportant we were successful in 2 cases in intentionally piercing the dura through the caudal canal with a $3\frac{1}{2}$ inch needle.

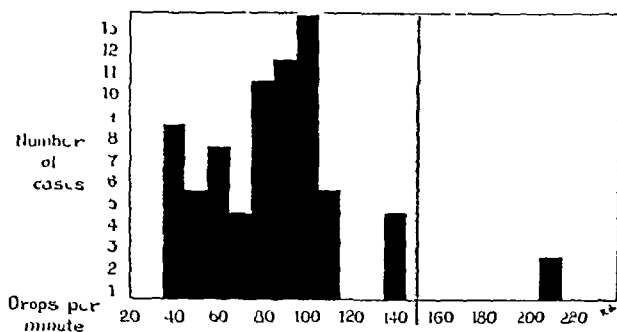


Fig. 8.—Number of drops per minute after saline solution had dripped for three minutes into the caudal space (69 cases)

After obtaining spinal fluid as confirmation we observed a saline rate of over 210 drops per minute.

The decidedly slower caudal rate probably depends on the fact that the caudal canal anatomically is almost a potential space and therefore offers resistance to fluid introduced by gravity. This is further borne out by the fact that the number of drops per minute that will drip into the caudal canal becomes progressively lessened as the canal is increasingly distended.

One per cent procaine hydrochloride was found to be completely satisfactory. It is less expensive than

metycaine, and no serious toxic effects have been encountered from its use. Since we give the anesthetic continuously we find its shorter lasting period of anesthesia to be advantageous. It was given as long as eighteen hours without complication. The average total dose was 200 cc. The largest dose was 850 cc. Relief from pain begins in ten to fifteen minutes, and complete anesthesia is obtained soon thereafter.

In the previously reported series, caudal anesthesia was begun very early. It was started as soon as it was certain that the patient was in labor. We now believe that it is wiser to withhold the anesthetic until pains are severe enough to make the patient uncomfortable. This is done for three reasons: 1. Labor seems to be more rapid. 2. It reduces the total procaine hydrochloride required. 3. The patient appreciates the anesthesia more because she can compare her comfort before and after its use.

SUMMARY

The continuous drip technic for the administration of caudal anesthesia for labor and delivery which we have presented may be modified also for surgery. It appears safer than the method now in general use, because it represents a truly continuous technic and large doses are thus avoided at any one time.

Criteria have been established to determine whether the needle is extradural or intradural. The spinal canal has been entered inadvertently if (a) spinal fluid can be aspirated, (b) the immediate flow of saline solution from a continuous drip reservoir exceeds 210 drops per minute and (c) there is no appreciable diminution in the rate of flow after three minutes.

The needle is in the subcutaneous tissue if (a) pressure proximal to the needle stops the free flow of saline solution, (b) a bulge develops over the sacrum where the fluid has extravasated into the tissue.

The needle is in the caudal canal if (a) no spinal fluid can be aspirated, (b) pressure over the sacrum does not stop the free flow of saline solution and (c) saline solution from a continuous drip reservoir flows in at a rate less than 150 drops per minute after three minutes.

Continuous caudal anesthesia has been a very satisfactory technic in our hands. Certain highly dangerous complications are possible and therefore it should be given only in well equipped hospitals by persons experienced in the technic.

Monument Street and Rutland Avenue

Estimate of Number of Patients Having Gout—Hench has affirmed that patients with gouty arthritis constitute at least 5 per cent of all patients seen at the Mayo Clinic suffering from the several diseases of the joints. A similar percentage has been observed in other clinics. If this value is valid throughout the United States, there may be at least a third of a million people suffering from gout among 7 million sufferers from chronic rheumatism. It is safe to estimate that only a portion of this number is diagnosed as gout and treated for same. One reason for the discrepancy between probable incidence and clinical recognition is the common failure among physicians of waiting until advanced tophaceous changes in the joints have appeared before suspecting gouty arthritis. Another reason is the lack of unanimity regarding criteria for a diagnosis.—Talbot, John H. *Gout*, New York, Oxford University Press, 1943.

PERIPHERAL NEURITIS AS A COMPLICATION OF PERNICIOUS ANEMIA

AND COMBINED SYSTEM DISEASE

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AND

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The literature concerning pernicious anemia and its associated neurologic complications, both clinical and pathologic, is voluminous. We should like to call attention to certain clinical aspects which, although not entirely neglected in previous reports, have not, we feel, been emphasized sufficiently. The specialist is quite familiar with the various aspects of this problem and with the variability of the neurologic complications of pernicious anemia. This brief review is directed primarily, therefore, to the general practitioner who first sees and examines these patients and starts them on a course of treatment.

When one considers the neurologic disorders which may precede,¹ accompany or follow the onset of pernicious anemia, one invariably thinks of subacute combined system disease. There can be little question that sclerosis and degeneration within the posterior and lateral columns of the spinal cord² have been the most frequently observed pathologic findings. The most common clinical finding³ related to the nervous system in patients with pernicious anemia is paresthesia and dyesthesia of the feet and hands, and frequent impairment of vibratory and position sense particularly in the feet. It is generally believed that the clinical findings are to be explained on the basis of the degree and location of the neuropathologic findings. The actual cause of these neuropathologic changes is still a problem, since there are a number of clinical conditions which may give rise to similar findings in the spinal cord. In more recent years vitamin deficiency has been thought to play a part in producing these changes, both in laboratory animals and in patients, but it would seem in most cases that there is a combination of factors. Although vitamin deficiency may be important, it usually does not operate alone to produce these pathologic changes.

Some writers⁴ call attention to the fact that the degree of sclerosis in the posterior and lateral columns of the spinal cord does not always parallel the severity of the clinical symptoms and, conversely, that the patient may have severe subjective changes and yet have little to explain these symptoms on pathologic examination of the spinal cord.

This has led other investigators⁵ to suspect that the peripheral nerve may be the source of certain clinical

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¹ Sub, T. H., and Merritt, H. H. Combined System Disease With Out Obvious Evidence of Pernicious (Macrocytic) Anemia. *Am. J. M. Sc.* 196: 57-66 (July) 1938.

² Dejerine, A. and Mouzon, J. Contribution à l'étude du syndrome des fibres radiculaires longues des cordons postérieurs. *Rev. Neurol.* 22: 382-388, 1914-1915.

³ Woltman, H. W. The Nervous Symptoms in Pernicious Anemia: An Analysis of One Hundred and Fifty Cases. *Am. J. M. Sc.* 157: 409 (March) 1919.

⁴ Hamilton, A. S., and Nixon, C. E. Sensory Changes in the Subacute Combined Degeneration of Pernicious Anemia. *Arch. Neurol. & Psychiat.* 6: 131 (July) 1921. Russell, Batten and Collier.

⁵ Baker, B. M., Jr., Bordley, James, III and Longcope, W. T. The Effect of Liver Therapy on the Neurologic Manifestations of Pernicious Anemia. *Am. J. M. Sc.* 184: 124 (July) 1932. McAlpine, Douglas. A Review of the Nervous and Mental Aspects of Pernicious Anemia. *Lancet* 2: 643-647 (Sept. 28) 1929. Lichtheim cited by Hamilton and Nixon. *Nonne*.

symptoms and signs. Early work on this point⁶ tended to be inadequate and lacked confirmation. In more recent years neuropathologic investigation⁷ has confirmed the presence of peripheral nerve disease in many patients with pernicious anemia who have neurologic complications.

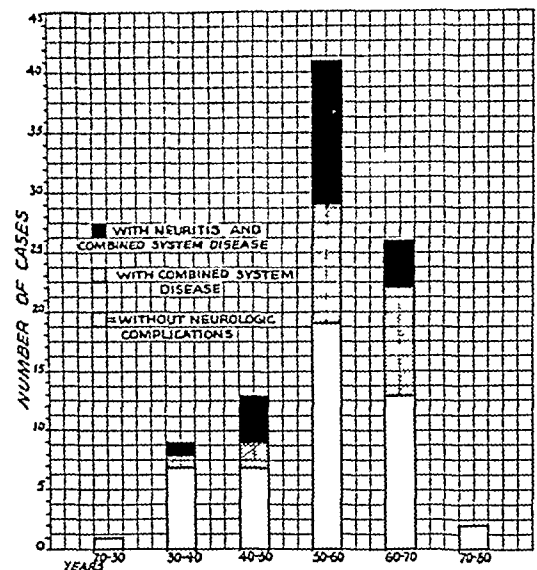
In medical teaching of the pernicious anemia syndrome it is not uncommon to stress spinal cord disease and the accompanying neurologic signs while either entirely neglecting or at least failing to emphasize the fact that neurologic examination reveals unusually variable signs. This variability tends to make diagnosis more difficult for one who has a limited experience with these disorders. The neurologic signs may not conform with the common conception of what the typical findings should be in cases of pernicious anemia. As a rule one expects to find increased tendon reflexes in the lower extremities with bilateral extensor response (Babinski), diminution or absence of vibratory sense in the feet and lower legs, impaired position sense of the toes, ataxic gait, positive Romberg's sign and absence of abdominal reflexes. One soon discovers that many patients have absent reflexes at the ankle and perhaps a complete loss of tendon reflexes in the lower extremities. In some patients the paradoxical findings of a positive Babinski sign associated with absent tendon reflexes may be demonstrated. Russell Batten and Collier⁸ in 1900 called attention to this particular combination of signs and suggested that they should make the examiner consider subacute combined system disease. Absent tendon reflexes frequently have been explained on the basis of involvement of the posterior columns of the cord and the interruption of the reflex arc in very much the same manner as in tabes dorsalis. In some cases this explanation may be quite valid, but it does not explain why certain patients with definite clinical evidence of posterior column disease continue to show increased reflexes, though one may concede the pyramidal tracts to be irritated.

There is another explanation which either in whole or in part may account for the absence of reflexes in a patient who otherwise has combined system disease. The latter explanation is concerned with the peripheral nerve and is one which we feel is usually given too little consideration.

Generally the clinical diagnosis of peripheral neuritis is made on the basis of peripheral nerve pain, dysesthesia or paresthesia, tenderness on pressure over the nerve trunks or muscles usually with evidence of some muscle weakness as the disorder progresses, and a loss or diminution of tendon reflexes starting distally. There is also a tendency to a distal superficial hypesthesia to pain and touch. In severe cases of peripheral neuritis one has little or no difficulty in making a diagnosis. However if the disorder is one of a milder character or one which has been present sometime in the past, the acute signs and symptoms may have diminished greatly and one therefore has fewer diagnostic criteria on which to render an opinion.

Some years ago, certain investigators⁹ believed that the neurologic complications of pernicious anemia did not respond to liver treatment, while others¹⁰ held a more optimistic point of view. At the present time, all of those who actively are studying the problem find much improvement on adequate parenteral liver treatment. Strauss Solomon and Fox¹¹ have particularly emphasized the necessity of adequate treatment, and under such conditions these patients may be greatly improved clinically, both subjectively and objectively and the disease process arrested. Davison's¹² recent neuropathologic investigation would seem further to confirm this view. The neuritic manifestations tend to respond to treatment before the abnormalities of combined system disease.

Patients suffering from pernicious anemia frequently lose their appetite, lose weight and develop a glossitis or stomatitis. An intercurrent infection may contribute to the development of neuritic symptoms. The relationship of vitamin B deficiency is strongly suggested but



Probable age of onset of symptoms in cases of pernicious anemia

has never been unequivocally demonstrated, and, in general, patients do not respond to vitamin therapy alone.

We have reviewed 92 cases of pernicious anemia, all of which were seen and examined by one or both of us. In a survey of this case material we have used the criteria stated in a previous paragraph in making the diagnosis of peripheral neuritis. Of the 92 patients having definite laboratory, clinical and therapeutic evidence of pernicious anemia 21, or approximately 23 per cent, had unmistakable peripheral neuritis in combination with combined system disease. An additional 22

9 Grinker R R and Kandel Ernestine. Pernicious Anemia. Results of Treatment of the Neurologic Complications. Arch Int Med 34 851-871 (Dec) 1934. Grinker R R. Neurology. Springfield Ill. Charles C Thomas 1934.

10 Sturgis C C, Isaacs Raphael, Goldhamer S M and Bethell F H. Blood A Review of the Recent Literature. Arch Int Med 63 1190-1231 (June) 1939. Strauss M B, Solomon Philip, Schneider A J and Patek A J. Subacute Combined Degeneration of the Spinal Cord in Pernicious Anemia. The Complete Arrest of the Lesion with Parenteral Liver Therapy. J A M A 104 1587-1592 (May 4) 1935. Goldhamer S M, Bethell F H, Isaacs Raphael and Sturgis C C. The Occurrence and Treatment of Neurologic Changes in Pernicious Anemia. ibid. 103 1663-1667 (Dec 1) 1934.

11 Strauss M B, Solomon Philip and Fox, H J. Combined Degeneration of the Spinal Cord in Pernicious Anemia. The Results of Seven Years Experience with Parenteral Liver Therapy. New England J Med 222 373-375 (March 7) 1940.

12 Davison Charles. Effect of Liver Therapy on Pathways of Spinal Cord in Subacute Combined Degeneration. Arch Int Med 67 473-488 (March) 1941.

6 Nonne M. Beiträge zur Kenntnis der im Verlaufe der perniciosen Anämie beobachteten Spinalerkrankungen. Arch f Psychiat 25 421-449 1893. Putnam J J and Taylor E W. Diffuse Degeneration of the Spinal Cord. J Nerv & Ment Dis 28 121 (Jan) 1901. Putnam J J. A Group of Cases of System Sclerosis of the Spinal Cord Associated with Diffuse Collateral Degeneration. Occurring in Enteebled Persons Past Middle Life and Especially in Women. Studied with Particular Reference to Etiology. ibid 18 69-110 (Feb) 1891. Russell Batten and Collier⁸. Lichtheim⁷.

7 Greenfield J G and Carmichael E A. The Peripheral Nerves in Cases of Subacute Combined Degeneration of the Cord. Brain 55 483-491 (Dec) 1935. Hamilton and Nixon⁸.

8 Russell J S R, Batten F F and Collier James. Subacute Combined Degeneration of the Spinal Cord. Brain 23 39-110 1900.

patients or about 24 per cent, had the clinical signs of combined system disease without peripheral neuritis, while the remaining 49 patients, or 53 per cent of the series showed evidence of pernicious anemia without clearcut neurologic signs.

An attempt was made in the analysis of our cases to discover some factor underlying the development of

Review of Cases

	Neuritic	Nonneuritic
Number of cases	21	71
Sex: Male	6	24
Female	15	47
Average age on entry	36.7 yr (10-72 yr)	46.3 yr (15-70 yr)
Average duration of symptoms on entry	2.3 yr (8 mo-16 yr)	2.8 yr (1 mo-23 yr)
Average weight loss	16.1 lb	16.2 lb
Cases presenting gastrointestinal complaints	11 (52%)	15 (21%)

the neuritis. The age of onset showed no significant difference in the three groups of cases, nor did the average duration of symptoms or the average weight loss throw any light on the problem. However, it was found that about 50 per cent of the neuritic group had definite gastrointestinal symptoms on entry as compared with 21 per cent of the cases not showing neuritic manifestations as shown in the accompanying table and chart.

The treatment of patients with neurologic complications must not be controlled solely by studies of the blood. When the red blood cell count and hemoglobin have reached normal levels and the macrocytosis has entirely disappeared the neurologic symptoms have sometimes not even started to respond. This is to be expected when one considers the varying level of anemia that may be present when neurologic manifestations become evident. Therefore in our opinion, the one criterion of adequate treatment is the improvement of these neurologic changes both subjective and objective. We believe that, if no response occurs, sufficient parenteral liver extract has not been administered. It is thought desirable to eliminate foci of infection and to improve the patient's general health if liver and vitamin therapy are to be successful in all cases.

When the highly concentrated liver extracts were first made available many including ourselves suspected that the less concentrated extracts would prove more efficacious in treating the neurologic manifestations of pernicious anemia. This has not been the case, as proved by a year's trial with a highly concentrated extract containing 15 U S P units per cubic centimeter. During this time no patient previously controlled on less concentrated extract showed progress of his disease. Each new patient who was given the highly concentrated liver extract (15 U S P units per cubic centimeter) demonstrated the expected degree of therapeutic response. This has also been the experience of others.¹³ Because of the higher cost of the more concentrated liver extract, we routinely use the crude type.

It is our practice to treat patients demonstrating severe neurologic complications with 20 U S P units (33 U S P units per cubic centimeter) of liver extract intramuscularly daily for several weeks and then to continue this dose every second day for several months. Thereafter 20 U S P units should be administered

at least twice a week until the neurologic manifestations have improved definitely or cleared entirely. The amount of liver extract needed varies considerably with the patient. The speed with which the red blood cell count and hemoglobin attain normal levels and the red cells lose all evidence of macrocytosis is of secondary importance to the continued neurologic improvement. Large doses of a potent vitamin B complex preparation are always given as supplemental therapy.

The response of patients suffering from peripheral neuritis in addition to combined system disease has progressed more rapidly and has been on the whole more complete than has occurred in patients with combined system disease alone. Of our 21 cases demonstrating definite evidence of both neurologic complications, 16 have responded well with pronounced regression of symptoms and unmistakable reversion of signs toward the normal. One case of seven years' duration responded poorly while the response in 4 cases is unknown, 2 of these are too recent to evaluate, 1 patient is dead, and 1 could not be followed.

SUMMARY

- 1 In a series of 92 cases of pernicious anemia, 21, or about 23 per cent, demonstrated clearcut evidence of peripheral neuritis and combined system disease.
- 2 An additional 24 per cent showed combined system disease without peripheral neuritis and 53 per cent pernicious anemia uncomplicated by neurologic signs or symptoms.

PROPHYLACTIC USE OF SULFA
GUANIDINE

LIEUT JAMES CLIFFORD SCOTT (MC), USNR

On Oct 24, 1941 a case of diarrhea with fever developed at the Devereux Gateway School, which is one unit of the schools operated by the Devereux Foundation, Devon, Pa.¹ This unit is operated for the care and training of children from 3 to 8 years of age, all of whom are mentally defective to some extent. On the following day the second child became ill in the same manner, and from then on, in spite of the usual treatment used for the control of diarrhea in childhood, we were faced with a rapidly developing epidemic in the building with all cases running virtually the same course of illness.

Cultures of the stools of all children were made, and the Bryn Mawr Hospital Laboratory² isolated from 4 active cases organisms identified as the Sonne type of dysentery bacillus. Details of the symptoms together with the laboratory findings, gave me full confidence that we were dealing with a perfectly clear cut epidemic of bacillary dysentery.

SYMPTOMS

Since the first diagnosis was made clinically and since the final diagnosis in our cases depended partially on clinical symptoms and signs, I believe that, in order to establish the fact of an epidemic of actual bacillary dysentery, a description of the signs and symptoms is necessary.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U S Navy. The opinions and views set forth in this article are those of the writer and are not to be considered as reflecting the policies of the Navy Department.

1 Lieutenant Scott is medical director on leave of absence for the duration of active duty of the Devereux Foundation, Devon, Pa.
2 Valuable suggestions were given and technical work done by Dr Max M Strumia, Bryn Mawr, Pa, and Miss Regina Neher, bacteriologist, Bryn Mawr Hospital clinical laboratory.

13 Strauss, M B, Patek, A J, Jr, Pohle, F J, Fox, H J, and Burchenal, J H. The Treatment of Pernicious Anemia. A Nine Year Study of Maintenance Requirements, with a Note on the Efficacy of Purified Liver Extracts in the Control of Neural Lesions, New England J Med 226:1013-1015 (June 25) 1942.

All the children described as suffering with the illness presented remarkably similar symptoms and chronology of illness except as they differed with the day on which they were given treatment with sulfaguanidine. Every attack began suddenly with apathy, loss of appetite, fever, hyperperistalsis and within a period of an hour or more acute diarrhea with innumerable stools both continent and incontinent. All the children during the acute period of the disease before institution of treatment appeared more ill than the degree of fever (from 100.5 to 104.0 F rectally) would usually indicate in children of this age. The stools were all liquid and foul and contained leukocytic exudate combined with food particles and gross blood in most cases. Most of the children had some degree of vomiting during the first thirty-six hours. In all cases the usual methods of treatment for diarrhea in children were instituted as soon as symptoms appeared and as these took effect to relieve the general condition of the child the appearance of toxemia would improve to some extent but none of the children fully recovered until they received either the therapeutic or the prophylactic dose of sulfaguanidine. However regardless of the time elapsed between the onset of illness and the institution of the sulfaguanidine therapy, every child without exception showed decided relief of all symptoms in from twelve to twenty-four hours after starting this therapy.

The therapeutic dosage used was designed as closely as possible to conform to the recommendations of Marshall and his associates,³ namely 10 mg per kilogram of body weight for the first dose followed by 5 mg per kilogram every four hours day and night thereafter.

Since the effectiveness of the drug used therapeutically in this disease seems to me to have been firmly established by previous reports of other authors I feel that no further discussion of results of treatment is here indicated. This paper is principally concerned with the prophylactic use of the drug.

A careful review of the literature at the time of writing has failed to disclose a description of an epidemic of this sort being controlled by the prophylactic use of sulfaguanidine and since this drug was used prophylactically in this epidemic with what appears to be perfect success, I feel that some details of the epidemic and our results with sulfaguanidine used in this manner should be published since the disease may be the source of a great deal of morbidity and loss of time especially in wartime.

The use of the drug therapeutically seems to require little more to be said in its favor except that in reviewing the literature I came across a curious fact which is not specifically mentioned in any of the papers. This concerns the toxicity of sulfaguanidine. In every report of toxic reactions that I was able to find the drug had been used in conditions in which there was a known break in the continuity of the epithelial wall of the intestinal tract or in conditions (such as typhoid) in which although the existence of such a break was not definitely known, such a break would naturally be expected to exist. This fact would seem partially to explain the disagreement between many physicians who have been able to use the drug extensively without a sign

of toxic reaction and a number of authors⁴ who warn specifically that use of the drug has been dangerous in their experience. I believe that, if given to patients who have no intestinal ulcers or other breaks in the mucosa sulfaguanidine is the drug of choice in bacillary dysentery.

The work of Marshall and his co-workers³ in January 1941 has become the classic work on the drug. They described its physical qualities and the first extensive use in animals and man. Their finding that it absorbed (as it is in the rabbit) the drug is very toxic fits in with later findings clinically that when absorbed in man as it definitely is in the presence of ulceration of the bowel the drug is dangerously toxic. In other cases the drug compares favorably with sulradiazine in its absence of toxic reactions. In handling a very large series of cases in an epidemic of bacillary dysentery in the Near East where only the sickest patients were treated with sulfaguanidine Fairley and Boyd⁵ reported that in 371 of the most severe cases toxic reactions were very mild and consisted only of headache associated with malaise and an occasional transient erythematous rash or a mild papular eruption.

A publication by Bloomfield and Lew⁶ indicated that the drug was effective in eliminating a troublesome epidemic of ulcerative colitis among their laboratory rats and no doubt this information had some influence in leading to its trial in ulcerative colitis in man. Such trials have been very disappointing and have led in almost all published reports to warnings concerning its toxicity.⁷ In the treatment of typhoid the drug has been most disappointing and in some cases harmful.⁸ However Levi and Willen⁹ found the drug effective in ridding a typhoid carrier of the infection when all other measures including appendectomy and cholecystectomy, had failed. It would be natural not to expect ulceration in such a case.

Every published report of the use of the drug therapeutically in bacillary dysentery is consistent in reporting good results with almost negligible toxic reactions.⁹ For this reason I feel that I should not burden the reader with a discussion of the therapeutic response in my epidemic except to say that in every case improvement of the child in every way in the first eighteen

4 Schwartzman Joseph and Grossman Leo. Sulfaguanidine Failure and Toxicity in One Case. *Arch. Pediat.* **38** 734-737 (Nov.) 1941.
Corwin W C. Sulfaguanidine Chronic Toxicity. *Bull. Johns Hopkins Hosp.* **69** 39-52 (July) 1941.
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5 Fairley N H and Boyd J S K. Sulfaguanidine in Bacillary Dysentery. *Lancet* **1** 20-21 (Jan. 3) 1942.

6 Bloomfield A L and Lew William. Effect of Sulfaguanidine Against Ulcerative Colitis of Rats. *Proc. Soc. Exper. Biol. & Med.* **48** 363-368 (Oct.) 1941.

7 Fior W M and Jonas A F. Use of Sulfaguanidine in Surgical Patients to Control Coliform Bacilli in Operations of the Colon. *Ann. Surg.* **114** 19-31 (July) 1941.
Lyon G M, Folsom T G, Parsons W J and Sprouse Irma. Sulfaguanidine in Bloody Flux. *West Virginia M. J.* **38** 19-27 (Jan.) 1942.
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8 Levi J E and Willen Abner. Typhoid Carrier State Treated with Sulfaguanidine. *J. A. M. A.* **116** 2258 (May 17) 1941.

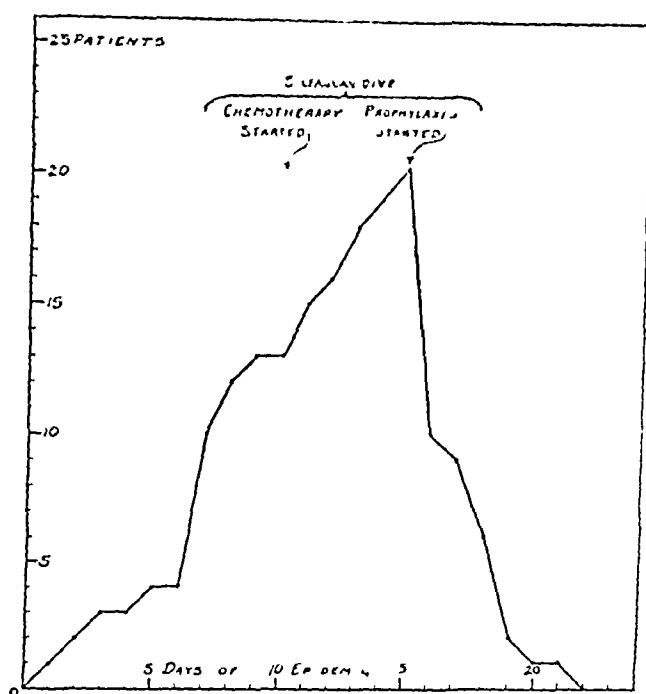
9 Long P H. Clinical Use of Sulfanilamide, Sulfapyridine, Sulfathiazole, Sulfaguanidine and Sulfadiazine in Prophylaxis and Treatment. *Canad. M. A. J.* **44** 217-227 (March) 1941.
Lyon G M. Sulfaguanidine in Acute Bacillary Dysentery. *U. S. Naval M. Bull.* **39** 278-293 (April) 1941.
West Virginia M. J. **37** 34-36 (Feb.) 1941.
Beling C A and Abel A R. *J. M. Soc. New Jersey* **38** 629-633 (Dec.) 1941.
Anderson D E, W. Cruickshank R and Walker J. Treatment of Dysentery (Flexner) with Sulfaguanidine. *Brit. M. J.* **2** 497-501 (Oct. 11) 1941.
Eblen J C. Sulfaguanidine in Treatment of Enteric Infections. *South. M. J.* **35** 302-305 (March) 1942.
Edwards L B. Sulfaguanidine in Bacillary Dysentery. *South. M. J.* **35** 49-55 (Jan.) 1942.
Marshall Bratton Edwards and Walker Fairley and Boyd.
Lyon Folsom Parsons and Sprouse.

3 Marshall E K Jr, Bratton A C, Edwards Lydia B and Walker Ethel. Sulfaguanidine in the Treatment of Bacillary Dysentery. *Bull. Johns Hopkins Hosp.* **65** 94-111 (Jan.) 1941.

hours was dramatic, that cure was effected in all cases within a very short time and that no relapses occurred. The dosage and techniques used followed as closely as possible those recommended by Marshall and his co-workers.¹ No toxic reactions of any sort were observed in any of the 20 patients treated with the drug, or in the other children, nurses, cooks, waitresses, attendants and teachers who voluntarily took the sulfaguanidine in small doses as a prophylactic measure.

EPIDEMIOLOGY AND PROPHYLAXIS

Therapeutic use of sulfaguanidine had been started on the ninth day of the epidemic, but in spite of this fact the number of our children ill in bed rose steadily, because although those treated were rapidly recovering, new cases were developing faster than recoveries were being made. This is illustrated in the accompanying chart. An interesting fact about our epidemic was that for the first ten days all patients were living on the second floor. The fact that all the children were fed by the same attendants and nurses and that the food



Course of epidemic of bacillary dysentery showing sudden arrest after prophylactic use of sulfaguanidine

was all prepared in the same kitchen by the same cooks indicates that the original infection developed in a child on the second floor. Although unable to prove his responsibility, we suspected 1 boy who had come to us six weeks before with a history of recurrent unexplained diarrhea at intervals throughout the preceding three months. He was the son of a physician and had been well studied. This was one of the children in whom the laboratory was able to demonstrate the dysentery bacillus by culture. Our suspicion that he was the original source of infection is augmented by the fact that after he had been treated with sulfaguanidine he never again had another attack of the unexplained diarrhea with which he had suffered at intervals up until the epidemic started.

Because of their age, and in most instances also because of their limited mentality, children of this group are much more apt to contaminate others and themselves with fecal material than the older or the higher mental groups. We felt that this was the manner in which the epidemic was spreading, but isolation of those actively ill failed to stop the spread of the epidemic. On the tenth day of the epidemic the disease first

appeared on the third floor, and on the twelfth day a nurse became ill with typical symptoms of the disease. On the fifteenth, because no decrease in the spread of the disease was noted, it was decided to give sulfaguanidine to all the children and to all the personnel willing to take it, and this willingness was unanimous.

PROPHYLACTIC DOSAGE

A brief search of the literature on the drug was made as soon as prophylactic use was considered, but I was unable to discover any precedent on which to base a scheme of dosage. Consequently an arbitrary dosage schedule was used on the following rationale. It, as is indicated by the best works, the absorption of sulfaguanidine is negligible, then its concentration in the bowel is dependent on the dosage and volume of intestinal content in which a given dose is suspended or dissolved. The concentration at a given point anywhere in the bowel will be dependent on two factors only—the dosage per unit of time, and the volume of intestinal content passing that point per unit of time, provided sufficient time has elapsed to bring the concentration up to a fairly good equilibrium.

It is apparent to most of us who see a great many children intimately that the normal volume of intestinal content per day as indicated by the volume of feces excreted is on the average equal to the amount passed by the average adult. For this reason it was decided to give the same dosage to all persons receiving the drug prophylactically, with no consideration of their size or weight.

On the same rationale, the dosage for a normal person with a comparatively small volume of large intestinal content would be considerably smaller than the dosage for a child weighing only one third as much but with an active diarrhea. It is not forgotten that diarrhea is largely due to lack of resorption of water in the large bowel and that therefore concentration of the drug in the small intestine when given prophylactically was considerably less than when the drug was given therapeutically.

Arbitrarily, then, it was decided to give each person in the building not suffering with dysentery a 0.5 Gm tablet of sulfaguanidine three times a day. The prophylactic administration started at noon on the fifteenth day of the epidemic, and we were fortunate in having the cooperation of every employee in the building. The drug was given in this dosage to 31 children who were still well and to all employees in the building part or full time. This meant that a total of approximately 50 persons took the drug prophylactically.

RESULTS OF PROPHYLAXIS

Following the institution of the prophylactic use of the drug, 1 child became ill with the typical signs and symptoms of bacillary dysentery. This case developed within one hour after the first prophylactic dose was given. His dosage was stepped up to the therapeutic level and he was symptomless in thirty-six hours. After this not another child became ill, and within forty-eight hours the nursing problem, which had been very acute for nearly two weeks, no longer existed as a major problem. The chart shows graphically how the nursing problem was eased through the sudden cessation in the development of new cases, combined with the continued recovery of children under treatment. The effect of giving sulfaguanidine in very small doses prophylactically seemed perfectly obvious, especially to the nurses who had been coping with a continuous siege of diarrhea for two weeks.

Four days after the full recovery of the child who became ill last, the prophylactic dose was stopped for all individuals. There were no further signs of the disease in any one in or connected with the building.

No toxic signs nor subjective symptoms were noted in any of the patients or in any well persons taking sulfaguanidine prophylactically.

Stool cultures were repeated ten days after and three weeks after full recovery of the last child in whom a positive stool culture had been found. These were all negative. Culture was again repeated several months later on the boy whom we suspected of being the source of the infection and this was negative. The boy remained well and still remains so a year later, although prior to the epidemic he had been having recurrent bouts of diarrhea at frequent intervals for three or four months.

AGGLUTINATION TESTS

Blood from all patients, all children not infected (with the exception of one from whom it was very difficult to get blood), 18 nurses and teachers and 1 nurse who had had the infection was taken from the veins one week after cessation of the epidemic. Each blood serum was agglutinated against four dysentery strains of organism, namely Flexner, Hiss, Shiga and Strong. Six titer dilutions were used: 1:20, 1:40, 1:80, 1:160, 1:320 and 1:640.

Results Obtained with Original Cultures of Three Children

Patient	Sonne	Flexner	Shiga	Hiss
B B	++	++	0	++
B M	++	0	+	0
J D	++	0	0	0

Following this, the original cultures of 3 children which had been saved were used for agglutination against Sonne, Flexner, Shiga and Hiss strain serums. The results given in the accompanying table were obtained which strengthened our conclusion that we were dealing with the Sonne strain.

SUMMARY AND CONCLUSIONS

1 A rapidly progressing epidemic of bacillary dysentery among mentally handicapped children receiving the best of care was stopped abruptly by the prophylactic use of sulfaguanidine in all well children and personnel in the building after other segregation and treatment methods had failed. The dosage for each subject whether adult or child was 0.5 Gm three times a day by mouth. Similar use has not been mentioned in any literature found.

2 In a comprehensive review of the literature on sulfaguanidine it was noticed that in all reports of reactions of any serious degree the drug was used for patients who were known to have intestinal ulceration or in diseases in which it is usual to expect breaks in the continuity of the intestinal mucosa. I believe it is dangerous to use the drug in the presence of breaks in the intestinal mucosa.

This opinion does not necessarily apply to the use of the drug in the presence of breaks in the intestinal mucosa such as repaired operative incisions in the intestinal wall which have been closed and present no considerable area of denuded wall for absorption.

3 No toxic signs or symptoms of any kind were noted either among our ill patients or among those receiving the drug therapeutically. This is in agreement

with most other writers who have used the drug for bacillary dysentery.

4 Used therapeutically, the drug was dramatically successful in every case in which it was used.

5 Because it is felt that other papers have established the effectiveness of the drug used therapeutically, case reports and charts which had been prepared from them are here omitted.

MALIGNANT LEUKOPENIA SUCCESSFULLY TREATED WITH SULFAPYRIDINE

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In this country urinary tract infections are much more frequently seen and in our malnourished, multi-infected patients of a far more serious prognosis than literature would lead one to expect.¹ The introduction of the sulfonamide compounds into the therapy of coliform group infections considerably improved the outlook. And yet the gravest of these cases those showing a leukopenia remained excluded from the beneficial and even life saving effect of this treatment because of the clinical rule that a diminished number of leukocytes excludes the use of the sulfonamides. Such patients being usually severely anemic and refractory to methenamine and pentose nucleotide, had a mortality of approximately 100 per cent a fact to which the local difficulty of getting blood donors contributes. In the literature available here only 2 cases of leukopenia and acute agranulocytosis were found² in which along with pentose nucleotides and blood transfusions sulfathiazole was used successfully.

The following 2 cases may show that a trial with sulfapyridine without any additional medication might change the hitherto apparently hopeless prognosis.

CASE 1—H. R. a man aged 45 a Hindu was admitted to our hospital on Oct. 10, 1942 in an irrational and delirious state. His attendant stated that eight days of a continuous high fever with a rigor on the first day preceded the admission. The heart and lungs showed no pathologic signs. The blood pressure was 115/85. The liver and spleen were not enlarged. The prostate gland was moderately enlarged and of increased consistency. The nervous system showed nothing abnormal. Urinalysis showed albumin 2 plus, sugar absent and microscopically red blood cells 2 plus, leukocytes 2 plus and granular casts 2 plus. Culture of the urine yielded *Pseudomonas*. The leukocyte count was 15,600 and the differential picture neutrophils 84 per cent and lymphocytes 14 per cent. Blood urea was 55 mg. Malarial parasites were not found. The malaria flocculation test was negative. The Widal test was negative (on admission and six days afterward). The Wassermann, Kahn and Kline reactions were negative. The pulse rate was 105 to 120. The temperature was 102.5 F dropping to normal after two days and remaining so for a fortnight. During this afebrile period the patient was treated with intravenous injections of dextrose and methenamine. His delirious condition subsided and he became rational and cooperative. He still showed signs however of a severe toxemia: the tongue was dry and heavily coated, the pulse was feeble and fast.

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1 Heilig, Robert and Puttaiva M. Coliform Group Infections of the Urinary Tract: Their Clinical Types and Incidence in Mysore, Indian M. Gaz., to be published.

2 Dameshek, William and Wolfson, L. E. A Preliminary Report on the Treatment of Agranulocytosis with Sulfathiazole. *Am. J. M. Sc.* 203: 819-823 (June) 1942.

an exudative endocystitis developed and the pathologic urinary findings persisted. Seven days after admission (October 18) the leukocyte count was 7,400 with the differential picture as follows: neutrophils 82 per cent, lymphocytes 15 per cent, large monocytes 2 per cent, eosinophils 1 per cent. After another week (October 25) a rigor set in and the temperature rose to 102 F, subsequently the malarial flocculation test became positive and daily quinine was administered by intravenous injection. In spite of this therapy after an afebrile interval of only three days, another rigor occurred and again the temperature reached 102 F (October 28) with small intermittences, remaining on this level for three days at the end of which time it rose to 103 F (October 31). While the fever lasted the signs of toxemia gradually increased, leading to a comatose

been normal since November 2 and remained normal except for two minute rises in the next six weeks, at which time the patient was seen the last time (December 15). The whole course consisted of 14 tablets of sulfapyridine and lasted for three and one-half days. Apart from nikethamide, no other treatment was used from the moment that the first sulfapyridine tablet was given. The surprising rise of the leukocytes to 9,375 with 58 per cent neutrophils on November 5 and to 8,750 with 73 per cent neutrophils on November 11, ten days after the sulfapyridine treatment was started, is shown with further observations in table 1. Simultaneously the patient recovered quickly, the urine became normal in all respects and four weeks after having reached a seemingly hopeless condition the patient was discharged, fit for resuming his work.

TABLE 1—Course of Disease in Case 1

Date	Temperature, F	Total	Leukocytes				Therapy
			Neutro- phils	Lympho- cytes	Mono- cytes	Eosino- phils	
October 11	102.5	11,000	83	14			Dextrose intravenously, pyelopyrin intravenously
18	98.2	7,400	82	15	2	1	Dextrose intravenously, pyelopyrin, ascorbic acid
21	103	2,600	4	81	7	8	Sulfapyridine 1.0 Gm
November 1	99.8	3,750	12	57		1	Sulfapyridine 2.0 Gm
2	98.2	1,800	16	83		1	Sulfapyridine 2.0 Gm
3	98.5	5,800	20	79		1	Sulfapyridine 1.25 Gm
5	98.2	9,375	58	42			
9	99.5	12,500	65	31		2	
11	98.2	8,750	73*	27			
16	98.2	9,200	80	19		1	Elivir vitamin B complex with glycerophosphates
19	98.2	10,800	76	24			Elivir vitamin B complex with glycerophosphates
22	98.2	11,200					Elivir vitamin B complex with glycerophosphates
December 7	98.2	12,000					Falsiteated sodium arsenate
15	98.2	10,900	70	29		1	

* A decided shifting of the nuclear picture to the left was noticed from this day on for six days.

TABLE 2—Course of Hospitalization in Case 2

Date	Temperature F	Red Blood Cells, Millions	Hemo- globin per Cent, Sahli	Leukocytes				Therapy
				Total	Neutro- phils per Cent	Lympho- cytes, per Cent	Eosino- phils, per Cent	
November 27	98.2	1.2	22	2,400	55	45		
December 3	98.2			2,600	52	48		Mixture of pepsin and hydrochloric acid
10	104 rigor	0.9	16	1,800	18	79	3	Sulfapyridine, 1.0 Gm
12	100			2,500	26	74		Sulfapyridine, total 5.0 Gm
13	98.2			3,700	36	62	2	Sulfapyridine, total 7.0 Gm
15	98.2			4,300	72	28		Sulfapyridine, total 9.75 Gm
17	98.2	1.1	20	10,300	77	23		Sulfapyridine stopped on December 16, total 10.25 Gm
19	98.2			6,600	78	22		2d injection of crude liver extract
22	98.2	1.45	25	6,800	80	20		5th injection of crude liver extract
24	98.5			7,000				7th injection of crude liver extract
26				7,420	76	22	2	8th injection of crude liver extract
28				7,210				10th injection of crude liver extract
30		1.6	28	7,300	76	24		
Jan 1 1943				7,000	80	20		
7		2.2	40	6,800	76	22	2	14th injection of crude liver extract
13		2.5	40	6,800	74	25	1	
20				7,000	73	25	2	
25				6,800	72	27	1	After 5 pyelopyrin injections

condition with deeply clouded consciousness, passing of urine and feces in bed and a pulse hardly palpable with a rate of 136 a minute. At this stage the leukocyte count was 2,600 with a differential distribution of 4 (1) per cent neutrophils, 81 per cent lymphocytes, 7 per cent large monocytes and 8 per cent eosinophils. All kinds of circulatory stimulation proving of no avail and the general condition rapidly deteriorating, we decided, in spite of leukopenia and granulocytopenia, to try sulfapyridine, giving 1 tablet every six hours (October 31). The next day, after administration of 4 tablets, the highest temperature was 99.8 F against 103 F the previous day, the leukocyte count rose to 3,750, the neutrophils to 12 per cent, after another 4 Gm within the next two days to 20 per cent with a total amount of 5,800 (November 3). At this time the patient was fully conscious and rational and asking for food, the pulse rate was 80 to 88 and the temperature had

CASE 2—J. L., a woman aged 30, a Hindu, admitted to our hospital on Nov. 26, 1942, gave a history of diarrhea, pain in the abdomen, rigor and fever off and on for the last year. She was highly emaciated and moderately anemic. But apart from one rise up to 101 F on the third day of hospitalization her temperature remained normal for eight days, and during this period only one thick pasty stool was passed every day. Clinical and radiologic examinations showed that the heart and lungs were normal. A fluoroscopic investigation of the stomach with barium sulfate could not be performed because of her extreme weakness. A barium sulfate enema showed diminished haustration of the descending colon. The liver was not palpable, the spleen was slightly enlarged but malarial parasites were not found and the malarial flocculation test was negative. The pelvic organs showed no pathologic changes. The tuberculin test (Mantoux) was negative. A tract of

test meal showed achlorhydria (free hydrochloric acid 0, total acidity 6 to 16, mean values 0 to 10). The stools showed nothing abnormal on microscopic examination and no pathogenic micro-organisms on culture. The urine showed traces of albumin, a few erythrocytes and a fair amount of pus cells (2 plus). Culture of the urine yielded *Acrobacter aerogenes*. Analysis of the blood revealed 1,200,000 red cells showing anisocytosis, the hemoglobin level 22 per cent (Sahli) and color index 0.9. Leukocytes numbered 2,400 with a differential count: neutrophils 55 per cent and lymphocytes 45 per cent. Six days later the leukocytes numbered 2,500 with a similar differential picture. The sedimentation rate was 24 mm the first hour and 68 mm the second hour.

On the ninth day after admission (December 4) when the diet which consisted of wheat congee and buttermilk was changed to boiled unpolished rice and buttermilk the patient had three loose bowel movements and the temperature rose to 100 F. The following day the diarrhea increased and accompanied by two rigors, the temperature rose twice to 104.5 F. Plantago seed diet controlled the bowel action within twenty-four hours, but in spite of intravenous injection of quinine and of methanamine a decidedly intermittent fever persisted for six consecutive days, varying every day between 100 and 104 F, the steep rise almost regularly being ushered in by a rigor. The urine showed innumerable pus cells which formed a thick creamy sediment though on culture again only *Acrobacter aerogenes* was growing. The patient was unable to speak understandably, the tongue was extremely dry and was covered with brown fur, the pulse which was hardly palpable reached a rate of 134. On the sixth day (December 10) of this high febrile condition the leukocyte count was 1,800 with 18 per cent neutrophils, 79 lymphocytes and 3 per cent eosinophils. The erythrocytes numbered 900,000 with hemoglobin 16 per cent (Sahli). The prognosis seemed to be so gloomy that we thought it justifiable to take every risk that might give the patient the slightest chance of overcoming this septicemic condition which certainly originated from the urinary tract. In spite of the severe leukopenia and granulocytopenia a course of sulapyridine was started with 1 tablet every six hours, the doses being gradually reduced until 20% tablets (10.25 Gm.) had been given within six days. The result was most astonishing. After 4 tablets of sulapyridine the temperature came down from 104 F. on December 10 to normal on the following day and the patient remained perfectly afebrile except for one single rise to 100 F. on December 12 up to Jan. 28, 1943. Table 2 shows how the leukocyte count increased from 1,800 on December 6 to 2,500 on the 12th to 3,700 on the 13th and to 10,300 on the 17th and was stabilized at about 7,000 during the following month, the percentage of neutrophils simultaneously rose from 18 to 26, 36 and 77 within seven days, remaining constant at about 75 to 80 per cent.

It was a most impressive experience to see how quickly the apparently moribund patient turned to a convalescent with a well sustained pulse though still at an increased rate, a rapidly clearing moist tongue and improving appetite. To stimulate the regeneration of the red blood picture which by the end of the sulapyridine treatment showed 1,100,000 erythrocytes and 20 per cent hemoglobin (Sahli), a series of fifteen injections of crude liver extract (Pronaemia) was given accompanied by dried yeast 1 teaspoon twice a day. On January 13 the figures were 2,500,000 red blood cells, 40 per cent hemoglobin (Sahli), 6,900 leukocytes, 74 per cent neutrophils and 25 per cent lymphocytes. The sedimentation rate was 7 mm the first hour and 17 mm the second hour. Without administering any other treatment the condition of the urine improved considerably though it had not become normal on January 15, albumin was absent and a fair amount of leukocytes was present. Culture yielded a few colonies of *Escherichia coli*. The bowel action remained normal throughout the entirely uneventful convalescence and even the gastric function improved considerably. On January 16 a fractional test meal showed free hydrochloric acid 0 to 28, total acidity 8 to 46, mean values were free hydrochloric acid 11 and total acidity 22 as against achlorhydria on admission.

COMMENT

It is a generally accepted clinical rule that the sulfonamides are strictly contraindicated in all cases of leukopenia, especially when a granulocytopenia is present. This rule is based on the fact that members of the sulfonamide group tend toward diminishing the number of leukocytes in general and the granulocytes in particular to such an extent that fatal consequences due to acute agranulocytosis have been reported in numerous instances. This danger is supposed to threaten whenever full doses of one of these compounds are used, so much so that leukocyte and differential counts should be performed at short intervals and the application of these drugs stopped at once when the total amount of white cells or the percentage of neutrophils shows a tendency to decrease.

I furthermore it is well known not only that sulfanilamide, sulapyridine and other sulfonamide compounds interfere with the leukopoiesis but also that the red blood cell count occasionally shows such a reduction that blood transfusions might be required.³ Quite recently Chaudhuri⁴ found that therapeutic doses of sulfanilamide and sulapyridine in monkeys cause 'a moderate and progressive anemia' and 'a consistent decrease of leukocytes'. Nevertheless the reasoning might be justified that a toxic arrest of the leukopoietic activity of the bone marrow causing leukopenia and granulocytopenia could be counteracted and the normal marrow function restored if one succeeded in eliminating the source of toxin production.⁵ Thus the question arises whether it is probable that the sulfonamides would exert their bacteriostatic action which inhibits the further release of toxins more rapidly than their paralyzing influence on the bone marrow. Dameshek and Wolson⁶ found in 2 cases of acute agranulocytosis that sulfathiazole did no harm and that it might have been of value in combating the secondary sepsis, although no definite proof for the latter opinion could be presented because it was given in addition to transfusions and pentnucleotides. So far as 2 cases can show small doses of sulapyridine are capable of improving the rapidly declining leukopoiesis if the infective organisms responsible for the severe toxemia respond promptly to the drug. In our cases such a response was established—apart from the changes in the blood picture—by the fact that the fever subsided immediately and the general condition which prior to sulapyridine medication apparently precluded any hope improved so speedily and completely without the employment of any other treatment that a spontaneous or chance recovery obviously was out of the question.

The course of events leading to this development, unexpected in several aspects, could be reconstructed and the origin of the toxemia traced in the following way. In the first case a hypertrophied prostate gland which as the patient later stated had caused typical complaints for the past one year caused urinary stagnation with a subsequent infection of the urinary tract. A tendency to a low leukocyte count is not rarely seen in coliform group infections,¹ so that an unusually heavy infection such as was proved in this case by the

3 Harvey A. M. and Janeway C. A. Development of Acute Hemolytic Anemia During Administration of Sulfanilamide. *J. A. M. A.* 109: 12 (July 3) 1937. Kohn S. E. Acute Hemolytic Anemia During Treatment with Sulfanilamide. *ibid.* 109: 1005 (Sept. 25) 1937.

4 Chaudhuri S. Action on the Hemopoietic System of Monkeys of Drugs of the Sulfonamide Group Administered in Therapeutic Doses. *Ann. Biochem. Exptl. Med.* 2: 129-180 (No. 3) 1942.

5 Long P. H. and Bliss Eleanor A. The Clinical and Experimental Use of Sulfanilamide, Sulapyridine and Allied Compounds. New York: Macmillan Company, 1939.

onset with a rigor, the high fever and the delirious condition, might have turned the initial leukocytosis to leukopenia which renders the system defenseless against a further invasion and unrestrained multiplication of all kinds of pathogenic micro-organisms. The second patient suffered from diarrhea which lasted for one year up to her admission. Though it recurred only on the ninth day of her stay in the hospital and lasted for a few days, easily controlled by Plantago seed diet it is significant that this short attack of diarrhea the very next day was followed by the heaviest febrile attack, with two rigors the temperature reaching 101.5 F twice within one day. The explanation is that during the chronic diarrhea which preceded the patient's hospitalization a chronic infection of the urinary tract, proved microscopically and bacteriologically on admission was established, owing to the increased permeability of the affected mucous membrane of the colon. The acute diarrheal relapse certainly was due to an increased virulence of the intestinal bacterial flora which invaded the urinary tract in force and, most probably, simultaneously entered the systemic circulation. Proof of the former process is the enormous increase of pus cells (4 plus) in a catheter specimen of the urine, the latter—the development of a septicemia—is almost ascertained by the occurrence of six rigors in eight days of high fever, uninfluenced by intravenous administration of quinine. The close connection between diarrhea and subsequent urinary tract infection was experimentally established by Leishman⁶ and is noticed in almost all of our diarrhea cases, especially in women. In contrast to the first case, leukopenia of 2,400 to 2,500 leukocytes per cubic millimeter with a relative lymphocytosis already present was found on admission. The further development clearly shows that this white blood cell picture was due not to some constitutional peculiarity but only to the urinary tract infection, the leukocyte count subsequent to the successful treatment of the septicemia being constant at about 7,000 with a normal differential picture. It is noteworthy that the red blood cell count did not improve simultaneously with the leukocytes but required administration of crude liver extract. In both of these cases small doses (1.5 to 2.5 Gm) of sulfapyridine succeeded in cutting short the course of the fever and further administration of 2 Gm a day, making a total of 6.25 Gm and 10.25 Gm respectively, in keeping the patients afebrile. It is highly improbable that such doses should have been sufficient to achieve sterilization of the heavily infected urinary tract, the more so as in case 2 *Escherichia coli* was found in the urine after one month of afebrility, normal bowel function and general well-being. The explanation of the successful medication obviously is that the drug, exerting its generally recognized bacteriostatic action, stopped further bacterial multiplication and prevented a renewed invasion of the circulation as well as further production of toxin, thus enabling the patient's defense mechanisms to deal with the bacteria which already were present in the system when the treatment was started.

When these cases were presented⁷ the discussion hinged on whether the development of leukopenia was not precipitated by the intravenous use of quinine and methenamine with sodium salicylate and caffeine with sodium salicylate (Pyelopurin). For the investigation

of this question 4 patients with particularly severe malarial and 4 with highly febrile urinary or biliary tract infection, all of them in a very low condition, were selected and treated with full doses of quinine or the proprietary methenamine mixture respectively by the intravenous route.

In each of these cases a total leukocyte count and differential picture have been determined before and twelve to twenty-four hours after conclusion of a course of either five quinine injections, containing 35 grams (2.3 Gm) of quinine dihydrochloride, or of 5 ampules of "pyelopurin intravenous," each of them containing methenamine 30 grams (2 Gm), sodium salicylate 12 grams (0.8 Gm) and caffeine with sodium salicylate 3 grams (0.2 Gm). In 2 of the cases in which quinine was given, the leukocyte count increased, in the other 2 it remained unaltered. The proportion of neutrophils showed variations of ± 10 per cent with a maximum of 80 and a minimum of 60 per cent after treatment. Similarly insignificant were the changes following medication with the methenamine mixture. In addition to our 8 control patients, the second of our 2 leukopenia patients (J. L.) received a course of five intravenous injections of the methenamine preparation when after one month of well-being *Escherichia coli* was found in her urine, on conclusion of this medication (January 25) the leukocyte count was 6,800, the differential picture 72 per cent neutrophils, 27 per cent lymphocytes and 1 per cent eosinophils. These results make it highly improbable that in our cases leukopenia and granulocytopenia should have been due to doses of quinine or methenamine with sodium salicylate and caffeine with sodium salicylate which were smaller than those used in the control cases, though it cannot be excluded that in rare instances of hypersensitivity against these compounds and a constitutional weakness of the leukopoietic apparatus such a reaction might develop.

SUMMARY

Two cases of highly toxic infections of the urinary tract were characterized by considerable leukopenia and granulocytopenia.

In both of them small doses of sulfapyridine, without any other treatment, brought about a rapid improvement of the general condition especially of the white blood picture, leading to recovery from seemingly hopeless conditions.

Eight control cases were studied to see whether quinine or the methenamine-sodium salicylate caffeine with sodium salicylate mixture administered by intravenous injection diminishes the amount of leukocytes or the percentage of neutrophils. Such changes were not seen in these cases.

Vinegar—If a saccharine liquid (e. g. cider) which has been fermented by yeast is left undisturbed and exposed to a limited supply of air, it gradually becomes acid and eventually turns into vinegar. Vinegar formation is a second fermentation which follows alcoholic fermentation. Bacteria are the agents involved and they oxidize ethyl alcohol, first to acetaldehyde and then to acetic acid. The so called mother of vinegar, *Mycoderma aceti*, as Pasteur named it, consists of a number of species of bacteria rather than a single organism. These bacteria produce a slimy, gelatinous growth on the surface of the liquid, which falls to the bottom and is succeeded by a film. The bacteria contained in the film bring about the conversion of the alcohol into acetic acid.—Peterson, William F. Skinner, John T., and Strong, Frank M., *Elements of Food Biochemistry*, New York, Prentice-Hall Inc., 1943.

⁶ Leishman, A. W. D. *Bacillus Coli Infection of the Urinary Tract*, *Lancet* 2, 971-973 (Nov. 4) 1939.
⁷ Nov. 26, 1942 and Jan. 14, 1943, Mysore Medical Association.

THE FREQUENCY OF INADEQUATE
ANTIDIPHTHERIA IMMUNIZATION

IN AN INFECTIOUS DISEASE HOSPITAL

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A positive Schick test is evidence that there is not sufficient circulating antitoxin to prevent the action of injected diphtheria toxin on the skin. Sufficient humoral immunity may be present to insure a negative Schick test after an attack of diphtheria or after active immunization, but the amount and duration of immunity varies in different people. Even a partial immunization may stimulate the immunity mechanism so that it reacts more actively with the restimulation of disease and accordingly is advantageous. However, a history of immunization unless checked by a dermal test, should not be used to exclude the diagnosis of diphtheria in the presence of clinical signs of the disease.

In order to determine the proportion of Schick positive children among those previously immunized, the parents of all children admitted to Willard Parker Hospital for diseases other than diphtheria during the months of June through September 1941 were carefully interrogated regarding immunizing procedures.¹ Willard Parker Hospital is a contagious disease hospital in New York City where Schick and Dick testing are routine procedures on admission. The group studied consisted of children of both sexes from 1 to 16 years of age. Forty-eight or 24 per cent of the 200 previously immunized patients were Schick positive. The age and sex distribution of the positive reactors did not differ from that of the group tested. In none of the infectious diseases was there a disproportionate number of positive Schick reactors. Measles has been observed to produce a diminished tissue resistance to the diphtheria toxin but no statement based on this study can be made on the especial effect of measles on the diphtheria protective mechanism after immunization, because among 2,068 patients admitted for measles in the first six months of 1941 there were only 2 patients with clinical diphtheria. One had received toxoid and one had not received any immunization.

During the eighteen month period extending from Jan. 1, 1940 through June 31, 1941 there were 88 patients admitted to Willard Parker Hospital for clinical diphtheria. Of these patients 29, or 32.9 per cent had previously been immunized. These patients had received from one to four injections of an immunizing agent. Subsequent Schick tests had not been performed on any. In 5 patients, or 5.6 per cent, no definite history in reference to immunization could be obtained. In 54 patients, or 61.4 per cent, no attempt to immunize had been made. The location of the membrane was uninfluenced by immunization, as shown in the accompanying table.

The immunized patients were not as severely ill as those in whom immunization had not been attempted.

This study received support from the Littauer Pneumonia Research Fund.

¹ Because of the vagueness of parents' knowledge of technical procedures all types of immunization have been considered together.

In the nonimmunized group there were five deaths, whereas there were no deaths among the patients who had received some immunizing injections, even though they were insufficient to prevent the disease. The average duration of illness before admission was the same in the two groups. There was considerable delay in the administration of diphtheria antitoxin in some patients because when there was a history of injections the physicians in attendance or in outpatient departments assumed that the throat infection was not due to diphtheria. The fact that patients may receive prophylactic injections without developing complete immunity is not sufficiently recognized. After partial immunization the illness may be very severe and clinically typical. The diagnosis of diphtheria must be made from the constitutional and local response to the toxin. Antitoxin should be given without delay. We give here an illustrative history of a patient from whom diphtheria antitoxin was temporarily withheld.

REPORT OF CASE

P. C., a girl aged 3 years, admitted to Willard Parker Hospital on March 28, 1941, had received 1 cc of toxoid on Feb. 15, 1940 and 1 cc on March 1, 1940. There had been no subsequent Schick test. Four days before admission, measles developed. On March 26 a croupy cough and slight retractions were present. On this day the croup was attributed to measles and antitoxin was withheld by the family physician because of the history of immunization. This physician saw the patient on

Location of Membrane in Immunized and Nonimmunized Patients

	Immunized	Per Cent	Nonimmunized	Per Cent
Nasal	5	17.2	15	27.7
Pharyngeal	16	55.1	26	45.1
Laryngeal	1	3.4	1	1.8
Combined	7	24.1	12	22.2
	29	99.8	54	99.8

two occasions including the day of admission to Willard Parker Hospital. She was seen at the outpatient department of a large hospital on March 28 and antitoxin was not given then because of the history of immunization. The child was brought to Willard Parker Hospital because of the measles. The croupy cough increased and she was very restless. She was acutely ill, toxic and hoarse with moderate respiratory distress. There was a fading measles rash. The cervical lymph nodes were enlarged but not tender. A dirty, thick, grayish membrane was seen on both tonsils, uvula and pharyngeal wall and over the supraglottic and subglottic areas. The heart was rapid but the tones were of good quality and regular. The temperature was 102.8 F, the pulse rate 124 and the respiratory rate 22. A direct laryngoscopy was done and the larynx was suctioned. Immediately after aspiration of the larynx the respiratory distress disappeared and the voice became less hoarse. Antitoxin 20,000 units intravenously and 40,000 units intramuscularly was given with epinephrine. On the second hospital day the patient coughed up several large pieces of membrane. On the thirteenth day bilateral catarrhal otitis media developed.

SUMMARY

1. Twenty-four per cent of a sample group of 200 previously immunized patients admitted to an infectious disease hospital for disease other than diphtheria were found to be Schick positive.

2. One third of the patients with diphtheria admitted to Willard Parker Hospital during a year and a half had received partial immunization against diphtheria. Antitoxin had been withheld from some patients with clinical diphtheria because of the history of immunization.

CONCLUSION

1 As measured by a negative Schick test, only 76 per cent of patients admitted to Willard Parker Hospital are effectively immunized by current routine procedures and thus thoroughly protected against the disease

2 The history of immunization against diphtheria should not lead to delay or failure to administer antitoxin when there is clinical evidence of diphtheria. Unless the Schick test has become and remains negative, immunity should not be assumed

3 Schick tests should be done after immunization so that if necessary the immunization may be fortified by extra dosage

62 West Fifty-Seventh Street

Clinical Notes, Suggestions and New Instruments

PERFORATION OF ESOPHAGUS CAUSED BY FLEXIBLE GASTROSCOPE

REPORT OF CASE WITH AUTOPSY

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LIEUTENANT (JG) R. H. LAGE, (MC), U. S. N. R.

Endoscopic examination of the stomach with the rigid gastroscope was a hazardous procedure, and according to Schindler many deaths resulted. With the flexible instrument complications are rare, and only one death has been questionably attributed to its use. Schindler in 1940 reported the results of a questionnaire concerning fatalities in relation to gastroscopic examination. In all, 22,351 gastroscopic examinations were reported. In this series there were eight perforations of the stomach and one of the jejunum, but none of these terminated fatally. One patient died nine days after the examination, but whether the latter was directly responsible for the fatal outcome could not be definitely established. Since this report was published others have recorded complications none of which were fatal.

At the University of Iowa 538 consecutive gastroscopic examinations were done without any complications. The technique advised by Schindler was used both in preparation of the patient and in introduction of the instrument. In the case being reported in which our 539th gastroscopic examination was performed the patient died twenty-four hours after instrumentation.

REPORT OF CASE

G. P., a white man aged 81, admitted to the University Hospital on March 26, 1942 complained of epigastric distress, tarry stools and loss of weight. He had had attacks of epigastric distress, nausea and vomiting most of his life. Three months before admission he noticed tarry stools for a few days. After that time he lost about 22 pounds (10 Kg). A transurethral prostatic resection had been performed in 1937.

Physical examination revealed that the patient was emaciated but was not acutely ill. The head and neck were essentially normal. The thorax was long and narrow and was normal to auscultation and percussion. The heart was enlarged both to

the right and to the left, auricular fibrillation was present and the blood pressure was 106/74 mm of mercury. The cardiac rate was 98 a minute. The peripheral arteries were thickened and tortuous. Palpation of the abdomen revealed tenderness in the epigastrium, but no masses were felt. The left testis was absent. The prostate was moderately enlarged and firm but not nodular. The extremities and reflexes were normal.

Examination of the blood showed a hemoglobin content of 12 Gm, the erythrocyte count was 32 million, the leukocyte count 7,900 and the differential leukocyte count normal. Several urinalyses were negative. The blood Wassermann reaction was negative. A roentgenogram of the chest showed that the heart was enlarged, but the lungs were normal. Fluoroscopic and roentgenographic examination of the stomach disclosed a penetrating ulcer on the lesser curvature. The ulcer measured about 1.5 cm in diameter.

Two days after admission a gastroscopic examination was done. The instrument was passed with ease and depth 1 was readily visualized. The angulus appeared distorted and was pulled to the right. In the midportion of the angulus a triangular defect was seen (Henning's sign). The mucosa was pale, many areas of submucosal hemorrhage were present and mucus adhered to the surface of the gastric mucosa. Just proximal to Henning's sign on the lesser curvature an oval ulcer about 2 cm in diameter was noted. As this lesion was viewed at a tangent the floor of the ulcer could not be accurately visualized. The mucosa surrounding the ulcer was pliable and not edematous, and peristalsis was active in this region. Depth 2 showed a slight amount of atrophic and considerable superficial gastritis. Depth 3 was essentially normal. The diagnosis was benign ulcer on the lesser curvature. The gastroscopic procedure lasted ten minutes.

Four hours later the patient complained of pain in his throat and difficulty in swallowing. Six hours later he had a chill, and his temperature rose to 102 F. Physical examination revealed nothing significant. The next morning the patient was cyanotic and had difficulty in breathing. At this time there was pronounced crepitus over the right side of the neck and the right upper anterior portion of the chest. Dulness was present over the bases of both lungs, and many rales were heard. The patient could not speak above a whisper. In a very short time he became comatose and died. Autopsy showed that the tissues of the anterior and posterior mediastinum and entire pericardium were extremely edematous and the seat of a fulminating cellulitis. The tissues of the neck showed a definite fibrinous exudate. No frank pus was found. The esophagus was normal, and even when air was blown into it no perforation could be found. Both lungs showed an extreme degree of hemorrhage, congestion and patchy pneumonia. A penetrating ulcer 2.5 cm in diameter was present on the lesser curvature of the stomach near the antrum. The organs were essentially normal.

Microscopic sections of the tissues of the neck and upper part of the thorax showed a fibrinous, acute, phlegmonous cellulitis with extreme edema. There was no evidence of localization. The edema and the inflammatory exudate dissected through the tissue septums and even between the individual skeletal muscle fibers. There was no evidence of tissue necrosis. Beta hemolytic streptococci were isolated from these tissues.

COMMENT

We were unable to ascertain why this accident occurred. The instrumentation was exceedingly easy and the patient was very cooperative. At first we thought that the age of the patient was a factor. Since this examination we have completed 500 more without a single complication. In the latter group there were many patients ranging in age from 75 to 83. On two occasions the rubber tip became loose and was lost in the stomach, but neither of these patients showed any trauma either in the esophagus or in the stomach. After the death of the patient the gastroscope was examined carefully but nothing unusual was found. Even though definite perforation was found at autopsy, it is possible that the tear was very small and was closed by serum or exudate. This is the first known death caused by perforation of the esophagus of a patient with no previous disease of the esophagus or mediastinum.

From the Department of Internal Medicine, State University of Iowa College of Medicine.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writers and are not to be considered as reflecting the policies of the Navy Department.

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2 Schindler, Rudolf. Results of the Questionnaire on Fatalities in Gastroscopy, *Am J Digest Dis* 7: 293-295 (July) 1940.

3 Rumball, John M. Perforation of Jejunum During a Gastroscopic Examination of the Resected Stomach, *J A M A* 113: 2053 (Dec 2) 1939. Schiff, Leon. Stevens, Richard J., and Goodman, Sanders. Pneumoperitoneum Following Use of the Flexible Gastroscope, *Ann Int Med* 11: 1283-1287 (Jan) 1941. Touroff, Arthur S. W. Perforation of the Cervical Esophagus with the Flexible Gastroscope. Case Report—Diagnosis—Treatment, *Ann Surg* 114: 369-374 (Sept) 1941.

MALIGNANT MELANOMA OF THE CHOROID WITH
EXTENSIVE METASTASIS TREATED BY REMOV-
ING SECRETING TISSUE OF THE TESTICLES

WILLIAM P. HERBERT, M.D., WASHINGTON, D. C.

A 67-year-old man aged 69 had a malignant melanoma of the choroid removed on Sept. 29, 1939 by Dr. J. B. Griffith. The pathologic report of the specimen which was submitted to Lieut. Col. J. I. Ash, M. C., United States Army, curator of the Army Medical Museum follows:

Gross. The eye has been opened in the horizontal plane. The retina is detached and behind it on one side is a pale mass measuring 16 by 9 mm. which extends from the optic disk to a point midway between the equator and the ciliary body.

Microscopic. Extending from the ora serrata almost to the optic disk is a tumor mass which appears to be breaking through Bruch's membrane in several places. A few thin walled blood vessels are seen; pigment is not discernible. The cells are spindle shaped with oval nuclei, round or polygonal with abundant cytoplasm and smaller nuclei. All have prominent nucleoli. The Callender-Wilder classification shows the tumor to be less than 50 per cent argyrophil fibroid. Intrabulbar extension is not demonstrated.

Diagnosis. Malignant melanoma of the choroid, spindle cell subtype B, and large and small epithelioid cell, ciliary glaucoma secondary, early intraocular hemorrhage, detachment of retina.

A short time after removal of the eye nodules appeared around the right orbit followed by numerous masses all through and on the surface of the patient's body. On Dec. 26, 1942 he was in a state of complete physical exhaustion, bedridden and unable to retain food because of nausea induced by a fluid which regurgitated from the pharynx. His liver was enlarged to at least twice its usual size and was nodular. The nodules on the surface of the body varied in size from 3 cm. in diameter to 10 cm.

On December 28 under pentothal sodium anesthesia the secreting tissue of the right testicle and the entire contents of the left scrotum were removed because of the presence of multiple spermatoceles on that side. His course following this operation was rather interesting in that he had no further nausea and was able to take small quantities of any kind of food that was given to him. There was no more fluid coming from the respiratory tract. There was definite regression of some of the metastatic lesions and no new lesions developed. He seemed to be improving gradually until Feb. 15, 1943 at which time he became unconscious while he was asleep and died. Permission for autopsy was not obtainable.

COMMENT

The basis for the indication for this procedure is not clear but the line of thought leading to the suggestion for this form of treatment is as follows:

Farrow and Adair¹ reported disappearance of extensive osseous metastases secondary to carcinoma of the breast in a man following castration.

McClelland² reported a case of extensive generalized metastasis secondary to a testicular tumor in which the removal of the primary tumor and the sound testicle was followed by rapid disappearance of all the metastatic lesions.

Huggins³ made a contribution to the biochemical aspects of orchiectomy for carcinoma of the prostate.

In view of these observations I felt that there was a remote possibility of so changing the biochemical status of the patient by removing the testicular tissue that the biochemical soil in which the malignant cells were growing might prove to be unfavorable to their continued expansion and growth.

Since that time there has been another interesting case reported in the literature by George G. Binne⁴. He reported

an extensive metastatic pleomorphic osteogenic carcinoma which almost entirely disappeared following a course of high voltage roentgen therapy combined with the injections of diethylstilbestrol in comparatively large doses. He employed 5.75 and 10 mg. doses daily intramuscularly. This case is not presented with any idea of claiming to comprehend the chemical mechanism involved but simply as an interesting clinical observation.

1801 I Street N.W.

REFRIGERATION ANESTHESIA IN SKIN GRAFTING

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UNITED STATES ARMY

Refrigeration anesthesia for skin grafting opens a new field for the use of reduced temperatures in surgery. In 27 cases requiring small or multiple small split thickness skin grafts this method was used. Pinch grafts could be removed equally well although none were attempted in this series. Results were so satisfactory that this report is submitted for general consideration.

In July 1941 my associates and I began to use refrigeration anesthesia for the amputation of extremities. When an extremity is refrigerated for amputation a tourniquet is always used.

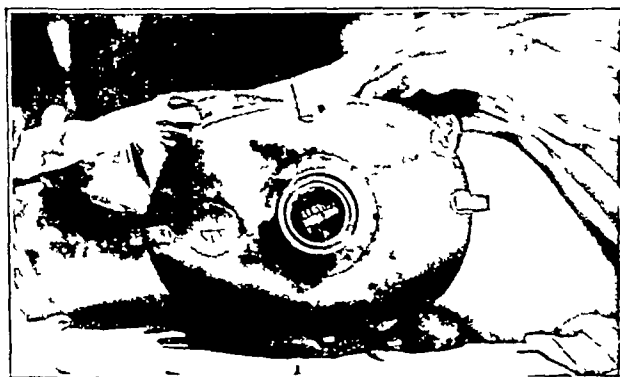


Fig. 1—Ice bag snugly applied to the skin preferably with bandages for two and one-half hours anesthetizes the donor site.

Ordinarily the constriction of a tourniquet is painful. Some of the original workers in refrigeration anesthesia discovered that previous chilling of the tissues with ice bags definitely decreased this discomfort. We corroborated this finding noting also that the skin was completely anesthetized. It was this ability of ice bags to produce superficial anesthesia that led us to attempt the method on donor sites for skin grafts.

TECHNIC

Two hours before operation one or more uncovered ice bags are applied directly to the area from which the skin is to be taken. The number of ice bags required depends entirely on the amount of skin to be anesthetized. Slight pressure deepens the anesthesia so it has been our practice to tie or bandage the ice bags in place. The donor site may be marked and orders left for the nurse to apply the ice bag or bags at the desired time. In hot weather they may have to be refilled but usually they are not disturbed until the surgeon is scrubbed and ready to prepare the skin. The maximum anesthetic effect lasts approximately twenty minutes after the ice bags have been removed.

Many of our operations are not carried out in the operating room. In the ordinary case with a small or moderate defect to be grafted orders are also left to have the necessary instruments in the ward. Then during the course of rounds the

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Released for publication by the War Department Manuscript Board which assumes no responsibility other than censorship for the contents of this article.

From the Georgetown Urological Service, Gallinger Hospital.

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procedure is done at the bedside or in the dressing room. It is amazingly simple—the donor site is cleansed with alcohol, the graft is cut and put in place and dressings are applied.

Preoperative medication is not usually necessary but may be a helpful adjuvant. In this series it was used only for those patients who were apprehensive. They were given morphine sulfate one-half to one hour before operation.



Fig. 2—Cutting the skin graft from the thigh

Complete anesthesia was obtained in 24 of the 27 patients prepared by refrigeration. The 3 patients with incomplete anesthesia complained of a burning sensation when the graft was cut, but it was not sufficiently acute to necessitate another form of anesthesia. In each of these cases we were too hasty and did not allow a full two hours for chilling.

Refrigeration does not noticeably affect the growth of the graft or the repair of the donor site. Complete healing occurred in two to three weeks in almost every case. Successful grafts were obtained in 23 of the cases. The 4 failures occurred in patients whose granulations were infected more than we realized and should more properly be ascribed to our error in judgment than to the method. In 2 of these cases subsequently suc-

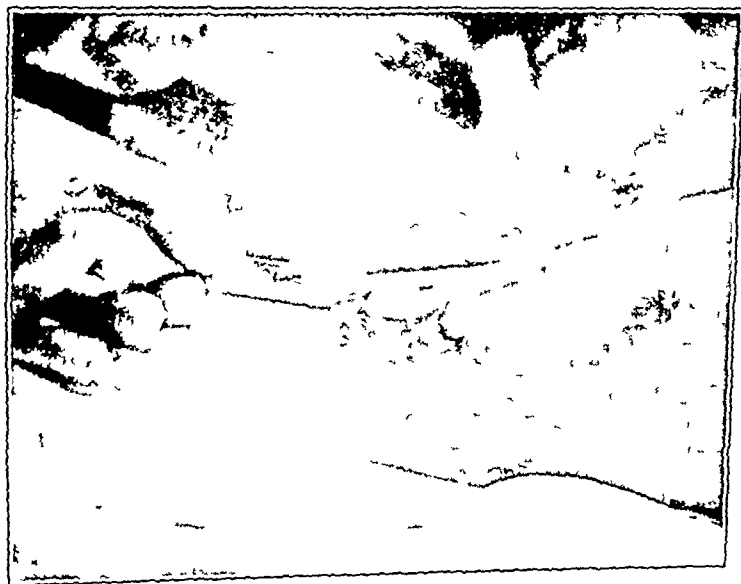


Fig. 3—Placing the skin graft on a small, ulcerated area on the leg

cessful grafts were obtained with the same technique. In the other 2 there was slow healing by granulation and epithelialization.

SUMMARY

A new use of reduced temperatures in surgery, namely anesthesia of skin graft donor sites by refrigeration, is recommended because it is simple, time saving and efficient. It has been used in 27 cases.

EXPLOSIVE INJURY DUE TO SOLID CARBON DIOXIDE

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Carbon dioxide is of increasing importance commercially. Many of its uses rely on its rapid expansion when released from a compressed state.¹ That this expansive force of solid carbon dioxide, the familiar "dry ice," is tremendous can perhaps best be appreciated by the realization that a rifle is now being manufactured using crushed "dry ice" as the propelling force. One loading is sufficient to "fire" 1,800 bullets of 0.22 caliber.² It was surprising, therefore, that reports of explosive injuries due to solid carbon dioxide are not to be found in the literature. Indeed, reports of all types of injuries are meager, though Stout³ and Som and Neffson⁴ have each drawn attention to the danger of aspiration. That the continued availability of "dry ice" to enterprising children remains a danger is illustrated by the case reported here.

REPORT OF CASE

K. L., a school boy aged 14, was brought to Columbia Hospital the evening of Dec. 31, 1942 with the history, later verified, that he and a chum had purchased a small block of "dry ice" at a local dairy store. This they had placed in a 5 gallon garden spray can in order to extinguish small fires with the vapor by suffocation. To increase the rate of vaporization, the can was partially filled with water. While they were in the process of building another fire the can exploded, the upper edge striking the patient in the face, knocking him down and traveling a distance of 50 feet. Further history was not significant.

On admission the patient was semiconscious and in mild shock, with a large, gaping laceration of the face. The blood pressure was 115/80, the pulse rate 86 a minute and the temperature 98 F. Roentgen examination of the skull showed no fracture of the vault. The patient was promptly taken to the operating room for debridement and reconstruction. Intravenous anesthesia with 25 per cent solution of sodium pentothal was administered along with an infusion of isotonic solution of sodium chloride and 300 cc of citrated whole blood. Further examination showed a deep laceration extending down along the left side of the nose, across the columella and out across the right cheek to a point on a line with the malar prominence. The upper flap gaped, the laceration having extended internally upward to the infraorbital ridges of the maxillary bones, which were fragmented. Both antrums were laid open, the nasal bones, the vomer and the ethmoid plate were comminuted. The inferior and middle conchae were shattered. Three upper incisor teeth were missing, the fourth had been thrust back up into the premaxilla, which, along with the superior alveolar process, was shattered. There was moderate bleeding from a branch of the right facial artery. The parotid duct and main branches of the facial nerve, apparently, were not exposed. Both orbits appeared uninjured, though there was extensive periorbital swelling and hemorrhage. All bony fragments were replaced. The nares were reconstructed with some difficulty over soft rubber tubing. Five Gm of sulfathiazole powder was sprinkled about the wound prior to closure. Fine chromic catgut was used for buried sutures and number 70 white cotton thread for skin sutures. Petrolatum gauze was inserted into the external nares as packing to control oozing. A prophylactic dose of tetanus antitoxin was administered.

The next morning, twelve hours after admission, the patient regained consciousness, and oral administration of sulfathiazole in doses of 1 Gm every four hours was begun. The further course of the patient was most gratifying. The highest temperature elevation was to 100.8 F rectally on the first postoperative day, after forty-eight hours it was normal. He

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petrolatum packs were removed the morning after operation and the soft rubber tubing twenty four hours later. There was a moderate amount of sero sanguineous nasal drainage never odorous. The nares remained patent. On the sixth day there was a small amount of purulent drainage from a tooth socket. Administration of sulfathiazole was kept up for ten days a blood level of 3 mc. per hundred cubic centimeters being maintained. Locally sodium perborate in the form of a paste was used in the mouth and a suspension of sulfathiazole in the nose. As the intense periorbital edema subsided it was apparent that the patient had a partial third nerve paralysis as evidenced by diplopia, loss of convergence and partial ptosis of the right lid. Improvement was pronounced and by the time the patient left the hospital on the seventeenth day after admission convergence was much improved and the ptosis less. In the week following the diplopia and ptosis cleared, the sense of smell and the sneeze reflex both of which had been lost likewise were recovered. When last examined three months after the accident both nares were patent and the cosmetic result was satisfactory.

304 Medical Arts Building

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
ALVIN F. SMITH, M.D., Secretary

DOSAGE OF VITAMIN PREPARATIONS

At various times the Council has given consideration to excessive and indiscriminate use of vitamin preparations by the general public. There has been no concern over any danger in such usage in doses which the Council would consider for therapeutic recommendation but it is quite apparent that large numbers of people have been using pharmaceutical preparations of vitamins far in excess of what would be expected to be of real benefit. This first became apparent in considering the large dosages recommended for vitamin A and D preparations when these vitamins became available at a relatively low cost. This prompted the Council to restrict the acceptance of vitamin A and D preparations recommending high dosages of vitamins A and D to preparations advertised only to the physician and the following statement of policy was adopted:

Vitamin A and D preparations are accepted with dosages in excess of 10,000 units of vitamin A or 1,000 units of vitamin D if the products are advertised only to the physician and the dosage statement indicates that the dose prescribed provides more than a prophylactic dose of the vitamin.

The Council decided that the principle involved should be applied uniformly to all vitamin preparations and accordingly adopted the following recommendation:

'That acceptable vitamin preparations which supply in each unit (tablet, capsule, etc.) or in the recommended daily intake more than three times the minimum daily requirements set forth in regulations under Sec. 403 (j) of the Food Drug and Cosmetic Act will be accepted if they are advertised only to the physician.'

For the past few years there has been some uncertainty with respect to the type of dosage statement that would meet the requirements of the FDC act for vitamin preparations, particularly those which provided a relatively high dosage. The Council was advised that the statement 'Caution: For therapeutic use only, to be used by or on the prescription of a physician' for a thiamine preparation which supplied doses larger than 3 mg. daily would meet the requirements of that act and therefore such a statement has been required. Further consideration has been given to this problem particularly because use of the term 'caution' had a connotation which did not seem desirable for vitamin preparations. The Council has received assurance that this caution statement will no longer be required and that the following type of statement is acceptable for thiamine preparations which supply more than 3 mg. per tablet:

Dose: One tablet daily, or as prescribed by the physician. This dosage is in excess of the quantity needed for prevention of thiamine deficiency.

The Council voted that this type of dosage statement be made applicable to vitamin preparations which supply in each unit (tablet, capsule, etc.) or in the recommended daily intake more than 12,000 units of vitamin A, 1,200 units of vitamin D, 90 mg. of vitamin C, 3 mg. of thiamine hydrochloride, 6 mg. of riboflavin or 50 mg. of nicotinic acid.

The Council has prepared the following suggested label statements to carry into effect the foregoing recommendations. Labels for thiamine hydrochloride are envisaged in the statement given but it will apply equally well to other vitamin preparations.

STATEMENTS REQUIRED ON MAIN PANEL

FOR PREPARATIONS SUPPLYING MORE THAN THREE TIMES THE MINIMUM DAILY REQUIREMENTS

Quantity of contents	50 tablets
Common or usual name	Thiamine Hydrochloride Tablets
Quantity of vitamin in tablets consumed daily	10 milligrams
Adequate directions for use	Dose: One tablet daily, or as prescribed by the physician. This dosage is in excess of the quantity needed for prevention of thiamine deficiency.
Name and place of business	John Doe 550 Broad Street Chicago, Illinois

FOR PREPARATIONS SUPPLYING THREE TIMES THE MINIMUM DAILY REQUIREMENT OR LESS

Quantity of contents	100 tablets
Common or usual name	Thiamine Hydrochloride Tablets
Quantity of vitamin in tablets consumed daily	One milligram
Dose: This is optional	
Proportion of minimum daily requirement	One tablet will supply the minimum daily requirement for an adult.
Name and place of business	John Doe 550 Broad Street Chicago, Illinois

Council on Foods and Nutrition

ACCEPTED FOODS

THE FOLLOWING ADDITIONAL FOODS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO ACCEPTED FOODS.
OFFICE OF THE COUNCIL.

FOODS FOR SPECIAL DIETETIC PURPOSES (See Accepted Foods, 1939 p. 295)

PROTEIN SUPPLEMENTARY FOODS

Under certain conditions it is desirable to give a high protein intake to patients or for other reasons it may be desirable to have available a suitable protein food. Among those products which are available for this purpose are preparations of casein and more recently there have been made available hydrolyzed protein products.

The following product has been found acceptable by the Council
Arlington Chemical Company, Yonkers, N. Y.

AMINOIDS PLAIN AND CHOCOLATE FLAVORED protein food supplements consists of hydrolyzed dried powdered beef, wheat gluten, dried skim milk and dried brewers' yeast. Cocoa is added to Chocolate Flavored.

Method of Manufacture—The ingredients are suspended in water and the pH is adjusted to proper level and digested with natural proteolytic enzymes. The digest is sterilized by boiling for thirty minutes and the undigested residue filtered off. The filtrate is then concentrated and dried in vacuo. The dried material is tested for total nitrogen by a modified Kjeldahl-Gunning method and for ash by incineration. Based on the test for total nitrogen the calculated amounts of aminoacetic acid and carbohydrates are added. For Aminoids with chocolate flavor the proper amount of cocoa is added to give the desired flavor. The whole is then mixed thoroughly, passed through a 16 mesh sieve and packaged. Samples of each batch of finished product are rechecked for total nitrogen and amino nitrogen.

Analysis (submitted by manufacturer)—PLAIN Amino acids and Polypeptides derived from milk, beef, wheat and yeast equivalent to proteins (N \times 6.25) 44.5% carbohydrates (dextrose, lactose, maltose, sucrose) 43.3% ash 6.3% moisture 5.9%

CHOCOLATE FLAVORED—Amino acids and Polypeptides derived from milk, beef, wheat and yeast equivalent to protein (N \times 6.25) 44.5% carbohydrates (dextrose, lactose, maltose, sucrose) 35.3% ash 6.3%, chocolate flavor 8.0% moisture 5.9%

Calories—3.5 per gram, 99.4 per ounce on Aminoids (Plain)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY JUNE 26, 1943

WAGNER-MURRAY-DINGELL BILL FOR SOCIAL SECURITY

Elsewhere in this issue appears an analysis prepared by the Bureau of Legal Medicine and Legislation of the American Medical Association of the proposed Wagner-Murray-Dingell bill for broadening the American social security program. The Board of Trustees and the newly created Council on Medical Service and Public Relations of the American Medical Association will, no doubt give careful consideration in the near future to the policy of the Association regarding this specific measure. Arrangements will probably be considered for representation at hearings before the appropriate committees of the Senate and the House. Announcements made by the chairmen of the committees of the Senate and of the House in charge of the bill indicate that this legislation is not likely to come for consideration previously to the next session of Congress. In the meantime physicians should inform themselves concerning its genesis and its objectives.

In its evolution the Wagner-Murray-Dingell bill stems from the National Health Conference of 1937, the Wagner bill which followed that conference, and the report of the National Resources Planning Board. Essentially in its medical aspects it is a compulsory sickness insurance bill and an attempt to translate the proposals of the Social Security Board into a technic of action. Inquiry of reliable sources in Washington indicates the probability that the actual designers and authors of the bill included I. S. Falk, director of the Bureau of Research and Statistics of the Social Security Board of the Federal Security Administration, Mr. Wilbur J. Cohen, technical adviser to the Social Security Board, and Senator Wagner's secretary, Mr. Philip Levy. A statement issued by William Green, president of the American Federation of Labor, says "The measure, which is the most comprehensive attempt yet made to establish postwar security in this country, is the fruit of a five year study by experts on the staff of the American Federation of Labor, which will give the proposed program full sponsorship and support."

Inquiry also reveals that, as far as can be determined, representatives of the medical profession, either within or without the government, were not consulted in the development of the medical provisions. Evidence of this failure to consult the medical profession appears in the language of the proposed bill, since it speaks twice of a "spell of sickness." The word "spell," thus employed, does not appear in English dictionaries except as a colloquialism in Webster, and the term is seldom, if ever, used by any one educated in medicine.

A study of the analysis by the Bureau of Legal Medicine and Legislation will reveal to the medical reader the terms of the proposal. Speaking bluntly, however, the measure apparently attempts to avoid the innumerable difficulties involved in developing a government controlled medical service by making the Surgeon General of the Public Health Service, whoever he might be, a virtual "gauleiter" of American medicine. Indeed, it is doubtful if even Nazidom confers on its "gauleiter" the powers which this measure would confer on the Surgeon General of the U. S. Public Health Service. Here are some quotes:

The Surgeon General of the Public Health Service is hereby authorized and directed to take all necessary and practical steps to arrange for the availability of the benefits provided under this title.

The Surgeon General is hereby authorized to negotiate and periodically to renegotiate agreements or cooperative working arrangements with appropriate agencies of the United States, or of any state or political subdivisions thereof, and with other appropriate public agencies, and with private agencies or institutions, and with private persons or groups of persons, to utilize their services and facilities and to pay fair, reasonable and equitable compensation for such services or facilities.

There is hereby established a National Advisory Medical and Hospital Council to consist of the Surgeon General as Chairman and sixteen members to be appointed by the Surgeon General.

The Surgeon General shall publish and otherwise make known in each area to individuals entitled to benefit under this title the names of general practitioners who have agreed to furnish services.

Services which shall be deemed to be specialist services shall be those so designated by the Surgeon General, and the practitioners from among those included in paragraph 1 above who shall be qualified as specialists and entitled to the compensation provided for specialists shall be those so designated by him as qualify to furnish such specialist services.

Payments from the Trust Fund to general practitioners shall be made on the basis of fees for services rendered to individuals entitled to benefits, according to a fee schedule approved by the Surgeon General.

The Surgeon General may prescribe maximum limits to the number of potential beneficiaries for whom a practitioner may undertake to furnish general medical benefit.

The Surgeon General is hereby authorized to establish necessary and sufficient hearing and appeal bodies.

The Surgeon General shall publish a list of institutions found by him to be participating hospitals. Inclusion of an institution upon such list shall, unless and until withdrawn by him, be conclusive.

The Surgeon General and the Social Security Board may determine for any calendar year that each individual entitled to general medical benefit may be required by the physician furnishing such benefit to pay a fee in respect to the first service or with respect to each service a spell of sickness or course of treatment.

The Surgeon General and the Social Security Board jointly shall have the duty of studying and making recommendations as to the most effective methods of providing dental, nursing and other needed benefits.

The Surgeon General, after consultation with the Social Security Board and with the approval of the Federal Security Administrator, shall make and publish such rules and regulations necessary to the efficient administration.

The term 'laboratory benefit' means such necessary laboratory or related services, supplies or commodities as the Surgeon General may determine including chemical, bacteriological, pathological diagnostic and therapeutic x-ray, and related laboratory services, physiotherapy, special appliances prescribed by a physician and eye glasses prescribed by a physician or other legally qualified practitioner.

With respect to inclusion in the list of participating hospitals the Surgeon General may accredit a hospital for limited varieties of cases and may accredit an institution for the care of the chronic sick.

This list is not all inclusive. There are many other points which space simply does not permit to be included in an editorial.

In offering the bill, its proponents emphasize that it provides for free choice of doctors, free choice of a doctor means, of course free choice of doctors willing to engage in this type of work.

The proposed measure has already been discussed editorially by such newspapers as the *Washington Star* and the *Chicago Daily News*, both of which pointed out that its passage would accumulate, at least for the present, deductions from many workers' wages of 20 per cent for income tax, 10 to 25 per cent for war bonds, 12 per cent for social security and such other special deductions as are already made in many individual plants. According to these figures there would be a minimum deduction of 42 per cent and a maximum deduction of 57 per cent of the worker's wages. The *Chicago Daily News* said:

We suspect that zeal for social security in the sweet by and by will have a hard time surmounting the shriveled paycheck already here with the future shrinkage now plainly in sight.

DOCTORS IN CONGRESS

In the Seventy-Eighth Congress of the United States there are seven physicians. They include

Fred J. Douglas (R.), Utica, N. Y.
Ivor D. Fenton (R.), Mahanoy City, Pa.
Walter H. Judd (R.), Minneapolis
Joseph L. Pfeiffer (D.), Brooklyn
Frederick C. Smith (R.), Marion, Ohio
Grant Furlong (D.), Donora, Pa.
Arthur L. Miller (R.), Kimball, Neb.

By the very nature of things, a physician in the Congress should be able to present to the membership of that august body the scientific point of view that is lacking from the education of most of the members, the majority of whom are lawyers. Indeed, with seven physicians holding membership one might anticipate that there would not be any difficulty in getting the medical evidence clearly before the legislators. Nevertheless it would not seem, if we are to believe Dr.

Walter H. Judd of Minneapolis, that any such possibility prevails. In a recent communication to *Minnesota Medicine* (June 1943) Congressman Judd says:

There are now seven of us doctors in Congress, by the way.

All of us got together, a while back, in the hope of fostering some sort of over-all scheme to take care of the medical situation. We hoped at least, to be on the inside so as to survey the situation in the hospitals, in the Army and the Navy and Public Health Service and make an over-all plan. But we didn't get anywhere.

The Public Health Service was interested but the Army and nothing doing and the Navy was even more reluctant. Each group wants the men and the power and neither will give way to the others. It is the same with many government agencies in Washington.

In fact I am convinced that what we need most in Washington is more doctors in government and above all, more of the kind of mental habits that good doctors must have.

In his statement to the Minnesota State Medical Association Congressman Judd also urged that the medical profession accept responsibility for leadership in medicine in the postwar period. "Certainly," he said, "neither you nor I want the professional philanthropists spinning out the alterations and calling the turn, though that is just exactly what will happen unless we take it over." He felt that medicine might well take the middle course between the "Old Guard," which says that things must stay as they are, and "the radical section that wants to scrap the entire system and start over." Congressman Judd also felt apparently that it was difficult for Congress or the Senate to obtain information concerning medicine. An investigation of the records in the headquarters office of the American Medical Association indicates that heads of practically every governmental agency call at frequent intervals on the American Medical Association in their desire for accurate information regarding medical proposals. The Bureau of Legal Medicine and Legislation and the state medical societies regularly send to their representative in the Congress information regarding pending medical and health legislation. Unfortunately, some members of Congress studiously avoid any attempt to obtain consultation or information, as is indicated elsewhere in this issue in an editorial discussion of the Wagner-Murray-Dingell bill.

The contacts of American medicine in municipal, state and federal government are surrounded in these times with hazardous possibilities. Motivations are constantly questioned. Indeed, in his presidential address to the Minnesota State Medical Association Dr. Stephen H. Baxter pointed out that the activities of the Minnesota State Medical Association in relation to state legislation had recently been questioned by the state senate and "that a resolution was presented to the Senate Committee calling for an investigation of the activities of the representatives of our Association at the Capitol. This resolution was not adopted, but it was widely publicized, and the very fact of its introduction created in the minds of many people, impressions unfavorable to the Association."

UNITED NATIONS CONFERENCE ON FOOD AND AGRICULTURE

Last month delegates from practically all of the governments opposed to the Axis powers, including representatives from both free and occupied countries, met at Hot Springs, Va. The purpose of the meeting was to further the development of national and international nutrition policy. The meeting was entitled the United Nations Conference on Food and Agriculture. The features of that conference which are of particular interest to the medical profession are summarized in the report of Section I dealing with food and the resolutions adopted by that section and by the recommendations of Section IV embodying the program for continuing and extending the work of the conference, the latter being the overall declaration regarding future procedure in international collaboration.

The most important basic assumptions were matters of general agreement. The evidence for association between faulty diet and ill health is conclusive. Ill health results from insufficient quality or variety of food as well as from deficient quantity. Widespread impairment of human efficiency as well as specific diseases result from malnutrition. There are also special population groups which are particularly vulnerable to the effects of faulty diet—pregnant and nursing women, infants, preschool and school children and adolescents. Certain common diseases such as tuberculosis are directly associated with lowered resistance caused by malnutrition—this in addition to the specific food deficiency diseases. There has never been enough food in the world for the people of the world to eat. The primary factor responsible for this condition is poverty. Improved economic conditions invariably lead to better nutrition, the better health thus effected prepares the way for ameliorating the economic lot.

It is useless, the report points out, to produce more food unless the markets are able to absorb it. It is necessary therefore not only to provide vastly increased quantities of food and in suitable variety but to make foodstuffs available to larger numbers of people by all the various means available. Thus an expansion of a whole world economy is necessary in order to furnish the purchasing power to make the wider distribution of foodstuffs feasible. In order to avoid the charge that this program is purely idealistic without the possibility of practical application, the report specifically recognizes that different peoples have varying tastes and food resources and that innumerable combinations of individual foods may be devised by which the necessary nutrients in suitable quantities can be provided largely within the resources of the local area. This may be facilitated by tables which permit the recommended allowances of specific food substances to be readily

translated into foods in common local use. By this means the value of diets commonly consumed by any population group can be compared with such standards and deficiencies readily estimated.

Recognition of the problem culminated in a series of resolutions adopted by the conference. International as well as national action is necessary if food policies based on human requirements are to be adopted throughout the world within a reasonable period of time. The problems of inadequate food consumption and malnutrition are urgent and have been profoundly aggravated by the war. Recognizing the impossibility of immediate or early solution of the nutrition problem, the conference nevertheless recommended that governments adopt as the ultimate goal of their policy dietary standards and allowances based on scientific assessment of the amount and quality of food which promote health and that they distinguish clearly between these standards and the more immediate consumption goals. Among the steps adopted to implement this policy, the conference recommended the immediate establishment of an appropriate "United Nations Food and Agricultural Organization," one of the functions of which would be to institute studies and investigations into food production and consumption throughout the world and to advise and assist governments in carrying out the recommendations of the conference. Further, the several governments represented at the conference should immediately undertake to ascertain the prevalence of specific deficiency diseases among their people, dealing with them by suitable dietary and therapeutic measures, and take appropriate steps to prevent their recurrence. Especially important is the early provision of extra foods for those especially vulnerable elements of the population. Wide public education is necessary. National nutrition organizations in those states in which they do not now exist should be formed. These several national organizations should exchange information and experience and provide mutual assistance both directly when desirable and through the medium of the proposed United Nations Food and Agricultural Organization by the submission of periodic reports. The setting up of regional branches of the United Nations organization in various parts of the world is recommended.

The sound evaluation of basic facts, the common sense differentiation between ultimate goals and immediate or early practicable measures, the setting up of what promises to be a workable international organization and the apparent general agreement of all delegates offers great promise for the gradual improvement of standards of nutrition throughout the world. If support by the medical profession of any sound program to improve general nutrition is a foregone conclusion

Current Comment

QUININE

Malaria as THE JOURNAL has frequently emphasized, is probably medical war problem No. 1. The provision of quinine, totaquine, atabrine and other remedies for malaria has been one of the most difficult aspects of the procurement situation. THE JOURNAL has already called attention to efforts that are being made to conserve all available quinine for military purposes, to collect every gram of quinine that could be collected from even retail drug stores and household medicine cabinets and to develop sources of quinine among our South American neighbors. Into this situation suddenly has been tossed a circular issued by the Cinchona Products Institute, Inc., of New York which represents largely the Dutch interests that controlled cinchona products in Java. This circular mailed widespread throughout the nation and offered for display in schools, clinics, drug-stores and any other public place urges the American public to get quinine for the treatment of malaria, perhaps self diagnosed. It states that "Quinine comes from the bark of the cinchona tree, a native of South America but best grown in Java." True, cinchona was apparently best grown in Java previous to Pearl Harbor, but the cinchona grown in Java means nothing now to the campaign against malaria among the forces of the United Nations. Physicians have been requested not to prescribe quinine even for malaria in this country if they can substitute totaquine or other available remedies. Druggists have been requested indeed forbidden to fill prescriptions for quinine for any other purpose than the treatment of malaria. Obviously the Cinchona Products Institute, Inc. has rendered no service in the war situation by the kind of publicity in which it has indulged, rather, its effort has been a disservice. Perhaps any intelligent reader may hazard a guess as to the motivation which stimulated the production of this circular at this time.

EPIDEMIC NAUSEA AND VOMITING

Recently various communities—usually localized—have been affected with a peculiar condition characterized by acute attacks of severe vomiting, generally lasting a few hours only, often involving all the members of a family or group, frequently not associated with other symptoms and with a completely benign outcome. This comparatively trivial disorder, according to Bradley¹ has become much more common of late in England. Although the disease is of minor significance clinically and economically, it may give rise to considerable administrative uncertainty. Those who are unfamiliar with the clinical and epidemiologic picture may be led to suspect food poisoning and dysentery and be stampeded into ineffectual and wasteful action. It is unusual, Bradley points out, for patients affected with this disorder to call their doctors, since most of them begin to feel better within a few hours. Vomiting is the most characteristic sign, and in young people it tends to be projectile and of great urgency. Usually nausea

is present with the vomiting but more characteristically precedes it for a few hours and in some cases persists unaccompanied by emesis. Vertigo, aches and diarrhea are of less frequent occurrence. By simple questioning a number of family outbreaks have been brought to light. Community outbreaks in girls' and boys' boarding schools have occurred and have received some study. Epidemiologic reports as far as available strengthen the impression that the disease is communicable and that the port of entry is the upper respiratory passages. Incubation periods are probably within the range of two to seven days but have not been determined accurately. The possibility that this condition may become more severe cannot be entirely ignored.

TRANSPLACENTAL FILTRATION OF VITAMIN C

The concentration of vitamin C is higher in fetal blood than in the maternal circulation.¹ Earlier clinicians interpreted this as evidence of the ability of the fetus to synthesize vitamin C. Manahan and Eastman,² however, believe that the difference is due to a one way selective filtration of vitamin C through the placenta. This filtration theory has recently been subjected to detailed clinical study by McDevitt and her co-workers³ of Bunne Bay Cottage Hospital, Norris Point Newfoundland, on patients encountered in the course of a nutritional survey. There were careful dietary histories before and after delivery. Repeated vitamin C titrations were made of maternal plasmas before delivery and immediately after childbirth, with control determinations of the vitamin C content of blood collected from the umbilical stump. The patients included those on adequate diets as well as several patients with definite vitamin C deficiency. Some of the patients with deficiency had been given vitamin C therapy. The average of all cases (including deficiency cases) was 0.43 mg of vitamin C per hundred cubic centimeters in maternal plasma before delivery, with an average of 0.53 mg per hundred cubic centimeters a few hours after delivery. The average cord blood contained 1.24 mg of vitamin C per hundred cubic centimeters, an amount approaching the zone of vitamin C saturation. The fetal blood titer was as high as 1.90 mg in patients given antepartum vitamin C saturation tests and as low as 0.33 mg in certain patients who suffered from prolonged deprivation of vitamin C (maternal plasma titer 0.06 mg per hundred cubic centimeters). The Newfoundland clinicians emphasize the latter result, since it suggests that latent scurvy of the newborn is a clinical possibility. In all cases in which the maternal blood titer was above 0.33 mg, however, the fetal blood titer was near the vitamin C saturation level (1.30 mg per hundred cubic centimeters). The physicochemical or cytologic factors responsible for this one way selective placental filtration have not yet been determined. The possibility of a similar selective filtration of other vitamins or of other nutritional factors has also not yet been tested.

¹ Baerstrup, P. W. Acta Paediatr. 2: 323, 1937.

² Manahan, C. P. and Eastman, N. J. Bull. Johns Hopkins Hosp. 62: 478 (May) 1938.

³ McDevitt, Ellen, Dove, M. A., Dove, R. F. and Wright, I. S. Proc. Soc. Exper. Biol. & Med. 51: 239 (Nov.) 1942.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession

ARMY

DAILY PROGRAM FOR CONVALESCENTS

Under a new program at the Station Hospital at Blackland Army Air Field, Waco, Texas, designed by the medical department of the Army Air Forces (THE JOURNAL, March 27, p. 1096), the soldier-patient follows a daily educational and physical training program which supplements his military knowledge, builds up his strength, and combats boredom, while he awaits recovery. Calisthenics, outdoor and indoor games, classes, training films, review of current news events, prescribed reading and regular work details are given the patients on the road to recovery. All patients are grouped into four classes according to their stage of recovery and each class follows its specific program. Each patient also receives an individual program based on his case.

The original assignment and the speed of progression through the classes are determined for each individual by the doctor in charge of the ward in which he is a patient in consultation with the officer in charge of the reconditioning program at the hospital. By following this plan the exercises are prescribed on a scale graded to approach closely, but never exceed, the individual's tolerance. The program has proved to be popular with patients. A typical daily schedule in addition to the work details is as follows: a five minute review of current news, a thirty minute lecture on a selected subject, a showing of one or more suitable training or recreational films, a minimum of one-half hour prescribed reading and a suitable period of physical exercise or drill.

A weekly schedule of the five daily courses given Monday through Friday is carried out. Four week schedules are prepared in advance suitable for each patient's first, second, third and fourth week of convalescence. The physical exercises are divided into three groups: those suitable for bed patients, ones suitable for ambulatory patients and a program for late convalescents.

During the first week of convalescence the patient is shown films or given lectures on the identification of Japanese aircraft, military courtesy and customs, personal hygiene, individual protection and the identification of U S aircraft. The second week he hears and sees training material on the identification of German aircraft, safeguarding military information, care of clothing and equipment, friend or foe, first aid, the care and use of the gas mask and incendiary bombs. The identification of Italian aircraft, interior guard duty, detection of booby traps, proper treatment of gas casualties and jungle warfare are topics taught during the third week. In the last week of the program the soldier is instructed in forced landings, weather, attack aviation, camouflage, map reading, arctic warfare and the motor vehicle driver.

The Army Air Forces Hospital program at Blackland Army Air Field was placed in operation by Lieut. Daniel D. Blum of the Medical Administrative Corps of Jersey City, N. J.

FELLOWS IN AVIATION MEDICINE

The new constitution and by-laws of the Aero Medical Association of the United States provide for the nomination of the initial group of ten fellows and for the election of fifteen additional fellows which shall comprise the first group of fellows of the association. The by-laws adopted last September further provide that all subsequent elections to the grade of fellow shall be by the Group of Fellows, which shall be by selection only from those who have made outstanding contributions to

aviation medicine, of whom not more than ten shall be elected in any one year at a meeting of the Group of Fellows just prior or during the annual session of the association.

The following comprise the first group of twenty-five fellows to be elected, together with their present addresses: Colonel Armstrong, Captain Poppen, and Captain Wright are at present outside continental United States and for military reasons their addresses are not given. Dr. Ralph N. Greene, Coral Gables, Fla., was elected a fellow posthumously.

FELLOWS IN AVIATION MEDICINE

Col. Eldridge S. Adams, M. C., Bowman Field, Louisville, Ky.
 Capt. J. C. Adams (MC), U. S. N., flight surgeon in charge of Division of Aviation Medicine, Bureau of Medicine and Surgery, Navy Department, Washington, D. C.
 Col. Harry G. Armstrong, M. C., U. S. Army
 Dr. Louis H. Bauer, Hempstead, N. Y.
 Col. Otis O. Benson Jr., M. C., Materiel Center, Wright Field, Dayton, Ohio
 Dr. Harold R. Bohlman, Baltimore
 Dr. D. S. Brachman, Detroit
 Dr. James C. Braswell, Tulsa, Okla.
 Comdr. L. D. Carson, (MC), U. S. N., Navy Department, Washington, D. C.
 Dr. J. C. Cole, New Orleans
 Major Herbert F. Fenwick, M. C., Army Air Forces, Miami, Fla.
 Dr. Charles H. Gowan, Glendale, Calif.
 Brig. Gen. David N. W. Grant, Air Surgeon, War Department, Headquarters Army Air Forces, Washington, D. C.
 Dr. A. J. Herbolzheimer, Civil Aeronautics Administration, Washington, D. C.
 Major Bernard L. Jarman, M. C., U. S. Army, Washington, D. C.
 * Comdr. Eric Liljencrantz (MC), U. S. N., Washington, D. C.
 * Major R. F. Longacre, M. C., Los Angeles
 Lieut. Col. W. Randolph Lovelace II, M. C., Materiel Center, Wright Field, Dayton, Ohio
 Dr. Albert M. Mitchell, Terre Haute, Ind.
 Capt. John R. Poppen (MC), U. S. N.
 Brig. Gen. E. G. Remartz, A. U. S., Commandant, School of Aviation Medicine, Randolph Field, Texas
 Col. R. Keith Simpson, M. C., Randolph Field, Texas
 Dr. John A. Tamisiea, Omaha
 Col. A. D. Tuttle (Ret.), Chicago
 Capt. Herbert B. Wright, M. C., U. S. Army
 * Deceased

DR. STRECKER NAMED SPECIAL CONSULTANT IN PSYCHIATRY

Dr. Edward A. Strecker of Philadelphia, president of the American Psychiatric Association, has been named special consultant to the Secretary of War for the Air Forces of the United States Army, according to an announcement by the American Psychiatric Association. He will be on call at all times by the War Department. A month ago Dr. Strecker was named consultant in psychiatry to the Surgeon General of the U. S. Navy. He recently established an intensive training school for naval medical officers in Philadelphia. All the medical and hospital facilities throughout the city are cooperating in this program, three months in length. In the first world war he was division neuropsychiatrist for the Twenty-Fifth Division in France. Dr. Strecker is professor and head of the department of psychiatry at the University of Pennsylvania Graduate School in Philadelphia and the Medical School of the same university. He is chief of service and consultant at the Institute for Mental Hygiene of the Pennsylvania Hospital, consultant for Bryn Mawr College and the United States Veteran's Bureau, and staff neurologist for the Philadelphia and Germantown hospitals.

RETURNED FROM GUADALCANAL

In order to give Medical Department officers the benefit of his experience in the South Pacific theater of operations, Lieut Col A H Thompson M C has become a member of the faculty at the Medical Field Service School Carlisle Barracks Pennsylvania. Lieutenant Colonel Thompson had been assistant to the department surgeon in Hawaii before being assigned surgeon of the 25th Division shortly before the attack on Pearl Harbor. The division was ordered to Guadalcanal in November 1942. He tells of the battle of Grassy Knoll in December and of other battles farther to the west. Improvisation was necessary in order to get wounded men back to medical stations where they could be given definitive care. Jungle growth steep hills and marshy ravines made hand carrying of litters difficult. Some Navy Stokes litters were used together with a pulley arrangement so that wounded men could be brought down a steep hill by means of a cable. Litter bearers in one sector came on three wounded men one of whom weighed 255 pounds. In shifts twelve litter bearers struggled eight hours to carry that patient through the jungle back to a medical station. In one section the wounded were brought out by water on rafts and boats captured from the Japanese. Speaking of the hospital Lieutenant Colonel Thompson told of operating lights made of tin cans the inside being painted with white enamel to give better reflection. The serious casualties later were evacuated from Guadalcanal to New Caledonia. Lieutenant Colonel Thompson said that the natural aptitude of the natives of Guadalcanal made them excellent litter bearers that Japanese prisoners were grateful for their medical care and that practically all of them were suffering from malaria starvation malnutrition and beriberi. Lieutenant Colonel Thompson is a graduate of the University of Pittsburgh Medical School and of the Army Medical School in the class of 1938-1939.

ARMY AIR FORCES RECEIVE AWARD

The achievement of the U S Army Air Forces in training 95 out of every 100 pilots without injury of any kind has been recognized by the National Safety Council which has bestowed its special wartime award 'For Distinguished Service to Safety on the Army Air Forces.

Col John Stilwell president of the Council said in announcing the award that a study of the figures of the Flight Control Command shows a downward trend in the rate of all army airplane accidents as well as of fatal accidents during the eleven month period from July 1942 to June 1 1943. Despite the great increase demanded by the war in both the number of hours and in the miles flown in training schools throughout the country, more than 95 per cent of Army Air Forces pilots and student pilots are completing their training period with no personal injury of any kind. Moreover, figures show there has been only one fatal accident for every 1 750 000 miles flown in recent months. This is a remarkable achievement in accident prevention. The citation which Col Stilwell will present in Washington to General H H Arnold reads in part as follows.

The National Safety Council believes that the ceaseless efforts of the Flight Control Command to prevent accidents constitute a spectacular fulfillment of America's traditional insistence that the triumphs of war be never achieved at the expense of the ideals of peace.

DISEASE PREVENTION IN NORTH AFRICA

The War Department announced on June 2 that American soldiers in North Africa are almost free of infectious and contagious diseases. Contributing to this result have been the medical department and the engineers and quartermaster corps. One of the most effective forces against the hordes of mosquitoes the War Department said has been a new lotion which the soldier rubs on the exposed parts of his body. A single application repels mosquitoes for at least four hundred minutes. Flies and other insects have been fought with a bomblike device which the soldier sets off with a trigger. It contains a spray that kills all flies and insects in an ordinary sized room and yet is harmless to human beings. The elimination of lice is

accomplished by a new powder which is sprinkled on clothes. The elaborate apparatus for delousing used in the last war is no longer required. However, as a general rule American troops in Africa have been free of these pests.

MEDICAL REPLACEMENT TRAINING CENTER

Night problems, bivouac maneuvers and obstacle courses are regular features of the training at the Medical Replacement Training Center at Camp Robinson Arkansas all aimed to toughen medical soldiers to enable them to carry on their difficult tasks wherever assigned. From 5 45 a m until 5 45 p m, six days a week medical trainees are impressed with the importance of their work and with the technical knowledge necessary to carry it out. Brig Gen James E Baylis is in command the executive officer is Col Frank S Matlack the Plans and Training officer is Col Robert E Peyton. The commanders of the medical training regiments and battalions are officers of the medical corps.

DIRECTOR OF NURSING SERVICE IN NORTH AFRICA PROMOTED

The War Department announced on May 20 the promotion of First Lieut Bernice M Wilbur Army Nurse Corps director of the Nursing Service for the North Africa Theater of Operations, to lieutenant colonel. Colonel Wilbur has departed for her post after a short leave. She returned to the United States with Lieut Gen Lesly J McNair commanding general Army Ground Forces, who was wounded while on an inspection trip in North Africa. Colonel Wilbur has been directing the nursing service in the North African theater since last December. Her home is in Boston where she graduated from the New England Deaconess Hospital.

VOLUNTARY WAR HOSPITAL SERVICES, INC

Voluntary War Hospital Services, San Francisco, a nonprofit, nonsectarian organization recently incorporated, will continue the work carried on by Mrs Janet Lindsley since shortly after Pearl Harbor to give wounded men entertainment, to assist in their rehabilitation and to find employment for those permanently injured or disabled. Voluntary War Hospital Services has already furnished a number of solariums at the base hospitals. Convalescents have also received thousands of kits, hundreds of slippers and numerous radios which have been donated.

DR. OSBORNE MISSING

The War Department has informed Mrs Mildred Osborne of Vicksburg Mich, that her husband, Capt Charles E Osborne, is still reported officially as missing in action. A year ago the War Department reported Dr Osborne as missing. Captain Osborne was stationed at Base Hospital No 1 on Bataan at the time the Japanese took that area.

LECTURE ON TROPICAL DISEASES

Dr Marcos Fernan-Nunez, professor of pathology, Marquette University Medical School, Milwaukee, addressed the combined medical staffs of Army General Hospital No 17 (Harper Unit) and the Post General Hospital of Camp McCoy, Wisconsin, April 5, on "War Problems in Tropical Diseases."

FLIGHT SURGEONS' ASSISTANTS

A course of instruction to qualify enlisted men as assistants to flight surgeons began at the School of Aviation Medicine in Texas on March 29 and continued for six weeks. About eighty-one sergeants, corporals, technicians of various grades and privates were enrolled in the class.

CIVILIAN DEFENSE

RULES FOR AFFILIATED
HOSPITAL UNITS

The Office of Civilian Defense, Washington, D C, on June 8 issued Circular Medical Series No 31, which follows (slightly edited)

One hundred and ninety one hospitals and medical schools have been invited by the Surgeon General of the U S Public Health Service to organize affiliated hospital units of the Emergency Medical Service of the U S Office of Civilian Defense. The invitation was extended to so large a number of civilian hospitals because each unit will be called on for service only in a war emergency affecting its own region. Units will be activated only in event of a grave military disaster affecting the civilian population or military personnel in the area in which the parent hospital is located. Activation of a unit will take place only on recommendation of the state chief of Emergency Medical Service and the Office of Civilian Defense regional medical officer, subject to certain limitations imposed by the Surgeon General and the chief medical officer of the Office of Civilian Defense and by agreements with the invited hospitals.

The rules governing activation of affiliated units are as follows:

1 Members of the staffs of affiliated units are commissioned in the inactive reserve of the U S Public Health Service, generally with the rank of passed assistant surgeon, surgeon or senior surgeon (equivalent respectively to army ranks of captain, major or lieutenant colonel). They will remain on inactive status for the duration of the war unless urgent need for their services should arise in their region because of an air raid or other grave wartime disaster. When activated under such circumstances, these officers will receive the pay and allowances of officers of equivalent grades in the armed forces.

2 The two specific purposes for which a unit may be activated are:

(a) For duty in an emergency base hospital to which civilian casualties and other hospitalized patients must be transferred because a community is under enemy attack and one or more of its hospitals must be evacuated.

(b) For temporary duty to assist the armed forces at the time of an extraordinary military emergency. The period of emergency assistance is expected to be of short duration and will last only until the Surgeon General of the Army can send in additional medical officers or until he can distribute the excessive load of sick and wounded to military hospitals in other parts of the country. Affiliated units are organized primarily for civilian protection and are not to be used to staff military hospitals as they expand to meet increasing medical requirements of the Army.

3 Affiliated units organized by the Medical Division of the Office of Civilian Defense as part of the Emergency Medical Service of their states will be expected to provide aid only in their own or neighboring states. Their members will not be detached for duty in other parts of the country, nor will they be activated for any other duty except those listed in paragraph 2.

4 A unit organized from the staff of a teaching hospital of a medical school will not be called unless the hospital itself must be evacuated or unless there is no unit from a nonteaching hospital to meet the emergency need.

5 The period of obligation for service will cease at the termination of the present national emergency, the Surgeon General will accept resignations of members of units six months after cessation of hostilities.

6 A commission in the inactive reserve of the U S Public Health Service does not prevent a member of an affiliated unit from entering the armed forces, resignation will be accepted for this purpose.

7 Members of affiliated units may wear the authorized lapel buttons which indicate that they have enlisted for emergency service. They are not to wear the uniform until called to active service and need not purchase a uniform unless the possibility of active service is imminent. Uniforms will not be required for brief periods of active service.

The organization of such affiliated units has received approval of the Board of Trustees of the American Medical Association, and the directing board of the Procurement and Assignment Service has authorized "essential" physicians to accept positions in affiliated units.

HOW TO PROTECT YOURSELF
AGAINST WAR GAS

The Office of Civilian Defense, Washington, D C, issued on May 15 Operations Letter No 128, which supersedes Operations Letter No 46 concerning protection against war gas.

1 Stay indoors. A tightly closed room affords protection against war gas. All windows and doors should be tightly shut, and blankets (to be soaked with water) or cardboard should be kept in readiness to cover and seal shattered windows. Choose a room on an upper floor if possible, most war gases are heavier than air, although they may be carried up with air currents.

2 If caught outdoors in a gas attack, get out of the area at once. Look down and shield your eyes with your arm. Do not worry about any brief vapor exposure to which you may be subjected. The danger from this source is not great.

3 Prompt action will avoid serious effects. If you know or suspect that you have gotten any of the gas on your person or clothing, do not go hunting for a casualty station or gas cleansing station and expect some one else to help you. Knock on the first door you come to, and take whatever steps are necessary. Self aid is the quickest and safest way.

4 This is what you should do. This routine should be memorized so it will be done automatically in an emergency.

(a) Remove shoes and outer clothing and drop them outside the house, in a covered can if available. Do not touch this clothing again except with sticks or gas proof gloves. Do not cling to false modesty. To enter a house with contaminated clothing endangers everyone in it.

(b) Get to a bathroom, kitchen or laundry room as fast as possible.

(c) If your eyes have been exposed to liquid gas or spray, flush them immediately. Plain water out of a faucet, shower head, canteen or douche bag will do, but a lukewarm dilute solution of sodium bicarbonate (heaping tablespoon in a quart of water) is even better, if it is handy. Let any one nearby help you.

(d) If drops of liquid blister gas have splashed the skin, you can prevent serious burns by adequate cleansing. Promptly blot up the liquid with pieces of cleansing tissue, cloth or a handkerchief, which should be disposed of carefully in order that it cannot contaminate any one else. Then sponge the skin briskly with laundry bleach containing sodium hypochlorite, if it is at hand, and rinse off under the shower or in a tub. A thorough bath with a vigorous lathering is the final step, which should never be omitted. Dry the skin by patting. Do not rub. Dress in whatever clean clothing you can get. If blisters develop, you should seek medical advice.

(e) If your nose and throat feel irritated, snuff and gargle with a dilute solution of sodium bicarbonate. If your chest feels heavy and oppressed, if you have any trouble breathing or if smoking becomes distasteful, lie down immediately and stay perfectly still until you can be taken to a doctor. Do this even if you feel fine otherwise.

5 Remember. Cleanse yourself quickly and calmly. Follow the instructions of your air raid warden.

RECREATION IN WARTIME

With the cooperation of the Office of Defense Health and Welfare Services, the Office of Civilian Defense has published a pamphlet for the use of local defense council committees in the field of civilian war services setting forth the particular duties and functions of the recreation committee of the defense council and suggesting a program of recreation. This committee may help carry out in its particular area.

WAR FOOD ADMINISTRATION—FOOD DISTRIBUTION ADMINISTRATION

RATIONING AND EXPERIMENTAL LABORATORIES

The question of the procedure for obtaining rationed foods for experimental purposes has been raised by a number of research institutions. In order to help those having difficulty in satisfying their needs, the following note has been prepared.

Amendment 18 to General Ration Order Number 5 issued April 24 1943 states that On and after May 1 1943 any use of a rationed food for experimental educational testing or demonstration purposes is an industrial and not an institutional use. This amendment lists experimental laboratories as industrial users and therefore requires them to proceed as directed under the institutional and industrial users sections of the various ration orders.

An industrial user (laboratory) registers either in person or by mail with the local board serving the area in which his principal office is located and receives an allotment to enable him to obtain and use foods covered by food rationing orders.

An application for the opening of a new establishment (laboratory) or original application to obtain rationed commodities must be made on OPA form R-315. Such application should be submitted to the local war price and rationing board which serves the area in which the establishment (laboratory) or its principal business office is or will be located. The local board will forward the application with its recommendation and all supporting data to Washington for appropriate action.

An application by an industrial user (laboratory) for allotment of a specific rationed food must be made in the following manner:

Sugar—If the applicant (laboratory) used sugar in 1941 his allotment will be based on actual usage during that year. He must register on OPA form R-310 and apply for his allotment on R-314. The local board shall take appropriate action.

If the applicant did not use sugar in 1941, his allotment will be granted by the local board in accordance with the ruling received from Washington, where the petition shall be sent by the local board.

Coffee—A laboratory which uses coffee for experimental purposes is considered a class A industrial user of coffee i.e. a person who uses roasted coffee in the preparation of a beverage which he does not serve. He must apply to his local War Price and Rationing Board, which shall determine his monthly allotments.

Processed Foods—The applicant shall register on OPA form R-1508 and include a record of his historical use of processed food on which subsequent allotments will be based.

Meat Cheese Butter and Edible Fats and Oils—The applicant shall register as an industrial user on OPA form R-1605 and include a record of his historical use of foods rationed under ration order 16 and his inventory of such rationed foods as of March 28, 1943. Allotments will be issued accordingly.

Sections 1407-81 to 1407-95 of ration order 3 cover the industrial use of sugar. Sections 1407-1015 to 1407-10175 of ration order 12 cover the industrial use of coffee. Article VI of ration order 13 and amendment 10 to that order cover the industrial use of processed foods. Article VII of ration order 16 covers the industrial use of meats, cheese, butter and the edible fats and oils.

Additional information as to the procedure for obtaining rationed foods for experimental purposes as well as copies of the various rationing orders, amendments and necessary forms may be obtained from local war price and rationing boards.

MISCELLANEOUS

NEW WARTIME NUTRITION CHART

This is the new official wartime nutrition food chart of the national wartime nutrition program. The seven food groups and the slogan "Eat the Basic 7 Every Day" have been adapted to the current food situation. Copies of this chart in six colors will be available about the middle of June.

A folder entitled "The National Wartime Nutrition Food Guide" which will explain the basic seven, will probably be ready for distribution the latter part of July. This folder gives practical suggestions for meeting wartime food shortages without sacrificing good nutrition.

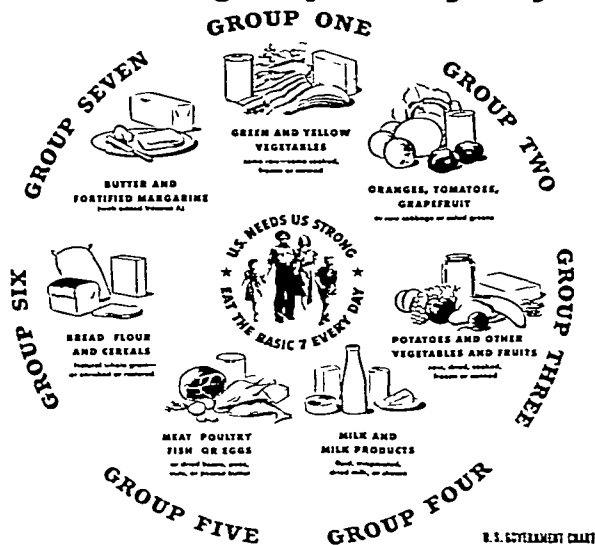
Both the chart and the folder may be obtained without cost from the regional offices of the Food Distribution Administration. The charts will be of interest to both doctors and their patients and they will find the folder helpful in solving their wartime food problems.

The slogan "U S Needs Us Strong—Eat the Basic 7 Every Day" retains the best part of the former slogan "U S Needs Us Strong—Every Day Eat This Way" and stresses the basic seven food groups. The circular presentation of the seven food groups emphasizes the fact that all groups are important and avoids putting any one group ahead of the others.

The Nutrition Division of the Office of Defense Health and Welfare Services, Federal Security Agency, is now incorporated in the Department of Agriculture Food Distribution Administration as the Nutrition and Food Conservation Branch.

The state and local nutrition committees previously affiliated with the Nutrition Division will continue their work with the Nutrition and Food Conservation Branch. They will as in the past act as the integrating and coordinating agencies for the activities of all groups engaged in improving nutrition. The regional nutritionists with headquarters at the Food Distribu-

*For Health...eat some food
from each group...every day!*



**IN ADDITION TO THE BASIC 7 ..
EAT ANY OTHER FOODS YOU WANT**

New official wartime nutrition chart

tion Administration regional offices will continue to work with state and local nutrition committees

The program of the Nutrition and Food Conservation Branch includes

1 A nationwide educational program on all phases of good nutrition geared to the wartime food situation and including (a) efficient utilization of available foods, shown by food demonstrations, (b) conservation of the physical volume and nutritive value of food, from production point to table, and (c) food preservation program covering methods of home and community canning

2 Support of community nutrition programs such as school lunch programs

3 Guidance and assistance with in-plant feeding projects for industrial workers

4 Assistance to state and local health departments, in cooperation with the United States Public Health Service, in planning and carrying out public health nutrition programs which are closely tied in with the activities of the local nutrition committees

Location of regional offices of the Food Distribution Administration

REGION	ADDRESS	STATES INCLUDED
Northeast	150 Broadway, New York	Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Jersey, New Hampshire, New York, Pennsylvania, Rhode Island, Vermont, West Virginia
Southern	Western Union Building, Marietta & Forsyth streets, Atlanta, Ga	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia
Southwest	425 Wilson Building, Dallas, Texas	Arkansas, Oklahoma, Texas, Louisiana
Rocky Mountain	Burns Vault Building, 1536 Welton Street, Denver	Colorado, Idaho, Montana, New Mexico, Utah, Wyoming
Pacific	821 Market Street, San Francisco	Arizona, California, Nevada, Oregon, Washington
Midwest	Old Colony Building, Grand Avenue at West Tenth Street, Des Moines, Iowa	Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
Great Lakes	5 Wabash Avenue, Chicago	Illinois, Indiana, Ohio, Michigan, Wisconsin

WARTIME GRADUATE MEDICAL MEETINGS

Further progress in the organization of the series of Wartime Graduate Medical Meetings, discussed previously in *JOUR A M A* (April 24, p 1399, May 1, p 45, June 5, p 382), has now been reported

ORGANIZATION

Twenty-four Regional Committees have been set up as follows

Maine, New Hampshire, Vermont, Massachusetts Dr Chester S Ketter, Boston chairman
Connecticut, Rhode Island Dr Crichton Barker, New Haven, chairman
New York Dr Oswald R Jones, New York chairman
Eastern Pennsylvania, Delaware, New Jersey Dr Eugene P Pendergrass, Philadelphia chairman
Maryland, District of Columbia, Virginia, West Virginia Dr James Alexander Lyon, Washington chairman
North Carolina, South Carolina Dr Wingate M Johnson, Winston Salem chairman
Georgia, Florida Dr Turner Z Cason, Jacksonville chairman
Western Pennsylvania, Ohio Dr Charles A Doan, Columbus, chairman
Michigan Dr J Milton Robb, Detroit chairman
Kentucky, Tennessee Dr Limer L Henderson, Louisville, chairman
Alabama, Mississippi Dr James M Mason, Birmingham, chairman
Louisiana Dr John H Musser, New Orleans, chairman
Texas Dr Albert O Singleton, Galveston, chairman
Indiana, Illinois, Wisconsin Dr LeRoy H Sloan, Chicago, chairman
Minnesota, Iowa Dr William A O'Brien, Minneapolis chairman
Missouri, Kansas, Arkansas, Oklahoma Dr Frank D Dickson, Kansas City, Mo., chairman
North Dakota, South Dakota, Nebraska Dr Angus L Cameron, Minot, N D, chairman
Montana, Wyoming Dr Ernest D Hitchcock, Great Falls, Mont., chairman
Colorado, Utah Dr James J Waring, Denver, chairman
New Mexico, Arizona Dr Carl Mulky, Albuquerque, chairman
Washington Dr John H O'Shea, Spokane, chairman
Idaho, Oregon Dr John H Fitzgibbon, Portland, chairman
Nevada, northern California Dr Ernest H Falconer, San Francisco, chairman
Southern California Dr Roy E Thomas, Los Angeles, chairman

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE ARRANGES COURSES

Ward walks, clinics, practical demonstrations, moving pictures and conferences for physicians in the armed services have been arranged by the Syracuse University College of Medicine, Syracuse, N Y, under the program of Wartime Graduate Medical Meetings. This instruction is available in Syracuse and vicinity and includes lectures at the College of Medicine and the teaching hospitals, and combinations of lectures with clinics, conferences and demonstrations. Teaching will be given in both afternoon and evening sessions. Teams of two or more teachers will hold sessions at camps or hospitals in nearby areas. Efforts will be made to provide instruction in those

fields for which requests are received. A tentative list of subjects and teachers has already been set up and includes the following

Allergy Ershler, Marty, Wiseman
Anatomy Armstrong
Bacteriology Chapman, Mueller
Bronchoesophagology Blaisdell, Rubenstein
Burns George Reed, Sutton
Chemotherapy Ernest Delmonico, Dooley, Ershler, Hughes, Lurie
Post, Silverman, Sutton
Dermatology Griggs
Ear, Nose and Throat Diseases Blaisdell, Brown, Cave, Kaufman
O'Connor Moore, Rubenstein
Exanthems Silverman
Eye Diseases Gillette, Joy, Marlow
Genitourinary Diseases Gibson, Laurie
Gynecology Chester Clark, Sears
Hematology Anemias and Leukemias Paul Clark, Curtis, Groat, Marty
Immunology Chapman, Mueller
Industrial Health Brewer, Fairchild, Griggs, Hyman
Malignant Disease Childs, Ferguson, Griggs, O'Connor, George Reed
E C Reifenstein, George Reifenstein, Wetherell
Medical Aspects of Chemical Warfare Artz, Ferguson, Gillette, George Reed, George Reifenstein, Yeckel
Medicine, General, Acute Infectious Diseases Bailey, Paul Clark, Curtis, Mack, McNerney
Arteriosclerosis and Aging E Curtis, E C Reifenstein
Arthritis Bailey
Cardiology Paul Clark, Hiss Street
Cardiovascular Diseases Ershler, McNerney, Post, E C Reifenstein
Gastroenterology Cooney, Laus, Yeckel
Kidney Diseases Levinson
Metabolic Diseases Brewer, Groat, Laus, Yeckel
Pulmonary Diseases (Nontuberculous) Post, McNerney, E C Reifenstein, Wiseman
Meningitis Bailey, Chapman, Paul Clark, Silverman
Neurology Boudreau
Nutrition Brewer, Groat, Knowlton
Obstetrics Hughes, Irving, Pieri
Orthopedics Severance, Vosburgh
Parasitology Chapman, Levinson, Mueller
Pathology Ferguson, George Reifenstein
Pharmacology Dooley, Ershler
Plasma Therapy and Blood Transfusion Paul Clark, Marty, Ernest Delmonico
Psychiatry Boudreau, Brewer, Chambers, Fleiss, Haviland, Sievers, Steckel
Radiology Childs, Needham
Rheumatic Fever, Rheumatic Heart Disease B C Doust, Hiss
Surgery, Abdominal George Reed, Swift
Surgery, Fractures Severance, Vosburgh
Surgery, General George Reed, Swift
Surgery, Infections Sutton
Surgery, Reconstructive Severance, Sutton
Surgery, Thoracic Wetherell
Surgery, Traumatic Leonard Acquino, John Van Duyn
Syphilis Chapman, Group Laurie, Steckel
Tropical Diseases Chapman, Levinson, Mueller
Tuberculosis Bogardus, Johnson

Information on these programs can be obtained from Dr Herman G Weiskotten, Dean, Syracuse University College of Medicine, 766 Irving Avenue, Syracuse, N Y

ORGANIZATION SECTION

THE WAGNER-MURRAY-DINGELL SOCIAL SECURITY PLAN

An Analysis Prepared by the Bureau of Legal Medicine and Legislation, American Medical Association,
June 16, 1943

Referred to generally as embodying an Americanized Beveridge plan but offered in Congress, according to Senator Wagner, simply as a basis for legislative study and consideration," legislation was introduced June 3 in the Senate by Senator Wagner, New York for himself and Senator Murray, Montana and in the House by Representative Dingell Michigan, proposing to create a United National Social Insurance System (S 1161, H R 2861). The Senate bill is pending in the Senate Committee on Finance and the House bill on the House Committee on Ways and Means.

The system proposed to be created will be financed in general from a trust fund established by a 6 per cent employee and a 6 per cent employer contribution on all wages and salaries, up to the first \$3000 a year, paid or received after Dec 31, 1943. Included in this proposed system will be a system of public employment offices increased old age and survivors insurance benefits temporary and permanent disability insurance benefits protection to individuals in the military service, increased unemployment insurance benefits under a federalized unemployment system, maternity benefits medical and hospitalization insurance benefits, a broadening of the basis of the existing social security program to embrace some 15,000,000 persons now excluded, such as farm workers and domestic servants, employees of nonprofit institutions, independent farmers, members of the professions and other self-employed individuals, and a unified public assistance program. There follows an analysis of those provisions of the ninety page bill that appear to be of particular concern to medicine.

DISABILITY BENEFITS PLUS MEDICAL CARE

The bill broadens the existing social security coverage by providing for the payment of cash permanent disability benefits to beneficiaries. In addition to such cash benefits, the Social Security Board through the Surgeon General of the Public Health Service will be authorized to make provision for furnishing medical, surgical institutional, rehabilitation or other services to disabled individuals entitled to receive insurance benefits, if such services will aid in enabling such individuals to return to gainful work. Such services, it is contemplated, will be furnished 'by qualified practitioners and through governmental and nongovernmental hospitals and other institutions qualified to furnish such services'. In administering the provisions of this particular section of the bill, the Surgeon General and the Social Security Board will follow as far as applicable the procedure outlined by another section of the bill relating to medical, hospitalization and related benefits generally.

MEDICAL, HOSPITALIZATION AND RELATED BENEFITS IN GENERAL

Section 11 of the bill proposes to add a new title to the Social Security Act title IX, providing for a federal system of compulsory medical and hospitalization insurance for all persons covered under the old age and survivors insurance, and their dependents. Each insured worker and his dependent wife and children will be entitled to receive general medical special

medical laboratory and hospitalization benefits. In addition, the system is made elastic so that it may be enlarged in its coverage to admit other beneficiaries on a voluntary basis, such as self-employed individuals and employees of states and political subdivisions.

In order to appreciate the broad scope of this new title, consideration must initially be given to the meaning of the words and phrases used in it. The term 'general medical benefit' means services furnished by a legally qualified physician, including all necessary services such as can be furnished by a physician engaged in the general practice of medicine, at the office, home, hospital or elsewhere, including preventive, diagnostic and therapeutic treatment and care, and periodic physical examinations.

The term special medical benefit means necessary services requiring special skill or experience, furnished at the office, home, hospital or elsewhere by a legally qualified physician who is a specialist with respect to the class of service furnished.

The term laboratory benefit means such necessary laboratory or related services, supplies or commodities, not provided to a hospitalized patient and not included as a part of the general or special medical benefit as the Surgeon General of the United States Public Health Service may determine, including chemical, bacteriologic, pathologic, diagnostic and therapeutic x-ray and related laboratory services, physical therapy, special appliances prescribed by a physician and eye glasses prescribed by a physician 'or other legally qualified practitioner'.

The term hospitalization benefit means (1) not less than \$3 and not more than \$6 for each day of hospitalization, not in excess of thirty days, which an individual has had in a period of hospitalization, (2) not less than \$150 and not more than \$4 for each day of hospitalization in excess of thirty in a period of hospitalization, and (3) not less than \$150 and not more than \$3 for each day of care in an institution for the care of persons suffering from chronic ailments. The exact amount of the benefit between the minimums and maximums stated, will be fixed by the Surgeon General of the Public Health Service after consultation with the National Advisory Medical and Hospital Council to be created by the bill and after approval by the Social Security Board. In lieu of such compensation, the Surgeon General may, after approval of the Social Security Board, enter into contracts with participating hospitals for the payment of the reasonable cost of hospital service, at rates for each day of hospitalization neither less than the minimum nor more than the maximum applicable rates previously mentioned. Such payments will constitute full reimbursement the bill provides for the cost of essential hospital services including the use of ward or other least expensive facilities compatible with the proper care of the patient.

PANEL OF PHYSICIANS TO SUPPLY MEDICAL CARE

The Surgeon General will be required to publish and otherwise make known in each area to individuals entitled to benefits the names of general practitioners who have signified their willingness or desire to participate in the insurance program.

Any legally qualified physician may so participate. A beneficiary may select any physician appearing on the panel to treat him subject to the consent of the physician selected, and may change such selection in accordance with such rules and regulations as may be prescribed. The Surgeon General may set maximum limits to the number of potential beneficiaries for whom a general practitioner may undertake to furnish medical benefits. Such limits may be nationally uniform or may be adapted to take account of "relevant factors."

The services of specialists will ordinarily be available only on the advice of the general practitioner. The Surgeon General will determine what constitutes specialist services and will also determine the qualifications of physicians as specialists "in accordance with general standards previously prescribed by him after consultation with the council and utilizing standards and certifications developed by competent professional agencies."

PAYMENTS FOR THE SERVICES OF PHYSICIANS

Payments to general practitioners may be made (1) on the basis of fees for services rendered according to a fee schedule approved by the Surgeon General, or (2) on a per capita basis, the amount being according to the number of individuals entitled to benefits who are on the practitioner's list, or (3) on a salary basis whole or part time, or (4) on a combination or modification of these bases. The method of payment, subject to the approval of the Surgeon General, will apparently be determined in each area in accordance with the desires of a majority of the general practitioners collaborating with the insurance program.

Payments to designated specialists may include payments on salary (whole time or part time), "per session," fee for service, per capita, or other basis, or combinations thereof. Apparently the method of payment to be adopted for specialists will be determined by the Surgeon General.

Payments for medical services may be nationally uniform or may be adapted to take account of "relevant factors." In any area where payment for the services of a general practitioner is on a per capita basis, the bill provides that the Surgeon General shall distribute on a pro rata basis among the practitioners of the area on the panel those individuals in the area who, after due notice, have failed to select a general practitioner or who, having made a selection, have been refused by the practitioner.

The bill provides that in each area the provision of general medical benefit for all individuals entitled to receive such benefit "shall be a collective responsibility of all qualified general practitioners in the area who have undertaken to furnish such benefit."

LIMITATIONS ON GENERAL MEDICAL AND LABORATORY BENEFIT

The Surgeon General and the Social Security Board may determine for any calendar year or part thereof that every individual entitled to general medical benefit may be required by the physician attending him to pay a fee with respect to the first service or with respect to each service in a "spell of sickness" or course of treatment if it is believed that such a determination is necessary and desirable to prevent or reduce abuses of entitlement to such benefits. Maximum size of such fee may be fixed by the Surgeon General and the Social Security Board at an amount estimated to be sufficient to prevent or reduce abuses and not such as to impose a substantial financial restraint against proper and needed receipt of medical benefit. Likewise the Surgeon General and the Social Security Board may limit the application of such fees to home calls, office visits or both.

PARTICIPATING HOSPITALS

For a hospital to participate in this insurance program, it must have been approved by the Surgeon General under standards prescribed by him after consultation with the council. A hospital to be approved must provide all necessary and cus-

tomary hospital services and must be found to afford professional service, personnel and equipment adequate to promote the health and safety of individuals customarily hospitalized in such institution. The Surgeon General may approve or accredit a hospital for limited varieties of cases and may accredit an institution for the care of the "chronic sick." In determining the adequacy of the professional service, personnel and equipment of any such institution, the Surgeon General may take into account the purpose of such limited accrediting, the type and size of community which the institution serves, the availability of other hospital facilities, and such other matters as he may deem relevant.

APPLICATION FOR AND LIMITATION OF HOSPITALIZATION BENEFITS

No application by an individual for hospitalization benefits will be valid with respect to any day of hospitalization if the application is filed more than ninety days after such day, or with respect to any day of hospitalization for mental or nervous disease or for tuberculosis after such diagnosis has been made. The maximum number of days in any benefit year for which any individual may be entitled to hospitalization benefit will be thirty. If, however, the funds in the special hospitalization benefit account fund to be created prove adequate, the maximum number of days may be increased to ninety by the Surgeon General and the Social Security Board, acting jointly.

PROPOSED METHOD OF ADMINISTRATION

The Surgeon General of the Public Health Service will be authorized to take all necessary and practical steps to arrange for the availability of the medical, hospitalization and related benefits. He will be authorized to negotiate and periodically to renegotiate agreements or cooperative working arrangements with appropriate agencies of the United States, or of any state or political subdivision thereof, and with other appropriate public agencies, and with private agencies or institutions, and with private persons or groups of persons, to utilize their services and facilities and to pay fair, reasonable and equitable compensation therefor.

The methods of administration, including the methods of payment to practitioners, the bill provides, shall (1) insure the prompt and efficient care of individuals entitled to benefits, (2) promote personal relationships between physician and patient, (3) provide professional and financial incentives for the professional advancement of practitioners and encourage high standards in the quality of services furnished as benefits through the adequacy of payments to practitioners, assistance in their use of opportunities for postgraduate study, coordination among the services furnished by general practitioners, specialists, laboratory and other auxiliary services, coordination among the services furnished by practitioners, hospitals, health centers, educational, research and other institutions, and between preventive and curative services, and otherwise, (4) aid in the prevention of disease, disability and premature death, and (5) insure the provision of adequate service with the greatest economy consistent with high standards of quality.

NATIONAL ADVISORY MEDICAL AND HOSPITAL COUNCIL

The bill proposes the creation of a National Advisory Medical and Hospital Council, to consist of the Surgeon General of the United States Public Health Service as chairman and sixteen members appointed by him. The appointed members will be selected from panels of names submitted by the professional and other agencies and organizations concerned with medical services and education and with the operation of hospitals and from among other persons, agencies or organizations informed on the need for or provision of medical, hospital or related services and benefits. Appointed members will

office for four years, with the terms of office staggered. The appointed members will receive compensation at the rate of \$25 a day for time spent on official business of the council and actual and necessary traveling expenses and per diem in lieu of subsistence.

This council will advise the Surgeon General as to (1) professional standards of quality to apply to general and special medical benefits, (2) designation of specialists, (3) methods and arrangements to stimulate and encourage the attainment of high standards through coordination of the services of general practitioners, specialists, laboratories and other auxiliary services, and through the coordination of the services of practitioners with those of educational and research institutions, hospitals and health centers and through other useful means, (4) standards to apply to participating hospitals and to establishment and maintenance of the list of participating hospitals, (5) adequate and suitable methods and arrangements of paying for medical and hospital services, (6) studies and surveys of the services furnished by practitioners and hospitals and of the quality and adequacy of such services, (7) grants in aid for professional education and research projects, and (8) establishment of special advisory, technical, local or regional boards, committees, or commissions.

RELATION TO WORKMEN'S COMPENSATION ACTS

The benefits provided by this bill will not be available with respect to an injury, disease or disability coming within the purview of any state or federal workmen's compensation act.

DENTAL, NURSING AND OTHER BENEFITS

The bill devolves on the Surgeon General and the Social Security Board jointly the duty of ascertaining the most effective methods of providing dental, nursing and other needed benefits not contained in the pending bill and of determining the expected costs of such additional benefits. The bill contemplates that the Surgeon General and the Social Security Board will report the results of their findings, with recommendations as to legislation, not later than Jan. 1, 1946.

GRANTS-IN-AID FOR MEDICAL EDUCATION, RESEARCH AND PREVENTION OF DISEASE AND DISABILITY

The Surgeon General will be authorized to administer grants-in-aid to nonprofit institutions and agencies engaging in research or in undergraduate or postgraduate professional education. The purpose of these grants will be to encourage and aid the advancement and dissemination of knowledge and skill in providing benefits and in preventing illness, disability and premature death. Such grants-in-aid will be made with respect to each project (1) for which application has been received from a nonprofit institution or agency stating the nature of the project and giving the reasons for the need of financial assistance in carrying it out, and (2) for which the Surgeon General finds with the advice of the council, that the project shows promise of making valuable contributions to the education or training of persons useful to or needed in the furnishing of medical, hospital, disability, rehabilitation and related benefits or to human knowledge with respect to the cause, prevention, mitigation or methods of diagnosis and treatment of disease and disability.

This part of the program will be financed by setting aside a certain percentage of amounts expended for benefits from the Federal Social Insurance Trust Fund to be created by the bill. The amount to be set aside will equal 1 per cent of the total amount expended for benefits from the trust fund, exclusive of unemployment insurance benefits, or 2 per cent of the amount expended for benefits under title IX (relating to federal medical, hospitalization and related benefits) after bene-

fits under that title have been payable for not less than twelve months, whichever is the lesser, in the last preceding fiscal year. The bill apparently leaves all the details with respect to these grants-in-aid to regulations to be promulgated by the Surgeon General after consultation with the council.

SELF EMPLOYED INDIVIDUALS

Self employed individuals may receive the benefits of the old age, survivors, and permanent disability and medical and hospital insurance by paying into the Trust Fund an amount equal to 7 per cent of the market value of their services rendered as self employed individuals, after Dec. 31, 1943, with respect to services in self employment after that date but not including that part of any remuneration for employment and the market value of services in self employment in excess of \$3,000 for any calendar year.

EMPLOYEES OF STATES AND LOCAL SUBDIVISIONS

The bill authorizes the Social Security Board to enter into compacts with individual states or with political subdivisions for the purpose of extending old age, survivors, and permanent disability and medical and hospitalization insurance coverage to employees of such states or political subdivisions. To finance the benefits to be provided under such compacts the bill requires such employer to pay a social security contribution equal to 35 per cent of the wages paid by it after Dec. 31, 1943 and every individual beneficiary of such a compact a contribution equal to 35 per cent of the wages received by him after Dec. 31, 1943 excluding any amount paid or received in excess of \$3,000 during any calendar year after Dec. 31, 1943.

BILL AS VIEWED BY SENATOR WAGNER

On the floor of the Senate, June 3, Senator Wagner described the overall objectives of his bill as follows:

The bill establishes a nationwide system of public employment offices to help war workers and war veterans to avail themselves of job opportunities in private industry and on farms throughout the country. It covers broadly the major economic hazards of average American families—the cost of medical and hospital care and loss of income in time of unemployment, temporary sickness, permanent disability and old age. It improves the present old age insurance system and extends coverage to 15,000,000 persons now excluded such as farm workers and domestic servants, employees of nonprofit institutions and the independent farmer, professional and small businessman. All these changes are established under a unified national system of social insurance with one set of contributions, one set of records and reports and one set of local offices. Reinforcing the job guaranty in the Selective Service Act, the bill gives the returning veteran and his family paid up benefit rights in every phase of this insurance protection. And finally the bill sets up an improved unified system for grants in aid to the states for public assistance on a variable matching basis in place of the rigid categories under present law.

PROSPECT OF SENATE CONSIDERATION OF THE BILL

Senator Walter F. George, chairman of the Senate Committee on Finance, before which S. 1161 is pending, has been quoted as saying that his committee cannot possibly undertake to give consideration to the bill until late in the present session of the Congress and that if that consideration is given, and if favorable action is taken by the committee, the measure will not reach the floor of the Senate until next year.

OFFICIAL NOTES

SUMMER HEALTH HINTS

The next three programs for the new series of broadcasts over WLS on Thursdays at 2:45 p. m. under the title 'Summer Health Hints' will be as follows:

July 1	Heat and Sun
July 8	Insects
July 15	Poison Oak or Ivy

PROCEEDINGS OF THE CHICAGO SESSION

MINUTES OF THE ANNUAL SESSION OF THE HOUSE OF DELEGATES OF THE
AMERICAN MEDICAL ASSOCIATION, HELD IN CHICAGO, JUNE 79, 1943

HOUSE OF DELEGATES

Second Meeting—Tuesday Morning, June 8

The House of Delegates was called to order at 9:30 a. m. by the Speaker, Dr. H. H. Shoulders.

Roll Call

On motion of Dr. Allen H. Bunce, Georgia, seconded by Dr. Arthur I. McCormick, Kentucky, and carried, the House dispensed with the roll call.

Presentation of Minutes

Dr. J. Newton Hunsberger, Pennsylvania, moved that the House dispense with the reading of the minutes. The motion was seconded by Dr. Burt R. Shurly, Section on Laryngology, Otolaryngology and Rhinology, and carried.

Report of Reference Committee on Credentials

Dr. G. Henry Mundt, Chairman, reported that one hundred and seventy members of the House of Delegates had been registered. All states, all sections and the three government services have complete registration. The only delegates who are not in attendance are those from Alaska, the Isthmian Canal Zone, the Philippines and Puerto Rico.

Report of Reference Committee on Medical Education

Dr. Wilburt C. Davison, Chairman, presented the following report, which, on motions, duly seconded and carried, was adopted section by section and as a whole.

1 The Reference Committee on Medical Education approved the following proposals:

1 Resolution on Technical X-Ray Training Courses, introduced by Dr. E. H. Skinner, Section on Radiology.

2 The changes in the Essentials of an Acceptable School for Clinical Laboratory Technicians, suggested in the supplementary report of the Council on Medical Education and Hospitals.

3 The Essentials of an Acceptable School for Physical Therapy Technicians, as presented in the supplementary report of the Council on Medical Education and Hospitals. These essentials have been completely revised in the supplementary report.

4 The Essentials of an Acceptable School of Occupational Therapy, as presented in the supplementary report of the Council on Medical Education and Hospitals. These essentials have been completely revised in the supplementary report.

5 Essentials of an Acceptable School for Medical Record Librarians, which were prepared by the Council on Medical Education and Hospitals in accordance with the request of the Board of Trustees, which had had referred to it a request from the House of Delegates at the Atlantic City session that the American Medical Association inspect and approve or disapprove present and future schools for the training of medical record librarians. These essentials as prepared by the Council on Medical Education and Hospitals are contained in the supplementary report of that Council.

6 The report of the Council on Medical Education and Hospitals, section by section and as a whole, as contained in the Handbook.

II Resolution Requesting Study of Nursing Licensure Requirements. Your reference committee, although sympathetic with the Resolution Requesting Study of Nursing Licensure Requirements, introduced by Dr. Stephen E. Gavin, Wisconsin, does not approve the resolution because it does not fall within the jurisdiction of the American Medical Association.

Respectfully submitted,

WILBURT C. DAVISON, Chairman
WALTER G. PHIPPEN
ROBERT E. SCHLUETER
CHARLES H. PHIFER
LEON J. MENVILLE.

Report of Reference Committee on Hygiene and Public Health

Dr. Warren F. Draper, Chairman, presented the following report, which, on motions duly seconded and carried, was adopted section by section and as a whole.

1 Resolutions on Giving Intelligent Instruction in Science and Biology to the Youth of America. With the consent of Dr. Borzell, the committee made certain changes in the resolutions, which now read as follows:

WHEREAS, The appropriate teaching in the secondary schools of science including biology, is essential to the child's understanding of health and nutrition, and

WHEREAS, The medical profession is vitally interested in such education therefore be it

Resolved, That the American Medical Association endorse the principle that every child in the United States be given adequate, sound instruction in high school in basic science including at least one year of biology, and be it further

Resolved, That the American Medical Association through its Bureau of Health Education encourage close cooperation between the constituent state medical associations and component county medical societies and the teachers of science in their respective communities to the end that intelligent instruction in science and biology be given the youth of America.

Your reference committee has been informed that national organizations which have already endorsed this principle are the American Association of Physics Teachers, American Chemical Society, Mathematical Association of America, Union of American Biological Societies and National Association for Research in Science Teaching.

The importance of real health education of the proper type in the schools has been forcibly demonstrated by the results of the physical examinations for the draft boards.

Teaching such as indicated is a fundamental necessity for the proper understanding of the elements of health and physical well being.

A sound educational basis in the sciences will help to sensitize the student to pseudoscientific claims, cultism and quackery.

Your reference committee has ascertained that the resolutions are practicable from the standpoint of the Bureau of Health Education and recommends their adoption as now presented.

2 Report of Bureau of Health Education as presented in the Handbook, pages 70 to 77. Your reference committee commends the Bureau of Health Education on its accomplishments under the trying conditions of the present time.

It is interesting to note that the travel of the director has necessarily been greatly curtailed and that the Bureau has turned to the radio to carry on much of the work that needs to be done. Direct broadcasts are made in some instances and recordings are also developed. Master records are made with ten recordings of each. These are sent out to constituent state medical associations and component county medical societies and may be used on the air at their convenience.

The adaptation of the radio program to cover the war work of doctors is especially commended. In the opinion of your reference committee, the results of this program are of definite value and its development should continue.

1 Report of Council on Industrial Health is presented in the Handbook, pages 65-70. Your reference committee notes with especial satisfaction the work of the Council in developing a plan for the recruitment and placement of medical volunteers for service in essential war industry. The committees on industrial health of constituent state medical associations can be of great assistance to the chairmen and state committees of procurement and assignment of physicians in furnishing medical service in industry.

This is one of the younger councils, which because of the character and excellence of the work that it is doing, is making itself felt and is becoming increasingly important.

Respectfully submitted,

WARREN F. DIERER, Chairman
HOLMAN TAYLOR
DON F. CAMERON
RANSOM D. BERNARD
WALTER W. KING

Report of Reference Committee on Miscellaneous Business

Dr. Charles G. Strickland, Chairman, presented the following report which on motions duly seconded and carried after discussion was adopted section by section and as a whole:

1 Resolution on Having Copies of the Boy and Girl Scouts Manual in Physicians Waiting Rooms, approved by the Louisiana State Medical Society and introduced by Dr. James Q. Graves, Louisiana. Your reference committee recommends the rejection of this resolution. The boy scouts and the girl scouts are both worthwhile organizations and their value in youth training and in character building is unquestioned. Nevertheless, your reference committee hesitates to recommend favorable action on this resolution, since other worthy organizations may request similar action on their literature and once the precedent is set the flood gates are open. The choice of waiting room reading can be left safely to the judgment of the individual physician and the taste of his clientele.

2 Resolution Requesting Constituent Associations and Component Societies to Consider the Establishment of Some Form of Dues for Their Members in Service, introduced by Dr. James C. Sargent, Wisconsin. Your reference committee desires to express its high appreciation of the motives which actuated the introduction of this resolution. The line of reasoning used does Dr. Sargent great credit. However for many reasons, too obvious to detail, your reference committee recommends that this resolution be rejected.

Respectfully submitted,

CHARLES G. STRICKLAND, Chairman
ALBERT A. GARTNER
H. A. LUCE
JAMES W. HAYES
STEPHEN E. GAVIN

Introduction and Address of Brig Gen David N. W. Grant

President Fred W. Rankin presented to the House Brig Gen David N. W. Grant, Flight Surgeon, as follows:

Mr. Speaker and Members of the House: As you are aware the Army of the United States is divided into three component parts, Air, Ground and Service of Supply. Each of these branches has its own medical service and each of them has expanded enormously and their medical services have expanded

alongside of them. I believe it is fair to say that the Air Corps has expanded more rapidly and more efficiently and more centrally than any other arm of the service. That is particularly true of the medical service of the Air Corps, because a year and a half ago I think I am correct in saying there were 97 flight surgeons in the Army. Today there are 9,300 flight surgeons in the Army.

In this expansion and in the development of the fine *esprit de corps* that the flight surgeons have and the especially fine cooperation that exists between the flight surgeons and the fliers and the men who serve the fliers, I think we can unquestionably pay tribute and give credit to the present Air Surgeon Brig Gen David N. W. Grant. He has developed an extraordinarily efficient staff. He has been exceedingly far reaching in his planning and to him goes an enormous amount of credit for the present day efficiency and the splendid all round rating of the Air Corps, the medical portion of the Air Corps.

General Grant is not a desk general. He has been in every theater of major activity in which our troops now operate, and I am privileged to present him to this House at this moment. Brigadier General David N. W. Grant.

Brig Gen David N. W. Grant addressed the House as follows:

Mr. Speaker, General Rankin and Members of the House: General Rankin has been most flattering in his comments but I cannot accept the full credit and responsibility. I leave it to you to say who has done this job. It has been and continues to be the people of this Association who have come to the fore and rendered full cooperation.

I feel particularly honored in being here. Today represents the culmination of about twelve years of hard work and my presence at this meeting is only symbolic of the deserved recognition of aviation medicine, a medical specialty which has had a hard struggle through the years. Aviation medicine has not received due recognition until just recently. We have had almost an absolute neglect of the medical aspect of the flier, due perhaps to some indifference and lack of funds, means and facilities. Of course this war has brought the entire situation to a head.

The development of the Army Air Forces Medical Service has been extremely interesting. It was a new creation. We had nothing to go on and very little past experience in which to base judgment. I have always thought of aviation medicine as being a return of the old family doctor. It is a specialty, yes, but the old family doctor was a specialist too. I like to feel that we are contributing a great deal to the future of medicine in the United States through our hope of returning physicians to civilian life not with an appreciation of a special part of the individual but with recognition of the individual as a whole and of treating him as a whole. I think the tendency in medicine has been to specialize perhaps to too great an extent. I have come in contact for instance, with heart specialists who couldn't listen to the lungs. It isn't that I don't believe in medical and surgical specialists because I do, but I think that they should expand a bit and not consider just a part of the individual but should study the patient as a whole, both as to diagnosis and in treatment.

In considering the development of the medical services of the Army Air Forces I feel very strongly that if we don't return the physicians who are with us to civilian life at least on a par with what they were when they came to us or as better doctors, we shall have failed in our mission. For this reason we have sent a great many of our medical men to special schools. The figure is a little over 5,000 in the Army Air Forces alone. We have started an intern and resident program which as you know was announced in *THE JOURNAL* several weeks ago. We want to give the interns and residents coming to us a chance and we are going to give it to them. Those boys who show ability are going to be advanced and trained under recognized men. We hope the various boards will give them due credit when these young men come to them.

The medical profession has been very kind to us. Without exception we have had the full support of all the professional

organizations. Otherwise we could not have done the job with which we were faced. We have tried to build an *esprit de corps* in our doctors of the same magnitude that exists in the Army Air Forces as a whole and we have built an enviable relationship between our doctors and the Army Air Forces personnel to the benefit of both concerned. I know that in the majority of cases our doctors are happy in their work. Of the men recognized by boards, or of those eligible for their boards, 98.77 per cent of the 1,785 with us are practicing their specialties. I believe that this move alone has saved the Army Air Forces 500 to 1,000 doctors by placing the right person in the right place.

I want to assure the American Medical Association that the Medical Service of the Army Air Forces appreciates the position of the doctor from civilian life. We are trying our best to place him properly and to keep him content and as happy as conditions permit. We all have recognized that there are many, many tasks in the Army that must be done and that there will be some misplaced personnel. It can't be helped in all instances, but we are making an honest endeavor to see that the civilian physician who is with us and who, after all, is doing the work is placed in the field for which he is best fitted.

Dr. Arthur I. McCormick, Kentucky, moved that this statesmanlike address containing the sound principles that it does be referred to the Council on Medical Education and Hospitals with the commendation of the House. The motion was seconded by Dr. William Weston, Section on Pediatrics, and carried.

Report of Reference Committee on Sections and Section Work

Dr. Francis F. Borzell, Chairman, presented the following report, which was adopted on motion of Dr. Borzell, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried.

There was but one item of business referred to your reference committee, and that was the report of the Council on Scientific Assembly, which, although brief, deals with the major function of the American Medical Association, that of promulgation of medical science.

The manner in which the serious problem of providing suitable material for journalistic publication has been met and the impetus given to continue postgraduate instruction to service men and civilian doctor alike deserves special approval.

Your reference committee therefore recommends the adoption of this report with commendation for the foresighted policy enunciated and the practical method of solving a difficult problem.

Respectfully submitted,

FRANCIS F. BORZELL, Chairman
L. G. CHRISTIAN
OLIN H. WEAVER
BENJAMIN F. COOK
ARTHUR J. BEDELL

On motion of Dr. George W. Kosmak, New York, duly seconded and carried, the House recessed for ten minutes at 10:08 a. m., to give the typists an opportunity to finish typing reference committee reports.

The Speaker called the House to order at 10:20 a. m.

Report of Reference Committee on Amendments to the Constitution and By-Laws

Dr. Walter E. Vest, Chairman, presented the first two sections of the report of the Reference Committee on Amendments to the Constitution and By-Laws, the third section being postponed until the Executive Session of the House on motion of Dr. E. H. Skinner, Section on Radiology, and so ordered, without objection, by the Speaker.

Your Reference Committee on Amendments to the Constitution and By-Laws met twice, considered all matters referred to it and offers the following report:

1. The Report of the Judicial Council. While not involving amendments to the Constitution and By-Laws, the report of the Judicial Council is very thought provoking and makes us realize the delicate position we now occupy in the eyes of the populace and the necessity for considering well our every move as a

profession. Your reference committee is especially impressed with the care the Council exercises in approving applicants for Fellowship and it commends the entire report to the profession generally.

2. Proposed Amendment to Constitution, Article 5, Section 2, contained in Report of the Secretary as published in the Handbook. Your reference committee has given very careful consideration to that part of the Report of the Secretary relating to the proposed amendment to the Constitution, article 5, section 2, submitted to the House of Delegates by the reference committee on Sections and Section Work at the annual session last year. Your reference committee believes that the adoption of this proposed amendment would be very unwise and essentially destructive, inasmuch as it would tend to change the character of the House of Delegates from a scientific body to a political and economic body. The American Medical Association is, and ought to be, a true composite of the entire medical profession of the United States. It is not only a federation of constituent state and territorial medical associations but includes as well the national governmental medical services as units, and the separate units of the Scientific Assembly, i. e., the sections. Such an amendment would tend to make the Scientific Assembly less cohesive. The very nature of the Scientific Assembly and its sections demands that the section delegates have full rights including the right to vote, otherwise the point of view of the specialties and the individual sections cannot be properly presented, and the business of the sections cannot be properly transacted. The section delegates, in the judgment of your committee, should be more than mere liaison officers, they should be actual, vibrant members of the House of Delegates invested with all the rights and privileges accorded to the delegates representing the various state and territorial associations. Your reference committee recommends, therefore, that the proposed amendment to the constitution be not adopted.

Respectfully submitted,

WALTER E. VEST, Chairman
LOUIS A. BUIE
KARL S. J. HOHLEN
WILLIAM WESTON
ELBERT G. WOOD

Dr. Vest moved the adoption of the first section of the report of the reference committee recommending approval of the report of the Judicial Council. The motion was seconded by Dr. Elbert G. Wood, Tennessee, and carried.

It was moved by Dr. Vest, seconded by Dr. Arthur T. McCormack, Kentucky, and carried after discussion by Dr. McCormack and Vest, that the House adopt the second section of the report of the reference committee recommending that the proposed amendment to article 5, section 2, be not adopted.

On motion of Dr. Vest, seconded by Dr. John Z. Brown, Utah, and carried, the report of the reference committee was adopted as a whole.

Report of Reference Committee on Reports of Officers

The Vice Speaker presided while the first section of the report of the Reference Committee on Reports of Officers was read, after which the Speaker resumed the Chair.

Dr. Deering G. Smith, Chairman, presented the following report, which was adopted section by section and as a whole, on motions of Dr. Smith, duly seconded and carried.

1. Address of the Speaker. Your reference committee feels sure that it voices the sentiment of the entire House in expressing its appreciation of the loyal and efficient leadership of our Speaker. It is pleased that he is emphasizing the work of the reference committees, and it reiterates his plea that members of the House of Delegates and the Association attend and participate in the reference committee meetings. It wishes to thank him for his appreciation of the work and accomplishments of the members of the House of Delegates and assure him of our best efforts to deserve to be called medical statesmen. It is reassuring that the medical statesmanship of the past has contributed to our present high standard of medical care of the war casualties and of the civilian population. Your reference committee agrees with Dr. Shoulders that such a

statesmanship must continue if the problems of the future are to be solved

2 Address of the President Our President has had the most difficult task of leading the Association during this year of the war and also holding a high position in the Office of the Surgeon General of the Army. He has discharged his manifold duties with credit to himself and to the benefit of organized medicine. He has had an unusual opportunity to gain a comprehensive view of the medical problems as they are related to the physician, the state and the people. In his scholarly address he has set forth certain broad concepts which should be carefully studied by every member of the profession.

He has charged us with the responsibility of approaching the problems of medical care in a thoroughly cooperative spirit. He further expresses the opinion that to achieve these solutions the American Medical Association should set up the necessary agencies. It is expected that the Committee on Planning of Postwar Medical Services will be such an agency.

3 Address of the President-Elect (a) Your reference committee is conscious of the time and effort expended by the President-Elect in the affairs of organized medicine and it expresses appreciation of this sacrifice.

It is noted with interest that twelve to fifteen million people under the American voluntary system have procured for themselves protection against the expense of major illness. This is an example of how the American people under proper leadership and education will provide for themselves without the undesired intervention of a paternalistic government.

Your reference committee commends Dr. Pullins' efforts in the provision of continuing medical education for our members now in service and for the civilian physicians who have been deprived of attendance at the customary Scientific Assembly. It recommends that this House of Delegates approve the War-time Graduate Medical Training program and suggests that after the war it may be advantageous to incorporate it in the peacetime system of postgraduate instruction.

(b) Your reference committee notes with enthusiasm the formation by the Board of Trustees of the temporary Committee on Planning of Postwar Medical Services which action it recommends be approved by the House of Delegates.

(c) Your reference committee further recommends that the Board of Trustees be instructed to make this a permanent committee on Planning of Postwar Medical Services to cooperate and collaborate with other agencies concerned with these problems.

Respectfully submitted

DEERING G. SMITH Chairman
FLOYD S. WINSLOW
JOSEPH H. CANNON
WILLIAM R. BROOKSHER
EDWARD JELKS

The Speaker announced that he had consulted with the chairman of the Reference Committee on Rules and Order of Business and that he was told that it was that chairman's opinion that the same regulations in the By-Laws that usually apply to the meeting of the House on Thursday or the week of the annual session would apply tomorrow (Wednesday) this year which means that no new business may be presented at tomorrow's meeting unless it comes from the Board of Trustees, the officers of the sections or the sections except by unanimous consent. This opinion was confirmed on motion of Dr. Arthur J. Bedell, Section on Ophthalmology, duly seconded and carried after discussion by Drs. Allen H. Bunce, Georgia; Holman Taylor, Texas; Arthur T. McCormack, Kentucky; R. W. Fouts, Vice Speaker, John Z. Brown, Utah, and the Speaker.

On motion of Dr. Edward H. Cary, Texas, duly seconded and carried, the House recessed from 10:50 a. m. to 11 a. m.

Report of Reference Committee on Reports of Board of Trustees and Secretary

Dr. Louis H. Bauer, Chairman, presented the report of the reference committee, which on motions of Dr. Bauer, duly seconded and carried, was adopted section by section. That section of the report of the reference committee dealing with hospital corporations engaging in the practice of medicine being amended, and as a whole as amended.

REPORT OF THE SECRETARY

1 Membership and Fellowship Once again your reference committee is pleased to note an increase in the membership of the Association which now totals more than 123,000, or an increase in ten years of over 25,000. The committee agrees with the Secretary that it refutes an oft-made charge that physicians as a whole are not in accord with the Association. Your reference committee feels that there is probably no organized body which has been so slandered by outsiders who do not know the true facts as has been the American Medical Association.

There has been a decrease of 8% in the Fellowship class, but considering that there are 45,000 physicians in the armed forces this decrease is surprisingly small. It is evidence that the House acted wisely a year ago in making no recommendation to revise the Constitution and By-Laws to permit remission of Fellowship dues and that the great majority of Fellows wish to maintain their subscription to the various journals of the Association in order to keep abreast of the changes in medicine.

2 Cancellation of Annual Session Your reference committee feels that the Trustees acted wisely in canceling the annual scientific session and having a meeting only of the House of Delegates and of the councils in view of war conditions, particularly as to transportation and the general shortage of physicians.

3 Correction of the Minutes Correction of the proceedings of the 1942 session of the House of Delegates was requested by Dr. Arthur J. Bedell, Section on Ophthalmology, but as this has already been taken care of by the House on June 7, 1943, no further action is necessary.

4 Annual Conference of Secretaries and Editors of Constituent State Medical Associations This conference is an annual affair and in these times is especially important in order that all war activities as well as routine matters of the various constituent associations may be properly coordinated. These conferences should be continued through the war unless transportation restrictions become so acute that it is not feasible. Special thanks should be expressed by the House to those government officials who have attended these conferences and helped in their success.

5 Service of the Secretary The Secretary again has expressed his thanks to all those with whom he has been officially associated. Your reference committee notes that this year completes twenty-one years of service by Dr. Olin West as Secretary. To express what the House in particular and organized medicine in general owes to him would be impossible, but your reference committee recommends that the House express its thanks and its best wishes for continued service from him.

REPORT OF BOARD OF TRUSTEES

If any member of the House has not read the report of the Board of Trustees, he owes it to himself and the organization he represents to do so. As usual, it contains a great deal of informative material.

1 Income and Expenditures It was fully expected a year ago that the income of the Association would be materially reduced by the exigencies of the war. Your reference committee notes with great satisfaction that such is not the case. The total income is greater by over \$36,000 for 1942 than for 1941. The Board of Trustees also reports a reduction in the total expenditures for 1942 over 1941 of nearly \$71,000. Another unexpected source of income was from Fellowship dues and subscriptions. While it was expected these would decrease, there was an actual increase of nearly \$9,000. This is particularly gratifying as it evidences a feeling of those in the armed services that they must have the Association's publications. Again it was felt a year ago that income from advertising space in THE JOURNAL might and probably would be decreased. Instead of that, there has been an increase of well over \$26,000. However, your reference committee feels it must caution the House that continued increases cannot be expected. We probably have not yet felt the full impact of the war effort and restrictions of advertising may yet well occur as well as further restrictions in the use of paper.

A falling off in the income from investments of about \$3,000 is noted and this must be expected, and, in fact, there may be a still greater reduction next year.

There has also been an increase in the cost of paper, which will be felt still more during the current year as new stocks are purchased. The Trustees have cooperated with the government by cutting down the size of publications and the paper margins and by the use of lighter weight stocks. It is hoped that it will not be necessary to curtail the amount of the scientific content, but even this may occur.

As indicated a year ago, salaries and wages have increased. This cannot be avoided, and further increases may be necessary, particularly as the work of the Association has been tremendously increased by its participation in war activities.

Operation of the councils, bureaus and departments of the Association has increased in cost by a little over \$7,000, doubtless because of war activities.

The legal and investigating expense has decreased by about \$55,000. This has been due to the fact that a year ago the costs were great because of the suit against the Association by the government.

As a whole we can look on the financial status of the Association as excellent, and the Trustees should be commended for their excellent handling of the finances of the Association. While income may yet fall off before the war is over, the increases in income during the past two years will afford an excellent backlog without the Association having to dip too deeply into its principal to maintain its activities on the present level.

2 THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Your reference committee recommends approval of the action of the Trustees in giving special consideration to the problems of war medicine and war effort as a whole. It also notes with satisfaction that the Trustees have arranged with the scientific sections for a continued flow of material for publication in spite of the cancellation of the annual scientific session.

Your reference committee also recommends continuance of the organization section of THE JOURNAL on its present plan.

Your committee also approves the action of the Trustees in appealing to the War Production Board on the reduction of paper used by 10 per cent, as THE JOURNAL and its contents are certainly a contribution to the war effort.

While there has been a slight reduction in the total circulation of THE JOURNAL during the past year, it is surprisingly small and, were it not for the cancellation of foreign subscriptions naturally to be expected, the circulation would be larger rather than smaller.

3 Special Journals. A year ago it was reported that two of these nine journals were operated with an income above the cost of publication. This year four of them have been so operated. Total circulation of these journals has slightly increased, the increase being due partly to WAR MEDICINE, which increased its circulation by 33 per cent. In view of the war situation, these facts are very encouraging.

4 HYGEIA. This magazine also increased its income by over \$40,000. Wider distribution among the laity would serve as an excellent means of education and help counteract the propaganda of cultists and faddists. This increase in income has been largely due to the activities of the Woman's Auxiliary, and our thanks are due that body.

5 Library. The library has continued its usefulness, and there has been special call for articles with reference to war medicine. It is believed by your reference committee that more extended use would be made of the library if THE JOURNAL from time to time would print a notice calling attention to its availability and the character of the service it can render.

6 Standard Nomenclature of Disease and Standard Nomenclature of Operations. The third edition of the Standard Nomenclature of Disease and the first edition of Standard Nomenclature of Operations, combined in a single volume, have been issued. This useful volume should be of interest not only to hospitals but to every physician.

7 QUARTERLY CUMULATIVE INDEX MEDICUS. This publication, one of the most valuable in medicine, has suffered a severe setback in that only about half as many articles were indexed

in 1942 as in 1941. This is because of the difficulty in obtaining foreign journals. However, as a result, the cost of and the loss sustained in publication were considerably less. Your reference committee feels that publication should continue in spite of its incompleteness, and it is hoped that after the war the deficiencies in the INDEX can be made up.

8 American Medical Directory. The publication of the seventeenth Directory was delayed unavoidably by war conditions, and the Board of Trustees feels that the next edition, which would ordinarily be published in 1944, may have to be considerably postponed. Your reference committee feels that the time of publication of another directory should be left to the judgment of the Trustees and so recommends.

9 Mailing and Order Department. Attention is merely invited to the tremendous amount of mail handled by the office of the Association.

10 Cooperative Medical Advertising Bureau. This was the most successful year of the Bureau from the financial standpoint. The Bureau continues to be of great value to many state journals.

11 Press Relations. The ramifications of the Press Relations activities of the Association continue to increase. The AMERICAN MEDICAL ASSOCIATION NEWS is reaching a constantly increasing number of agencies. Press stories based on THE JOURNAL and HYGEIA totaled over 83,000 in 1942, an increase of nearly 2,000 over 1941. An increasing number of feature stories and editorials and radio broadcasts based on information furnished by the Association is noted. Over 3,800 inquiries were answered, an increase of 700 over 1941. The Press Relations activities have also played a large part in the war activities of many organizations, including the government. These activities of the Association deserve commendation and should be continued. It is through such relations that much of the vicious propaganda against American medicine can be combated.

12 Council on Pharmacy and Chemistry. During the past year the Council has increased its contributions to the welfare of the physician and the public and has given material aid to many agencies of the federal government in prosecution of the war effort. Furthermore, it has held a meeting with representatives of the American Pharmaceutical Association and established cooperative relationships with a number of foreign countries. Several of the publications of the Council have been revised during the year and there is an increasing demand for them. The Council has continued research through various grants, and valuable information on new methods of treatment is expected. Forty-four reports and twenty monographs on drugs have been issued and many more drugs are under study.

At the annual meeting of the Council, among the matters discussed were prevention and treatment of fungous infections, promotion of mixed vitamins, labeling of vitamin preparations, mineral waters, contraceptives, use of the metric system, scope of New and Nonofficial Remedies, medical and pharmaceutical relations, and censorship of published descriptions of new drugs, the last named being required by the Office of Censorship. Your reference committee is glad to note that further attention has been given to the subject of vitamins in accordance with the expressed wishes of the House a year ago. Several changes have been necessitated in the personnel of the Council because of death and resignations. Your reference committee notes that 1942 completed the thirty-eighth year of this council. The Council is to be commended for its activities and productive efforts. Your reference committee urges that still further clarification be made of the use of vitamin therapy and decry the commercialization of this important subject by some commercial organizations.

13 The Chemical Laboratory. This laboratory, now in its thirty-seventh year, is one of the mainstays of the Council on Pharmacy and Chemistry. A great deal of work has been accomplished the past year on vitamin K and testing and setting up standards for numerous drugs both old and new. Its equipment has been increased and it is now outstanding among well-equipped laboratories. The Laboratory has cooperated with all departments of the Association and with a number of other organizations. Its work deserves commendation.

14 Council on Foods and Nutrition A new load has been thrown on this council by the war because of the important food problems which have arisen in connection with it. The Council has been in close touch with the government agencies charged with promulgation and enforcement of orders pertaining to foods. In cooperation with the Council on Industrial Health a Cooperative Committee on Nutrition in Industry has been established. A great deal of further work has been done on vitamins and as a result opinion has gradually crystallized on the question of fortifying foods with vitamins and minerals. Your reference committee is glad to note that the policies of governmental agencies have been largely in harmony with those of the Council. In cooperation with the Council on Pharmacy and Chemistry and the Council on Industrial Health reports have been made on the proper use of vitamins in mixtures and the administration of vitamins to industrial workers. This work has been very timely and it is urged that the Council continue its research and educational activity in this field. In the opinion of your committee vitamins should be available on the basis of food and not on the basis of drugs. Efforts should be made to make them available at a lower cost to the public whenever a physician feels that it is essential to prescribe them. Consideration has been given to the substitution of food ingredients and the Council has felt that it was preferable as a rule to produce less rather than to diminish nutritional quality through substitution. Reports have also been issued on maintaining nutritional standards in formulation of mixed vegetable juices and on comparative nutritional value of butter and oleomargarine. It is recommended that the activities of the Council be approved and commended.

15 Council on Physical Therapy The Council has devoted much of its time to presentation of useful reliable and factual information about physical therapeutic methods for the attention of civilian army and navy physicians confronted with the task of rehabilitation. The Council has cooperated with government agencies by giving advice on physical therapeutic procedures and apparatus. In cooperation with a subcommittee of the National Research Council the Council has prepared a manual on physical therapy and with other groups is preparing one on occupational therapy which will be of value to those concerned in rehabilitation. A Handbook of Amputations has also been issued and is of value to both military and civilian physicians. The Council consultants aided in revising the curriculum for schools of technicians and in investigation of audiometers and hearing aids and has published specifications for a home made respirator. Application of ultraviolet radiation for disinfection was studied and a statement on the problem was published. The booklet Apparatus Accepted was revised. Grants were made for research on problems vital to physical therapy. Twenty-one reports were published during 1942.

The members of the Council and its consultants who receive no remuneration have given a great deal of time and effort to the work of the Council and deserve the House's thanks and commendation.

16 Bureau of Medical Economics A In carrying out the plan for a national emergency adopted by the House in 1940 the Bureau of Medical Economics was designated as the agency to conduct the census of the medical population. This entailed a tremendous amount of work and resulted in an increase in the staff of the Bureau. This census became of incalculable value to the Procurement and Assignment Service when it was established. The Bureau at first acted as a consultant office or that service. At the end of 1942 it was deemed advisable to separate the two entirely and the census was given over to Army and Civil Service personnel at the close of 1942.

B (a) Prepaid medical service plans were studied and analyzed in addition to the work connected with the war already referred to. The report of the Bureau reviews the history of the subject the earliest plans being the unit system arrangements in the states of Oregon and Washington. By the summer of 1941 about twenty state medical societies had taken steps to introduce statewide plans. Besides Washington and Oregon at the present time there are eight other states which have developed plans with the support of their state medical societies. California New Jersey Michigan Pennsylvania Colorado

North Carolina and Massachusetts each have one plan. New York has three. It is interesting to note that in 1935 there were over two hundred suggested methods. The Bureau feels that certain fundamentals ought to characterize all plans and is of the opinion that its report of 1935 is no less applicable now than then. In that report it listed ten dangers to be avoided in any plan. The Bureau again stresses these ten points which your committee feels are well worth stressing. They should be familiar to every member of the House, so that they will not be repeated in toto here. All ten are important but your committee does wish to lay special emphasis on two of them namely numbers 8 and 10. These are the freezing of medical fees at a point below that which is consistent with good medical care and 'medical society plans must not be considered or accepted as a substitute for the regular practice of medicine as applied to the majority of people. It is believed such plans may be useful they should be considered merely as supplementary facilities in the distribution of medical service. They should be used only so long and in such a manner as they serve efficiently to make more easily available to low income groups a high quality of medical care. The Bureau also has repeated that portion of its 1935 report dealing with vital factors to be recognized and protected. The substance of these factors is the avoidance of competition and to quote the report the medical profession in its professional associations is the only possible body that can organize the supply and distribution of that service without harmful effects on and possible destruction of that service itself.

(b) Experience with medical service plans has developed some interesting facts.

(1) The offering of a prepayment medical service the quality of which is guaranteed by the medical profession increases the demand for medical care much more than any one anticipated.

(2) The public's sales resistance has an important effect on the success of the plan. Premiums must be within the limits of the valuation placed by the average person on the preservation of his health. Education of the public is an important factor in solving this problem.

(3) Actuaries, physicians and consumers cannot determine accurately the effect of various contract provisions on the minds of possible purchasers of prepayment medical care.

(4) Some subscribers will always be trying to get something in return for their money and this may overthrow the most careful actuarial calculations. In turn this may result in a tendency to restrict the amount of care or on the other hand to dilute it and make it poor and ineffectual. The Board feels that the objective should be to guard against abuse and encourage use.

(5) Unnecessary surgery may be performed by unscrupulous physicians. This must be curbed by courageous and efficient medical organizations.

(6) The type of clientele served may affect the success of the plan. This makes it impossible to adopt a nationwide plan or in some cases even a statewide plan.

(7) Income is an important factor. The original decision to limit plans to low income groups has resulted in sales resistance. Key men in industry are not interested in fostering plans which do not protect them.

(8) Income limits also have a bearing on the comparative desirability of indemnity or service benefits and has led to the development of a so-called surgical plan.

(c) Actuarial difficulties have led to the development of limited plans. The public seems unwilling to pay the cost of unlimited care. An advantage of the limited plan is that it covers so called catastrophic illnesses and these are more easily figured from the actuarial standpoint. On the other hand rural areas are not well covered by such a limited plan because of often inadequate hospital facilities. The public must be educated to realize the value and cost of complete medical service before such complete service can be developed. Such education will help combat the deceiving propaganda for compulsory insurance. A special committee of the Massachusetts Medical Society stated: Your committee urges a gradual approach to our ultimate ideal—total medical coverage by a comprehensive policy—through well defined initial steps of

partial coverage" This recommendation should be considered carefully by all states in the opinion of your own reference committee. Again your reference committee reiterates the statement of the Bureau of Medical Economics that professional supervision of all the standards of medical service must be made one of the dominant features of prepayment services as it always has been of private practice.

(d) Medical service plans of the Farm Security Administration have been universally reported as being conducted in accordance with the principle that the medical profession should control all features of medical service in any method of medical practice.

The Bureau of Medical Economics has therefore included in its report a summary of the history of prepaid medical service, repeated the basic principles previously adopted by the House and given a summary of the experience with different plans. The Bureau has carried out its function as a clearing house in the development of plans for prepaid medical service. The publication of this report will be of great value to those who are intimately concerned with such plans. These plans are still in the process of trial and error, but much good has developed from them. However, further experimentation will be necessary. The Bureau should cooperate in every way possible with those who are developing plans. In the opinion of your reference committee, therefore, the Bureau is correct in not attempting to draft a nationwide plan because of the varying conditions in different states. It should continue to do just what it has done during the past year. Approval of its work is recommended.

C The Bureau notes with alarm the possibility that lack of funds may prevent the compilation and publication of basic statistical tables in connection with the latest decennial census of the United States. Your reference committee agrees and recommends that the House refer the matter to the Board of Trustees for such action as seems most practicable in urging the government to allocate sufficient funds to the Census Bureau so that the latest census may be as reliable and informative as the preceding ones.

17 Bureau of Investigation During the past year the bureau has continued its educational work with both the profession and the public in "patent medicines," quacks, frauds, fakes and faddists. While inquiries from physicians have fallen off, those from students have greatly increased. Eight thousand four hundred items have been inquired about. The bureau has continued its contributions to THE JOURNAL, in the form both of original articles and of abstracts. One thousand seven hundred and seventy-five pamphlets have been distributed and many addresses made by the director of the bureau. The bureau has also cooperated with governmental and civic organizations concerned with the war effort. Your reference committee commends the work of the bureau and urges continuance of its activities along the same lines.

18 Bureau of Exhibits Attention is invited to the report of the bureau on the scientific exhibits at the Atlantic City session, where there was a total of 216 exhibits and four motion picture theaters in continuous operation. Loan exhibits were sent out during the year ninety-one times to fifty-eight meetings. A total of fifty-six exhibits are now available. Twenty-six motion pictures are also available for loan. They were sent out 245 times. Many hundreds of requests for information have been answered and books and pamphlets have been prepared for distribution. The bureau makes no recommendations, but its work is deserving of commendation.

19 Committee on Student Health This committee was appointed at the suggestion of government officials, has had two meetings and reports progress.

20 Committee on the Conservation of Vision This committee has also been appointed this past year, but, because of the war, its plans are not complete and will be reported later.

21 Progress Report of the Committee to Study the Relationship of Medicine and Law In compliance with a resolution of the 1941 House, a committee was appointed for this purpose. Two meetings have been held and the work is being carried on

in collaboration with the American Bar Association. The committee considered as its most important topic those closely integrated medical and legal activities which have as their common purpose the investigation of deaths in the interests of justice and public safety. The subject was divided into three parts and each assigned to a subcommittee. A preliminary report was drawn up and as a result of it the committee is now conducting a survey of the relative costs of operating coroner and medical examiner offices and also is drawing up various types of model legislation for the improvement of coroners' or medical examiners' offices. Several months will be required to complete the studies and render a report. Your reference committee recommends that the committee be continued in order to complete its work.

22 Committee on Inter-American Relations The Board of Trustees recommends that a Committee on Inter-American Relations be created in the interest of friendly relations with the medical profession of the countries of North and South America. Your reference committee recommends that this request be approved.

23 Committee to Study Air Conditioning Progress has been reported by the committee to the Board of Trustees, but the nature of existing conditions makes it advisable that the report be withheld from publication at present. The work should be continued, and your reference committee so recommends.

24 Committee on American Health Resorts The war has interfered with the work of the committee, which has, however, revised its rules for listing health resorts and is continuing the preparation of scientific papers. The committee should be continued so that the work which has been started can be carried on in the interest of further development and regulation of American health resorts.

25 Hospital Corporations Engaging in the Practice of Medicine This supplementary report deals with three resolutions introduced in the 1941 and 1942 houses. The first related to certain group hospitalization plans, including certain medical services, contrary to the expressed policies of the House of Delegates, and called for a clarification of the existing relations between physicians and hospitals. The second called for the appointment of a committee to confer with the national hospital associations on the differentiation between medical and hospital services so that the physician-patient relationship of the pathologist, the radiologist and the anesthetist may be preserved. The third asserted that the practice of certain insurance companies in paying for medical services under policies covering hospital and health insurance might lead to the inclusion of physicians' services in hospital bills.

All three resolutions were referred in whole or in part to the Board of Trustees. The Board, after reviewing the previous actions of the House on the same subjects, came to the following conclusions:

(1) In the solution of a given abuse, whether concerned with exploitation of the physician or with exploitation of the patient, actual facts must be established and local conditions must be understood before the adjudicating body can act. Constituent associations and component societies are in a better position than are the national bodies to obtain and to act on these cardinal necessities.

(2) Conditions vary widely in the respective jurisdictions requiring the weighing of circumstances before the letter of the principle or the approved action of the House of Delegates can be equitably applied.

(3) The local society is better able than is the national body to do justice to a situation that is colored by so many factors.

(4) No new principles are involved in the resolutions under consideration, and no new pronouncements would appear to be necessary.

(5) The responsibility for the correction of abuses rests primarily on component county medical societies and constituent state or territorial medical associations empowered to govern themselves in local matters, while they may reasonably be expected to abide by the authority of the House of Delegates in matters of general policy.

(6) The obligation to prevent the exploitation of the patient while protecting the prerogatives of the physician bears with equal responsibility on our profession

(7) Special societies are in position to help in the equitable solution of these urgent problems by securing the understanding and cooperation of their members. Attempts to devise remedial measures at the national level would appear to be unwise

Before discussing these further, we must take into consideration the Supplementary Report of the Board of Trustees on the Report of the Proceedings of the Joint Committee Meeting of National Hospital Associations and Representatives of the Board of Trustees of the American Medical Association. This report deals with the same general subject.

This report is lengthy and represents a prodigious amount of work. Even though the report is lengthy, it behooves every member of the House of Delegates to read and study it carefully. The factual data contained therein concern the whole future of the practice of medicine. Unless the medical profession as a whole is willing to devote at least the same amount of time and effort in studying the report and correcting the dangers pointed out therein as the Board of Trustees has in compiling it then we might as well throw in the sponge now and consent to lay domination of the practice of medicine.

That the Blue Cross plans to give medical service with or without the approval of the medical profession there can be no doubt after reading this report. The fact that the House of Delegates on numerous occasions has declared against the selling of medical service by hospitals has not stopped the practice. National approval or disapproval of any practice is a waste of time unless the state and county organizations will see that the dicta of the national body are carried out in the small localities.

The report gives the entire history of the whole matter and reviews the actions of previous House resolutions on the subject. It is high time that it was taken seriously not just for the duration of the meeting of the House but for the other 360 odd days of the year.

Your reference committee therefore recommends:

A That the House emphatically reiterate that it disapproves the injecting of a third party into the personal relationship of the patient and the physician and that hospitals should not be permitted to practice medicine.

B That the practice of radiology pathology and anesthesiology is the practice of medicine just as much as is the practice of surgery or internal medicine and that it is only a short step from including the first three in a medical service plan to including the whole field of medicine in such a plan.

C That the public should be educated to realize that the hospital created monopoly control of radiologic or any service as a source of profit beyond the normal provision for replacement department development and proper proportion of over-all costs of operation of the hospital should not be permitted nor can the hospital rightfully use per diem charges against all the hospital patients to support a radiologic or other department devoted to creating bargains in radiologic or other services in order to make hospital group insurance more attractive. To permit either will result in decrease of the quality of service and increased cost to the patient.

D The medical profession must watch with care all proposed plans for medical service and endeavor to prevent the acceptance of any plan which includes medical service under the control of the hospital.

E The effectiveness of this program can be attained only if constituent state medical associations and component county medical societies use their influence on hospitals in their respective localities and exercise control over the local members of the medical profession.

F The public must be educated on what it will mean to them in the way of inferior medical care if these dangerous trends are not curbed.

G In the relationships of the medical staff and the board of directors of a hospital there should be no intermediary. The staff should have direct access to the board.

H The Board of Trustees should continue its conferences with national hospital associations and should also endeavor to

enlist the support of special medical organizations in education both of the profession and of the public.

The Board of Trustees in general and Dr. Sensenich and Dr. Irons in particular should be commended for the tremendous amount of time and effort which they have given in preparing their very informative report.

Your reference committee recommends that the House of Delegates of the American Medical Association urge the American Hospital Association to withhold approval of the uniform comprehensive Blue Cross contract proposed by the Hospital Service Plan Commission of the American Hospital Association which includes certain medical services as a part of hospital care and which it adopted is recommended by the said commission, would virtually compel the addition of medical services to the benefits of those Blue Cross plans and now accede to the demands of the American Medical Association by confining their benefits to hospital services.

26 Board of Trustees. Your reference committee is aware of frequent criticisms of the Board of Trustees because the Board does not do this or that and although it should be well known by the medical profession at large, it is worth repeating that the Board of Trustees is bound by the mandates of the House and the House is responsible for the Board's activities. Your reference committee feels that the House should express its appreciation of the tremendous amount of work carried on throughout the year by the Trustees an amount of work which has been greatly increased by the war. It recommends therefore that the House express its heartfelt thanks to the members of the Board for their efficient work.

REPORT OF THE TREASURER

The report of the Treasurer has already been covered in substance in the section of the Report of the Board of Trustees under the heading of 'Income and Expenditures.'

Your reference committee recommends the approval of the report and notes with satisfaction the excellent financial status of the Association. Your reference committee also approves the appointment of Dr. Olin West as ad interim Treasurer following the resignation of Dr. Kretschmer. It feels that the House owes a debt of gratitude to Dr. Kretschmer for his untiring and faithful services as Treasurer for many years and so recommends.

Respectfully submitted

LOUIS H. BAUER, Chairman
W. A. COVENTRY
ANDREW F. MCBRIDE
JAMES R. McVAY

It was moved by Dr. Felix J. Underwood, Mississippi, duly seconded and carried that the House thank the reference committee for the excellent analysis and very complete report.

Report of Reference Committee on War Participation

Dr. Stanley H. Osborn, Chairman, presented the following report which was adopted on motions of Dr. Osborn, duly seconded and carried.

Your reference committee had referred to it that portion of the report of the Board of Trustees dealing with participation in the war effort contained in the report of the Board of Trustees as printed in the Handbook, pages 33 to 36 and the report of the 1942-1943 Committee on War Participation.

Your reference committee is in complete accord with the action of the Board of Trustees in making available to the Procurement and Assignment Service and to other federal services assistance, advisory services and such facilities of our Association as would be of value to the war effort.

Your reference committee commends the work of the Board of Trustees in authorizing the preparation and turning out of a scientific news letter to the officers of the medical departments of the armed forces and it compliments the editors of WAR MEDICINE and hopes that publication will continue along the same high standard so evident in the past.

Your reference committee approves the arrangements made by the War Participation Committee with the Surgeon General of the U. S. Public Health Service whereby the Public Health Service in conjunction with the Procurement and Assignment Service has undertaken studies of the medical needs in certain

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critical areas of the country. It seems evident that only by collecting such factual data can the relative needs of the civilian population in the different areas be assessed.

Your reference committee approves in principle the development in the different states of plans whereby certain physicians from other states not acceptable to the armed forces may be allowed to practice in the duration of the war emergency in critical areas where the medical needs of the civilian population may be assisted by such action. These plans may be different in the several states and should be worked out by each constituent state medical association in accordance with its local problems. Your reference committee would emphasize the importance of the full trained physicians being accepted serving as health technicians.

Your reference committee suggests that in those states where the Procurement and Assignment Service feels the need of a medical advisory group it request that a state war participation committee be appointed by the state medical society.

Your reference committee traces closer relations between the War Participation Committee and those in authority who during the war emergency are in control of medical education and training. It recommends the continuation of the War Participation Committee in order that it may continue to serve in the admirable way it has in assisting in the war effort and for civilian health in accordance with the action of the House of Delegates at the 1942 session.

Respectfully submitted,

STANLEY H. OSBORN, Chairman
CHARLES H. HENNINGSEN
SAM E. THOMPSON
FORREST J. PINKERTON
WALTER B. MARTIN
L. B. McAFEE

NEW BUSINESS

Resolution Requesting Board of Trustees to Prepare a Concise Statement of Achievements of the Medical Profession for Submission to Boards of Education

Dr. Burt R. Shurly, Section on Laryngology, Otolaryngology and Rhinology, presented the following resolution which was referred to the Reference Committee on Reports of Board of Trustees and Secretary.

WHEREAS Education is the hope of the world for better citizenship, patriotism, stability and understanding; and

WHEREAS Opportunity is knocking at the doors of our high schools to present the great achievements of medical progress in the last ten decades, therefore be it

Resolved That the Board of Trustees prepare a concise statement of the achievements of the medical profession, especially the prevention of blindness and deafness, to be sent through the state medical societies to the boards of education in charge of high schools throughout the nation.

Resolutions Opposing Legislative Recognition of Cultists

Dr. J. F. Hassig, Kansas, presented the following resolutions which were referred to the Reference Committee on Medical Education.

WHEREAS The members of the Kansas Medical Society believe that the osteopathic, chiropractic and other cultist schools of the healing art are entirely unqualified for the adequate instruction of their students in the practice of medicine, surgery, obstetrics and any branches thereof; and

WHEREAS These cultists and their schools have arisen as healing methods opposed to the use of medicine and surgery; and

WHEREAS The licensed practitioners of these healing arts are in ever increasing numbers practicing medicine and surgery, often illegally; and

WHEREAS This is resulting in a lowering of the standards of medical practice in many states because of the admission in various degrees to the practice of medicine and surgery by the cultists, especially the osteopaths, whereby the osteopathic schools become in effect diploma mills for the practice of medicine and surgery; and

WHEREAS The Kansas medical profession rejects the idea that any of the cultists are qualified to practice medicine and surgery, therefore be it

Resolved That the proper department of the American Medical Association be suitably expanded to acquire the material and develop suitable means to combat this evil of legislative recognition of the cultists to participate in the practice of medicine and surgery for which they are unqualified and be it further

Resolved That the above resolutions be referred to the Kansas Medical Society for its consideration and action.

Resolved That the above resolutions be presented to the House of Delegates of the American Medical Association at its next meeting in Chicago.

Resolution on Amendment to the Federal Compensation Act

Dr. Edward C. Pogue, New York, introduced a resolution seeking to effect an amendment of the Federal Compensation Act. The resolution was referred without reading to the Reference Committee on Legislation and Public Relations.

Resolution Proposing Amendment to Constitution, Article 5, Section 3

Dr. Arthur S. Risser, Oklahoma, presented the following resolution proposing an amendment to the Constitution, Article 5, Section 3, which under the Constitution and By-Laws may be over for action and next year.

WHEREAS The American Medical Association is a national association of physicians and surgeons and its members are engaged in the practice of medicine and surgery; and

WHEREAS There is a need for the association to act in a more unified manner and to be organized in a more efficient manner so that it may be able to handle the increasing number of members and the increasing number of problems of medicine and surgery which are being presented to it; and

Resolved That the House of Delegates of the American Medical Association do hereby propose to amend the following portion of the Constitution of the American Medical Association:

Article 5, Section 3, by adding the following language:

After the adoption of this amendment, the House of Delegates will elect at the earliest possible time a committee of three Trustees from the ranks of the Massachusetts River and all other members to all members of these Trustees shall be from states west of the Mississippi River and the Trustees shall be elected at all times be retained.

On motion of Dr. E. H. Cary, Texas, seconded by Dr. Charles E. Morgan, Massachusetts, the House voted 12-05 p. m. for lurchion.

Tuesday Afternoon, June 8

The House of Delegates was called to order by the Speaker at 2:05 p. m.

Report of Reference Committee on Reports of Board of Trustees and Secretary

Dr. Louis H. Bauer, Chairman, presented the following report which was adopted on motion of Dr. Bauer, seconded by Dr. Arthur T. McCormack, Kentucky, and carried.

Resolution Requesting Board of Trustees to Prepare a Concise Statement of Achievements of the Medical Profession for Submission to Boards of Education. Your reference committee feels that this is a rather large order particularly with regard to preparing a statement on the achievements of the medical profession as a whole. However, it is believed that a statement could be prepared and published in *HYGEIA*, which reaches the high schools in the country. In addition, as a possible motion pictures should be prepared for general release which could cover the prevention of deafness and blindness and highlight the achievements of the profession in the prevention of disease and the elements of public health in general.

Your reference committee so recommends and further recommends that the Section on Ophthalmology and on Laryngology, Otolaryngology and Rhinology be consulted in the preparation of the material.

Respectfully submitted,

LOUIS H. BAUER, Chairman
ANDREW F. McBRIDE
W. A. COVENTRY
JAMES R. McVAY

On motion of Dr. Arthur T. McCormack, Kentucky, seconded by Dr. Walter E. Vest, West Virginia, and carried as amended, attendance at the Executive Session was granted to members of the House of Delegates, any alternate delegates in attendance, employees of the Association, full time secretaries of constituent state medical associations and component county or district medical societies, secretaries of regional medical associations, men of procurement and assignment committees for state

are present officers of constituent state medical associations properly accredited, editors of medical journals the chairman of the committee on public health legislation of the Medical Society of the State of Pennsylvania and deans of medical schools

Executive Session—Tuesday Afternoon, June 8

The Sergeants-at-Arms polled the House after which on motion of Dr William R Brooksher Arkansas, seconded by Dr Arthur J Bedell, Section on Ophthalmology and carried the House went into Executive Session at 2 15 p m with Dr H H Shoulders, Speaker presiding

Report of Reference Committee on Legislation and Public Relations

Dr Thomas A McGoldrick Chairman presented the following report

1 Resolutions Expressing Approval of Federal Assistance to Wives and Children of Service Men as Outlined in Plan Under Consideration by Federal Childrens Bureau, introduced by Dr John H Fitzgibbon Oregon Your reference committee recommends (a) that the action of the federal government in making funds available for maternity and infant care for the wives and infants of enlisted men be approved and (b) that adoption be urged of a plan under which the federal government will provide for the wives of enlisted men a stated allotment for medical hospital maternity and infant care similar to the allotments already provided for the maintenance of dependents leaving the actual arrangements with respect to fees to be fixed by mutual agreement with the wife and the physician of her choice

2 Resolution Approving Proposed Changes in Regard to Medical Services of the American Red Cross in Disaster Relief submitted by Dr Arthur T McCormack Kentucky Your reference committee recommends that this resolution be approved

3 Resolution Urging the Creation of a Federal Department of Health introduced by Dr Thomas A McGoldrick in behalf of the New York State delegates Your reference committee recommends the adoption of this resolution with the insertion of the words which shall have full responsibility for all the medical and health activities of the government with the exception of those connected with the armed forces so that the resolution will now read

Resolved That the American Medical Association urge with all the power at its command that a federal department of Health be created which shall have full responsibility for all the medical and health activities of the government with the exception of those connected with the armed forces and that this department be headed by a Secretary of Health who shall be a properly qualified Doctor of Medicine and who is a member of a component county medical society

4 Resolution Requesting Changes in Administration of Federal Security Law so as to Assure Payment of the Physician introduced by Dr Walter P Anderton New York Your reference committee recommends that this resolution be disapproved because it involves the introduction of a third party a party coming between the patient and the physician Such practice has already been disapproved by the American Medical Associations House of Delegates

5 Report of Bureau of Legal Medicine and Legislation in Report of Board of Trustees contained in Handbook pages 77-107 Your reference committee commends the Board of Trustees on that part of its report covering the activities of the Bureau of Legal Medicine and Legislation Particular attention is called to the study given medical licensure and the war and the model code of evidence adopted by the American Law Institute in which suggestions of the Bureau regarding the physician-patient relationship were included

Your reference committee calls to your attention the large amount of work done by this bureau and is of the opinion that its activities could be further increased to the ultimate good of the medical profession

6 Resolutions Dealing with the Creation of a Council or Committee on Medical Service and the Establishment of an

Office of the American Medical Association in Washington D C introduced by Drs W A Coventry Minnesota F S Crockett Indiana Wells P Eagleton New Jersey Karl S J Hohlen Nebraska, Arthur S Risser Oklahoma and Barney I Hum Ohio All these resolutions as well as the opinions expressed at the open meeting of your reference committee have been given full earnest consideration There appears one objectively submits the following recommendation A Council on Legal Medicine and Legislation shall be created at once this Council to be composed of six members of the American Medical Association geographically distributed over the United States the President the Secretary the immediate Past President and a member of the Board of Trustees of the American Medical Association The six members from the American Medical Association for the first year shall be appointed by the Board of Trustees Your reference committee recommends that the term of membership on the Council be three years provided that at the end of the first year there be an election of two members for one year two for two years and two for three years After the first year the Board of Trustees shall present to the House of Delegates for election to membership on this Council a list of three nominees for each vacancy and the Chairman shall be selected by the Council from its elected members

The duties of this Council shall be to make available all facts data and medical opinions with respect to timely and adequate rendition of medical care to the American people and to keep informed the constituent state medical associations and component county medical societies of all proposed changes affecting medical care in the nation and also the activities of the Council The present Bureau of Legal Medicine and Legislation shall be made a part of this Council and the Board of Trustees shall provide adequate facilities for these activities

Respectfully submitted

THOMAS A MCGOLDRICK Chairman
EDWIN S HAMILTON
LLOYD NOLAN
PARKE G SMITH
WILLIAM R MORONY SR

The first section of the report referring to the Resolutions Expressing Approval of Federal Assistance to Wives and Children of Service Men as Outlined in Plan Under Consideration

1 The resolution as introduced by Dr Eagleton on June 7 1943 was not published in full in THE JOURNAL last week The resolution should read as follows

RESOLUTION REQUESTING ESTABLISHMENT OF A LEGISLATIVE BUREAU OF THE AMERICAN MEDICAL ASSOCIATION IN WASHINGTON

With respect to the recommendation about to be introduced on behalf of the New Jersey delegation we should mention that immediately following the annual meeting of the Medical Society of New Jersey held May 25 and 26 and pursuant to a resolution adopted at this meeting a letter from the secretary of our society containing the resolution regarding the establishment of a legislative bureau of the Association in Washington together with a brief in support of this proposal was sent to all of the listed Delegates of the Association and since our arrival we have attempted to place in the hands of the other Delegates the material referred to

We shall reserve further arguments in support of this proposal for the hearing before the reference committee but we should like to emphasize that in making this recommendation it is not to be assumed that this in any way is a reflection on the Bureau of Legal Medicine and Legislation We believe from our experience and our relations with this Bureau that it is doing an excellent job within the setup now existing The Legislative Committee of the Medical Society of New Jersey is particularly appreciative of the fine cooperation given by the Director of the Bureau Mr Holloway in relation to some of our state problems and has a high regard for his ability and judgment

In referring this recommendation we should appreciate it if the Speaker will permit these remarks to be attached

WHEREAS It is increasingly apparent in view of the present trend as signally demonstrated by the introduction of bills in the Congress only last Thursday (June 3) to establish an American Beveridge Plan of Social Security and as evidenced by the growing number and variety of measures being proposed in the Congress affecting public health and medical practice that it is impossible for the Association without representation in Washington to present the opinion of the organized medical profession properly and adequately on these measures to the members and committees of the Congress and to the public especially to the organized groups of labor agriculture industry and veterans and to keep the component societies of the American Medical Association fully and promptly informed therefore be it

Resolved That to accomplish these and related purposes the House of Delegates requests the Board or Trustees of the Association to establish promptly a legislative bureau in Washington this bureau to be under the direction of the Bureau of Legal Medicine and Legislation

by Federal Children's Bureau, was adopted on motion of Dr McGoldrick, seconded by Dr James Q Graves, Louisiana, and carried after discussion by Dr Holman Taylor, Texas, and Dr McGoldrick.

Dr McGoldrick moved the adoption of the second section of the report of the reference committee, approving the Resolution Approving Proposed Changes in Regard to Medical Services of the American Red Cross in Disaster Relief. The motion was seconded by Dr Arthur I McCormack, Kentucky, and carried.

The substitute resolution suggested in the third section of the report of the reference committee was adopted instead of the Resolution Urging the Creation of a Federal Department of Health as introduced by Dr Thomas A McGoldrick, New York, on motion of Dr McGoldrick, seconded by Dr Charles E Mongan, Massachusetts, and carried.

The fourth section of the report of the reference committee recommending the disapproval of the Resolution Requesting Changes in Administration of Federal Security Law so as to Assure Payment of the Physician was adopted on motion of Dr McGoldrick, seconded by Dr Arthur J Bedell, Section on Ophthalmology, and carried.

Section 5 of the report of the reference committee, commending the report of the Board of Trustees covering the activities of the Bureau of Legal Medicine and Legislation, was adopted on motion of Dr McGoldrick, seconded by Dr Arthur T McCormack, Kentucky, and carried after discussion by Drs Olin West, Secretary, Arthur J Bedell, Section on Ophthalmology, R W Fouts, Vice Speaker, G Henry Mundt, Illinois, the Speaker and Dr McGoldrick.

Dr McGoldrick moved that the sixth section of the report of the reference committee, recommending the establishment of a Council on Legal Medicine and Legislation, be adopted. The motion was seconded by Dr James R Reuling Jr, New York. There was discussion by Drs Wells P Eagleton, New Jersey, James C Sargent, Wisconsin, Walter E Vest, West Virginia, A W Adson, Minnesota, and Barney J Hem, Ohio, who offered the following amendment to the report of the reference committee: "The Board of Trustees is hereby directed to provide adequate funds for such council to maintain a permanent office, properly equipped and with adequate personnel, in our National Capital, in order that our membership can be more quickly informed of the legislative developments which concern the practice of medicine, so the public can be rendered better medical and health services."

Dr William M Skipp, Ohio, moved the adoption of the amendment, and the motion was seconded by Dr Charles R Meek, Ohio, and was discussed by Dr Allen H Bunce, Georgia, Speaker H H Shoulders, Dr McGoldrick, and Dr Walter B Martin, Virginia. Dr A A Walker, Alabama, moved that the amendment be tabled. The motion to table was carried by a rising vote of 114 for it to 21 against it.

After further discussion on the adoption of the sixth section of the report of the reference committee by Drs Louis H Bauer, New York, H H Shoulders, Speaker, and Walter B Martin, Virginia, and Dr McGoldrick, the motion to adopt the sixth section of the report of the reference committee carried and that section of the report was adopted.

On motion of Dr McGoldrick, seconded by Dr A A Walker, Alabama, and carried, the report of the reference committee was adopted as a whole.

The Speaker took the liberty of extending an expression of appreciation to the reference committee, and referred the report to the Board of Trustees.

Report of Reference Committee on Amendments to the Constitution and By-Laws

Dr Walter E Vest, Chairman, presented the following report:

Resolutions Requesting the Establishment of a Council on Medical Care. Your reference committee has carefully considered the resolution offered by Dr Skinner, Section on Radi-

ology, to amend the Constitution and By-Laws in order to create a Council on Medical Care. It recognizes the merit in the proposal and realizes fully the desirability of establishing such a council.

It recommends, therefore, that the first five paragraphs of the resolution be adopted and that the Board of Trustees be empowered to establish such a council as soon as feasible. Your reference committee recommends, therefore, that this council, when established, be named the Council on Medical Service rather than on Medical Care.

Inasmuch as the subject matter of paragraph 6 is covered by a number of resolutions referred to the Committee on Legislation and Public Relations, your reference committee deems it wise to offer no report on this paragraph.

Respectfully submitted,

WALTER E VEST, Chairman
ELBERT G WOOD
LOUIS A BUIE
KARL S J HOHLEN
WILLIAM WESTON

It was moved by Dr Arthur T McCormack, Kentucky, that this be referred to the Board of Trustees. The motion was seconded by Dr James R Miller, Connecticut, and carried after discussion by Drs Arthur J Bedell, Section on Ophthalmology, Edward H Cary, Texas, E H Skinner, Section on Radiology, Arthur T McCormack, Kentucky, Holman Taylor, Texas, Thomas A McGoldrick, New York, H H Shoulders, Speaker, Walter E Vest, West Virginia, Olin West, Secretary, and Henry C Macatee, District of Columbia.

It was moved by Dr Louis H Bauer, New York, seconded by Dr Robert E Schlueter, Missouri, and carried, that the Board of Trustees be asked to take into consideration the various boards existing and just established and bring in some clarifying statement as to the status of all of them and, if necessary, recommend reconsideration of some of the actions taken today.

It was moved by Dr R W Fouts, Vice Speaker, that the House rise from Executive Session and continue with the regular business. The motion was seconded by Dr William R Brooksher, Arkansas, and carried, and the House rose from Executive Session at 3 45 p m.

Tuesday Afternoon—Continued

The House reconvened in regular session at 3 45 p m with Dr H H Shoulders, Speaker, presiding.

Report of Reference Committee on Medical Education

Dr Wilbur C Davison, Chairman, presented the following report, in which the Reference Committee on Medical Education recommended that the Resolutions Opposing Legislative Recognition of Cultists introduced by Dr J F Hassig, Kansas, be referred to the Board of Trustees.

In regard to these resolutions of the Kansas Medical Society, the objects of the American Medical Association are to promote the science and art of medicine and the betterment of public health. The Council on Medical Education and Hospitals believes that only graduates in medicine of approved medical schools should be licensed in the practice of medicine and the healing art. In view of the fact that the various states have legislative acts permitting the licensure of others than graduates of approved medical schools, the purpose of the resolutions of the Kansas Medical Society is beyond the functions and scope of the Council on Medical Education and Hospitals. At the present time there is being conducted a survey of seven osteopathic schools for purposes of comparison with seven approved medical schools in similar areas and further action on these resolutions should await the publication of the findings of this survey of the National Research Council.

It is therefore recommended by your reference committee that these resolutions be submitted to the Board of Trustees.

On motion of Dr Davison, seconded by Dr James Q Graves, Louisiana, the report of the reference committee was adopted.

On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. Arthur T. McCormack, Kentucky, and carried after amendment the House recessed at 3:50 p. m. to reconvene at 10 a. m. Wednesday, June 9.

Third Meeting—Wednesday Morning, June 9

The House of Delegates was called to order at 10 a. m. by the Speaker Dr. H. H. Shoulders.

Report of Reference Committee on Credentials

Dr. G. Henry Mundt, Chairman, stated that a total of 170 delegates had been seated and added that he wished to repeat that all constituent state associations and all sections were fully represented and that the only delegates not in attendance are those representing Alaska, the Isthmian Canal Zone, the Philippines and Puerto Rico.

Roll Call

The Secretary called the roll and announced that more than a quorum had responded.

Presentation of Minutes

On motion of Dr. Arthur T. McCormack, Kentucky, seconded by Dr. H. B. Everett, Tennessee, and carried the House dispensed with the reading of the minutes.

Report of Board of Trustees

Dr. Roger I. Lee, Chairman, stated that the Board of Trustees met with the members of the Reference Committee on Legislation and Public Relations and of the Reference Committee on Amendments to the Constitution and By-Laws and the Board of Trustees took action as follows:

On motion duly seconded and carried the Board of Trustees proposed the formation of a Council on Medical Service and Public Relations to be composed of six members of the American Medical Association geographically distributed over the United States with the President, the immediate Past President, the Secretary and a member of the Board of Trustees of the American Medical Association. For the first year the six members shall be appointed by the Board of Trustees. The term of membership of the Council shall be three years provided that at the end of the first year there shall be an election of two members for one year, two for two years and two for three years. After the first year the Board of Trustees shall present to the House of Delegates for election to membership on this Council a list of three nominees for each vacancy. The Chairman shall be selected by the Council from its elected members. The duties of the Council shall be:

(a) To make available facts, data and medical opinions with respect to timely and adequate rendition of medical care to the American people; (b) to inform the constituent associations and component societies of proposed changes affecting medical care in the nation; (c) to inform constituent associations and component societies regarding the activities of the Council; (d) to investigate matters pertaining to the economic, social and similar aspects of medical care for all the people; (e) to study and suggest means for the distribution of medical services to the public consistent with the principles adopted by the House of Delegates; and (f) to develop and assist committees on medical service and public relations originating within the constituent associations and component societies of the American Medical Association.

In the exercise of its functions this Council, with the cooperation of the Board of Trustees, shall utilize the functions and personnel of the Bureau of Legal Medicine and Legislation, the Bureau of Medical Economics and the Department of Public Relations in the headquarters office.

The Board of Trustees shall provide adequate facilities for these activities and shall prepare necessary changes in the By-Laws to accommodate the purpose of this resolution.

The Board also voted to propose that the present Committee on Legislative Activities of the House of Delegates be discharged with a vote of thanks for its work.

Dr. Lee then presented the following suggestions:

The following changes and additions in the By-Laws are suggested by the establishment of a Council on Medical Service and Public Relations:

Add to chapter VII, section 3, "(d) Council on Medical Service and Public Relations."

Insert "of these" between "each" and "Council" in the third sentence of section 1 of chapter VIII, making it read:

"The term of office of the members of each of these Councils shall terminate in succession, one each year," etc.

Add to section 1 of chapter VIII a new paragraph, reading as follows: "The Council on Medical Service and Public Relations shall include six members of the American Medical Association selected according to geographic distribution with the President, the immediate Past President, the Secretary and a member of the Board of Trustees. For the first year the six members shall be appointed by the Board of Trustees. The term of membership of the Council shall be three years provided that at the end of the first year there shall be an election of two members for one year, two for two years and two for three years. After the first year the Board of Trustees shall present to the House of Delegates for election to membership on this Council a list of three nominations for each vacancy. The Chairman shall be selected by the Council from its elected members."

Change the second part of section 2, chapter VIII, to read "and that on nomination by the respective Councils the Board of Trustees shall elect annually to serve one year, a secretary of the Council on Medical Education and Hospitals and a secretary of the Council on Medical Service and Public Relations, and shall fix their salaries (As amended, 1943)."

Add a new section to chapter IX as follows: "SEC. 4. COUNCIL ON MEDICAL SERVICE AND PUBLIC RELATIONS.—The functions of the Council on Medical Service and Public Relations shall be: (1) to make available facts, data and medical opinions with respect to timely and adequate rendition of medical care to the American people; (2) to inform constituent associations and component societies of proposed changes affecting medical care in the nation; (3) to inform constituent associations and component societies regarding the activities of the Council; (4) to investigate matters pertaining to the economic, social and similar aspects of medical care for all the people; (5) to study and suggest means for the distribution of medical service to the public consistent with the principles adopted by the House of Delegates; (6) to develop and assist committees on medical service and public relations originating within the constituent associations and component societies of the American Medical Association."

In the exercise of its functions this Council, with the cooperation of the Board of Trustees, shall utilize the functions and personnel of the Bureau of Legal Medicine and Legislation, the Bureau of Medical Economics and the Department of Public Relations in the headquarters office.

Dr. George W. Kosmak, New York, moved the adoption of the report of the Board of Trustees. The motion was seconded by Drs. Francis F. Borzell, Pennsylvania, Arthur S. Risser, Oklahoma, F. S. Crockett, Indiana, James C. Sargent, Wisconsin, and A. W. Adson, Minnesota, and carried.

It was moved by Dr. Arthur T. McCormack, Kentucky, seconded by Dr. H. B. Everett, Tennessee, and carried that the amendments to the By-Laws contained in the report of the Board of Trustees be adopted.

Report of Reference Committee on Legislation and Public Relations

Dr. Thomas A. McGoldrick, Chairman, presented the following report:

1. Your reference committee, in possession of the facts relating to the By-Laws and their adoption by the House of Delegates, would implement and extend its report adopted yesterday by the statements in the report of the Board of Trustees, so that it will now read:

Your reference committee recommends the formation of a Council on Medical Service and Public Relations to be composed of six members of the American Medical Association geographically distributed over the United States, with the President, the immediate Past President, the Secretary and a member of the Board of Trustees of the American Medical Association. For the first year the six members shall be appointed by the Board of Trustees. The term of membership of the Council shall be three years provided that at the end of the first year there shall be an election of two members for one year, two for two years and two for three years. After the first year the Board of Trustees shall present to the House of Delegates for election to membership on this Council a list of three nominees for each vacancy. The Chairman shall be selected by the Council from its elected members. The duties of the Council shall be:

(a) To make available facts, data and medical opinions with respect to timely and adequate rendition of medical care to the American people, (b) to inform the constituent associations and component societies of proposed changes affecting medical care in the nation, (c) to inform constituent associations and component societies regarding the activities of the Council, (d) to investigate matters pertaining to the economic, social and similar aspects of medical care for all the people, (e) to study and suggest means for the distribution of medical services to the public consistent with the principles adopted by the House of Delegates, and (f) to develop and assist committees on medical service and public relations originating within the constituent associations and component societies of the American Medical Association.

In the exercise of its functions this Council, with the cooperation of the Board of Trustees shall utilize the functions and personnel of the Bureau of Legal Medicine and Legislation, the Bureau of Medical Economics and the Department of Public Relations in the headquarters office.

The Board of Trustees shall provide adequate facilities for these activities and shall prepare necessary changes in the By-Laws to accommodate the purpose of this report.

2. Resolution on Amendment to the Federal Compensation Act, introduced by Dr. Edward C. Podvin, New York. Your reference committee approves this resolution.

Dr. McGoldrick moved the adoption of the first section of the report of the reference committee as the report of the committee on that subject, and the motion was seconded by Dr. Felix J. Underwood, Mississippi.

Dr. Arthur T. McCormack, Kentucky, moved that the House reconsider the vote by which this section of the report of the reference committee was adopted on yesterday, and the motion was seconded by Dr. Walter E. Vest, West Virginia, and carried, after discussion by Drs. Lowell S. Gorn, California, Louis H. Bauer, New York, Louis A. Bue, Section on Gastro-Enterology and Proctology, William Weston, Section on Pediatrics, R. W. Fouts, Vice Speaker, and H. H. Shoulders, Speaker, and Dr. McCormack.

Dr. R. W. Fouts, Vice Speaker, moved to table the section of the report of the reference committee adopted on yesterday. The motion was seconded by Dr. Arthur J. Bedell, Section on Ophthalmology.

On motion of Dr. Louis H. Bauer, New York, seconded by Drs. Arthur S. Rissei, Oklahoma, and Walter E. Vest, West Virginia, and carried, the report of the reference committee as just presented was substituted for the sixth section of the report of that committee presented on yesterday.

It was moved by Dr. McGoldrick that the report of the reference committee as just presented be adopted, and the motion was seconded by Drs. Walter E. Vest, West Virginia, and James Q. Graves, Louisiana, and carried.

Dr. McGoldrick moved the adoption of the second section of the report of the reference committee approving the resolution introduced by Dr. Edward C. Podvin, New York. The motion was seconded by Dr. John Z. Brown, Utah, and carried.

Dr. McGoldrick moved that the Committee on Legislative Activities be discharged as recommended by the Board of Trustees. The motion was seconded by Dr. Burt R. Shurly, Section on Laryngology, Otolaryngology and Rhinology, and carried, and the Committee on Legislative Activities was discharged with the thanks of the House of Delegates.

Report of Reference Committee on Amendments to the Constitution and By-Laws

Dr. Walter E. Vest, Chairman, stated that the matter the reference committee had under consideration had already been attended to in the report of the Reference Committee on Legislation and Public Relations.

Report of Reference Committee on Reapportionment

Dr. Arthur I. McCormack, Chairman, stated that the statesmanlike report of the Reference Committee on Amendments to the Constitution and By-Laws on yesterday disposed of the question of reapportionment and that there would be no report from the reapportionment committee, which would like to be discharged. Doubt as to that procedure was expressed because it is necessary to reapportion delegates every third year and this is the year for that purpose.

Dr. McCormack then stated that the reference committee reports progress.

Dr. Arthur J. Bedell, Section on Ophthalmology, moved that the report of the reference committee be referred back to the committee with the request that it bring in a report. The motion was seconded and carried after discussion by Drs. Arthur I. McCormack, Chairman of the reference committee, H. H. Shoulders, Speaker, Olin West, Secretary, and Walter E. Vest, West Virginia, and Dr. Bedell.

On motion of Dr. Louis H. Bauer, New York, seconded and carried, the House recessed from 10:50 a. m. until 11 a. m.

Report of Reference Committee on Reapportionment

Dr. Arthur I. McCormack, Chairman, presented the following report which was adopted on motion of Dr. McCormack, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried:

Your reference committee has made a study of this matter and recommends that the basis of the apportionment of delegates for the next three years be one delegate for each 965 members or fraction thereof, each constituent association being represented by at least one delegate irrespective of the number of members.

The By-Laws specifically provide that the total membership of the House of Delegates shall not exceed 175. The total membership of the Association on April 1, 1943, as recorded in the office of the Secretary, was 122,741.

On the basis of one delegate for each 965 members or fraction thereof, the total membership of the House will be 175. On this basis Connecticut, New York and Ohio will each gain a delegate and Kentucky, North Carolina and South Carolina will each lose a delegate.

The Speaker expressed to the members of the reference committee a word of thanks for the very excellent work they have performed at this session of the House.

ELECTION OF OFFICERS

The Speaker declared the next order of business to be the election of officers.

Election of President-Elect

Dr. Charles H. Phifer, Illinois, nominated for President Elect Dr. Herman L. Kretschmer, Chicago, and the nomination was seconded by Drs. Arthur T. McCormack, Kentucky, James C. Sargent, Wisconsin, Allen H. Bunce, Georgia, Edward H. Cary, Texas, George W. Kosmak and Thomas A. McGoldrick, New York, Carl R. Steinke, Ohio, James Q. Graves, Louisiana, Walter E. Vest, West Virginia, Robert L. Anderson, Pennsylvania, Arthur J. Bedell, Section on Ophthalmology, and William R. Molony Sr., California, the five delegates.

from Michigan as well as the delegates from Kansas Minnesota, Missouri New Jersey and Pennsylvania Dr Elbert G Wood, Tennessee, the delegates from Iowa, Dr James P Wall Mississippi, Dr Roy B Henline, Section on Urology, the delegates from Massachusetts and Dr Grover C Penberthy, Section on Surgery, General and Abdominal

Membership of House of Delegates

Percent Number of Delegates	State	Number of Members 4/1/43	Number of Delegates Under Basis of Ap- portionment
2	Alabama	1,335	2
1	Arizona	1,000	1
2	Arkansas	1,070	2
8	California	7,314	8
2	Colorado	1,151	2
2	Connecticut	1,917	3
1	Delaware	15	1
1	District of Columbia	94	1
2	Florida	1,149	2
3	Georgia	1,665	3
1	Idaho	90	1
3	Illinois	8,587	3
4	Indiana	3,414	4
3	Iowa	2,410	3
2	Kansas	1,560	2
3	Kentucky	1,886	2
2	Louisiana	1,551	2
1	Maine	751	1
2	Maryland	1,537	2
6	Massachusetts	5,542	6
5	Michigan	4,415	5
4	Minnesota	2,945	4
2	Mississippi	573	2
4	Missouri	3,154	4
1	Montana	456	1
2	Nebraska	1,147	2
1	Nevada	194	1
1	New Hampshire	548	1
5	New Jersey	4,178	5
1	New Mexico	72	1
19	New York	18,674	20
3	North Carolina	1,912	2
1	North Dakota	408	1
7	Ohio	6,783	8
2	Oklahoma	1,504	2
1	Oregon	932	1
11	Pennsylvania	9,092	11
1	Rhode Island	613	1
2	South Carolina	992	1
1	South Dakota	349	1
2	Tennessee	1,756	2
5	Texas	4,398	5
1	Utah	481	1
1	Vermont	385	1
2	Virginia	1,892	2
2	Washington	1,645	2
2	West Virginia	1,337	2
3	Wisconsin	2,587	3
1	Wyoming	195	1
1	Alaska	58	1
1	Hawaii	341	1
1	Isthmian Canal Zone	126	1
2	Philippine Islands	1,247*	2
1	Puerto Rico	450	1
1	U S Army		1
1	U S Navy		1
1	U S Public Health Service		1
16	Scientific Sections		16
Total		122,741	175

* From records last received

On motion of Dr A A Walker, Alabama seconded by Dr Louis H Bauer, New York and carried, the nominations were closed

It was moved by Dr Arthur T McCormack, Kentucky, that the Secretary be instructed to cast the ballot of the House for Dr Herman L Kretschmer for President-Elect, and the motion was seconded by several delegates and carried

The Secretary cast the ballot of the House of Delegates for Dr Herman L Kretschmer, Chicago, for President-Elect of the American Medical Association for the ensuing year, and the Speaker declared Dr Kretschmer so elected

Election of Vice President

Dr Walter F Donaldson, Pennsylvania, nominated Dr Edward L Bortz, Philadelphia, and the nomination was seconded by Drs H B Everett, Tennessee, Clyde L Cummer, Section on Dermatology and Syphilology, William Weston, Section on Pediatrics and Robert H Hayes, Illinois

Dr Walter W King Colorado nominated Dr John W Amesse Denver, and the nomination was seconded by delegates from Wyoming Illinois Arkansas, Louisiana and Minnesota Dr Arthur S Risser Oklahoma, Dr E N Roberts, Idaho, Dr Grover C Penberthy Section on Surgery General and Abdominal Dr James R McVay Missouri, Dr E H Skinner Section on Radiology, and Dr John Z Brown, Utah

On motion of Dr Clyde L Cummer, Section on Dermatology and Syphilology, seconded by Dr Arthur J Bedell, Section on Ophthalmology and carried, the nominations were closed and the tellers spread the ballot

The Secretary announced that 155 votes had been cast out of a registration present of 158 of which Dr Bortz received 54 and Dr Amesse 101, and the Speaker declared Dr Amesse elected Vice President of the American Medical Association for the ensuing year

On motion of Dr Walter F Donaldson Pennsylvania seconded by Dr Clyde L Cummer, Section on Dermatology and Syphilology and carried the election of Dr Amesse was declared unanimous

Introduction and Address of Dr Herman L Kretschmer

Dr Charles H Phifer Illinois presented the new President-Elect Dr Herman L Kretschmer Chicago, who addressed the House as follows

Mr President Mr Speaker Members of the House of Delegates of the American Medical Association May I thank you from the bottom of my heart for electing me to this high office of President-Elect of the American Medical Association? I feel that this is the highest honor that can be paid to a member of the American Medical Association

I am mindful of the fact that this honor carries with it many obligations and you who represent more than 123,000 doctors in the United States I hope will find your confidence in me has not been misplaced

You have had a long trying session I will not burden you with a long speech I wish to take this opportunity to thank the House for the privilege it has given me to serve you as your Treasurer for ten years I cannot let this opportunity go by without thanking the Board of Trustees Since I began sitting in with its members ten years ago the complexion of the Board has changed completely and there are not on that Board today any of the original men who were on the Board in 1933 Irrespective of the change in personnel in this Board I wish all of you knew how honestly and sincerely and how conscientiously the Board performs its work It turns over many of the problems that you present to it with great deliberation having always in mind what is best for American medicine

And last but not least I wish to pay my respects to and to thank Dr Olin West whom somebody called yesterday the great grand man of American medicine He has always been most cooperative he has always been most helpful and it was a joy and a privilege to work with him

Again my sincerest thanks to the members of the House for electing me to this exalted position I thank you

Election of Secretary

Dr E E Barlow Arkansas nominated Dr Olin West, Chicago, to succeed himself as Secretary of the American Medical Association and the nomination was seconded by Drs William Weston Section on Pediatrics Robert A Peers Cali-

form, Wells P Eagleton, New Jersey, George M Kosmak, New York, Stephen E Gavin, Wisconsin, James Q Graves, Louisiana, Walter W King, Colorado, Henry Cook Macatee, District of Columbia, H B Everett, Tennessee, Thomas A McGoldrick, New York, Walter E Vest, West Virginia, Olin H Weaver, Georgia, William A Mulherin, Georgia, Felix J Underwood, Mississippi, George P Johnston, Wyoming, E H Cary, Texas, Mather Pfaffenberger, Illinois, Burt R Shurly, Section on Laryngology, Otology and Rhinology, J F Hassig, Kansas, Robert F Schlueter, Missouri, Charles L Mongan, Massachusetts, W A Coventry, Minnesota, Frank I Reeder, Michigan, F S Crockett, Indiana, John H Fitzgibbon, Oregon, Ivan Fawcett, West Virginia, John Z Brown, Utah, Forrest J Pinkerton, Hawaii, Virgil E Simpson, Kentucky, Deering G Smith, New Hampshire, N J Nessa, South Dakota, Louis H Bauer, New York, Francis F Borzell, Pennsylvania, and several other delegates from Pennsylvania, Indiana and Delaware.

Dr William Weston, Section on Pediatrics, moved that the nominations be closed, and the motion was seconded by Dr James Q Graves, Louisiana, and carried.

On motion of Dr Arthur J Bedell, Section on Ophthalmology, seconded by Dr Wells P Eagleton, New Jersey, and carried, the Speaker of the House cast the ballot of the House for Dr Weston Secretary for the ensuing year and declared Dr Weston so elected.

Election of Treasurer

Dr Roger I Lee, Chairman in behalf of the Board of Trustees, placed in nomination for Treasurer of the American Medical Association Dr Josiah J Moore, Chicago. The nomination was confirmed on motion of Dr James Q Graves, Louisiana, seconded by Dr Edwin S Hamilton, Illinois, and carried. The Speaker declared Dr Josiah J Moore, Chicago, elected Treasurer of the American Medical Association for the ensuing year.

Election of Speaker of House of Delegates

With Dr R W Fouts, Vice Speaker, in the chair, Dr H B Everett, Tennessee, nominated Dr H H Shoulders, Nashville, Tenn, to succeed himself as Speaker of the House of Delegates of the American Medical Association, and the nomination was seconded by Drs James Q Graves and Leon J Menville, Louisiana, Arthur T McCormack, Kentucky, Louis A Buie, Section on Gastro-Enterology and Proctology, Burt R Shurly, Section on Laryngology, Otology and Rhinology, Wells P Eagleton, New Jersey, J F Hassig, Kansas, Frank E Reeder, Michigan, and delegates from Illinois. The nominations were closed on motion of Dr Louis A Buie, Section on Gastro-Enterology and Proctology, seconded by Dr George P Johnston, Wyoming, and carried.

On motion of Dr Arthur T McCormack, Kentucky, seconded by Dr James Q Graves, Louisiana, and carried, the Secretary cast the ballot of the House for Dr H H Shoulders, Nashville, Tenn, for Speaker of the House of Delegates of the American Medical Association for the ensuing year and the Vice Speaker declared Dr Shoulders so elected.

Election of Vice Speaker of House of Delegates

The Speaker resumed the chair and called for nominations for Vice Speaker of the House of Delegates.

Dr A W Adson, Minnesota, nominated for Vice Speaker of the House of Delegates of the American Medical Association Dr R W Fouts, Omaha. The nomination was seconded by Drs James Q Graves, Louisiana, Edwin S Hamilton, Illinois, Stephen E Gavin, Wisconsin, Walter W King, Colorado, and Robert E Schlueter, Missouri. On motion of Dr James Q Graves, Louisiana, seconded by Dr Roy B Henline, Section on Urology, and carried, the nominations were closed.

Dr E G Wood, Tennessee, moved that the Speaker cast the ballot of the House for Dr Fouts to succeed himself as Vice Speaker of the House of Delegates. The motion was seconded by Dr James Q Graves, Louisiana, and carried. The Speaker cast the ballot of the House for Dr R W Fouts,

Omaha, to succeed himself as Vice Speaker of the House of Delegates of the American Medical Association for the ensuing year and declared Dr Fouts so elected.

Election of Trustees

Dr Arthur T McCormack, Kentucky, nominated Dr William F Braasch, Rochester, Minn, to succeed himself as a member of the Board of Trustees for a term of five years. The nomination was seconded by Drs A W Adson, Minnesota, E H Cary, Texas, Louis A Buie, Section on Gastro-Enterology and Proctology, Stephen E Gavin, Wisconsin, Thomas A McGoldrick, New York, James M Hayes, Minnesota, James R McVay, Missouri, R K Packard, Illinois, F S Crockett, Indiana, and Robert E Schlueter, Missouri. On motion of Dr James Q Graves, Louisiana, seconded by Dr Arthur J Bedell, Section on Ophthalmology, and carried, the nominations were closed.

It was moved by Dr Arthur T McCormack, Kentucky, seconded and carried, that the Secretary cast the ballot of the House for Dr William F Braasch to succeed himself for a term of five years as a member of the Board of Trustees of the American Medical Association, and the Speaker declared Dr Braasch so elected, after the Secretary cast the ballot.

Dr G Henry Mundt, Illinois, nominated as a member of the Board of Trustees to succeed himself for a term of five years Dr Ernest E Irons, Chicago. The nomination was seconded by Drs Thomas P Murdock, Connecticut, Clyde L Cummer, Section on Dermatology and Syphilology, Thomas A McGoldrick, New York, George P Johnston, Wyoming, Deering G Smith, New Hampshire, Felix J Underwood, Mississippi, Robert E Schlueter, Missouri, and Olin H Weaver, Georgia. A motion by Dr Olin H Weaver, Georgia, seconded by Dr Sam E Thompson, Texas, to close the nominations was carried.

The Secretary cast the ballot of the House for Dr Ernest E Irons, Chicago, to succeed himself as a member of the Board of Trustees of the American Medical Association for a term of five years, on motion of Dr Clyde L Cummer, Section on Dermatology and Syphilology, seconded by Dr James Q Graves, Louisiana, and carried, and the Speaker declared Dr Irons so elected.

Nomination for Standing Committees

NOMINATIONS BY DR JAMES E PAULLIN, PRESIDENT

Dr James E Paullin, President nominated Dr John H O'Shea, Spokane, Wash, to succeed himself as a member of the Judicial Council for a term of five years.

On motion of Dr Arthur T McCormack, Kentucky, seconded by Dr Felix J Underwood, Mississippi, and carried, the nomination of Dr O'Shea was confirmed.

Dr Paullin nominated Dr Edward L Bortz, Philadelphia, to succeed himself as a member of the Council on Scientific Assembly for a term of five years.

On motion of Dr Walter F Donaldson, Pennsylvania, seconded by Dr Clyde L Cummer, Section on Dermatology and Syphilology, and carried, the nomination of Dr Bortz was confirmed.

NOMINATION BY THE BOARD OF TRUSTEES

Dr Roger I Lee, Chairman, stated that the Board of Trustees wished to nominate Dr Russell L Haden, Cleveland, to succeed himself as a member of the Council on Medical Education and Hospitals for a term of seven years.

The nomination of Dr Haden was confirmed on motion of Dr Barney J Hein, Ohio, seconded by Dr Walter E Vest, West Virginia, and carried.

Election of Affiliate and Associate Fellows

NOMINATIONS FOR AFFILIATE FELLOWSHIPS APPROVED BY THE COUNCIL ON SCIENTIFIC ASSEMBLY

The Secretary presented the following nominations for Affiliate Fellowship, properly approved by the Council on Scientific

Assembly, which, on motion of Dr Arthur J Bedell, Section on Ophthalmology, seconded by Dr James C Sargent, Wisconsin, and carried, were confirmed

Abbot E Stanley Wayland Mass	Libby J H E Weymouth Mass
Ash Rachel I San Francisco	Loring Robert G, Concord Mass
Asherott Felix F Glendale, Calif	Mace Lewis S Los Gatos Calif
Bach James A Milwaukee	McCarthy H L Los Angeles
Baldwin George E Green Lake Wis	McCaw John A, Denver
Barton Lyman G Plattsburg, N Y	McCleave Thomas C Berkeley, Calif
Bissett Alice H Boston	McDaniel W A Taylors S C
Caldwell John D Lake Worth Fla	Morfit John C, St Louis
(nominated from Pennsylvania)	Moser William Brooklyn
Champion J A Colton Calif	Neptune John W Salina Kan
Cloyd Augustus D Omaha	Nisong, Frank C Columbia Mo
Copeland Charles E Charleston, W Va	O Neil, C H Deckerville Mich
Daniel Karl A Phoenix Ariz.	Patterson E J Pittsburgh
(nominated from Illinois)	Phinney A O Louisville Ky
Davis Stephen R Lynn Mass	Pinkston Omar W, Kansas City, Mo
Drexel A Milwaukee	Poorman Bert A Kansas City, Mo
Findley Palmer Omaha	Pursell F J Los Angeles
Frazer Homer E New Lebanon N Y	Rosenheim, Paul J New York
George McLeod M Attredale Colo	Schultz Louis Chicago
George William A Iowa Linda Calif	Scott George D New York
Gutmann John H Albany N Y	Sessions S Kenosha Ann Arbor (nominated from Indiana)
Hale J W Waco Texas	Sheridan Joseph P Richmond Hill L I N Y
Hamprey A R Pittsburgh	Smith Arthur M Oakland Calif
Hare C H Boston	Spaid Charles J Springfield Mass
Hartman W F Swoope Va	Staats H H Charleston W Va
Herbst Frank Kansas City Mo	Stauter Nathan P Philadelphia
Hood Jacob J Cicero Ill	Steinach William New York
Hopkins William T Lynn Mass	Sturge Edgar Scranton Pa
Hovt Henry A Watertown N Y	Sullivan John J Dorchester Mass
Hurd Lee M Rowayton Conn	Sutherland Charles G Rochester Minn
Imrie C T Rochester N Y	Sutton Richard L Kansas City Mo
Jackson V B Washington D C	Thomason H E Kansas City Mo
Janko N New York	Wahn Henry New York
John F D Chicago	Wanous Ernest Z Minneapolis
Johnson Fred G Iron River Wis	Weill Nathan J Pittsburgh
Johnston James Los Angeles	Verxa Charles W Los Angeles
Jordan John F Peabody Mass	
Lazelle Horace G Thetford Vt (nominated from California)	

NOMINATIONS FOR ASSOCIATE FELLOWSHIP

The Secretary presented the following nominations for Associate Fellowship approved by the Judicial Council or by the section indicated which were confirmed on motion of Dr Clyde L Cummer Section on Dermatology and Syphilology, seconded by Dr E E Barlow Arkansas and carried

NOMINATIONS OF AMERICAN MEDICAL MISSIONARIES APPROVED BY THE JUDICIAL COUNCIL

Abbott Donald H Juliaca Peru S A
Rouhe O J Kamina Belgian Congo
Weber Harry J Addis Ababa Ethiopia

NOMINATIONS FOR ASSOCIATE FELLOWSHIP APPROVED BY THE SECTIONS INDICATED

EXPERIMENTAL MEDICINE AND THERAPEUTICS

Flosdorf, Karl W Lansdowne Pa

PATHOLOGY AND PHYSIOLOGY

Johnson Victor E Chicago

Place of 1946 Annual Session

Dr Roger I Lee Chairman, Board of Trustees, presented the following statement

The Board of Trustees received no invitations up to this morning but during the morning an invitation was received as follows

The California Medical Association takes pleasure in extending to the American Medical Association an invitation to hold its 1946 convention in the city of San Francisco

We look forward to a convention held in a time of victorious peace in which there can be shown the part medicine played in winning the war

Cordially yours,

LOWELL S GOIN, President-Elect,
and Delegate to American Medical Association
DWIGHT L WILBUR, Delegate
LYELL C KINNEY, Delegate
HENRY S ROGERS, Delegate
EDWARD N EWER, Delegate
WILLIAM H KIGER, Delegate
ROBERT A PEERS, Delegate
WILLIAM R MOLOVY SR, Delegate"

On motion of Dr Arthur J Bedell, Section on Ophthalmology, seconded by Dr John Z Brown, Utah, and Dr Felix J Underwood, Mississippi, and carried, the House voted that the 1946 session of the American Medical Association shall be held in San Francisco. The Speaker declared San Francisco the place of the 1946 annual session of the American Medical Association

Expressions of Appreciation

VOTE OF THANKS TO SPEAKER

With the Vice Speaker in the Chair, a vote of thanks to the Speaker for his very efficient and splendid service was extended on motion of Dr Burt R Shurly, Section on Laryngology, Otology and Rhinology, seconded by Dr Arthur J Bedell, Section on Ophthalmology and carried

The Speaker resumed the Chair

EXPRESSION OF APPRECIATION TO THE NATIONAL BROADCASTING COMPANY

It was moved by Dr Arthur T McCormack, Kentucky, seconded by Dr Felix J Underwood, Mississippi and carried, that the House express itself as being grateful to the National Broadcasting Company for its cooperation in making the broadcasting program of the American Medical Association possible

EXPRESSION OF APPRECIATION TO BRIG GEN FRED W RANKIN

Dr Arthur T McCormack, Kentucky, moved that the House of Delegates express to the retiring President Brig Gen Fred W Rankin its gratitude for the very arduous service he has rendered along with his responsibilities in the Army and wish him good in war and in peace. The motion was seconded by Drs Clyde L Cummer, Section on Dermatology and Syphilology, Felix J Underwood Mississippi and Wells P Eagleton, New Jersey, and carried

Telegram from President of Southern Medical Association

Dr Felix J Underwood, Mississippi, presented the following telegram which was ordered filed in the records of the American Medical Association

In your deliberations in behalf of the nation's health and the promotion of our war efforts may I convey to the officers and the members of the House of Delegates of the greatest medical association in the world the fullest cooperation and greetings from the Southern Medical Association. Love to all Harvey F Garrison"

Response of Brig Gen Fred W Rankin to Expression of Appreciation of House

Dr Fred W Rankin Retiring President addressed the House as follows

Mr Speaker and Members of the House It is a great satisfaction to me to express to you my appreciation for this generous motion which you have just passed and to tell you that the two years which I have served you in the capacity of President-Elect and President of this Association have been very happy although arduous years and I can assure you that I have taken the responsibility seriously and that as time goes on I hope that I may be able to continue to do whatever is in my power to forward the progress of the American Medical Association. Thank you

On motion of Dr E E Barlow Arkansas, seconded and carried unanimously, the House adjourned sine die at 12 05 p m

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status—H R 2935 has passed the House, making appropriations for the Department of Labor, the Federal Security Agency and related independent agencies for the fiscal year ending June 30, 1944. Among other sums appropriated this bill makes available to the Children's Bureau \$4,000,000 for grants to states to provide, in addition to similar services otherwise available, medical, nursing and hospital maternity and infant care for wives and infants of enlisted men in the armed forces of the United States under plans developed and administered by state health agencies and approved by the chief of the Children's Bureau. No part of any appropriation for the Children's Bureau, the bill provides, may be used to promulgate or carry out any instruction, order or regulation relating to the care of obstetric cases which discriminates between persons licensed under state law to practice obstetrics. The bill also makes available to the Public Health Service the sum of \$3,500,000 for the training of nurses. H R 2536 has been reported to the Senate, a bill to provide for the promotion of vocational rehabilitation of persons disabled in industry or otherwise.

Bill Introduced—H R 2947, introduced by Representative Coffee Washington, proposes to authorize an appropriation of \$18,000,000 for the fiscal year ending June 30, 1945 [sic] and for each fiscal year thereafter such sums as may be necessary to enable each state to provide medical care to recipients of public assistance under the titles of the Social Security Act relating to old age assistance, aid to dependent children and aid to the blind. The term "medical care" is defined to include only such services, supplies and appliances for the diagnosis, cure, mitigation, treatment or prevention of disease, or for the purpose of affecting any structure or function of the body, as may be approved in regulations of the Social Security Board.

STATE MEDICAL LEGISLATION

Alabama

Bill Introduced—S 302 proposes the creation of a mental hygiene clinic to advise and consult with individual citizens of the state who recognize or feel that they have mental problems about which they may be concerned threatening to affect their own mental health, to consult and advise with the relatives or guardian of persons about whom they may be interested anxious or concerned on the account of some suspected or approaching or threatening mental health, to admit such person for examination, observation, study, consultation, diagnosis, opinion and to advise as to what course shall be followed in the care, planning for and treatment of such individuals.

California

Bills Enacted—A 257 has become chapter 1098 of the Laws of 1943. It amends the health and safety code by requiring the state department of public health to seek out children with impaired sense of hearing, especially in the primary and grammar grades of all schools. It shall employ for such diagnostic investigation only trained otologists. This law does not give the department power to require medical or physical examination of children without consent of the parent or guardian, however. A 686 has become chapter 1061 of the Laws of 1943. It amends the Health and Safety Code by providing, among other things, that the state director of health shall be a doctor of medicine eligible to license to practice in California, with at least one year's postgraduate training in public health and a minimum of five years' practical experience as an administrative officer in a well organized health department.

Connecticut

Bill Enacted—H 902 has become chapter 308 of the Laws of 1943. It provides that licensed physicians serving in the armed forces of the United States shall not be required to renew their certificates until the next renewal period immediately following discharge from such service or the renewal period following the second year after the cessation of hostilities, whichever is first.

Florida

Bills Enacted—S 264 was approved, May 31. It provides that any member of the armed forces of the United States on active duty who, at the time of entering on active duty, was in good standing with any administrative board (which includes the state board of medical examiners) of the state of Florida and was entitled to practice or engage in his profession shall be kept in good standing by such administrative board without registering, paying dues or fees or performing any other act on his part to be performed, as long as he is a member of the armed forces on active duty and for a period of six months after his discharge therefrom. S 301 was approved, June 11. It provides an appropriation of \$20,000 to provide for the vocational rehabilitation of disabled persons who are physically incapable of earning a livelihood but whose disabilities appear to be amenable to treatment or surgery and could be removed or materially diminished to the extent that such persons would then be physically able to engage in remunerative employment. S 367 was approved, June 11. It provides for the creation of a Florida board of massage to examine persons desiring to practice massage, defined as the art of body massage, either by the hand or by mechanical apparatus, oil rubs, gymnastics, colon irrigations, hot and cold packs, cabinet baths (excluding fever therapy), tub, shower, sitz and similar baths. S 616 was approved, June 6. It authorizes state, county and municipal health officers to commit persons within their respective jurisdictions who are infected with venereal disease to quarantine and compulsory treatment in any hospital within the state whenever in their judgment it is necessary to protect the public health. S 641 was approved, June 11. It amends the medical practice act by providing that the clerk of the circuit court shall not accept for recording and shall not record any license to practice medicine dated after the effective date of the act unless the same has been presented to him for recording on or before sixty days after the date of the license and provided further that no license to practice medicine dated prior to the effective date of the act may be recorded by the clerk of the circuit court unless it has been presented to him for recording on or before the expiration of six months from and after the effective date of the act or within sixty days after the date of recertification thereof by the board of medical examiners.

Illinois

Bill Introduced—H 704, to amend the law relating to nursing homes, proposes that such home will not be denied a license because it is conducted in accordance with the tenets of any well recognized church or denomination and the treatment therein is confined to prayer and spiritual means as an exercise or enjoyment of religious freedom. The inspection of such institutions would be confined to the adequacy of the facilities to furnish such service and the sanitary and fire protection facilities thereof.

South Carolina

Bill Enacted—H 141 has become act 354 of the Laws of 1943. It provides that receipted hospital bills shall be an exemption under the state income tax law.

Wisconsin

Bills Enacted—A J R 53 has become chapter Res No 38 of the Laws of 1943. It is a resolution that the state board of health, state board of medical examiners, state board of dental examiners and the several professional societies be requested to ask all practicing physicians and dentists to ascertain, as far as possible, whether patients are now or are on any subsequent date veterans of the present war and, if so, to preserve case histories thereof for at least six years after the date of the last professional service rendered. A bill has become chapter 304 of the Laws of 1943. It amends the law relating to the licensing of nurses by providing for the addition thereto of regulations for the licensing of "licensed attendants" who are authorized to perform simple procedures in the physical care of a patient and such other procedures as may be directed by the attending physician.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY FINDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITY THE NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

ALABAMA

Governor Approves Four Year Medical School—The Medical College of Alabama will be established under a bill recently signed by the governor which appropriates a million dollars for land buildings and equipment and \$366,750 for each of the fiscal years ending Sept 30 1944 and Sept 30 1945. The governor is to appoint a building commission to select a site for the school which will operate as a part of the University of Alabama. The bill also authorized the creation of a Physicians Advisory Board consisting of five physicians who shall be members in good standing of the state medical association and shall reside in different sections of the state. This board will cooperate with the commission in its activities toward the construction of the school. The bill provides that the board of trustees of the University of Alabama is authorized to establish a scholarship for each county in the state in the amount of \$400 a year for the benefit of one resident of each county payable from the annual state appropriation to the school of medicine.

CALIFORNIA

State Board Changes Time for Examinations—The state board of medical examiners at its recent meeting in Los Angeles decided that it would give written examinations to candidates for licensure whenever a sufficient number of such applications are on file. The action was to aid in every possible way in the war effort. In the past the board has held four written examinations a year.

Orders License Restored—Newspapers recently reported that the license of Dr Thomas D Wyatt Redding to practice medicine has been restored by a writ of mandate issued by Superior Judge Edward Murphy in San Francisco. The physician who has twice had his license revoked for performing allegedly illegal operations brought action against the state board of medical examiners, claiming that it had exceeded its jurisdiction in revoking his license the second time.

Opening for Physician—The Los Angeles County Civil Service Commission is seeking a doctor of medicine to conduct venereal disease clinics and perform other venereal disease work in the Los Angeles County Health Department. Men under 55 years of age who have graduated from an accredited medical school and who have completed at least one year's internship in an approved hospital are eligible for the position which offers a salary of \$296 a month. The examination will be held in Los Angeles and may also be held in other parts of the country if warranted by the applications filed. Information may be obtained from the office of the commission Room 102 Hall of Records Los Angeles 12 California. Applications must be filed on or before Wednesday July 7.

IDAHO

Annual Registration Due July 1—All practitioners of medicine and surgery holding licenses to practice in Idaho are required by law to register annually on July 1 with the Department of Law Enforcement and at that time to pay a fee of \$2. If a licensee has not paid the annual registration fee by October 1 his license can be canceled but will be restored within five years thereafter on payment of the delinquent fees and a \$10 penalty. If a license has been canceled for more than five years it can be reinstated only on the payment of \$25 and on the licensee's passing an examination the nature of which shall be determined by the Department of Law Enforcement.

ILLINOIS

Society News—Dr Walter E Foley Davenport Iowa was elected president of the Iowa-Illinois Central District Medical Association at its meeting in Rock Island May 27. He succeeds Dr David B Freeman Moline. Other officers include Lieut Col Herbert P Miller M R C of Rock Island now stationed at Fort Sheridan vice president Dr James Dunn Davenport secretary and Dr Florens E Bollaert East Moline treasurer.

Chicago

Chicago Alumni Awarded Citations—On June 12 the University of Chicago awarded citations as distinguished alumni to fifty-five members of the college classes prior to 1911. Among those honored are Drs Morris Fishbein Arno B Luckhardt Franklin C McClain and Rollin T Woodvatt.

Hektoen Institute for Medical Research—On July 2 the eightieth birthday of Dr Ludwig Hektoen the Hektoen Institute for Medical Research at Cook County will be dedicated in his honor. Dr Morris Fishbein Editor of THE JOURNAL will preside at the ceremonies which will be held at 10 a m. The building formerly the McCormick Institute for Infectious Diseases has been purchased by the board of Cook County commissioners. A portion of the building is already in use. A plaque bearing a bas-relief of Dr Hektoen will be unveiled in the entrance of the institute. The presentation will be made by Clayton F Smith president of the board of commissioners and Dr Karl Meyer will receive it on behalf of the institute. The board of trustees for the Hektoen Institute for Medical Research of Cook County established by the Cook County Board comprises:

Mr Smith
Dr Raymond W McNeely president of staff Cook County Hospital
Col Albert A Sprague
Dr Meyer medical superintendent Cook County Hospital and other Cook County institution
Frank Bobrytzka chairman Hospital Committee Cook County Board of Commissioners
William McFetridge international president Building Service Employees Union
Brig Gen Frank Schwengel president Seagram Distilleries Inc
Dr Fishbein
Dr Andrew C Ivy scientific director Naval Medical Research Institute Bethesda Md
Dr Raymond B Allen executive dean of Colleges of Pharmacy Dentistry and Medicine and dean of College of Medicine University of Illinois
Dr Italo F Volini chairman of the Department of Medicine Loyola University School of Medicine
Dr Marshall Davison chairman Department of Surgery Cook County Hospital
Dr Maurice L Blatt head of Children's Division Cook County Hospital
Lieut Col Samuel J Hoffman M C chief of medical personnel Sixth Service Command
Dr James P Simonds professor of pathology Northwestern University Medical School
Dr Aaron Arkin chairman Department of Medicine Cook County Graduate School of Medicine
Dr Hans Popper director of laboratories Cook County Hospital
Dr Frederick Steigmann director of therapeutics Cook County Hospital

LOUISIANA

University News—At a meeting of the History of Medicine Society of Tulane University, April 15 the Rudolph Matas Award for the best paper on the history of medicine presented before the society was given to Mr Charles M Wilson senior in the medical school, for his paper on American Contributions to Neurosurgery. The I I Lemann Award for the best discussion before the society was presented to Mr Leonard K Knapp junior in the medical school, for his discussion on aviation medicine. The presentations were made by Dr B Bernard Weinstein New Orleans instructor in gynecology in the medical school Harold Cummins, Ph D, New Orleans, professor of microscopic anatomy was the principal speaker discussing Extra Medical Interests of Charles Richet Arthur Conan Doyle and Dr Krandon.

New Orleans Venereal Disease Campaign—A citywide venereal disease campaign committee was recently formed in New Orleans after a drive against prostitution when 820 women were arrested and examined between July 14 1942 and Feb 1 1943. The group had a reported infection rate of 80 per cent. The work of the new committee is financed through contributions by the city individuals civic agencies and commercial firms. The facilities of practically every medium of communication were made available. According to the *Har Letter* although the main drive of the campaign was scheduled originally for only two weeks the campaign committee decided to expand and continue for a longer period. The members of the committee were asked to continue to serve for several more months and activities directed at education of the man in the street were intensified.

Grants to Medical School—According to the *Tulannan* a fund of \$30,000 for the establishment of a biologic chemistry division of the Tulane University or Louisiana School of Medicine was bequeathed to the university by Miss Aimee Creagh Denis. The fund is designed to establish the Willey-Lover Denis Fellowship in memory of Miss Denis's sister Willey L Denis a biochemist. Three grants for work in tropical medicine and cancer research have been made to the university. A grant of \$10,000 for the making of a colored educational

motion picture on amebic dysentery has been given by the Wyeth pharmaceutical house of Philadelphia. The picture will be used in teaching and training physicians, students and nurses. A gift of \$8,500 has been given the department by the G. E. Seale pharmaceutical house of Chicago, and an unspecified amount has been given to the department of surgery for the study of cancer by Theodore Brent, New Orleans, president of the Mississippi Delta Shipping Company.

MINNESOTA

Annual Journal-Lancet Lecture—On May 19 Dr. Ernst Gellhorn, professor of physiology, University of Illinois College of Medicine, Chicago, delivered the third annual Journal-Lancet lecture at the University of Minnesota Medical School, Minneapolis. Dr. Gellhorn's subject was "Experimental Studies: Conditioned Reactions and Their Implications for Medical Problems."

Narcotic Prescriptions Forged—Helen Geneva Rudd, Minneapolis, was recently ordered by Federal Judge Gunnar H. Nordbye to the U. S. Public Health Service Hospital at Lexington, Ky., for treatment of drug addiction. Mrs. Rudd had pleaded guilty to four counts of an indictment charging her with forging medical prescriptions for narcotic drugs. She was placed on probation for three years on condition that she be taken to the hospital at Lexington and that she be not released until the medical authorities of the hospital pronounced her cured. An investigation by the Federal Bureau of Narcotics disclosed that Mrs. Rudd's addiction dates back about twenty years; she pleaded guilty in 1934, after two years she violated her probation and was taken to the Women's Reformatory at Alderson W. Va., where she served fourteen months.

MONTANA

State Medical Meeting—The sixty-fifth annual session of the Medical Association of Montana will be held in Billings, July 7-8, under the presidency of Dr. Ernest D. Hitchcock, Great Falls. Among the speakers will be:

Dr. William M. Bane, Denver, Treatment of Eye Diseases by the General Practitioner
Dr. Laurence J. Howard, Great Falls, Hematuria and Its Significance
Dr. Glenn A. Carmichael, Butte, Management of Breech Presentation
Dr. Irving J. Bridenstine, Terry, A Discussion of Some of the Newer Drugs
Dr. Wayne Gordon, Billings, Gastritis: Diagnosis and Clinical Significance
Major Alexander P. Ormond, M. C., U. S., Great Falls, The Wartime Spread of Communicable Diseases
Dr. Harry O. Drew, Billings, The Sex Hormones and Their Relationship
Dr. Halvard M. Bleken, Jr., Missoula, Gastrocolic Fistula

Dr. E. Thompson Bell, professor of pathology, University of Minnesota Medical School, Minneapolis, will conduct a panel discussion Thursday on "Diseases of the Kidney and Hypertension." He will also address the annual banquet on "Diseases of the Kidney."

NEW JERSEY

Medical School Plan Rejected—The state board of education on June 11 denied an application of a corporation known as the Essex College of Medicine and Surgery, Newark, for permission to confer the degree of doctor of medicine, according to the *New York Times*. The action was said to be taken on the ground that the school "is only a paper institution." The *Times* further reported that the state board of education unanimously approved a report of a committee stating that the Essex College of Medicine and Surgery was at present inadequately financed, lacked library facilities and had no faculty.

NEW YORK

Report of Emergency Food Commission—A four point nutrition program was recommended in the first report of the Emergency Food Commission of the State of New York, June 7. The program covering food preservation, protection of milk and egg supply, research for new foods and nutritional guidance, is discussed in the report of the commission with a view to showing what improvements have already been accomplished and what must be made in the future to maintain the public health and morale in the face of a necessary shift to a wartime diet lacking the usual amount of animal products.

Expansion of Health Teaching—The New York State Board of Regents has authorized the expansion of teaching on health and safety in the senior high schools, the new program to be given one unit of credit. The new regulations covering health teaching make it the duty of the trustees and boards of education to provide a satisfactory program in health and safety in accordance with the needs of all pupils from the kindergarten and primary through the senior high school

grades. In the junior and senior high school grades, health must be taught by teachers with approved preparation. *Health News* announces that a member of each faculty with such preparation must be designated as health coordinator in order that the entire faculty may cooperate in realizing the potential health teaching values of the school program.

New York City

Chinese Blood Bank—On June 5 the first Chinese blood bank in the city was opened under the auspices of the American Bureau for Medical Aid to China. The bank will take blood from Chinese-Americans and send plasma by air to Chinese soldiers. The medical staff members of the bank are all Chinese, have had special training in this work and will eventually go to China as a unit to set up the first blood bank there.

Institute for Forensic Medicine—The planning of an Institute of Forensic Medicine in New York was announced by Mayor La Guardia at the opening session of the annual assembly of the International College of Surgeons, June 14. The proposed institute will serve as a center for all matters pertaining to medical jurisprudence. Arrangements are being made to acquire the land for the building, which will be situated near Bellevue Hospital. The new center will be operated in conjunction with one or two medical schools of the city, the chief medical examiner's office and all of the city's hospitals. It will have its own morgue, laboratory, dissection room, class rooms and chemical division.

OHIO

Outbreak of Smallpox—Wholesale vaccination was carried out recently in a number of counties in Ohio because of the 97 cases of smallpox which were reported to the state department of health between January 1 to May 15. The state medical journal reported that a recent outbreak of the disease in Steubenville and Jefferson County created a serious problem not only in Ohio but also in West Virginia, because a large number of residents of Ohio are employed in the steel mills in West Virginia. In Steubenville, a city of about 35,000 population, 28,186 persons were vaccinated in a period of three weeks and many thousands of residents in other parts of Jefferson County were vaccinated during the same period of time. The intensive program of vaccination became necessary when several families, believing that they had chickenpox, exposed a large number of residents to smallpox. Concentrated programs of vaccination were conducted in other counties where the disease occurred and Cleveland is now considering one in the schools and industry.

Training in Health Education at Cleveland Museum—The Cleveland Health Museum announces a course of instruction from August 9 to September 4 for twenty-seven students in health education from the University of North Carolina, Chapel Hill, who will work as museum interns. The students will do laboratory work and gain field experience in the methods of health education, especially in health exhibits. Among the students are seventeen persons who were awarded fellowships by the U. S. Public Health Service from a grant made available by the W. K. Kellogg Foundation. The four week course at the museum is part of a three months supervised field experience required in addition to nine months' academic training in order to obtain a master of science in public health. One student comes from Lima, Peru. The course will be conducted by Dr. Bruno Gebhard, Cleveland, who is director of the Cleveland Health Museum and an associate in health education, Western Reserve University School of Medicine. Besides instruction in the principles and methods of visual health education, the students will gain practical experience in three work units. The first one deals with ideas, facts, figures and manuscripts. Another unit is centered around designing, constructing and budgeting of exhibits. And the third work unit will handle placement, publicity, visitors' reaction and follow-up. The museum's facilities including the work shops, the loan service, traveling exhibits and the film library, and of course the museum's own exhibits will be used for this training.

PENNSYLVANIA

Changes in Health Officers—Dr. Thomas M. Thompson, Philipsburg, district medical officer for district 9, consisting of Clearfield, Clinton and Centre counties, has been transferred to district 4, composed of Bucks and Montgomery counties, with headquarters in Norristown. Dr. George R. Good, Altoona, district medical officer for district 10, will have temporary charge of district 9. District 10 includes Huntingdon, Blair and Cambria counties. Dr. Thompson succeeds the late Dr. Howard W. Hassell, Bridgeport.

Philadelphia

Dr Fay Acting Dean at Woman's Medical College—Marion S. Fay, Ph.D., since 1935 professor of physiologic chemistry at the Woman's Medical College of Pennsylvania, has been appointed acting dean for the duration of the war to fill the vacancy caused by the commissioning of Dr. Margaret D. Croughill as major in the medical corps of the army. Dr. Fay began her services as acting dean on May 28 when Major Croughill reported to the Surgeon General's Office in Washington, D. C. Dr. Fay was born in New Orleans. She graduated at Newcomb College, New Orleans, in 1915. She received her master's degree at the University of Colorado Boulder in 1922 and her Ph.D. at Yale University, New Haven, in 1925. She was associate professor at the University of Texas Medical Branch, Galveston, when she joined the Philadelphia faculty.

Symposium on Poliomyelitis—The Philadelphia chapter of the National Foundation for Infantile Paralysis is sponsoring a series of eight lectures on poliomyelitis for physicians, nurses and physical therapists. The lectures which opened on June 14 are given on Mondays and Thursdays in the Philadelphia County Medical Society. Among the speakers are:

- Dr. Don W. Cudakunst, New York, medical director, National Foundation for Infantile Paralysis, Introduction and Chemotherapy.
- James H. Jones, Ph.D., assistant professor of physiologic chemistry, University of Pennsylvania School of Medicine, Nutrition.
- Dr. Pascal L. Lucchesi, acting assistant director of public health of Philadelphia, Diagnostic Signs.
- Dr. Kenneth F. Maxey, professor of epidemiology, Johns Hopkins University School of Hygiene and Public Health, Baltimore, Epidemiology.
- Dr. Howard A. Howe, associate professor of epidemiology, Johns Hopkins University School of Hygiene and Public Health, Neuro-pathology.
- Herman Kabat, Ph.D., pharmacologist at the National Institute of Health, Bethesda, Md., Neurophysiology.
- Dr. DeForest P. Willard, professor of orthopedics, the Medical-Surgical College Graduate School of Medicine, University of Pennsylvania, Orthopedic Surgery.

TEXAS

Baylor Graduates Last Class in Dallas—Arrangements are being made for the transfer of Baylor University College of Medicine from Dallas to Houston under the direction of Dr. Walter H. Moursund Sr., dean. At the recent graduation of the last class of Baylor in the Dallas school, Dr. Ernst W. Bertner, acting director of the M. D. Anderson Hospital for Cancer Research, Houston, delivered the address on "A New Era in Medicine."

Conference on Hay Fever and Allergy—A special conference on hay fever and allergy met at the University of Texas Medical Branch, Galveston, June 13 under the leadership of Dr. William L. Marr, director of the allergy clinic of the medical school and Dr. Ralph Bowen, Houston. The conference has been organized to coordinate the work of Texas physicians who are interested in the problems of hay fever and allergy in the Southwest.

WASHINGTON

Annual Registration Due July 1—All practitioners of medicine and surgery holding licenses to practice in Washington are required by law to register annually on or before July 1 with the Director of Licenses and at that time to pay a fee of \$5 thereby renewing their licenses for one year. Failure on the part of a licensee timely to register and pay the required fee renders his license to practice invalid but his license may be reinstated on written application to the director and on payment of the delinquent fees and a penalty of \$10.

WISCONSIN

State Medical Meeting—The one hundred and second annual meeting of the State Medical Society of Wisconsin will be held in Milwaukee, September 13-15 under the presidency of Dr. Russell M. Kurten, Racine. According to a preliminary program a feature of the meeting will be a symposium on the liver and one on peptic ulcer. Round table breakfasts will be devoted to the following subjects: bedside medicine and newer drugs; prevention and treatment of wound infections; improvisations to cope with medical emergencies in the home; precautions in telephone prescribing; medication for common skin diseases and the use and abuse of sulfonamide drugs. A separate program has been arranged for hospital superintendents, chiefs of staff, secretaries of staff, hospital administrators and nurses, the program to cover a discussion of recent legal decisions of importance to physicians in hospitals, problems concerning graduate education and employment of nurses, interns and residents, authorization required for professional

procedures, Wisconsin Hospital and medical payments plan, professional accounting, relationship between the lay hospital board and the hospital staff, a small hospital library and inter-hospital relations.

GENERAL

Institute for Hospital Administrators—The eleventh Chicago Institute for Hospital Administrators will be held at the Knickerbocker Hotel, August 30-September 10, under the auspices of the American Hospital Association and in cooperation with the American College of Hospital Administrators, American College of Surgeons, American Medical Association and the Chicago Hospital Council. The institute will be under the direction of Dr. Malcolm T. MacEachern, Chicago, and lectures, demonstrations and round tables will be based on practical means to help solve present-day hospital problems. A minimum of fifty registrants must be assured by July 15 to hold the institute. Additional information may be obtained from Miss Agnes M. McCann, secretary of the institute for hospital administrators, American Hospital Association, 18 East Division Street, Chicago.

Infantile Paralysis Foundation Expands Board of Trustees—The recent addition of nine members to the board of trustees of the National Foundation for Infantile Paralysis brings the total number of trustees to thirty-nine. The late Mr. Edsel Ford has been succeeded on the board by one of his sons, Lieut. Henry Ford II. Other new members are Benjamin F. Fairless, president, U. S. Steel Corporation; Pittsburgh, Edward S. French, president, Boston and Maine Railroad, Boston; Walter S. Gifford, president, American Telephone and Telegraph Company, New York; Clarence G. Michals, chairman and trustee, Seamen's Bank for Savings, New York; Bayard F. Pope, chairman, Marine Midland Corporation, New York; David Sarnoff, president, Radio Corporation of America, New York; Juan T. Trippe, president, Pan American Airways, New York; and Joseph E. Uihlein Sr., vice president, Joseph Schlitz Brewing Company, Milwaukee.

CORRECTIONS

Connor Odor Adsorber—In a letter from Dr. Levin published in the Queries and Minor Notes on May 15, reference was made to the Connor Odor Adsorber. This is manufactured by the W. B. Connor Engineering Corporation instead of the General Electric Company, as stated in the letter.

Place of Annual Session—On page 507 of THE JOURNAL for June 19 a statement appears to the effect that the annual session of the American Medical Association in 1944 is scheduled to be held in New York and the annual session for 1945 in St. Louis. That statement is in error in that the annual session scheduled for 1944 is to be held in St. Louis and the annual session for 1945 is to be held in New York. At the meeting of the House of Delegates in Chicago on June 9 San Francisco was selected as the place of meeting for 1946. As stated in THE JOURNAL these designations are subject to final action of the Board of Trustees and depend on special conditions that may be created by the war.

Government Services

Dr. Spencer Appointed Director of Cancer Institute

Roscoe Roy Spencer, medical director, U. S. Public Health Service and assistant chief of the National Cancer Institute, Bethesda, Md., has been appointed chief of the institute effective August 31. He will succeed Carl Voegtlin, Ph.D., who is retiring as director. Dr. Spencer was born in Virginia, July 28, 1888. He graduated at Johns Hopkins University School of Medicine, Baltimore, in 1913 and in the same year joined the U. S. Public Health Service. He was sanitary adviser to the Navy Department 1917-1918, officer in charge of bubonic plague suppressive measures at Pensacola, Fla., 1919-1921 and in charge of investigations of Rocky Mountain spotted fever 1922-1929. In 1930 a year after he with Ralph R. Parker, Ph.D., Hamilton, Mont., wrote a volume on spotted fever, Dr. Spencer received a gold medal from the American Medical Association for his discovery of a preventive vaccine for the disease. Dr. Voegtlin will retire from the public health service. From 1913 to 1939 he was chief of the division of pharmacology of the National Institute of Health. In 1938 he was appointed the first director of the National Cancer Institute.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 15, 1943

New Measures in the Campaign Against Tuberculosis

The minister of health, Mr. Ernest Brown, has announced the fact that, in spite of the war, the number of deaths from all forms of tuberculosis in 1942 was 25,500 less than that in the two previous years 1940 and 1941, when it was 28,000. The figure of last year was the same as that for the prewar year of 1938, which was the lowest on record, and it was well under half of that for 1918. Who would have dared, asked the minister, to hope that the tuberculosis position in the third year of the war would be so good? But he said that there was a small rise of about 3 per cent in the number of new cases last year, and under the trying conditions of total war there can be no assurance that the death rate from tuberculosis will not rise again. The Ministry of Health has therefore decided to intensify the offensive against pulmonary tuberculosis. It is doing two things: introducing the newest method of chest examination by miniature radiography and starting a scheme of special allowances which will enable those who require treatment for pulmonary tuberculosis, in the interest of public health as well as their own, to undertake it without anxiety about those whom they support.

MASS MINIATURE RADIOGRAPHY

The weak point in the attack on tuberculosis has been inability to get the individual case soon enough. Early detection is vital. For this mass miniature radiography was recommended by a special committee of the Medical Research Council under the chairmanship of Lord Dawson, appointed at the minister's request to investigate the wartime increase in tuberculosis. A detailed scheme covering the application of miniature mass radiography in all its aspects has been drawn up and brought before all the local health authorities. There must be some delay in obtaining delivery of the highly technical machines necessary and it may take at least a year before a network of mass miniature radiography units covers the populous areas of the country. It is hoped that eventually this radiography will become part of routine health examinations. The aim is to detect pulmonary tuberculosis before symptoms have appeared and thus give the best prospect of cure. So far only about three out of every thousand examined have been found tuberculous. The machines can photograph chests at the rate of more than a hundred an hour, using ordinary cinema film. Each negative, only about 1 inch square, is projected on a screen and examined by experts. In forty to fifty of each thousand there is some sign which indicates the advisability of further investigation. A full size x-ray film and other tests may then show that the suspicion is unfounded, or perhaps the need for another test after an interval.

THE NEW ALLOWANCES

The object of the ministry is that any one in whom miniature radiography discloses active tuberculosis should undergo treatment without delay, even though the disease has not reached a disabling stage or, indeed, has caused him to feel unwell or unfit for work. For this reason the government has decided to provide special maintenance allowances. These will enable the person to give up work for a time and undergo treatment while there is every prospect of recovery. Another reason for introducing these new allowances is that tuberculosis stands alone as a social disease of prolonged infectivity. In the interests of the community, especially in wartime, it calls for special measures to check its spread and consequent drain on

man and woman power. The new allowances will comprise what will be called "maintenance allowances" based on a standard scale and without any test as to means. To these may be added, at the discretion of the local health authority where they are satisfied as to need, extra grants toward meeting standing commitments which the patient could not otherwise meet, such as high purchase instalments, high rent or rates, insurance premiums and school fees.

Damages for Negligence Awarded Against a Physician for Awaiting the Pathologist's Report Before Treating Diphtheria

An unusual case in which damages for negligence were awarded against a physician has occurred in the high court. On Sept. 5, 1940 the physician was called to a boy who complained of his throat. The physician did not at first suspect diphtheria and therefore he did not take a swab until the 13th. It was four days before he received the pathologist's report and the boy was not removed to a hospital until the 17th, when he was hopelessly ill with diphtheria. Antitoxin was given at once but death took place two days later. The judge found the physician negligent at least from September 9, when he ought to have seen symptoms which the boy's mother had seen on the previous day. The judge commented on the fact that the physician was in charge of a case of diphtheria for eleven days and gave no treatment for the disease. He also criticized his omission to do anything while awaiting the pathologist's report for four days. It was impossible to say that with earlier treatment the boy would have recovered or that the death was attributable to the treatment. But there was a good chance of recovery if the patient had been properly treated.

An unusual feature of the case was that no evidence was called for the defense. The physician contended, doubtless under legal advice, that he should not be found guilty of negligence in the absence of medical evidence. The judge dissented from this submission and said "The trusting public would be hopelessly at the mercy of the medical profession" if this argument held. He also commented on the silence of the physician saying "It is the first time in my experience that a medical man charged with negligence has refrained from going into the witness box to explain, excuse or throw light on what has happened." He awarded \$300 damages with costs. However, notice of appeal against this judgment was given, pending which a stay of execution was granted.

Commenting on the case, the *Lancet* says that it would be a pity if it became a convention that a defendant because he is a physician must go into the witness box and call evidence, though defendants of other callings would in a like situation be allowed to claim their right to plead that no sufficient case had been made for them to rebut. It would be lamentable if the physician's vocation exposed him to the forensic duty of clearing himself whenever his professional judgment is challenged. Negligence of a physician is normally established by giving proof of what a reasonably careful one would do in the circumstances. It will be a surprise to the profession if such proof can be given by lay witnesses or if the court itself can so far abandon the rule of judicial ignorance as to declare on its own unaided knowledge the standard of due professional care. The fact that a physician did not treat a patient who died of diphtheria for the disease before the pathologist's report was available need not be automatic proof of negligence.

Simplification in Prescribing Spectacle Lenses Desirable

The war effort has hindered the production of spectacle lenses as of many other things. Because of the difficulty the Council of British Ophthalmologists suggest a simplification of the prescription of lenses. It recommends (1) discontinuance of prescribing lenses in steps less than 0.25 diopter, (2) reduc-

the prescribing of prisms to a minimum and (3) in the higher ranges say above 4 diopters, reducing the prescription of lens powers in steps less than 0.5 diopter to a minimum. These recommendations were adopted in the army some time ago and their adoption in civilian practice would materially aid the situation.

BRAZIL

(From Our Regular Correspondent)

MAY 25, 1943

An Experiment in the Prevention of Endemic Goiter

In 1939 Dr. A. Lobo Leite described a goitrogenous region in the central part of the state of Minas Gerais, comprising the counties of Ouro Preto, Congonhas and Lataste, a region completely free from Chagas disease (American trypanosomiasis) despite the vicinity of several areas stricken by this disease. In this region the endemic disease presents a complex of symptoms similar to that described in other countries: goiter, cretinism, dwarfism, mental debility. Of all the elements of this complex goiter is the most frequent although the most benign and many cases of goiter are not accompanied by any other element of the complex. Cases of psychoses are relatively common which is perhaps related to the complex. The medium and small diffuse enlargements of the thyroid are the most frequent nodular goiter appearing as a rule only in adult age. The recent diffuse goiter is very responsive to treatment with iodine. A representative sample of 2574 school children has been routinely examined for the detection of goiter and the thyroids classified according to the Marine scale. Of the total 1437 (55.8 per cent) had type 1 thyroid (normal), 920 (35.7 per cent) had type 2 thyroids (small goiter) and 217 (8.4 per cent) had type 3 thyroid (medium goiter). Types 2 and 3 taken together represented 44.2 per cent of the sample. The whole of this goitrogenous region lies about 3500 feet above sea level and the soil belongs to the primitive era, the humon system. The region is clearly deficient in iodine as it is easy to see from the average amount of this element in the water supply and in the principal vegetables used as food: water 0.18 microgram per liter, beans 60 micrograms per kilogram, potatoes 51 micrograms per kilogram, rice 20 micrograms per kilogram, corn 1.4 micrograms per kilogram and manihot less than 10 micrograms per kilogram.

With the cooperation of the school authorities a prophylactic station has been established with the main purpose of distributing to the school children confections with 10 mg. of potassium iodide each twice a week. Dr. Lobo Leite considers this dose rather high but intended with it to render possible the formation of an iodine reserve as well as for treatment at the same time. This high dosage is intended also to compensate for the school vacation time (from January to March). Between April and December 1941 855 Kg. of confections was distributed corresponding to 1983 Gm. of potassium iodide to about 5 thousand school children. The work continued during the year 1942 and at the end of the year Dr. Lobo Leite took a new survey of the situation the results of which will soon be published.

BCG Immunization in Brazil

The BCG method of tuberculosis immunization has been in course of development in Brazil since August 1927 when the Ataulpho de Paiva Foundation began to prepare the immunizing material and to vaccinate a part of the infants of the Federal District (city of Rio de Janeiro). With 17573 vaccinations performed in 1942 in the city of Rio de Janeiro (about 50 per cent of the total number of live births) the number of children immunized in the city has reached the total of 123493. Of this total 32589 children or 26.39 per cent have been medically controlled in clinics. So large a percentage of controlled children in BCG immunization has not been attained in

any other place. Of the total of 17573 children vaccinated in 1942, the immunization was performed by spontaneous request from the families of 5526 or 31.45 per cent, which shows the acceptance of this prophylactic measure by the population. In November of last year an agreement was reached between the Ataulpho de Paiva Foundation and the federal government to extend the supply of the immunizing material to several of the states of Brazil through the action of the Tuberculosis Division of the National Department of Health. During the year 1942, 62180 doses of the vaccinating material were sent to several states of Brazil.

Brief Items

A few months ago the Brazilian government created a Book of Merit in which to inscribe the names of the greatest living men of the country. The honor is considered exceptional and the few names up to now included in the book have been selected with utmost care. One of these names is that of Dr. Vital Brazil, the founder of the Butantan Institute of São Paulo, one of the pioneer laboratories in the study of ophiology and the preparation of antiophidic serums. Dr. Vital Brazil is now director of the Vital Brazil Institute of Vitreia state of Rio de Janeiro, a great laboratory where many biologic products for medical therapy are prepared.

Dr. Raul L. da Cunha, president of the University of Rio de Janeiro and Drs. Alfredo Montuoro and H. Annes Dias, professor of surgery and of medicine at the medical school of the same university, came back recently from a trip to Santiago de Chile where they attended the commemoration of the centenary of the foundation of the University of Santiago. These three Brazilian medical men received the degree of professors honoris causa from that university.

Dr. Emilio Corbiere from Buenos Aires recently spent a few days in Rio de Janeiro as a representative of several medical institutions of Argentina. Dr. Corbiere who came in a mission of scientific interchange delivered medical lectures at the National Academy of Medicine and before the Medical Association of Rio de Janeiro.

A special course in war traumatology has been established at the medical school of the University of Rio de Janeiro. This course is under the direction of Dr. Barbosa Vianna, professor of traumatology and orthopedic surgery at the same school.

A School of Aviation Medicine has been founded by the Ministry of Aeronautics. The new school located at Atonos Field near Rio de Janeiro is under the direction of Col. Dr. Godinho Santos.

Marriages

WILLIAM JAMES MCKINNON, Maxton, N. C. to Miss Corinne Louise Stimax of Westminster, Md. in New York, May 29.

LUTHER BRADFORD WATERS, JR., Lynchburg, Va. to Miss Margaret Mae Hughes of Colerain, N. C. in Norfolk, May 17.

CHARLES DICK ROLLINS, Henderson, N. C. to Miss Martha E. Laney of Camden, Ark. at Walla Walla, Wash., May 14.

WILLIAM HARVEY PATRICK, Chocowinity, N. C. to Miss Nellie Evangeline Guy of Clements, Md., May 16.

FRANK L. ENGEL, New Haven, Conn. to Miss Mildred Goldaden of Norwich in New York, May 25.

HAROLD GREELEY NOYES, New York, to Mrs. Bessie Clements Murrelle in Greenwich, Conn., May 22.

CHARLES FREDERICK DOWNING, Nashville, Tenn. to Miss Juliette McNeil in Knoxville, May 8.

JOHN FRANCIS McGRATH, New York, to Mrs. Inez Thorpe Ford of Georgetown, S. C., May 28.

SANDOR ALEXANDER NADAS, to Miss Mary Elizabeth McClearen both of Boston, recently.

FRANCIS C. ANDERSON, Cadillac, Mich. to Miss Dorothy Mae Larson at Ann Arbor, recently.

Deaths

Isador Henry Coriat ♂ Boston, Tufts College Medical School, Boston, 1900, instructor of neurology at his alma mater from 1914 to 1916, instructor, supervising analyst and training analyst, Boston Psychoanalytic Institute, neurologist to the medical advisory board and contract surgeon in neuropsychiatry for the U S Army during World War I, specialist certified by the American Board of Psychiatry and Neurology, Inc., member, twice president, 1924-1925 and 1936-1937, and vice president, 1935-1936, of the American Psychoanalytic Association, member and vice president, 1931-1932, of the American Psychopathological Association, member of the International Psychoanalytic Association and vice president, 1936-1937, president of the Boston Psychoanalytic Society from 1930 to 1932 and 1941-1942, member of the New England Society of Psychiatry, American Psychiatric Association, Boston Medical History Club, Boston Society of Neurology and Psychiatry and the Massachusetts Psychiatric Society, assistant and first assistant physician, Worcester (Mass.) Insane Hospital from 1900 to 1905, neurologist on the staff of the Boston City Hospital from 1905 to 1919 and the Mount Sinai Hospital from 1905 to 1914, consulting neurologist to the Chelsea Memorial and Beth Israel hospitals from 1919 to 1928, neuropsychiatrist to Forsyth Dental Infirmary from 1913 to 1929, collaborating editor of the *Psychoanalytic Review* and the *Journal of Abnormal Psychology*, collaborator for psychoanalytic terms for Dictionary of Psychology, aged 67, died, May 26, of coronary thrombosis.

Isabella Coler Herb ♂ Hubbard Woods, Ill., Northwestern University Woman's Medical School, Chicago, 1892, Secretary of the Section on Pathology and Physiology of the American Medical Association from 1915 to 1918 and chairman of the Section on Miscellaneous Topics from 1921 to 1924, retired on June 7, 1941 is head anesthetist of Presbyterian Hospital and clinical professor of surgery at Rush Medical College, continued her association with the hospital as anesthetist emerita, assisted Dr. Lawrence H. Prince, now of Kilm, Miss., in developing the open drop method of ether administration, later served on the staff of the Mayo Clinic, Rochester, Minn., for five years as anesthetist and pathologist, after further graduate study in Europe, carried on research in bacteriology under a grant from the American Medical Association and as an associate of Dr. Ludvig Hektoen, in 1909 gave up her work in pathology and started again to specialize as an anesthetist, joining the staffs of both Presbyterian Hospital and Rush Medical College, Chicago, the first woman appointed to the staff of Presbyterian Hospital and was the anesthetist who first administered ethylene gas at actual operations, author of chapters on anesthesia in several textbooks on surgery, aged 74, died, May 28, in the Presbyterian Hospital, Chicago, of heart disease.

Andrew Charles Smith, Portland, Ore., Cooper Medical College, San Francisco, 1877, Second Vice President in 1906, and a member of the House of Delegates of the American Medical Association in 1902 and 1909, member and past president of the Oregon State Medical Society, past president of the Portland Academy of Medicine and the Multnomah County Medical Society, fellow of the American College of Surgeons and chairman of the Oregon unit from 1928 to 1934, at one time assistant surgeon in the U S Army, first president and for twenty years active on the state board of health, formerly a member of the state senate and house of representatives, at one time associate in surgery at the University of Oregon Medical School, a member of the draft examining board during World War I, helped organize the Coffey Hospital, the county hospital and the Portland Open Air Sanitarium, on the staffs of the Good Samaritan and St. Vincent's hospitals, first president of the Medical Arts Building Company and the Oregon Good Roads Association, once president of the Hibernia Bank of Portland, aged 86, died, April 12, of bronchopneumonia.

Lida Stewart Cogill, Upper Darby, Pa., Woman's Medical College of Pennsylvania, Philadelphia, 1890, member of the Medical Society of the State of Pennsylvania, fellow of the American College of Surgeons, professor of obstetrics at her alma mater from 1923 to 1938 and since 1938 emerita professor, chief in obstetrics at the West Philadelphia Hospital for Women from 1906 to 1930, when it merged with the Woman's Hospital, Philadelphia, where she had been chief in obstetrics from 1930 to 1938 and on her retirement in the latter year became consultant in obstetrics, aged 74, died, April 18, of acute uremia.

Frank R. Borden ♂ Lieutenant Colonel, U S Army, retired, Charlotte, N C., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois,

1902, Ph G, Northwestern University School of Pharmacy, Chicago, 1895, School of Aviation Medicine in 1942, served during World War I, commissioned a major in the medical corps of the U S Army in 1920 and retired in 1937 for disability in line of duty with the rank of lieutenant colonel, aged 68, died, March 28, in the Veterans Administration Facility, Augusta, Ga., of pneumonia.

Leo Chrysostom Mudd ♂ Lieutenant Colonel, U S Army, retired, San Francisco, St. Louis University School of Medicine, 1907, Army Medical School, Washington, D C., 1911, commissioned a first lieutenant in the medical corps of the U S Army in 1911, became a captain in 1914, a major in 1917 and retired in 1918 for disability in line of duty, returned to active duty from Oct 5, 1918 to Feb 5, 1919, under a special act in 1930 was made a lieutenant colonel, served during World War I, aged 62, died recently of coronary thrombosis and pycnephritis.

Glenn Llewellyn Baker, Rib Lake, Wis., Northwestern University Medical School, Chicago, 1911, aged 58, died, April 11, in St. Joseph's Hospital, Marshfield, of chronic myocarditis and coronary thrombosis.

Stanley Walter Blazejewski ♂ Wilkes-Barre, Pa., Baltimore Medical College, 1907, member of the surgical staff of the Hudson Coal Company, aged 63, a member of the staff of the Wilkes-Barre General Hospital, where he died, April 12, of coronary heart disease.

Dell Scotland Bowman, Akron, Ohio, University of Pennsylvania Department of Medicine, Philadelphia, 1893, past president of the Summit County Medical Society and vice president of the Ohio State Medical Association, for many years served as alienist for the Summit County Courts, formerly trustee of the Children's Home, visiting physician to the Edwin Shaw Sanatorium from Aug 1, 1915 to Sept 1, 1920, aged 79, on the staff of the City Hospital, where he died, April 18, of pneumonia.

Ola M. Buckman, Toledo, Ohio, Cleveland University of Medicine and Surgery, 1897, served on the staff of the Flower Hospital, aged 77, died, April 6, of carcinoma of the ovaries.

Charles Armstrong Byrne, Hatfield, Mass., Long Island College Hospital, Brooklyn, 1894, member of the Massachusetts Medical Society, aged 80, died, April 3, of bronchopneumonia and arteriosclerosis.

Robert Emmet Camfill, Springfield, Mass., Harvard Medical School, Boston, 1895, aged 70, for many years on the staff of the Mercy Hospital, where he died, April 7, of an appendical abscess.

William Stanley Carter ♂ West Hazleton, Pa., Jefferson Medical College of Philadelphia, 1909, since 1938 trustee of the Hazleton (Pa.) State Hospital, West Hazleton borough school physician, physician for the Lehigh Valley Coal Company, organized a crippled children's society in 1924, aged 57, died, April 15, of heart disease.

Eugene George Charbonneau ♂ East Orange, N J., Detroit College of Medicine, 1901, formerly served on the staff of St. James Hospital, Newark, aged 64, died, April 9, in St. Mary's Hospital, Orange, of heart disease.

Sylvan Coombs ♂ Chicago, Rush Medical College, Chicago, 1891, fellow of the American College of Surgeons, on the staff of the Grant Hospital, formerly on the staffs of the Cook County, Henrotin and Columbus hospitals, aged 74, died, April 8, of carcinoma of the prostate.

James William Cox, Flomaton, Ala., Medical Department of Tulane University of Louisiana, New Orleans, 1895, aged 69, died, April 7.

William T. Craft, Brunswick, Neb., Omaha Medical College, 1902, aged 73, died, April 6, in Niobrara of heart disease.

William Clarke Craig, Ridgewood, N J., Jefferson Medical College of Philadelphia, 1907, served in the Medical Corps of the U S Army during World War I, a member of the New Jersey National Guard, on the staff of St. Joseph's Hospital Paterson, aged 58, died, April 12, of cirrhosis of the liver.

Albert Harlan Currie, Los Angeles, Bennett Medical College, Chicago, 1911, member of the California Medical Association, served as a captain in the medical corps of the U S Army during the World War, aged 56, died, April 19, of heart disease.

Arter Wayne Deal, Lewistown, Mont., College of Physicians and Surgeons, Baltimore, 1903, member of the Medical Association of Montana, formerly member and president of the Montana State Board of Medical Examiners, chief of staff of St. Joseph's Hospital, appointed surgeon to the Great Northern Railway in 1917, aged 61, died, March 13, of paralysis agitans.

James Harvey Donnelly Troy N Y Boston University School of Medicine 1897 member of the Medical Society of the State of New York, on the staff of the Samaritan Hospital aged 72 died April 8, of ungular pectori

Joseph Francis Doran Wilkesburg Pa, University of Pittsburgh School of Medicine, 1910 served during World War I aged 59, died April 12, of heart disease

Thomas Francis Dwyer, Buffalo, University of Buffalo School of Medicine 1885, aged 80 died April 11, in the Buffalo General Hospital of adenoma of the prostate, chronic uremia from bilateral pyelonephrosis and hemorrhagic cystitis

Charles Thomas Ehrnsberger, Lima Ohio, Miami Medical College Cincinnati, 1900 aged 70, died April 12 of coronary occlusion

David Paul Fry, Hedgesville W Va College of Physicians and Surgeons, Baltimore 1889 served on the staff of the City Hospital, Martinsburg aged 75 died April 14 of pneumonia

Willoughby Lyman Godfrey ♂ Battle Creek Mich, University of Michigan Department of Medicine and Surgery Ann Arbor 1876 an Affiliate Fellow of the American Medical Association, past president and vice president of the Calhoun County Medical Society in 1928 the society presented him with a cup marked "Fifty Years in Medicine", aged 90 died, April 7, of arteriosclerotic heart disease

Raymond Weist Graham Syracuse N Y New York Homeopathic Medical College and Flower Hospital New York 1915 member of the Medical Society of the State of New York, aged 52 attending anesthetist and president of the staff of the Syracuse General Hospital, where he died April 4, of heart disease

Harold Louis Hall Brooklyn Cornell University Medical College New York 1910 member of the Medical Society of the State of New York aged 55 died April 6 in Tucson Ariz of coronary thrombosis

Charles C Hammond, Erie Pa, Medico-Chirurgical College of Philadelphia 1903 member of the Medical Society of the State of Pennsylvania served on the staff of the Adrian Hospital, Punxsutawney aged 64 died in April, of coronary sclerosis

Don Stuart Harvey ♂ Chicago Rush Medical College Chicago, 1891 aged 75, served on the staff of the South Chicago Community Hospital where he died May 2, of lobar pneumonia and acute coronary insufficiency

Robert Hatfield Harvey, Chicago Northwestern University Medical School, Chicago 1894 aged 74, died April 29 of bronchopneumonia

Elnathan Pierce Hatheway, Ottawa Ill Rush Medical College Chicago, 1895 health officer of Ottawa on the staff of the Ryburn Memorial Hospital, aged 84, died April 4 of cerebral hemorrhage

Edwin Clyde Henry ♂ Omaha, John A Creighton Medical College, Omaha, 1895, Medico-Chirurgical College of Philadelphia, 1896, past president of the Omaha-Douglas County Medical Society, served in France during World War I formerly chief surgeon and owner of the Lord Lister Hospital on the staffs of the Lutheran, Doctors and St. Joseph's hospitals past president of the Rotary Club aged 73 died, April 2 of cerebral thrombosis

Howard M Humphrey, Indianola Iowa State University of Iowa College of Homeopathic Medicine Iowa City 1895 aged 74 died, April 2 in Des Moines of cerebral hemorrhage

Carl Ireneus, Chicago National Medical University Chicago 1905 member of the Illinois State Medical Society at one time on the staff of the Washington Park Community Hospital aged 70 died, April 16 of acute coronary thrombosis

James Raymond Johnson, Philadelphia Howard University College of Medicine Washington D C 1919 served on the staff of the Mercy Hospital, examining physician for draft board number 9 aged 56, died April 6 of hypertensive cardiovascular renal disease

Francis Drake Kendall Sr, Columbia S C Medical College of the State of South Carolina, Charleston, 1883 served on the staff of the Roper Hospital Charleston for many years surgeon for the Southern Railroad aged 86, died April 4 of cardiovascular disease and asthma

George Lawrence Kessler ♂ Brooklyn, New York University Medical College, New York, 1897 consultant to the Brooklyn Eye and Ear Hospital aged 74, died, April 3 of coronary thrombosis

William Benjamin Kunze Belleville, Ill St. Louis University School of Medicine 1906 aged 61 died April 1 in the Pleasant View Sanatorium, East St. Louis of tuberculosis

Isaac Herman Leion, Detroit University of St. Vladimira Faculty of Medicine Kiev Russia 1896 formerly a member of the Michigan State Tuberculosis Sanitarium Commission, served on the staffs of the Lincoln and Marr General Hospitals at one time medical examiner for the probate court of Wayne County aged 77 died April 8 of cerebral hemorrhage

William Vardeman Lindsay, Winona Minn Missouri Medical College, St. Louis 1898 member of the Minnesota State Medical Association past president of the Winona County Medical Society and the Winona County Public Health Association, served as a major with the American Expeditionary Forces in Siberia during World War I for many years health officer of Winona, in 1920 county physician aged 69, died, April 24, of coronary thrombosis

Francis W Mann, Wellington Mo Missouri Medical College St. Louis 1889, member of the Missouri State Medical Association aged 79 died March 11 of coronary occlusion

Robert Batten Mervine ♂ Lock Haven Pa Jefferson Medical College of Philadelphia 1903 served on the staff of the Warren (Pa) General Hospital aged 62 died April 3 of cerebral hemorrhage

Robert J Montfort, Elizabeth, N J, University of the City of New York Medical Department 1890 member of the Medical Society of New Jersey served on the staff of the Elizabeth General Hospital aged 78 died April 4 of arteriosclerosis

Sampson James Morris, Chicago, Chicago College of Medicine and Surgery 1910 on the staffs of St. Mary's, Columbus and St. Elizabeth's hospitals a field health officer for the city health department aged 58, died, April 10, in Van Nuys, Calif of cerebral hemorrhage

Wallace Brown Perry ♂ Lincoln Ill St. Louis University School of Medicine 1918 past president of the Logan County Medical Society on the staffs of the Evangelical Deaconess and St. Clara's hospitals aged 52 died April 9 of coronary thrombosis

Francis Herbert Poole ♂ Major U S Army, retired Boulder Creek, Calif, Columbian University Medical Department Washington D C 1902 served during World War I became a major in the medical corps of the U S Army in 1920 and retired in 1933 for disability in line of duty formerly an agency physician in the U S Indian Service at one time medical superintendent of the Idaho Insane Asylum Blackfoot fellow of the American College of Surgeons aged 70 died recently of carbon monoxide poisoning

George Anthony Robertson Jr, Battle Creek, Mich University of Michigan Homeopathic Medical School Ann Arbor 1901 formerly on the staff of the Nichols Memorial Hospital aged 64 died, April 6 of acute uremia and carcinoma of the bladder

John Donald Target, Atlantic City N J University of Pennsylvania Department of Medicine Philadelphia 1898 member of the Medical Society of the State of Pennsylvania served in the U S Navy during World War I major in the medical reserve corps of the U S Army not on active duty aged 74 died April 13 of heart disease

DIED WHILE IN MILITARY SERVICE

Richard Davison Bullard ♂ Saratoga Springs N Y Cornell University Medical College New York 1930 diplomate of the National Board of Medical Examiners fellow of the American College of Surgeons, an organizer and executive officer of the tumor clinic and member of the staff of the Saratoga Hospital at one time ship's surgeon for the Grace Line the Panama Export Company and the American Export Company began active duty as a lieutenant commander in the U S Naval Reserve in July 1942 served on the U S S *Tasker H Bliss* which was lost off the coast of Morocco early in November 1942 aged 39 died April 22 in the Saratoga Hospital of carcinoma of the brain and pulmonary edema while on sick leave from the National Naval Medical Center Bethesda, Md

Frederick Paul Sedgwick, San Francisco University of Minnesota College of Medicine and Surgery Minneapolis 1941 began active duty as a first lieutenant in the medical reserve corps of the U S Army on Aug 6 1941 and later became a captain assigned to the 771st Military Police Battalion at Monterey, Calif. aged 29 died April 5 of a self-inflicted bullet wound

Correspondence

ORANGE JUICE SENSITIVITY IN BREAST FED INFANTS

To the Editor—This is a protest against the administration of orange juice to infants naturally fed. Scurvy is practically unknown in infants receiving human milk exclusively. The earlier researches indicated that breast milk was generally low in its ascorbic acid content, consequently the dictum that all infants should receive orange juice daily became incorporated in the dietary directions. Nearly every mother on leaving the hospital is directed to give her baby orange juice. The result is that an allergy to orange juice has become widely disseminated among infants. The fact that orange juice contains a soluble protein (about 1 per cent) is generally overlooked. This protein substance may readily be absorbed unchanged by the breast fed infant and, I believe, is the cause of this sensitization.

Moreover, human milk is approximately isotonic with the blood of the infant. The daily administration of orange juice supplies an excess of alkaline ions to be disposed of by metabolic and excretory processes and may lead to a hypertonicity and hyperexcitability.

Although I base my conclusion entirely on clinical experience, I am impelled to lay down this nutritional rule. The feeding of orange juice to breast fed infants under 4 months of age is contraindicated.

JOHN ZAHORSKY, M D, St. Louis

NOTE—From the point of view of the allergist the high permeability of the gastrointestinal tract of the infant in its first weeks of life must be emphasized (Lippard, V W, Schloss, O M, and Johnson, Priscilla A. Immune Reactions Induced in Infants by Intestinal Absorption of Incompletely Digested

Articles on Allergy in Breast Fed Infants

Hill, L W. Eczema in Infants and Young Children, *New England M J* 223: 624 (Oct 17) 1940.

Orange juice is likely to cause trouble in infants. Even if skin reactions are negative it is not uncommon for itching to be severe after ingestion of orange juice.

Rowe A D. Elimination Diets and Patient's Allergies.

Exclude all foods which commonly produce eczema or allergy, such as milk, eggs, wheat or orange.

Robinson, Edith C. Study of 240 Infants, *Am J Dis Child* 59: 1002 (May) 1940.

Fewer rashes in breast fed babies than in any other group.

Goodman, Herman and Burr, M E. Elimination Test Diets, *Arch Pediat* 54: 88 (Feb) 1937.

Some cases of eczema develop on breast feeding only. Usually the eruption occurs after complementary or supplementary feedings such as milk, orange juice and vegetables.

Hopkins, J G. Allergic Eczema, *Am J Dis Child* 49: 1511 (June) 1935.

Of various foods found to be the sole cause of eczema in infants as proved by the elimination of such foods, eggs were found to cause trouble in one half of the cases, wheat and milk in about one fourth of the cases, oranges next, then spinach, potatoes and so on. For example

	No of Cases	Positive Skin Reactions	Allergic Reaction After Eating Food
Egg	43	32	35
Wheat	26	12	21
Milk (cow)	19	12	18
Orange	6	4	6

Cow's Milk Protein, *Am J Dis Child* 51: 562 [March] 1936). Because of this it seems to be advisable that the diet of the infant with an allergic disposition should be as simple as possible. If human milk is available in adequate amounts for good nutrition, it would be advisable to delay adding any other food for several months. However, this need not apply to all infants.

Only about 10 per cent of the population develops any allergy. It is also generally accepted that allergy developing in infants is usually associated with a family history of allergy. It would therefore appear to be more reasonable that any limitation in diet should be directed only to those children who give a family history of allergy. Even here, allergists are inclined to avoid any special precaution as far as diet is concerned except the advice to add only one food at a time during the first year of life to avoid food mixtures and to look for the causes of skin rashes or gastrointestinal disturbances with the possibility of allergy in mind. The pediatrician or the intelligent mother who is watchful for symptoms suggestive of allergy will recognize the first signs of it, and serious trouble may almost invariably be avoided by rapid recognition of the offending agent and the elimination of the cause.

In other words, there is too great a tendency "to be allergy conscious" and to lay down special rules other than those of careful observation.

Accompanying is a list of articles regarding the frequency of orange juice as a cause of symptoms of allergy, and of the frequency of allergy in breast fed infants.

BEN Z. RAPPAPORT, M D, Chicago

RING TEST IN VAN DEN BERGH REACTION

To the Editor—Referring to the use of the term "the ring test of Lepehne" in the paper "The Functional Value of the Liver in Heart Disease" by Chavez, Sepulveda and Ortega I (*THE JOURNAL*, April 17), Lepehne, now working at Boston University School of Medicine, is not responsible for the application of the ring technic now used so extensively in the performance of the van den Bergh reaction ("direct" reaction). In an editorial in the *Journal of Laboratory and Clinical Medicine* a decade ago Magath did give Lepehne credit for the test, remarking that it was "rediscovered by Elton ten years later," but examination of Lepehne's report showed that while he tried overlaying the diazo reagent on serum rather than mixing it before I did, he did not appreciate its clinical value and stated that it afforded no advantage over the original technic. I believe I was the first (quite accidentally) to find that this method sensitized the van den Bergh reaction tremendously in detecting the presence of bilirubinate ("direct" reacting form) in blood serum, and I have made a number of studies based on that observation, leading to my own conceptions of the mechanism of jaundice in general, which seem to have been acceptable to the authors of a number of textbooks on clinical pathology.

Some time ago, with the help of Mr. Kalmar, I translated van den Bergh's monograph "Der Gallenfarbstoff im Blut," ed. 2 (1928), "nahezu unveranderte," and noted that he was well aware of the positivity of the (direct) reaction (even without the ring technic) in congestive heart failure. His first edition, containing this and many other significant observations for which he has not been accorded full credit, was published in 1918. The publication of his monograph in English would be a contribution to the classics of scientific literature, but one's blood pressure has to be taken into consideration in such effort and thus far I have been quite successful in keeping mine down where it should be.

It is my earnest hope that Hijmans van den Bergh will survive the Nazi occupation of the Netherlands and reassume his position of leadership in medical science.

NORMAN W. ELTON, Lieutenant Colonel, M C,
APO 827, % Postmaster,
New Orleans

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examinations in Specialties were published in THE JOURNAL June 17 page 60

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Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Pregnancy Mistaken for Fibroid Tumor
—The plaintiff a woman aged 37 who had borne five children consulted the physician defendant on June 25 1938. According to the patient and her husband who accompanied her she told the physician that she was pregnant and that she had not menstruated since the preceding October. The physician and his office nurse however testified that he interrogated the patient concerning menstruating and both she and her husband said That is just the point. She has gotten to the point where she is unable to do her work from which the physician inferred that she had been bleeding too much. Also according to the physician and the nurse when the possibility of pregnancy was broached to her she replied Doctor that is impossible. I am the mother of five children and if I was in the family way I would certainly know it. The physician then made a bimanual or vaginal examination of the patient and concluded that she had a fibroid tumor. Accordingly on July 6 he performed an operation to remove the supposed tumor and discovered that the plaintiff was pregnant. Nine days later the patient was delivered of a dead fetus fully developed. Subsequently she sued the physician and the hospital in which the operation had been performed for malpractice. At the conclusion of the plaintiff's evidence the hospital was dismissed, and at the close of the case the jury returned a verdict in favor of the physician and judgment was entered thereon. The circuit court of Kanawha County West Virginia on appeal reversed the judgment in favor of the physician and ordered a new trial and the physician appealed to the Supreme Court of Appeals of West Virginia.

The trial court admitted testimony concerning the physician's reputation for skill and care. This the patient contended with which contention the circuit court agreed was erroneous because of the general rule in cases of malpractice that evidence of the defendant physician's reputation in the community and among his profession as to skill and care is inadmissible unless questioned by the plaintiff. The physician however cited *Dudley v Grace Hospital* 112 W Va 461 164 S E 670 as decisive of the admissibility of such evidence. In that case it was held that in an action for malpractice where the declaration charges want of skill and care generally and does not limit the charge to a specific act evidence of the physician's reputation for skill and care is admissible. In that case the defendant had undertaken to perform a tonsillectomy on the patient, and the declaration charged that by and through their want of skill and care in some way or by some means without the knowledge of plaintiff and beyond her power to explain caused an injury to plaintiff's left eye. The court there expressed the opinion that the language used in the declaration did not limit the want of skill and care to any particular act and held that it was a direct charge on the defendant's proficiency generally and therefore the physician's reputation for skillfulness and care became a proper inquiry for such consideration as the jury deems requisite. In this case however said the Supreme Court of Appeals the sole reference in the declaration filed by the plaintiff relating to the skill of the physician defendant was a charge that the physician unskillfully attempted to stitch the wound. In the first place such an allegation relates to a specific act and therefore does not fall within the rule propounded in the *Dudley* case. Moreover we do not believe that such an allegation is one which charges a lack of skill or ability on the part of the operating physician to stitch the wound but rather a careless performance. Exclusive of such allegation the gravamen of the declaration is definitely one of negligence and therefore

the general rule as relied on by the patient is applicable and the admission of evidence relating to the physician's reputation for skill and care in the community and among his profession was erroneous.

The Supreme Court of Appeals accordingly remanded the case to the trial court for a new trial—*Robinson v. Amick*, 21 S. E. (2d) 161 (W. Va., 1913).

Workmen's Compensation Acts Cerebral Hemorrhage Precipitated by Strain of Employment—The claimant at the time of the alleged industrial accident was a man of about 75 years of age and had arteriosclerosis and hypertension. He had worked for a number of years as a glue cooker for the defendant employer. The "glue room" in which he worked was reached by ascending two perpendicular ladders of about 12 feet and 8 feet, respectively. It was his duty to pull sacks of glue weighing from 100 to 200 pounds by rope and pulley to the "glue room," to stick these sacks and as needed to weigh them and dump the contents into "cooking" kettles. On the day of the alleged industrial accident, the "glue room" was unusually hot and the claimant did "all he could do." After working for about three and a half hours he descended the ladders for a drink of water. Just as he reached the main floor he felt a roaring sound in his left ear and had a dead or numb feeling in his right arm and leg. He was able to return to the "glue room" with difficulty but continued on the job, doing light work. About four and a half hours later he began to feel worse and could not hold a pencil in his hand to execute a daily report. He quit work, and just as he reached the main floor his right side "gave way" and he was taken home in a semiconscious condition. Subsequently a diagnosis of cerebral hemorrhage was made and the workman became partially paralyzed on his right side. He brought proceedings under the workmen's compensation act of Louisiana. From a judgment in his favor the employer appealed to the Court of Appeals of Louisiana, first circuit.

The principal question in this case, said the court, involves both one of fact and one of law—of fact, as to whether or not the claimant suffered an accident which was a contributing cause of the rupture of a cerebral artery, and of law, "as to whether or not there was any accident and causal connection between the alleged injury and the present disability," within the meaning of the workmen's compensation act. The claimant's attending physician testified that the claimant had hardening of the arteries and that this condition, coupled with the physical exertion and overheating in connection with his work, caused his blood pressure to rise, producing a rupture of the cerebral artery. Another physician, who was called in consultation in the treatment of the claimant, testified that the hardening of the arteries present in the claimant was not caused by any overexertion or overheating but that a person with hardening of the arteries and high blood pressure could by undue physical and mental exertion cause the blood pressure to rise temporarily, putting a greater strain on the brittle or weakened arteries and thus produce a rupture and resulting hemorrhage. In this physician's opinion the exertion and overheating of the claimant while working combined with his condition to cause the cerebral hemorrhage, which was the cause of his present disability. Two physicians called by the employer stated that the strain and exertion put forth by the plaintiff while at work had no causal connection with the cerebral hemorrhage but that it was a mere coincidence that the hemorrhage occurred while the claimant was on the job and that it might just as likely have occurred while he was straining at stool or doing almost anything else off the job. The trial court called three physicians as court witnesses. Two of these physicians testified that the exertion and overheating had no causal connection with the hemorrhage because the hemorrhage did not occur at the height of the exertion. The other physician, however, believed that the exertion and overheating did precipitate the hemorrhage, that the elevation of blood pressure caused from lifting and handling the sacks continued and persisted while the claimant was descending the ladders.

The medical evidence, continued the court, indicates that a warm temperature does not tend to increase the blood pressure but rather has the opposite effect. However, the sudden lowering of the temperature does have the effect of raising the blood pressure. According to the evidence, blood pressure will subside in a very few minutes after the exertion ceases. Because of this, the employer contended that any elevation in the claimant's blood pressure caused from his overexertion in the "glue room" would have subsided before he reached the bottom of the ladders. However, said the court, as one of the physician witnesses called by the court testified and as the other physicians in the case admitted, climbing down these two steep ladders a distance of 20 feet is considerable exercise in itself. In fact, it would seem that for a man of the claimant's age climbing down these ladders required about as much physical exertion as did the performance of his duties in the "glue room." We conclude that the strain and exertion put forth by the claimant for several hours in handling the heavy sacks in the hot "glue room" caused his blood pressure to rise, that the continued exercise in descending the ladders and becoming exposed to the cooler air kept the blood pressure elevated and that when the claimant reached the floor this continued, and persistent pressure on the brittle and weakened cerebral artery caused it to rupture. The situation is similar to an automobile tire with worn fibers and blisters in the rubber when the air pressure is such as to bring the walls of the tire to the breaking point. The tire might hold up with this pressure for a while, but the continued strain will finally cause it to blow out.

During each systole, continued the court, the ventricles of the heart force blood into the arteries that are already full. The extensibility of the arteries enables them to distend and receive the extra supply of blood. When the systole is over and the force is relaxed, the elasticity of the arteries causes them to recoil to their former diameter in a normally healthy person but as the result of age, or other cause, the walls of the arteries may become less elastic and then do not properly perform their function. This condition is called arteriosclerosis, and any increase of the blood pressure against the worn out arteries is likely to cause a rupture. If the exertion and straining in working cause such an elevation in the blood pressure of a person with hardened arteries as to cause the artery to rupture and result in a hemorrhage, this is an injury to the physical structure of the body and is such an unexpected and unforeseen occurrence as to constitute an accident within the meaning of the workmen's compensation law.

While the claimant was performing his work in the usual and customary way, it was apparent that this work on the day of the industrial accident was unusually heavy and that the "glue room" was unusually warm. To a person with hardening of the arteries and high blood pressure, hard work is more or less pulling the trigger on a cerebral hemorrhage. To argue that the claimant might have had the stroke while off duty is merely to indulge in speculation. The fact is that the claimant did not have the hemorrhage while off duty, but the hemorrhage occurred in the course of his employment and was precipitated by the elevation of the blood pressure produced by the lifting, exertion and straining incurred in connection with his work.

The court accordingly concluded that the claimant had suffered an accident, within the meaning of the compensation act, which was a contributing cause to the rupture of his cerebral artery and that there was a causal connection between the industrial injury and the present disability. Accordingly the award of compensation in favor of the workman was affirmed.—*Murray v. Mengel Co.*, 9 So. (2d) 818 (La., 1942).

Society Proceedings

COMING MEETINGS

Montana, Medical Association of, Billings, July 7-8 Dr. Thomas F. Walker, 206 Medical Arts Building, Great Falls, Secretary

Current Medical Literature

AMERICAN

The Association library lend periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamp to cover postage (6 cents in one and 18 cents if three periodicals are requested). Periodical published by the American Medical Association are not available for lending, but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J Obstetrics and Gynecology, St. Louis 45 183-304 (Feb.) 1943 Partial Index

- Physiologic Neonatorum: Experimental Study in Guinea Pig.* W. F. Windle and R. F. Becker. Chicago—p. 183.
- **Placental Transmission of Sulfathiazole and Sulfadiazine and Its Significance for Fetal Chemotherapy.* H. Speert. Baltimore—p. 200.
- Colostrum Intradermal Test for Diagnosis of Pregnancy.* F. Allen and I. B. Donaldson. Chicago—p. 205.
- Clinical Pelvimetry and Pelvic Palpation as Basis for Morphologic Classification of Obstetric Pelvis.* Preliminary Report. C. T. Javert, K. B. Steele and Mildred E. Powllitt. New York—p. 216.
- Hypertension and Pregnancy.* K. D. Mussey, A. B. Hunt and F. S. Sluder. Rochester, Minn.—p. 224.
- **Importance of Rh Blood Factor in Erythroblastosis.* Edith L. Potter, I. Davidsohn and A. B. Crunden. Chicago—p. 234.
- Sarcoma of Uterus.* Clinicopathologic Study of 27 Cases. M. D. Bosse and J. N. Stanton Jr. Pittsburgh—p. 262.
- Effects of Estrogenic Therapy on Ovarian Function.* I. When Employed During Normal Menstrual Cycles. E. C. Hamblen, D. A. Hirst and W. K. Cuvier. Durham, N. C.—p. 268.
- Evaluation of Pregnanol Complex as Index of Ovarian and Uterine Function.* S. L. Siegler and D. Bauer. Brooklyn—p. 277.
- Relationship of Erythroblastosis Fetalis to Intrauterine Anoxia.* P. F. Rothman and Helen Hopkins. Los Angeles—p. 291.
- Vaginal Delivery of a Six Months Living Child Four Years After Supravaginal Hysterectomy.* D. A. Connors, J. V. Cresci and M. Glas. Brooklyn—p. 309.
- Complete Heart Block Complicating Pregnancy.* F. A. Mitchell, D. S. Fettes Jr. and A. G. Hollander. Brooklyn—p. 340.
- Primary Ovarian Pregnancy with Living Mother and Child.* I. J. Strumpf. Jacksonville, Fla.—p. 350.

Placental Transmission of Sulfathiazole and Sulfadiazine.—Organisms most frequently encountered in severe neonatal infections are among the most responsive to sulfonamides. Speert investigated placental transmission of the sulfonamide compounds with the view of extending their scope in fetal prophylaxis and intrauterine therapy. He observed that sulfathiazole and sulfadiazine, like sulfanilamide, diffuse readily across the placenta. A single intravenous dose of 5 Gm of sodium sulfathiazole or sodium sulfadiazine to the mother during labor causes the drug to appear in the fetal blood almost immediately. They are retained there in therapeutically effective concentrations for at least six hours in the case of sulfathiazole and considerably longer in the case of sulfadiazine. Equilibrium between maternal and fetal blood is established within three hours. A higher concentration of sodium sulfadiazine is obtainable in the fetal blood than is possible with an equal dose of sulfathiazole. These drugs also appear in the amniotic fluid, but later than in the fetal blood. The intravenous injection of sodium sulfathiazole or sulfadiazine into the mother is suggested as a method of treating the fetus in utero in cases of intercurrent or intrapartum infection caused by susceptible organisms. When the lower part of the mother's genital tract harbors the gonococcus the establishment of an adequate sulfathiazole or sulfadiazine concentration in the fetus prior to delivery would appear indicated as a prophylactic measure.

Colostrum Intradermal Test for Diagnosis of Pregnancy.—The colostrum intradermal test of Falls, Freda and Cohen for the diagnosis of pregnancy was used by Allen and Donaldson in 151 known pregnant and 81 known nonpregnant women. The reaction of the test was correct in 82 of the first group and in 28 of 38 of the group in the first trimester. The percentage of accuracy for the second group is 87.65 or in 71 of the 81 women known not to be pregnant. Allen and Donaldson point out that the percentage of accuracy in their series of pregnant and nonpregnant women is much lower than that obtained by the original investigators. There seems to be either

a difference in potency in individual colostrum samples or a periodic change in individual sensitivity. Cutaneous sensitivity appears to play a part in false or incorrect reactions. More work should be done on the hormone content of colostrum.

Importance of Rh Blood Factor in Erythroblastosis.—During the last several years Potter, Davidsohn and Crunden examined many fetuses and infants at necropsy. Following the discovery of the Rh blood factor they attempted to obtain blood from the women who had given birth to the infants and fetuses presenting any suggestion of erythroblastosis as the cause of death. The blood of 60 mothers giving birth to babies with erythroblastosis and of 59 infants and fetuses has been tested. Only 6 of the infants were Rh—. When the mother is Rh— and the father is Rh+ either 50 or 100 per cent of the offspring will be Rh positive, the difference in percentage depending on whether the Rh factor in the father is homozygous or heterozygous. If fetal blood containing the Rh factor gains access to the maternal circulation, agglutinins may be produced in the mother's blood. When it is necessary to transfuse an infant with erythroblastosis the mother's blood should never be used. The authors have not observed free anti Rh agglutinins in the blood stream of such infants nor have they found such a record. Therefore they question whether it is necessary to transfuse with Rh negative blood on this basis. If the cells and the serum of a patient and a potential donor do not agglutinate after incubation at 37 C for one hour and centrifugation at 600 revolutions for one minute the blood of this donor can be used with safety regardless of whether it is Rh positive or negative. As the majority of women who bear babies with erythroblastosis are known to be Rh negative and may show anti Rh agglutinins it is essential to use blood from a known Rh negative donor if transfusion becomes necessary in such a woman. Since the Rh factor is present in approximately 86 per cent of the population, about 12 per cent of marriages will be between an Rh negative wife and an Rh positive husband. Such a wife is capable of becoming sensitized to the Rh factor and of subsequently reacting on the fetus to produce erythroblastosis. However, erythroblastosis in the authors' experience has been found in only about 0.1 per cent of all pregnancies. The several conditions which may account for the difference between the potential and the actual incidence are childless or one child marriages, the ability of the Rh antigen in the infant to stimulate the production of agglutinins in the maternal blood, the probable variable ability of the placenta to prevent the passage of the Rh antigen, the probable variance of the maternal response to the Rh antigen into the blood stream and the probable variable ability of the placenta to permit passage of agglutinins. Apparently other superimposed factors are operative in the determination of whether or not erythroblastosis will be realized. A few women giving birth to babies who appear to have erythroblastosis are Rh positive and a few such infants are Rh negative. Therefore it may be possible that these infants are actually suffering from a different disease entity. However, a doubtful diagnosis of erythroblastosis can be confirmed by finding the maternal blood Rh negative and the paternal and infant blood Rh positive. If the mother is Rh positive, the diagnosis of erythroblastosis is less probable.

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- Casualties and Medical Problems of Tank Warfare.* D. L. Borden. Fort Eustis, Va.—p. 43.
- Medical Aspects of Chemical Warfare. I. Decontamination.* R. H. Meredith. Washington—p. 51.
- History of Brucellosis.* A. P. Hitchens. Philadelphia—p. 55.
- Cholecystitis as Complication of Brucellosis. Report of Case.* C. S. White. Washington—p. 60.
- Twelfth Revision of U. S. Pharmacopeia and Its Importance to the Physician.* G. B. Roth. Washington—p. 63.

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- Surgical Considerations of War Casualties.* W. H. Buermann—p. 67.
- Treatment of War Wounds and Fractures Based on Spanish War Experience.* I. Ponseti and J. P. Guri—p. 73.
- Progress from War Surgery.* C. R. McCreery—p. 78.
- Diuretic and Other Effects of Intravenous Sorbitol and Sucrose. Removal of Edema Fluid by Combined Action of These Substances and Salyrgan.* H. L. Richardson, J. C. Kennedy and E. S. West—p. 80.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

VIRUS PNEUMONIA OR UNUSUAL ARSENICAL REACTION

To the Editor—During the past year I have encountered two identical syndromes which can be classified by me only as "atypical pneumonia," and even this flexible term leaves much to doubt. Briefly, two employees of the sanatorium—one a Negro maid and the other a Negro nurse, the former found to have a positive serologic reaction for syphilis and a history of inadequate therapy, and the latter picked up with typical secondaries and a positive serologic reaction—were started with neoarsphenamine injections. In both cases after the fifth and seventh injections (0.45 Gm) respectively there was a subacute illness characterized by cough, dyspnea and mild elevation of temperature. There were scattered rales over the majority of both lung fields, with areas of suppressed breath sounds and others in which there was bronchial character to the breath sounds suggestive of severe bronchopneumonia. However, neither of the patients appeared acutely ill. The most striking feature was the x-ray examination, which revealed diffuse soft shadows over both lung fields, being lightest in the extreme apices, and in 1 case areas of rarefaction resembling cavitation. Numerous sputum examinations were negative for tubercle bacilli, and serial films showed gradual clearing on bed rest, so that over a period of approximately five months there was complete resolution of the shadows. In each case the x-ray examination of the chest had been completely negative within a few weeks of beginning arsenotherapy. There was nothing significant in routine blood counts and urinalysis, and the sedimentation rate was only moderately accelerated in both cases, showing improvement with clearing of the lungs. In summarizing, the following factors in both cases do not fit my present conception of virus or atypical pneumonia: the onset gradually of cough and dyspnea early in the course of arsenotherapy, the diffuse involvement of the lungs and the benign but prolonged course before clearing of pulmonary shadows. I should like to know if there is a possibility of this syndrome being a reaction to the neoarsphenamine. The nurse has been returned to employment here at the sanatorium and at present is receiving bismuth subsalicylate, which is tolerated well. I shall appreciate any suggestions as to the future precautions in regard to further use of neoarsphenamine in her case.

M D, South Carolina

ANSWER—There is a possibility that the syndrome may be the result of a reaction to neoarsphenamine, but the cases described are unusual indeed. Reactions to arsenobenzenes are classified as immediate or delayed and the cases in question would be included among the latter. A variety of disturbances may develop after neoarsphenamine therapy, involving the skin, the liver, the heart, the gastrointestinal tract and the nervous system, but little or no mention is made of pulmonary reactions.

In one article (Wright, C. S. Syphilis, in the *Cyclopedia of Medicine*, 1940, vol 14, p 745) it is stated that "another unfavorable symptom is the development of a bronchopneumonia." The pneumonia which occurs, however, usually accompanies severe exfoliative dermatitis (apparently absent in the cases referred to) and may be incited by a similar exfoliative process of the lining of the pulmonary air passages. Syphilitic pneumonia has been described but is apparently not to be considered in the present discussion.

On the other hand, it is also possible that both patients had atypical or virus pneumonia. The points which the questioner raises against this diagnosis do not rule it out. There is no reason why patients receiving any form of therapy cannot develop pneumonia, the involvement of the lungs in virus pneumonias may be diffuse, and the pulmonary shadows may persist for long periods.

There are no rules whereby one may predict future recurrences of reactions after arsphenamine therapy, except that if a patient reacts unfavorably once he is apt to do so again. According to the advice of Robinson (*The Resumption of Antisyphilitic Therapy Following Postarsphenamine Reactions*, *Pennsylvania M J* 46 667 [April] 1943) continued therapy seems advisable in the case of the nurse, if the severity of the reaction did not outweigh the importance of treatment in an early case. Perhaps the substitution of an arsenoxide drug such as mapharsen would be desirable. On the other hand, regardless of the type or degree of syphilis, when blood dyscrasias, exfoliative dermatitides or involvement of the nervous system results from therapy, resumption of treatment with arsenical compounds should not be considered.

INHERITANCE OF RETINITIS PIGMENTOSA

To the Editor—If a man has retinitis pigmentosa and is married, should the wife be advised not to have children and, if not, should such a case be grounds for performing a therapeutic abortion? The man is 30 years of age.

M D, New York

ANSWER—There has been a good deal of discussion about the question of prevention of childbirth in patients with retinitis pigmentosa. The conclusions seem justified that, since retinitis pigmentosa is recessively inherited, the chance of its being transmitted to the offspring of one affected person is slight or, in fact, almost impossible. It is stated that the only way in which cases of retinitis pigmentosa can occur is by a union between an affected person and a nonaffected person who is a member of a family that is affected with retinitis pigmentosa. This may be the case even though no known cases can be traced in the family. The chances of trouble are so remote that the couple in question probably need not refrain from having children and a therapeutic abortion would not be indicated.

EXPRESSING QUANTITY OF ROENTGEN IRRADIATION

To the Editor—In x-ray therapy how is the roentgen estimated? For example, how would such a dose as the following be expressed 5 ma., 86 Kvp, at 8 inch distance for one minute?

N S Fraser, M D, St John's, Newfoundland

ANSWER—The quantity of irradiation given is measured in roentgens. The most satisfactory and simplest instrument is the electroscope with an ionization chamber attached. The ionization chamber is placed in the direct x-ray beam. Readings are taken either in air or on the skin. Higher readings will be obtained with the ionization chamber on the skin, as the result of "backscattering" of the rays. It is necessary when recording dosage to specify whether the readings were taken in air or on the skin. The lower the kilovoltage, the greater the "backscattering."

Example 5 milliamperes, 86 kilovolt peak, at 8 inches target skin distance, no filter added. Roentgens measured in air. Half value layer: this is the amount of the specified material (usually aluminum at lower voltages) necessary to reduce the intensity (roentgens) of the beam of x-rays to one half of its initial value.

ETIOLOGY OF GANGLIONS

To the Editor—Will you please inform me of the current opinion relative to the etiology of simple ganglions (cystic tumors in tendon sheaths). I am especially interested in knowing whether or not trauma (either single or repeated) is believed to be an etiologic factor in their development.

A L Kefauver, M D, Columbus, Ohio

ANSWER—The etiology of ganglions is still not clear. The best judgment is that they result from a low grade inflammatory process developing within the joint capsule or over the periosteum of the small bones about the wrist. They have no relationship to the sheaths of the tendons, as is often suggested, except proximity. That misconception is responsible for the fact that incomplete removal is common and invariably followed by recurrence.

There is no definite evidence that trauma is a factor in the development of this condition.

LEFT HANDEDNESS

To the Editor—A girl aged 3 years prefers using her left hand when eating and writing. Should I advise her parents to encourage her to use her right hand, in view of the fact that this is a right handed world? At this age, in my opinion, it is difficult to determine the predominant hand definitely. Does it cause any ill effects to make her right handed?

Bernard S Dignam, M D, Thompsonville, Conn

ANSWER—The parents should encourage the child to use the right hand in eating, since this is the only situation that occasions social embarrassment. Ill effects may follow if a predominantly left handed child is forced to use the right hand. The development of finer coordinations in general tends to be interfered with.

DENTAL INFECTIONS AND URINARY INFECTIONS

To the Editor—Are infections about the teeth considered one of the sources of infected (surgical) kidney? I am informed that this opinion is now obsolete and untrue.

M D, California

ANSWER—Infections about the teeth are definitely considered the source for infected kidneys of any type. There is nothing especially characteristic about this type of infection that would make it surgical but any kidney infection, under proper conditions, may become subject to surgery.

It is a general procedure in the urologic clinics of the country to search for distant foci and eradicate them in the presence of upper urinary tract infections of any sort.

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THE LABORATORY DIAGNOSIS OF VIRUS DISEASES

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Perhaps at no time in the history of medicine has such an era of discovery and adaptation of knowledge occurred as in the past two decades. This is especially noteworthy in the case of virus diseases. Although these ultramicroscopic agents have been known to exist for many years, knowledge of their specific properties has been elucidated only in recent years. During this time the study of viruses has grown into a branch of medical science equal in importance to bacteriology itself. This development has been so recent and the literature has grown so rapidly that there are few sources from which the clinician or the laboratory worker can obtain a simple and adequate survey of the present status of knowledge pertaining to methods of diagnosis of virus diseases. Actually it seems unlikely that the diagnosis of virus diseases will ever attain the simplicity of the diagnosis of bacterial infections. Furthermore controversies have arisen in numerous instances as to the most practical methods of laboratory diagnosis. In many instances one method has been accepted as most valuable, while in the diagnosis of other diseases several tests are available.

The clinical features of certain of the virus diseases are uniformly consistent permitting the physician to make a diagnosis with a fair degree of regularity. However it should not be concluded that all virus diseases can be diagnosed without the aid of certain laboratory procedures. This is especially true of virus diseases of the central nervous system. In attempting to establish an etiologic diagnosis of some of the human encephalitis the clinician has had to depend on methods that are either inadequate or else cannot be adapted as a routine laboratory procedure. Also the laboratory may be of aid in the diagnosis of various abortive infections of virus origin.

Our primary objective in this article is to provide the physician as well as the laboratory worker with an analysis of acceptable procedures that are now available. Furthermore the discussion is limited to an account of only those diseases of man in which it is generally accepted that the causal agent comes within the virus category.

The procedures followed in the laboratory diagnosis of virus diseases are analogous to those used in bacterial infections. Conclusive evidence consists in the demonstration and identification of the virus, although such tests are tedious and expensive. This may be readily accomplished in some of the virus diseases (psittacosis, yellow fever, influenza and rabies) by using susceptible laboratory animals or chick embryos instead of the ordinary culture mediums used for the isolation of bacteria. Unfortunately many factors complicate the use of certain animals in virus study: (1) costliness of animals prohibits their use (monkeys in poliomyelitis); (2) in some cases animals must be strictly isolated to prevent contact infections (ferrets in influenza); and (3) latent viruses of ordinary laboratory animals frequently confuse diagnosis.

Once the virus is recovered identification is accomplished by determination of the animals for which it is pathogenic, routes by which it can be given, tissues which it infects, pathologic lesions produced (including inclusion bodies) and specific immunologic reactions.

In the diagnosis of bacterial diseases it is often useful to cultivate the causative organism from lesions or discharges. Since viruses cannot be grown in the absence of living cells it is necessary to inoculate animals with material from the patient. The route chosen for inoculation usually depends on which tissues of the body are susceptible, for example in influenza secretions from the human respiratory tract are inoculated intranasally into ferrets. Evidence that a virus is present is demonstrated by the production of a disease in the animals inoculated. This may be recognized by clinical and pathologic signs. The disease should then be transmissible similarly from animal to animal indicating that a true infectious agent is present. Cultures, smears or sections may be employed to determine that bacteria or other nonviral infectious agents are not producing the lesions.

After the identification of a virus it is important to determine whether it was present in the body as an incidental contaminant or whether it was similarly encountered during passages in animals. Comparisons of the clinical and pathologic aspects of the disease in human beings and in animals help to determine this point. The comparison of immunologic tests on serums taken during the acute phase and convalescent stages of disease in human beings is likewise important. If specific antibodies have developed during or shortly after the clinical disease it is likely that the virus is the cause of the human disease.

Microscopic study of virus-containing tissues is of value in identification and in establishing the relationship of the virus to the human disease under investigation. Certain viruses producing apparently identical lesions however may be distinguished only by their species specificity or their immunologic reactions. Inclu-

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From the Virus Laboratory of the St. Louis Health Division and Department of Bacteriology, Washington University School of Medicine.

Owing to lack of space this article has been abbreviated for publication in THE JOURNAL by omission of the bibliography (to which the superior figures in the text refer). The footnotes to the table are presented in abbreviated form. The complete article appears in the authors' reprint.

sion bodies are not sufficiently distinct in all cases from the morphologic standpoint to serve as characteristic indicators of the presence of virus. Furthermore, these bodies have not been demonstrated in a number of virus diseases, they have been found often in pathologic material in which the presence of a virus could only be suspected¹ and they have been produced in tissues in which the presence of a virus could be excluded with reasonable certainty. When a virus can be demonstrated by passage as indicated previously, the presence of inclusion bodies may serve as corroborative evidence.

NEUTRALIZATION TESTS

Neutralization tests are generally used for detecting the presence of virus-neutralizing antibodies for diagnostic or epidemiologic purposes. The serum to be tested is mixed with the virus in suitable proportions and then inoculated into susceptible animals. In some of these tests the amount of virus used is kept constant and different dilutions of serum are added, while in others the amount of serum is kept constant and the virus diluted. In general, the basis on which virus neutralization tests are interpreted depends on the susceptibility of the animal used. Usually when the virus is highly pathogenic the results are interpreted according to the proportion of animals that survive. When a less infective virus is used, all animals that do not die must be killed and examined for evidence of specific lesions. For example, in the case of neutralization tests with influenza virus, the lungs of all mice are usually examined for evidence of consolidation.

It has been shown that demonstration of protective antibodies is more effective when serum-virus mixtures are given by some routes of inoculation than by others.² This fact must be taken into consideration when practical diagnostic tests are being done. For example, with vaccinia virus, neutralization is more readily demonstrated if serum-virus mixtures are inoculated intracutaneously rather than intratesticularly in the rabbit. In equine encephalomyelitis it is preferable to inoculate 16 day old mice intra-abdominally rather than intracerebrally.

The most conclusive diagnostic evidence is available when the virus has been recovered from infectious tissues and an increase in specific neutralizing or complement fixing antibodies demonstrated in the convalescent serum of the patient. Correlation of laboratory and clinical findings in certain virus diseases, however, has shown that the serologic procedures are applicable even when virus is not recovered. Immunologic tests should be done on the blood serum obtained during the early stages of the disease and again after recovery of the patient. The presence of specific antibodies is of particular significance if blood specimens taken during the acute phase are negative and become positive with convalescence of the individual. Though such diagnoses can be made only after the patient recovers from the disease, they are of definite public health significance. Frequently a specimen of serum can be obtained only during convalescence. In such cases the validity of the diagnosis depends on the frequency with which serums from apparently normal persons in a given community give positive tests. For example, in attempting a diagnosis of St. Louis encephalitis or lymphocytic choriomeningitis by single specimens of serum taken during convalescence, it must be remembered that the serums of many normal persons of the same community also give positive results.⁴ During epidemic periods,

because of subclinical exposure, a large percentage of normal persons may develop antibodies against the virus responsible for the outbreak. Accordingly, based on the study of serum specimens from the general population and from cases of influenza occurring during the 1940-1941 outbreak in St. Louis,⁵ the level of complement fixing antibodies near a titer of 1 to 16 in terms of the original dilution of the patient's serum was found to be significant of epidemic influenza. In certain virus diseases specific antibodies develop quite rapidly (St. Louis encephalitis and equine encephalomyelitis), while in others antibodies may not become apparent for several weeks or even months (lymphocytic choriomeningitis). The absence of neutralizing antibodies against at least the poliomyelitis virus in human serum may not exclude the diagnosis, since specific antibodies may not develop in the serum after a typical clinical attack.⁶ On the other hand, the disease may develop in persons who already possess antibodies in their serum. Although it is possible that these facts may be explained when there is more knowledge of immunologically distinct strains and inapparent infection, it now appears that serologic tests alone are of little value in the diagnosis of poliomyelitis.

Specific neutralization tests have been described for many of the known virus diseases, and the accompanying table indicates where these tests may be of value as laboratory aids in diagnosis.

IN VITRO TESTS

The early literature contained many conflicting reports concerning the application of complement fixation tests to the study of virus diseases. In subsequent years, however, various improvements have been introduced which have resulted in the more extensive use of this test. Various workers have shown that some anti-viral serums are capable of fixing complement in the presence of their homologous antigens similar to the fixation of complement by antibacterial serums with suspensions of the appropriate micro-organisms. The essential difference, however, lies in the fact that viruses cannot be grown in large amounts on ordinary culture mediums and that antigen consisting of infected tissues must be employed instead. This necessitates the addition of suitable antigen and serum controls. Theoretically, in vitro immunologic reactions should be demonstrable, provided a sufficient quantity of virus is contained in the tissue used as antigen.¹⁰ However, if the concentration of virus in the tissues is low, a delicately balanced system must be used.¹⁴ Enough time must be allowed for the union of antigen and antibody. Accordingly, Bedson and Bland¹⁷ permitted complement fixation to occur over a period of hours at low temperature, employing the procedure previously used for increasing the delicacy of the Wassermann test.

Although many investigators doubted the specificity of the early complement fixation tests with viruses, sufficient evidence has accumulated in recent years to eliminate uncertainty. Virus diseases that can now be diagnosed by means of the complement fixation test, together with the respective authorities, are indicated in the table. The reader is referred to the articles cited for details of technic of tests.

Precipitation or flocculation reactions have been reported by many investigators.¹⁸ The practicability of these precipitation tests as a diagnostic aid in the diagnosis of virus diseases is limited, as indicated in the table.

THE USE OF THE CHICK EMBRYO AS AN AID
IN DIAGNOSIS

The chick embryo is now widely used for the isolation, cultivation and titration of viruses for titration of antiviral serums. It is a source of antigen for immunologic procedures for the preparation of vaccines for human use and for studying the development of lesions. The reader is referred to the articles by Goodpasture and his associates,³ Burnet,¹⁰⁰ Stevenson and Butler,¹⁰¹ and Bengtson and Davi,¹⁰² for details of methods now in general use for inoculating eggs. Convenient histologic methods of examining infected chorioallantoic membranes have been described by Goodpasture and his co-workers,¹⁰³ Himmelweit,¹⁰⁴ and more recently Burnet and Faris,¹⁰⁵ Cooke and Blattner,¹⁰⁶ have described a method for supravital staining which renders lesions on the membranes more easily visible.

PRESERVATION OF VIRUSES

It has long been known that viruses which are unstable and rapidly become inactivated at room temperatures retain their infectivity for longer periods at lower temperatures. Even the most unstable viruses may be stored almost indefinitely with no detectable decrease in infectivity when maintained at low temperatures. Proper preservation of viruses eliminates the necessity of expensive and time consuming animal passage and is important if virus is to be available when needed. The most widely used method of preservation consists of the immersion of infected tissue in glycerin (It is not necessary to use the Schering-Kahlbaum brand of glycerin, but it is desirable to use a good pure grade.) This method is simple but does not maintain the infectivity of some viruses over long periods. Flossdorf and Mudd¹⁰⁷ have described procedures and apparatus for preservation of viruses and other biologic materials by drying while in the frozen state. This system has been found to be very effective for most viruses. Carbon dioxide in solid form has been used to maintain virus-containing materials at very low temperatures with conspicuous success.¹⁰⁸ Horsfall¹⁰⁹ has described a low temperature storage cabinet designed to accommodate a large number of virus specimens in an easily accessible manner and to maintain them in a state of unaltered infectiousness. The specimen tubes are surrounded by a cold gas mixture resulting from the evaporation of solid carbon dioxide, and a temperature of minus 76 C can be maintained.

COMMON ERRORS IN LABORATORY PROCEDURE

Unquestionably the diagnosis of virus diseases by laboratory methods is subject to numerous difficulties. One frequent error occurs when a latent virus appears during animal passage and is mistaken for that causing the human disease. Several spontaneous infections in apparently healthy mice from various highly inbred laboratory stocks have complicated experimental study of viruses. From apparently healthy mice Traub¹¹⁰ isolated a virus later found to be identical with the lymphocytic choriomeningitis virus isolated by Armstrong and Lillie¹¹¹ (This virus has been subsequently isolated from a number of animals used in experimental work.¹¹²) Theiler and Gard¹¹³ recovered a mouse encephalomyelitis virus from spontaneously paralyzed stock mice. Olitsky¹¹⁴ was able to recover Theiler's encephalomyelitis virus from the intestinal contents of practically all of his adult stock of white mice. Theiler and Gard¹¹³ recovered the virus in approximately two thirds of 6 month old mice.

The aforementioned viruses can be identified immunologically by the use of specific antisera and by testing surviving immune animals. A virus capable of producing fatal pneumonia in mice was recovered from apparently normal mouse lungs by Dochez and his associates.¹¹⁵ A spontaneous mouse infection against which it is not possible to produce effective antiserum in rabbits and which appears to be similar to that described by Dochez and his co-workers,¹¹⁶ was reported by Gordon, Freeman and Clampitt.¹¹⁶ Freeman¹¹⁷ has pointed out that there may be no immunity to a virus that lies dormant in mice until stimulated by serial passage of lung emulsion or of isotonic solution of sodium chloride inoculated intranasally. More recently Horsfall and Hahn¹¹⁸ recovered a latent virus from normal mice which was capable of producing pneumonia in its natural host and which proved to be different from other viruses which various investigators have found in normal mouse lungs. The strictly pneumotropic virus described by Horsfall and Hahn¹¹⁹ readily immunized mice and produced neutralizing antiserum in rabbits, hence differing from the viruses recovered by the previous investigators.¹¹⁹ A number of reports dealing with the recovery of viruses from other experimental animals have also appeared.¹⁻⁹

Many workers in the fields of biology and medicine believe that if results need statistical evaluation they are of such an inconclusive nature that they should not be considered valid. On the other hand, we are of the opinion that results which look significant may well be given the test of statistical analysis, since occasionally they may not prove to be as conclusive as they appear. Mainland¹⁻² discusses the use of statistical methods in such situations. Furthermore in the primary isolation of a virus it is desirable to use a large number of animals. This obviously increases the possibility of getting positive results, and if all animals show signs of infection activation of a latent virus is less likely to have occurred. Also in serum protection tests the use of enough animals makes the conclusions less open to criticism. Schaeffer and Muckenfuss¹²² have shown how difficulty in using large numbers of monkeys in experimental poliomyelitis has often made results invalid.

Authorities differ as to the amount of incubation of serum-virus mixtures necessary in the performance of neutralization tests. Although some workers advocate definite incubation periods, good results have been obtained when only sufficient time to make necessary manipulations was allowed. Incubation may cause some inactivation of the virus, so that it is important that control animals inoculated with normal serum-virus mixtures are carefully observed. It is desirable to inoculate the immune serum-virus mixtures first so that any protection observed cannot be attributed to standing during inoculation of control animals.

The diluent used for suspending the virus-containing tissue is an important factor and is almost always stated. In general, 1 to 10 per cent solutions of normal horse or rabbit serum in saline solution are satisfactory, but it must be made certain that the serum does not contain specific antibodies against the virus used. Infusion broth is also valuable but in 1 instance has been found to be inferior to serum.¹⁻³ Beet infusion broth containing 20 per cent horse serum has been found satisfactory in studies with influenza virus.

Although specific complement fixing antibodies have been demonstrated in many virus diseases, these reactions are so delicate that the execution of the tests, their adequate control and the interpretation of results

demand the utmost care and attention. One of the chief obstacles remains that of nonspecific complement fixation caused by tissue proteins from which viruses are inseparable. For example, the appearance of cer-

body is obtained must be considered. Fairbrother and Hoyle¹²¹ found from their control experiments that the complement fixation which occurred between anti-influenzal ferret serum and influenzal mouse lung was

Laboratory Diagnosis of Virus Diseases of Man *

Disease	Detection of Virus								Tests for Antibodies		Pathology		Laboratory Animal of Choice	Laboratory Procedure of Choice
	Respiratory Secretions	Skin Lesions	Genital Lesions	Central Nervous System	Spinal Fluid	Blood	Feces	Conjunctiva	Saliva	Neutralization Test	In Vitro Tests	Histopathology	Inclusions	Skin Tests
Influenza	1													Mouse
Common cold	11													Chimpanzee
Pittacosis	12									11	15	16	16	Mouse
Primary atypical pneumonia etiology unknown						11	13							Chimpanzee
Measles	19					19						18		Mouse
Epidemic parotitis (mumps)									20			20		Monkey
Lymphocytic choriomeningitis					21	22				23	24	25		Monkey
Equine encephalomyelitis				26	27	26†††				28	29	30	31	Mouse, guinea pig
St. Louis encephalitis				32						33	39	34		Mouse
Japanese B encephalitis				35						36	37	38		Mouse
Encephalitis lethargica												39		Mouse
Australian A disease				40								40		Monkey
Forest Spring encephalitis #				41	41	41				42		41		Monkey
Poliomyelitis	43			44			45			46		47	47	Monkey
Coupling ill *							48			49	37	50		Mouse
West Nile fever ‡						51				51		52		Mouse
Rabies									53	52	54	55	55	Mouse
Aujeszky's disease ** (pseudorabies)						6								Rabbit
B virus **														Mouse
Varicella	58		57							57	59	57	57	Rabbit
Varicella	61									59	60	61	61	Chick embryo
Herpes														Human volunteers
Herpes zoster	63§§		65							66		67	68	Rabbit
Inclusion hemorrhage		69										67	67	
Trachoma							71					70	70	
Epidemic keratoconjunctivitis							72					71	71	Monkey
Yellow fever							73			75		75	76	Mouse
Dengue fever							77			75	74	75	76	Mouse
Rift Valley fever ***							78			79		80	80	Monkey
Bwamba fever §							81			81				Mouse
Sandfly fever (phlebotomus fever)							82			83				Chick embryo
Lymphogranuloma venereum	84	85						84	86	87	88	89	90	Mouse
Foot and mouth disease	91									92				Guinea pig
Molluscum contagiosum	93										93	93		Human
Verruca vulgaris (warts)											91	94		volunteers

* This table is intended to serve as a guide to reliable literature for details of technique. The numbers indicated refer to the bibliography which appears on the following page. Only procedures that are considered established are included.

** Refers to the so-called virus pneumonias, although a virus has usually not been recovered.

*** The only known cases are those which have occurred as laboratory infections.

† Not feasible under ordinary circumstances.

†† Complement fixing antibodies are present before neutralizing antibodies make their appearance.

††† Western type.

Because of the high incidence of accidental infections only experienced workers should carry out animal inoculations.

In addition to microscopic examination for Negri bodies it is desirable to inoculate suspected brain tissue into mice.

There are some indications that this disease is the same as louping ill (Casals and Webster Science 97 246, 1943).

† The value of the neutralization test is controversial hence this test is of doubtful significance in poliomyelitis.

¶ Immunologic in vitro tests using known serum and vesicle fluid or crusts may also be used.

¶¶ Neutralizing antibodies usually appear earlier than complement fixing antibodies.

¶¶¶ Neutralizing antibodies appear slowly after recovery.

¶¶¶ Causative agent not known but thought to be a virus.

° Because of insufficient data the laboratory procedure of choice is not as yet established.

§ Disease recently encountered by Smithburn and his associates⁸¹ in Bwamba County Western Province of the Uganda Protectorate.

§§ A disease recently encountered by Smithburn and his associates⁸² in the West Nile District, Northern Province of the Uganda Protectorate.

§§§ Direct inoculation of chorioallantoic membrane of developing chick embryo with fluid from herpetic lesions is a useful procedure.

tain immunologic effects, such as the Forssman phenomenon, may interfere with interpretation of the results of serologic reactions. The animal species from which antigen is derived and animal species from which anti-

nonspecific in character, as the same effect was obtained with normal mouse lung as antigen. Therefore suitable antigen and serum controls must be included before the results of these tests can be interpreted. Also un-

the same pooled complement is used throughout a series of tests comparisons cannot be made, since the variability of different specimens of complement may vary considerably.¹

promising but are beginning to displace those in present use. Hirst¹⁻⁶ recently discovered that the allantoic fluid of chick embryos infected with either influenza A or B virus was capable of agglutinating red blood cells

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NEWER PROCEDURES

The accompanying table is designed to include only procedures which in our opinion are fully established and confirmed. Some new methods not only appear very

This phenomenon was utilized by this investigator to detect influenza virus in throat washings and to measure influenzal antibodies in serum. The practicability of this simple in vitro test was pointed out in a later

study.¹²⁷ The same phenomenon was observed independently by McClelland and Hare,¹²⁸ who confirmed the observations of Hirst. Nagler¹²⁹ has described a similar phenomenon with vaccinia virus.

Another in vitro test, referred to as the "bacterial agglutination" (B A) technic, was recently described by Roberts and Jones.¹³⁰ This test, which consists essentially in coating the cells of a suspension of bacteria with virus and observing the agglutination of such cells on the addition of the homologous immune serum, was used successfully in studies with St. Louis encephalitis and poliomyelitis viruses. Roberts and Jones observed that the bacteria exhibited greater suspension stability than the colloidal particles used in the agglutination test previously described by Cannon and Marshall.¹³¹

Recently Goodner¹³² developed a new in vitro technic called "colloidal fixation" which permits detection of small amounts of virus or antibody. No literature on the application of this method has appeared.

Experiments are now in progress in the virus laboratory of the St. Louis Health Division to determine the practicability of these newer procedures.¹³³ A discussion of the hazards and difficulties likely to be encountered in the laboratory diagnosis of virus diseases will be published elsewhere.¹³⁴

VIRUS PNEUMONIA

In recent years an increasing number of cases of acute infection of the respiratory tract associated with atypical pulmonary lesions have been reported. These infections have been variously described as acute influenza pneumonia, pneumonitis, acute interstitial pneumonitis, atypical pneumonia, atypical bronchopneumonia of unknown etiology and most frequently "virus pneumonia." In spite of the meager positive results of laboratory studies, the latter name is now quite generally used both by the practitioner in verbal discussions and in many written reports. The diagnosis "primary atypical pneumonia, etiology unknown," recently suggested in an official statement¹³⁵ to the Surgeon General of the Army, appears to be the most suitable designation for this fairly well defined clinical syndrome and implies that an effort has been made to rule out the known bacterial as well as nonbacterial etiologic agents. The nonbacterial agents refer particularly to the viruses of influenza, psittacosis and Q fever. Although a number of attempts¹³⁶ have been made to isolate the causative agent, the etiology of primary atypical pneumonia is by no means established at the present time¹³⁷ and hence no specific laboratory test is now available.

Municipal Courts Building

The Limit of Acclimatization for Man—It is estimated that there are 10,000,000 inhabitants of this globe living at altitudes of 10,000 feet or more. In the mining camps of South America men live at 17,000 feet and work at 18,000 feet. There are monasteries in Tibet where the monks spend their lives at 17,000 feet. It is interesting to note that the miners in South America prefer to live at 17,000 feet and to walk up the additional 1,000 feet to work each day, rather than to live at 18,000 feet. Although an attempt was made to live at 18,000 feet it was abandoned, and these men moved down to 17,000 feet. This indicates that the limit for acclimatization for man is between 17,000 and 18,000 feet—Gemmell, Chalmers L. *Physiology in Aviation*, Springfield, Ill., Charles C. Thomas, Publisher, 1943.

PERIPHERAL NERVE INJURIES DETERMINED BY THE ELECTRICAL SKIN RESISTANCE METHOD

I. ULNAR NERVE

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AND

DAVID T. KATZ, M.S.

BALTIMORE

In previous papers a method was described by means of which areas of high and low electrical skin resistance can be quickly and accurately defined on all parts of the body.¹ This method was first applied to the delineation of areas of skin denervated by sympathetic ganglionectomy. These areas did not sweat and had a very high electrical resistance. A sharp line, usually less than $\frac{1}{8}$ inch in width, separated the normal areas of low skin resistance from the affected areas of high resistance. Removal of the sympathetic ganglia at any given spinal level produced definite skin resistance patterns which closely conformed to the corresponding sensory dermatomes. This method made it possible to determine exactly the area affected by sympathetic ganglionectomy and the presence of regeneration of the sympathetic nerves.

In a later study with this method, well circumscribed areas of low electrical skin resistance were found in normal individuals at room temperature on the face, hands and feet and in the axillae and antecubital fossae. On the face the area had an oval shape and included the eyes, nose and mouth; on the hands it included the palmar surface and the distal parts of the dorsal surfaces of the fingers; on the feet it included the plantar surface and a marginal band of about 1 inch along the sides. In warm external temperatures and with any kind of sympathetic stimulation these areas of low electrical skin resistance on the face, hands and feet became larger, while in the cold and during sleep they became smaller. The possible uses of these areas for the objective study of peripheral circulatory and other disturbances have been discussed in our previous papers.

This method is now being used (1) to define cutaneous areas innervated by the peripheral nerves, (2) to define areas affected by trauma or sectioning of the peripheral nerves and (3) to determine the effects produced by nerve suture and spontaneous regeneration. The present paper deals only with observations made on the ulnar nerve. In the first part of this study we mapped the areas of skin which are affected by a temporary palsy of the ulnar nerve produced by an injection of procaine hydrochloride into the nerve at the elbow. In the second part we mapped the areas denervated by total or partial accidental sectioning of the nerve at various levels of the arm. In some instances the observations were made immediately after the nerve was sectioned and in others not until several months or even years later. So far we have not had sufficient

David T. Katz is Henry Strong Denison Scholar, 1943-1944. From the Psychobiological Laboratory, Phipps Psychiatric Clinic, Johns Hopkins Hospital.

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1. Richter, C. P., and Woodruff, B. G. Changes Produced by Sympathetic Ganglionectomy in the Electrical Resistance of the Skin. *Surgery* 10: 957, 1941. Facial Patterns of Electrical Skin Resistance. *Bull. Johns Hopkins Hosp.* 70: 442-459, 1942. Whelan and Richter.²

time to follow the entire process of regeneration of the ulnar nerve from the time of suturing to full recovery. In all instances simultaneous observations were made on sensory changes accompanying nerve section and suture.

METHOD

For most of the following observations we used a small dermatometer which was specially designed for this purpose. It consisted of a small portable box which contained an ammeter, two variable resistances, a 4.5 volt battery and two lead wires and electrodes. One electrode made of a small zinc disk soldered to a wire clip was securely fastened to the lobe of one ear. This electrode remained fixed throughout the examination. A paste made of kaolin and saturated zinc sulfate solution established contact between the electrode and the ear and a prick to the skin eliminated the resistance of the skin beneath this electrode. The movable electrode a small zinc disk 1 cm in diameter was soldered at right angles to the end of an insulated 3 inch copper rod. By holding the rod in the hand the operator could bring the flat surface of the disk into contact with the skin on any part of the body.

At the outset of an examination, the movable electrode was pressed lightly against the skin within an area suspected of having been denervated by peripheral nerve injury. By means of the variable resistance in the instrument the current flowing through the completed circuit was adjusted so that an ammeter deflection of only a few scale divisions was obtained. Then while maintaining a close watch on the ammeter the movable electrode was moved over the surface of the skin until an area of low skin resistance was reached as indicated by a sharp deflection of the pointer across the ammeter scale. The electrode was then moved back and forth between areas of high and low resistance until the exact point of change was located. The change from low to high resistance usually occurred within a distance of $\frac{1}{8}$ inch or less. By repeating this procedure in adjoining areas other points of sharp resistance change were determined and marked with a skin pencil. This process was continued until the entire area of high resistance was delineated. The points so obtained were then joined together. Areas were recorded on charts and in most instances the hands photographed.

In a warm external environment the resistance of the skin on normal parts of the body is usually very low as compared with that present on denervated areas. Under such conditions mapping tests can be made at once without further preparations. During the cold months of the year or at any other times when the patient is cold, the skin resistance on the normal areas may be as high as on the affected areas. It is necessary then either to heat the patient for a few minutes in a hot air cabinet or under a heat cradle or to give a subcutaneous injection of pilocarpine ($\frac{1}{10}$ gram [0.0065 Gm]) or to give acetylsalicylic acid and hot water or tea. Such procedures reduce the resistance of the normal skin but have little or no effect on the high resistance of the denervated areas, thereby bringing out a sharp line of demarcation between them.

Heating the body also eliminates the normal hand pattern, which otherwise in some instances may be mistaken for parts of the pattern produced by the peripheral nerve injuries.

In many instances the skin resistance patterns were checked with the Minor starch-iodine sweating test. This test however, does not usually give good patterns on the hand, particularly on the palmar surface.

On most persons simple sensory tests were made for pain and touch, the pin prick and cotton swab being used.

RESULTS

Patterns of High Electrical Skin Resistance Produced by Injections of Procaine Hydrochloride In and Around the Ulnar Nerve at the Elbow

In these studies 4 to 5 cc of a 1 per cent solution of procaine hydrochloride was infiltrated in and around the ulnar nerve at the elbow. Skin resistance and sensory tests were made every few minutes to determine the first appearance and the duration of the appearance of the areas of high electrical skin resistance and of the areas of anesthesia.

Usually within five minutes patterns of high skin resistance and anesthesia could be detected. For the

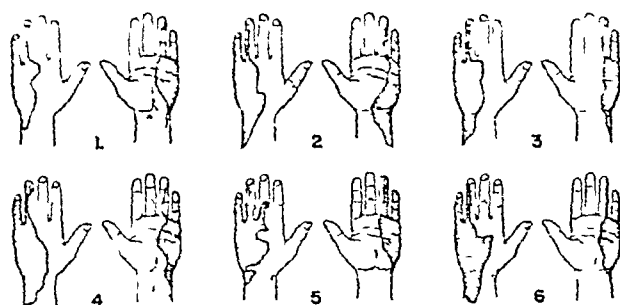


FIG. 1.—Ulnar nerve patterns of high electrical skin resistance following procaine injection of the ulnar nerve at the elbow.

first few minutes the outlines of the patterns were not sharply defined. Later they became as sharp as those which bound sympathectomized areas. The areas of skin resistance and of anesthesia agreed very closely. They both disappeared after the lapse of thirty to forty-five minutes. Figure 1 shows the patterns that were found in 6 normal persons. The pattern showed some individual variations, but in general they agreed closely with the ulnar patterns which have been determined by other methods.

Skin Patterns of High Resistance Found in Patients with Total or Partial Section of the Ulnar Nerve³

CASE 1.—N. B. a white man aged 42 sustained a laceration of the ventral and ulnar aspects of the wrist on May 21 1942. In the course of the injury which was caused by broken window glass, the ulnar nerve was cleanly divided and the ulnar artery cut. On the same day the nerve was sutured. One month later when the patient was sent to us for examination the ulnar patterns of high electrical resistance shown in figure 2 (N. B.) were clearly defined on his hand. These patterns were almost the same as some of those shown in figure 1, which were found after injection of procaine hydrochloride.

³ These patients were referred to us by Lieut. Col. R. Glenwood Spurling of the Walter Reed General Hospital in Washington, D. C., by Dr. James G. Arnold Jr. of the University Hospital of the University of Maryland and by Drs. Herbert E. Sloan Jr. and Marcus M. Ravitch of the Johns Hopkins Hospital.

² Whelan, F. G. and Richter, C. P. Electrical Skin Resistance Technique Used to Map Areas of Skin Affected by Sympathectomy and by Other Surgical or Functional Factors. *Arch. Neurol. & Psychiat.* 49: 44 (March) 1943.

in and around the ulnar nerve at the elbow. Here again the areas of high electrical skin resistance corresponded almost exactly with the areas of anesthesia.

CASE 2—J. W., a Negro aged 51, in May 1942 suffered a compound fracture of the left shoulder. An open reduction was performed. Ulnar palsy was noticed when the cast was removed. The patient was examined by us on October 10. At that time it was noticed that he had contractures of the long tendons of the fourth and fifth fingers, atrophy of the intrinsic hand muscles (except those supplied by the median nerve) and a complete loss of sensation over the ulnar field. It was found that he had a fairly typical ulnar pattern of high electrical skin resistance (fig. 2, J. W.). Clearly the nerve must have still been severed at this time. A skin mapping test made at the time of the fracture would have revealed at once the severance of the ulnar nerve.

CASE 3—F. S., a Negro aged 45, sustained a stab wound in the right arm in the ulnar region just above the elbow. When he was brought to the hospital he had a complete palsy of the lower arm attributed to a tourniquet which had been in position on the upper arm for more than seven hours. According to the examinations made at that time no nerve had been cut. Seven days later, dorsiflexion of the fingers and sensation began to return. Three weeks later the patient could pronate his forearm slightly but was unable to supinate it. Intrinsic muscles of the hand were almost completely paralyzed.

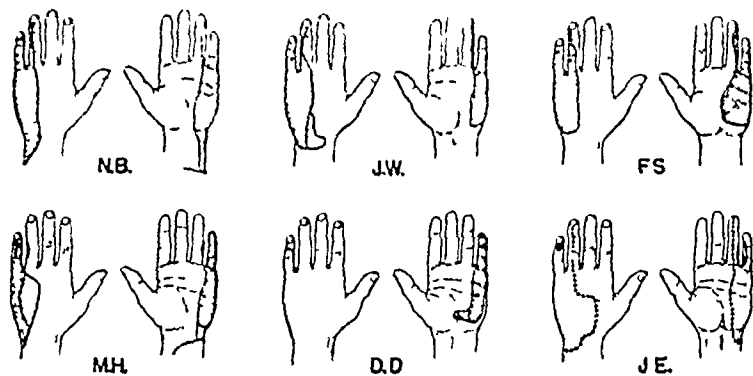


Fig. 2—Ulnar nerve patterns of high electrical skin resistance following partial and total section of the ulnar nerve.

and flexion and extension of the wrist were almost entirely gone. Three months later the patient was sent to us for examination. Figure 2 (F. S.) shows the typical ulnar pattern of high electrical skin resistance that was found on the patient's hand at this time. It corresponded closely with the area of anesthesia. The ulnar nerve must have been either severely injured or actually severed by the stab wound. A skin resistance mapping test made at the time of the original surgical examination would have demonstrated the serious condition of the ulnar nerve.

CASE 4—E. L., a white man aged 41, on Sept. 1, 1942, suffered a blow on the medial side of the upper third of the humerus, with a resultant ulnar palsy. Electrical skin resistance examination was made on December 29. A typical area of high resistance was found over the ulnar field. The high resistance also extended above the medial side of the arm including the medial antibrachial cutaneous nerve and possibly the medial brachial cutaneous nerve up to the site of injury.

CASE 5—K. F., a white man aged 26, on Feb. 19, 1942, received a bomb fragment in the medial side of the lower third of the humerus. There was a complete ulnar nerve palsy. On September 4 a neuroma was excised and a transposition and end to end anastomosis were performed. An electrical skin resistance test was performed on December 30. An area of high resistance (about 5,000,000 ohms) was found over the hypothenar eminence and over a narrow band on the ulnar side of the dorsum of the hand, the fifth digit and two small

spots on the fourth digit. The remainder of the hand had a lower resistance (under 500,000 ohms). The area delineated corresponded well with the area of complete pain and touch anesthesia. This pattern is not as extensive as the typical ulnar field and therefore would indicate partial recovery.

CASE 6—M. H., a white woman aged 21, accidentally cut her right wrist on a sharp edged vessel on Aug. 25, 1942. The wound was 8 cm. in length and was located on the ventral and lateral surfaces of the wrist 2 to 3 cm. above the hypothenar eminence. The ulnar nerve and artery and the long flexor tendons on the ulnar side of the wrist were cut. The nerve and tendons were sutured. When examined by us three months later, her hand showed a definitely constricted ulnar pattern. Figure 2 (M. H.) shows that the area of very high resistance included only the little finger and a narrow band along the edge of the hand on both the palmar and the dorsal surface. Areas of intermediately high resistance (light stipple) were found (1) on the inner surface of the fourth finger (2) between the scar and the area of very high resistance and (3) on the dorsum which filled in most of the original ulnar pattern. (The high resistance area at this time was 3,600,000 ohms while the area of low resistance was from 140,000 to 1,500,000 ohms.) These areas of very high and intermediately high resistance corresponded closely with areas of total and partial anesthesia respectively. It is clear that suture of the ulnar nerve had been successful and that part of the nerve had already regenerated.

CASE 7—D. D., a white man aged 42, fractured his humerus and dislocated his shoulder on April 22, 1942. The shoulder was set at once and placed in a cast. Five weeks later when the cast was removed it was found that the patient had a complete nerve palsy. Five months later when he was examined by us his hand showed only a very small ulnar pattern, as may be seen in figure 2 (D. D.). On the dorsal surface the area of very high resistance included only the tip of the little finger and on the palmar surface the little finger and a narrow strip along the edge of the hand. It therefore appears that in the beginning the ulnar nerve must have been either partially or completely cut and in the meanwhile must have become at least partially regenerated.

CASE 8—J. E., a white man aged 41, in July 1935 sustained a 3 cm. laceration on the ulnar side of the left wrist on the volar surface extending around to the dorsal surface. The ulnar nerve was cut at this point. He was first seen at the Johns Hopkins Hospital in February 1936. At this time he had a healed laceration with atrophy of the intrinsic hand muscles and a complete ulnar palsy and loss of sensation over the ulnar field. A nerve suture was performed. One year later he noticed returning sensitivity and could distinguish heat and cold but still had complete loss of tactile sensation. The muscles were atrophied and very weak. When examined by us in October 1942, six years after the nerve suture, his hand showed a small area of intermediately high resistance on the inner surface of the fifth digit and on the dorsal surface of the tip of the fifth digit. However, he still had an area of partial anesthesia over the entire ulnar field, as may be seen in figure 2 (J. E.). Thus the ulnar nerve had not completely regenerated over a period of six years. The sympathetic functions had apparently completely recovered long before the sensory functions returned to normal.

CASE 9—R. S., a white man aged 36, sustained a laceration of the left arm and forearm on Aug. 17, 1939 in an automobile accident. He had a large U shaped wound on the ulnar side of the forearm about 4 cm. below the medial epicondyle. Distal to this there was another wound. When the patient first came to the Johns Hopkins Hospital in December 1939 he had a typical ulnar nerve palsy with muscular atrophy, contracture and hypesthesia. When examined by us three years later the hand showed a very small area of intermediately high

resistance on the inner distal surface of the fifth digit and over the dorsal surface of the tip. The remainder of the ulnar field showed low resistance indicating recovery. The entire ulnar field showed hyperesthesia. Here again there is seen a decided discrepancy between the rate of sympathetic and the rate of sensory recovery.

CASE 10—A H, a white man aged 48, injured his ulnar nerve at the elbow in an automobile accident in 1907. He was operated on for a fractured humerus but apparently the ulnar nerve was not sutured. When examined by us in December 1942 his hand showed no skin resistance patterns whatever. There was a well defined ulnar palsy with muscular atrophy and contractures and hyperesthesia. In this case the sympathetics had entirely regenerated while the muscle and sensory functions had only partially recovered.

COMMENT

The results of these observations show that in the electrical skin resistance mapping test we have a simple accurate and practical method of defining areas affected by peripheral nerve injuries. One of its chief advantages is that its successful use does not depend in any way on the cooperation of the patient. Even in conscious intelligent patients it is often difficult and time consuming to map areas of anesthesia while in disoriented patients shocked by civilian or wartime accidents mapping of areas of anesthesia becomes almost impossible. In cases of suspected malingering the electrical skin resistance method supplies a more reliable test than the subjective report. In cases of severe fractures and the like in which nerves may become traumatized or sectioned the skin resistance mapping test should make it possible to determine at once the site and extent of nerve involvement. As will be shown in later papers and as was pointed out in the present paper, this method should help to determine the success of nerve sutures and to follow the progress of regeneration. With the combination of the accurate means of defining the nature of the lesion as well as the degree of functional injury as indicated by the actual absolute skin resistance readings in ohms, it should become possible to determine which procedures speed up regeneration and which ones retard it. It should also be possible with this method to work out in more detail the interrelationship between the rate and character of regeneration of the autonomic and sensory nervous systems. The nature of sensory and sympathetic "overlap" which might occur as a result of diffusion from contiguous nerve fields is under investigation.

SUMMARY

1 By means of the electrical skin resistance mapping test and procaine injections of the ulnar nerve at the elbow, the ulnar field of sympathetic innervation was defined in 6 normal persons.

2 By means of this test the affected areas of skin were sharply delineated on 10 patients with ulnar lesions of recent and long standing produced by accidental cuts, intentional stabs, compression from fractures or by bomb and shell fragments.

3 The simplicity, accuracy and speed of the method make it useful for the exact examination of all types of peripheral nerve lesions for the determination of the effects of nerve sutures and different kinds of treatment.

SUCCINYLSULFATHIAZOLE IN THE TREATMENT OF BACILLARY DYSENTERY

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AND

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The history of dysentery runs parallel with the history of wars. Through the centuries it has been the scourge of armies. Its morbidity has decided campaigns. It almost defeated the British at Gallipoli in 1915 when it was responsible for a high proportion of the 120,000 casualties from sickness in that area. Whenever troops are encamped in the field, even in training areas, this disease is apt to occur unless there is constant and unremitting attention to field sanitation.

During a six weeks period in the late summer of 1942 an epidemic of dysentery occurred in a large military organization encamped in the field in North Carolina. The epidemiology and source of this outbreak were studied by Sands and Riley.¹ The bacteriology of the epidemic has been investigated by Kuhns² and his co-workers. The bacteriologic studies of the hospital cases were made by Brown and Pohle.³ It was clearly shown that the epidemic was fly borne and due to *Shigella paradyserteriae* Boyd-88.

The present paper concerns itself with the clinical aspects and treatment of the hospitalized patients. Two hundred and fifty-two soldiers from the organization concerned were admitted with dysentery during this period. Two hundred and twenty-five of the cases are used as the basis of this analysis.

CLINICAL PICTURE

The onset in the majority of cases was sudden with chills, fever, headache, backache, malaise, nausea, vomiting, cramping abdominal pain, tenesmus and diarrhea. In many instances the diarrhea became rapidly worse, and some soldiers stated that they had had fifty stools in the twenty-four hours prior to admission. The maximum number of stools observed in the hospital was fifteen in twenty-four hours and the average seven. The stools were watery, were greenish or yellowish brown and frequently contained mucus. They were bloody in 18 per cent of the cases. Colicky abdominal pain was common (81 per cent) and often severe enough to make the men double up and groan with pain. Tenesmus was not severe and was present in only 21 per cent of the cases. Generalized abdominal tenderness of moderate degree was usual. Hyperperistalsis was fairly frequent but distention occurred only occasionally. Fever was present in the majority (69 per cent). The highest temperature was 104.8 F and the average maximal temperature was 100.8 F. Shaking chills were present only at onset, but chilliness during the febrile period was frequent (42 per cent). Weakness, listlessness and anorexia were common and were

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Lieut. Col. Dwight Kuhns, M. C., and the staff of the Fourth Service Command Mobile Laboratory made the results of their follow-up cultures available. First Lieut. Ivan W. Brown, Jr., M. C., and Major F. J. Pohle, M. C., of the laboratory of this station hospital made the bacteriologic studies in the cases reported.

1 Sands, A., and Riley, H. M., to be published.

2 Kuhns, Dwight. The Control of Endemic and Epidemic Dysentery. South M. J., to be published.

3 Brown, I. W., Jr., and Pohle, F. J., to be published.

directly proportional to the height of the fever and the severity of the diarrhea. Early in the illness, prostration from fever and loss of fluids was great enough in some cases to require the parenteral administration of fluids. Fever persisted, as a rule, for from two to three days, and diarrhea usually disappeared after four days of treatment. The great majority of patients had less residual weakness than would be expected following an acute febrile illness with severe diarrhea. There were no complications and no deaths. Tables 1, 2 and 3 indicate the frequency and duration of some of the manifestations.

During the early period of the outbreak all patients were treated symptomatically with bed rest, a bland low residue diet and camphorated tincture of opium 8 cc after each bowel movement until the diarrhea had decreased. In the cases of more severe involvement morphine was necessary.

At first, stool cultures were made from fresh specimens sent to the laboratory. However, early in the outbreak the rectal swab method advocated by Cruickshank and Swyer⁴ was adopted with excellent results. This method is quick, is easily carried out and yields a much higher incidence of positive results than the usual method of stool collection.

TABLE 1—Incidence of Signs and Symptoms

	Controls (116 Cases), per Cent	Succinyl sulfathiazole (89 Cases), per Cent	Average (225 Cases) per Cent
Diarrhea	88.9	84.2	86.4
Cramplike fever	75.0	88.7	81.8
Chilliness	66.9	71.9	69.4
General malaise	44.8	39.1	42.0
Headache	44.1	37.0	40.0
Nausea and vomiting	36.0	32.5	34.2
Leucostasis	33.5	33.0	33.4
Delirium	13.2	30.3	21.6
Tenderness	14	1.1	1.2
Hyperperistalsis	8.8	32.8	34.1
Distention	18.1	22.4	20.1
	9.5	0.8	5.1

In the majority of instances cultures were made in selenite F broth and on Shigella-Salmonella agar (Difco) plates. These cultures were transferred to Kleigle's iron agar slants. Further differentiation of the organism was made by sugar fermentation and by agglutinations. Shigella paradysenteriae Boyd-88 was isolated from 36 per cent of the patients on admission, and this figure was increased somewhat by subsequent cultures. The leukocyte count during the acute phase of the illness ranged from 3,300 to 17,000 per cubic millimeter of blood. The majority of the patients had normal leukocyte counts. Leukopenia, however, was common (21.4 per cent). In this group the average ratio of polymorphonuclear leukocytes to lymphocytes was 55.5 to 41.2.

Succinylsulfathiazole (2-[p-succinyl aminobenzene-sulfonamide] thiazole), recently synthesized by Moore and Miller,⁵ was used in the treatment of half of the later cases. All the early cases were treated purely symptomatically. Poth and Knotts⁶ have reported the use of this compound in more than 100 cases presenting various intestinal lesions and acute intestinal infections. The oral administration of the drug exerts a decided bacteriostatic action in the bowel and can reduce the

coliform organism from 100 million to 1 thousand per gram of wet feces in three to seven days. The usual dosage is 0.25 Gm per kilogram of body weight as an initial dose, followed by 0.25 Gm per kilogram daily divided into six equal doses. In our cases this dosage schedule was continued until the patient's temperature had been normal for two days and until diarrhea had

TABLE 2—Fever

	Controls	Succinyl sulfathiazole Treated Patients
Number of patients	79	89
Average maximum temperature	100.8	100.6
Average days' duration of fever	2.8	0.7

been absent for an equal period. It is essential to give an adequate dosage of opiates to check the diarrhea so that the drug will not pass through the bowel too rapidly. The compound is sparingly soluble in water and poorly absorbed from the intestinal tract so that its action is essentially in the bowel. The total urinary excretion is less than 5 per cent.⁷ The blood level of succinylsulfathiazole was determined in a few of our cases. It was always less than 1 mg per hundred cubic centimeters of blood. Since the bacteriostatic action of the sulfonamide compounds is due to the presence of the free amino radical on the benzene ring, it is probable that the mode of action of this drug is by its hydrolysis to succinic acid and free sulfathiazole in the intestinal tract.⁸ The concentration of sulfathiazole so derived is from 50 to 200 mg per hundred cubic centimeters of feces. These concentrations have been shown to be both bacteriostatic and bactericidal. The succinyl radical presumably inhibits the absorption of the drug from the upper intestinal tract.⁹ After slow hydrolysis the active portion, sulfathiazole, is freed and reaches a high concentration in the large bowel. Under the influence of this drug the stools become "semifluid, small in bulk, somewhat gelatinous in appearance and relatively odorless." The only reactions are a mild perianal irritation and a tendency to slight diarrhea.⁷ Kirby and Rantz⁸ used this drug in the treatment of 5 dysentery carriers. The dysentery bacilli disappeared from the stools of all 5 carriers within one week of treatment and remained absent during the follow-up period of thirty to sixty days.

TABLE 3—Diarrhea

	Controls	Succinyl sulfathiazole Treated Patients
Number of patients	107	71
Average maximal number of stools	7.4	7.0
Average days' duration of diarrhea	4	4

PLAN OF STUDY

When the clinical diagnosis of bacillary dysentery was made, immediate rectal swab cultures were taken. Each patient admitted was given a number, and those with even numbers were treated symptomatically, as previously outlined. Those with odd numbers were given the same treatment but succinylsulfathiazole was also used. Tables 1, 2 and 3 indicate that the treated and control groups were entirely comparable. Eighty-

⁴ Cruickshank, Robert and Swyer, Robert. Outbreak of Sonne Dysentery, *Lancet* 2: 803 (Dec. 28) 1940.

⁵ Moore, M. L. and Miller, C. S. Dicarboxylic Acid Derivatives of Sulfonamides, *J. Am. Chem. Soc.* 64: 1572 (July) 1942.

⁶ Poth, E. J. and Knotts, F. L. Clinical Use of Succinylsulfathiazole, *Arch. Surg.* 44: 208 (Feb.) 1942.

⁷ Poth, E. J. Succinylsulfathiazole, *J. A. M. A.* 120: 266 (Sept. 26) 1942.

⁸ Kirby, W. M. M. and Rantz, L. A. Treatment of Typhoid and Dysentery Carriers with Succinylsulfathiazole, *J. A. M. A.* 119: 615 (June 20) 1942.

nine patients were treated with succinylsulfathiazole and 130 patients were used as controls. Follow-up cultures in the two groups covered a period of from one to three weeks with an average of eighteen days. Further cultures could not be made because this organization was ordered to another locality. All follow-up cultures were taken by the rectal swab method after sufficient time had elapsed for the drug to be eliminated from the bowel. Para-aminobenzoic acid was added to all culture mediums.

ANALYSIS OF RESULTS

The average duration of fever in the treated group was slightly less than in the controls that is 22 as compared with 28 days. There was no significant difference in the daily number of stools or the duration of the diarrhea in the two groups. It was felt that the patients in the control group were on the whole more comfortable than those treated with succinylsulfathiazole. It was obvious that the drug produced no amelioration of symptoms nor did it shorten the course of the illness in this outbreak. There was no evidence of drug toxicity in any of the treated cases.

In the control group of patients, 44 (32 per cent) had positive cultures on admission and 8 (18 per cent) of these had positive follow-up cultures after recovery.

TABLE 4—Results of Treatment

	Number	Results of Cultures		Percentage of Positive Follow-Up Cultures	
		Admission	Follow-Up	Whole Group	Bacteriologically Positive Cases
Controls	126	44 positive 92 negative	8 positive 7 positive	11.0	18.2
Succinyl sulfathiazole	89	38 positive 51 negative	1 positive 0 positive	1.1	2.6

* This patient's culture was negative for three weeks. He was discharged from the hospital and was in the field (where original disease contracted) for ten days before a positive culture was obtained. The probability of reinfection must be considered.

Of the 92 control patients who had negative cultures on admission, 7 (7 per cent) had positive follow-up cultures. Fifteen patients (11 per cent) of the entire untreated group had one or more positive follow-up cultures. Of the 89 treated patients, 38 (43 per cent) had positive cultures on admission. The higher incidence of positive cultures in the treated group is probably the result of the rectal swab method of culturing which was begun at about the time the decision was arrived at to use succinylsulfathiazole in treatment. Some of the patients reported as controls were admitted to the hospital prior to the use of succinylsulfathiazole in treatment when the rectal swab culture method had not been adopted. Only 1 (2.6 per cent) of these 38 patients had a positive follow-up culture and none of those originally negative later showed a positive culture. Of the entire group of 89 treated patients the incidence of positive follow-up cultures was 1.1 per cent. This is in striking contrast to 11 per cent in the untreated group. If the cases which were bacteriologically positive on admission are considered alone, the ratio of positive follow-up cultures is 18.2 per cent in the untreated group as compared to 2.6 per cent in the treated.

CONCLUSIONS

1 Two hundred and twenty-five soldiers ill with dysentery due to *Shigella paradysenteriae* Boyd-88 have been studied.

2 Succinylsulfathiazole produced no amelioration of the illness nor did it shorten its duration. This would be expected in an illness of only four days' duration.

3 The carrier rate in the bacteriologically proved cases when succinylsulfathiazole was given, was 2.6 per cent and in a comparable untreated group 18.2 per cent.

SPECIFIC TREATMENT OF TYPHOID

THE INEFFECTIVENESS OF SULFATHIAZOLE AND IMMUNE SERUM

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Between Feb 25 and March 21, 1942, 59 patients with typhoid were admitted to Provisional Hospital No 3 in the Territory of Hawaii. All of the patients except 2 were children between the ages of 12 and 16, and all except 2 attended or were employed at the Washington Junior High School. Investigation by the public health authorities disclosed that a healthy intestinal typhoid carrier, employed as a food handler in the school, produced the epidemic by contaminating food eaten by the pupils at one meal. The clinical aspects of this epidemic were described by Hoagland and Fleming¹.

All the patients were hospitalized in the same institution and all were under my control. All except 2 were in a similar state of nutrition, and all except 2 were infected by the same strain of *Eberthella typhosa*. The variables of age, nutrition, climate and strain of infecting organism were absent. In addition, four fifths of the patients entered the hospital in approximately the same stage of the illness (between the fifth and fourteenth days).

When this epidemic occurred there were no reports in the literature concerning the use of sulfathiazole in the treatment of typhoid. It was therefore decided to give sulfathiazole to some of the patients and to withhold the drug from a control group.

Sulfanilamide was stated to be of value in a series of 7 cases.² All were treated with azosulfamide and sulfapyridine, there were no controls. In 3 cases the drug was given at a time when spontaneous improvement might have been expected (on the twenty-eighth day in 1 case and between the thirty-sixth and fifty-seventh days and the eighteenth and twenty-fifth days in other cases). As a rule the drug was given over a period of five to ten days before improvement was manifest, hence it is questionable whether improvement was the result of the administration of the drug or was only concomitant with it. One of the patients received an antityphoid serum as well.

The use of sulfaguanidine in the treatment of typhoid was reported by Watt and Peterson.³ Six patients were treated with 20 Gm of sulfaguanidine daily for eight to ten days. No untreated patients were used as controls. The authors concluded that the drug had no effect on the course of the disease or on the disappearance of *E. typhosa* from the patients' feces.

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1 Hoagland R. J. and Fleming J. F. Clinical Aspects of an Epidemic of Typhoid Fever, Hawaii M. J. 1:307 (May) 1942.

2 Harries E. H. R. Swyer Robert and Thompson Noel. Sulfanilamide in Typhoid Fever. Lancet 1:1321 (June 10) 1939.

3 Watt James and Peterson J. S. Sulfaguanidine Ineffective in the Treatment of Typhoid Fever and Typhoid Carriers. Pub. Health Rep. 57:472 (June 5) 1942.

Hall⁴ used sulfaguandine to treat 5 patients with typhoid. Controls were not used. An initial dose of 0.1 Gm of the drug per kilogram was followed by 0.05 Gm per kilogram every four hours for one week. He believed that although the small number of cases precluded the drawing of definite conclusions his results

TABLE 1—Patients Without Specific Treatment

Patient	Day of Disease Temperature Returned to Normal	Complication and Day of Onset
27	26	
28	17	
29	1	Intestinal hemorrhage, slight, 18th day
30	17	
1	21	Febrile relapse 27th day
2	21	
3	1	
4	11	Febrile relapse, mild 24th day
5	22	
6	26	
37†	29	
7	19	
3	20	
40	46	Intestinal hemorrhages severe 25th day febrile relapse 30th day
11	1	
12	11	
13	15	
14	0	
15	11	
16*	—	Intestinal hemorrhage, mild, 14th day
17	71	Intestinal hemorrhages severe 23d day
18	19	
19	20	
30	11	Intestinal hemorrhage moderate 24th day
31	28	
32	29	
33	27	

* Boy unassociated with the Washington School or any of its students
† A woman aged 32 employed at Washington School
‡ Died on the fifteenth day of illness of intestinal perforation

indicated that sulfaguandine was ineffectual in the treatment of typhoid-paratyphoid infections.

There are many reports concerning the use of serum obtained from horses previously inoculated with *E. typhosa*. It would be unprofitable to attempt to review all of them. The few reports available to me were analyzed.

Horse antiserum was used in the treatment of 73 patients during a milk borne epidemic of typhoid.⁵ Twenty were treated during the first two weeks of their illness, 13 during the third week and 40 after the third week. There were no controls. The criterion of a favorable effect was the lowering of the temperature within forty-eight hours after administration of the serum. The temperature did not necessarily have to return to normal but had to remain lower than before the injection for at least seven days. The mortality rate was 9.5 per cent. The authors believed that beneficial effects of serum might be delayed seven days. A study of the temperature curves of the cases reported by Hoagland and Fleming¹ reveals that spontaneous recovery in typhoid is likely to take place within less than seven days from any given date after the second week; hence 53 of these patients might have been expected to have a spontaneous recovery at any time within a week after their admission to the hospital.

The use of horse serum was also reported by Robertson and Yu⁶ and by Felix.⁷ The former mentioned no controls and treated many of their patients in the

third week of illness. The latter stated that fever was clearly shortened and suppressed in 23 cases but was uninfluenced in 20 cases and that patients might show a lessening of toxemia without an accompanying effect on pyrexia.

PRESENT STUDY

Sulfathiazole was given to 20 patients. Nineteen, weighing between 80 and 110 pounds (36 and 45 Kg.), received 4 Gm of sulfathiazole daily for five days. One adult received 6 Gm daily for five days.

Five patients were given injections of 150 cc of pooled human serum obtained from previously inoculated persons. The donors of the serum had had an average of three series of inoculations (of three injections each) of typhoid vaccine. They had all received their last series of injections between two and five months prior to the withdrawal of serum.

"The typhoid protective titer of the pooled serum was between 100 and 1,000 minimum lethal doses, that is, 0.1 cc amounts of serum protected all mice that were subsequently inoculated with 100 m l d of a virulent typhoid culture, while 50 per cent of the animals, receiving the same amounts of serum, survived the inoculation of 1,000 m l d of the test organism." This degree of protection is "fair."⁸

Nine patients were treated with sulfaguandine by private physicians before they entered this hospital. The doses used varied and in my opinion, were deficient in most instances. One patient received this drug after admission. Although the administration of this drug was not under my control and its use in inadequate doses did not constitute a fair trial, it may be of some interest to include these cases in the presentation of results without drawing any conclusion.

Thirty-seven patients selected entirely at random were treated only symptomatically. These controls were chosen only because they happened to be in certain rooms. Three patients received two forms of treatment, as shown in table 3.

RESULTS

Results are presented in the accompanying table, which are self explanatory. No toxic effects attributable to the use of the sulfonamide compounds were observed. The incidence of complications was about the same in treated patients and controls. Since none of the patients became typhoid carriers, the efficacy of medi-

TABLE 2—Cessation of Fever

Specific Treatment	Number of Cases in Group	Number of Days Before Temperature Returned to Normal		
		Average	Minimum	Maximum
Sulfathiazole	20*	30	16	51
Sulfaguandine	10	36	20	51
Human serum	5†	42	25	1
None	27	27	13	—

* Of this group 2 patients are in the sulfaguandine group also and 1 patient is in the serum group also.
† One patient in this group received sulfaguandine during her illness and is in the latter group as well.

cation in preventing the occurrence of the carrier state cannot be evaluated. All patients had at least three consecutive negative cultures of the urine and feces at six day intervals preceding discharge. The Territorial Board of Health has performed follow-up examination of the feces with uniformly negative results.⁹

4 Hall, L. C. The Use of Sulfaguandine in Enteric Infections, *J. Pediatr.* 20: 328 (March) 1942.
5 Cookson, Harold, and Facey, R. V. Value of Specific Serum in Treatment of Typhoid Fever, *Brit. M. J.* 1: 1009 (May 15) 1937.
6 Robertson, R. C., and Yu, H. The Serum Treatment of Typhoid Fever, *Brit. M. J.* 2: 1138 (Dec 5) 1936.
7 Felix, A. Clinical Trials with a New Antityphoid Serum, *Lancet* 1: 799 (April 6) 1935.

8 Army Medical School. Personal communication to the author.
9 Board of Health, Territory of Hawaii. Personal communication to the author.

COMMENT

The well known variability of the severity of typhoid makes the use of control cases essential in evaluating the efficacy of any drug used in its treatment. The fact that variables were reduced to a minimum in this study made comparison between controls and treated patients valid.

The most convenient index of the efficacy of treatment was the graphic temperature chart. It was

The cessation of fever usually occurred independently of sulfathiazole therapy. Occasionally treatment and a drop in temperature were concomitant. If, here and there a patient treated with sulfathiazole was studied without regard to untreated patients, one might erroneously infer that the drug had had a favorable effect on the disease. However, when time and time again the fever of control and of treated patients would abate during similar phases of the illness, it became apparent

TABLE 3—Patients Receiving Specific Treatment

Patient	Day of Disease Treatment Was Begun	Day of Disease Temperature Returned to Normal	Days Elapsing Between Cessation of Treatment and Onset of Normal Temperature	Complication and Day of Onset	Comment
1	14	41	3	Patient Receiving Sulfathiazole	4 Gm daily for five days
2	1	29	9		4 Gm daily for five days
3	12	35	12		4 Gm daily for five days
4	17	7	10		4 Gm daily for five days
5	13	33	14		4 Gm daily for five days
6	8	23	14		4 Gm daily for five days
7	11	33	17		4 Gm daily for five days
8	13	34	1		A man aged 7 weighing 10 lb. no connection with Washington School received 4 Gm of sulfathiazole daily for 3 days
9	16	22	2		4 Gm daily for five days
10	11	14	2		Received sulfaguandine before admission
11	11	14	2	Patient Receiving Sulfathiazole	Received 3 Gm of sulfathiazole daily for 3 days before admission (starting on the 5th day of illness) and 4 Gm daily for 3 days after admission starting on the 17th day received sulfaguandine before admission also
12	1	16	0		4 Gm daily for five days
13	6	2	12		4 Gm daily for five days
14	7	29	10		Received sulfathiazole for 12 days before admission dose not known no sulfathiazole given after admission
15	1	22	3		4 Gm daily for five days
16	10	22	3		4 Gm daily for five days
17	13	27	3		4 Gm daily for five days
18	11	51	3		Received 4 Gm of sulfathiazole daily for 3 days received serum also
19	20	22	0		4 Gm daily for five days
20	7				Died on 20th day of illness - 4 Gm daily for 10 days
21	12	23	12	Patients Receiving Sulfaguandine	3 Gm daily for six days
22	12	30	7		6 Gm daily for three days
23	1	34	3		5 Gm of sulfaguandine daily simultaneously with 5 Gm of sulfadiazine daily for two days preceded by 4 Gm of sulfanilamide daily
24	1	30	13		7 Gm daily for nine days
25	12	31	13		6 Gm daily for even days
26	11	32	3		10 Gm daily for eight days
27	9	34	30		20 Gm daily for nineteen days
28	10	34	30		30 Gm daily for six days
29	20	81	33		5 Gm of sulfaguandine accompanied by 6 Gm of sulfadiazine daily for two days
30					Received serum on 17th day of illness and 4 Gm of sulfaguandine daily for three days beginning on 20th day of illness she was the sickest patient of those who survived
31	13	51	33	Patients Receiving Serum	400 cc of serum
32	13	81	63		150 cc of serum
33	11	35	22		150 cc of serum
34	19	37	18		150 cc of serum
35	26	31	3		150 cc of serum
36	18	28	10		150 cc of serum
37					

Given by private physician before patient's entry into the hospital

believed that this standard was not only convenient but thoroughly reliable. It was the unanimous opinion of all physicians and nurses attending these patients that toxicity and fever were directly proportional. Therefore return of the temperature to normal was used as the criterion of recovery. On the other hand it was noted that when patients had febrile relapses they did not appear to be ill. Temperatures became normal as early as the twelfth day and as late as the eighty-first day of illness, either by lysis over a period of three to seven days or abruptly within twenty-four hours.

that at a certain time during the course of the disease the fever subsided and the patient felt well whether or not the drug had been used.

The use of sulfaguandine was not under my control. Furthermore insufficient doses were used. In the few cases in which dosage approached adequacy, no beneficial effects were observed. It would seem illogical to use in a blood stream infection a drug whose effect is largely confined to the intestine.

Early administration of serum in such diseases as diphtheria and pneumonia is considered to be of great importance. Typhoid however is usually not diag-

nosed until the patient has been ill at least five to ten days. Therefore serum could rarely be used early. All patients in my series who received serum were treated on or after the eleventh day of illness. A stimulating dose of vaccine two to three weeks before the donors were bled would have produced a serum of higher titer.⁸ However, the occurrence of a typhoid epidemic is unpredictable, hence previously inoculated donors cannot be reinoculated before its outbreak. The donors used had received many inoculations and had fortunately received their last series of injections relatively recently.

The dose of serum employed was large, fifteen hundred times the amount that protected all mice inoculated with 100 minimum lethal doses of a virulent typhoid culture and 50 per cent of the mice inoculated with 1,000 minimum lethal doses.

SUMMARY AND CONCLUSIONS

1 Fifty-nine patients with typhoid were hospitalized simultaneously. All except 2 were between 12 and 16 years of age, and all except 2 were infected by the same strain of *Escherichia typhosa*.

2 The administration of sulfathiazole did not affect the course of the illness, complications, mortality rate or occurrence of the carrier state.

3 The use of serum obtained from previously inoculated persons was valueless.

PYURIA OF THE NEWBORN TREATED WITH SULFATHIAZOLE

A REPORT OF THREE CASES ILLUSTRATING DIFFERENT ASPECTS OF THE SYNDROME

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During the neonatal period changes take place very rapidly in the anatomy and physiology of the child. These changes are often reflected in those disease pictures peculiar to this period of life. Examples of such conditions are tetany of the newborn, paroxysmal tachycardia, pyloric stenosis and the condition we are describing in this communication, namely pyuria of the newborn. In all these conditions the change from fetal to extrauterine existence, with the sudden alteration in physiologic processes this entails, may easily account for disturbances in the smooth functioning of the various organs. It is our purpose in this communication to reemphasize this observation and to report 3 cases of pyuria of the newborn treated with sulfathiazole.

The newborn child's urine may contain casts and cellular elements in the absence of disease.¹ These are usually clear with the ingestion of large amounts of fluid.² However, there are reports in the literature which suggest that during this period of relative anuria the urinary tract may furnish an especially good focus for infection.³ That physiologic changes peculiar to this period of life modify the disease picture of pyuria is also suggested by the fact that, unlike what is observed

in a slightly older group, pyuria in the newborn is more frequently observed in the male. It is a relatively benign disease and recurrences seem to be infrequent.

Although the disease was first described by Kovalsky and Moro⁴ in 1901, Happ⁵ could find only 37 case reports when he summarized the literature through 1932. The urine of newborn infants is now examined more frequently, so that the diagnosis is being made more often. In 1935 Craig³ reported observation on 61 newborn children, of which 53 showed definite pyuria.

The 3 cases which form the subject of our paper were recognized over a period of seven months in a pediatric service which does not have any direct affiliation with an obstetric hospital. They are being reported because they illustrate so well several different aspects of the syndrome pyuria of the newborn.

CASE 1—*Illness started at 10 days of age with resulting uricemia and difficulty in feeding. Pyuria found to be due to atypical Escherichia coli. The clinical picture was complicated by anemia of fetal erythroblastotic origin. The child was given Rh negative transfusion and sulfathiazole. The urine was clear after two and one-half weeks except for occasional leukocytes and a trace of albumin.*

S. H., a boy, admitted to the Mount Sinai Hospital at 6 weeks of age because of poor feeding and failure to gain weight, had been born at term weighing 6 pounds 5 ounces (2,870 Gm). He was circumcised at 1 week without difficulty. At 10 days of age he developed fever and his eyes were noted to be puffy. When he was 3 weeks old there was an episode of twitching of the arms and legs which responded to calcium. He had several mild attacks of diarrhea. At 6 weeks of age he was hospitalized weighing only 6 pounds (2,728 Gm). He was a poorly nourished child with a mild upper respiratory infection. The temperature was 102 F. There was an icteric tinge to the skin. The liver edge and tip of the spleen were both 2 cm. below the costal margin. The umbilical stump was everted but clean. The penis was that of a normal circumcised male infant. The hemoglobin was 45 per cent, red blood cell count 2,030,000 and white blood cell count 49,600 with 57 per cent polymorphonuclear cells. No nucleated red blood cells were seen. The red cell fragility test was normal. The icterus index was 18 (water) and 12 (acetone). Rh studies showed the mother to be Rh negative and the child Rh positive. The urine observed on admission was cloudy, the specific gravity was 1.010, albumin was 1 plus and the sediment was loaded with pus cells. On culture atypical *Escherichia coli* was recovered. This organism did not ferment lactose but did ferment with acid and gas production maltose, sucrose, glucose and mannite. This same organism was grown from a urine obtained four days later. Blood culture on admission was sterile. Blood chemistry showed evidence of uremia: urea nitrogen 112 mg per hundred cubic centimeters, carbon dioxide 27.4 volumes per cent, calcium 6.9 mg per hundred cubic centimeters and phosphorus 7.5 mg per hundred cubic centimeters, total protein, 8.2 Gm per hundred cubic centimeters. The child was given intravenous fluids, several transfusions of Rh negative blood, sulfadiazine for twenty-four hours and then sulfathiazole. The drug was continued for one month, during which time blood levels of between 5 and 10.1 mg per hundred cubic centimeters and urine levels of 64 to 98 mg per hundred cubic centimeters of free sulfathiazole were attained. After forty-eight hours the patient's temperature fell to normal and twenty-four hours later there were many fewer leukocytes in his urine, though albumin was still present. The urine slowly cleared and after two and one-half weeks, although albumin was still present, only a rare white blood cell was noted. At that time the blood chemistry had changed as follows: the urea nitrogen was 14 mg per hundred cubic centimeters, carbon dioxide 44.2 volumes per cent, calcium 11.1 mg per hundred cubic centimeters and phosphorus 5.7 mg per hundred cubic centimeters.

From the Pediatric Service of the Mount Sinai Hospital.
1 von Reuss, A. R. *The Diseases of the Newborn*, New York, William Wood & Co., 1921.
2 Campbell, M. F., quoted by H. T. Nesbit in discussion on Conrad, C. E. *South M. J.* 31: 640 (June) 1938.
3 Craig, W. S. *Arch. Dis. Childhood* 10: 337-354 (Oct.) 1935.

4 Kovalsky and Moro. *Klin. therap. Wchnschr.* 50, 1901.
5 Happ, W. M. *California & West Med.* 51: 166-169 (Sept.) 1940.

meters. After six weeks the only abnormal finding in the urine was a faint trace of albumin. The jaundice observed on admission disappeared in seven days. Coincident with the improvement already noted the child began to take his feedings better, so that at the end of three and one-half weeks he had gained 15 ounces (425 Gm). When discharged after six and one-half weeks he weighed 7 pounds 6 ounces (3,345 Gm). He looked well, his liver and spleen were just barely palpable and his hemoglobin was 85 per cent.

CASE 2—Child admitted at 3 weeks of age with fever, jaundice, pyuria, *Escherichia coli* sepsis and bacteriuria. This was possibly the result of a nursery infection. He was treated for ten days with sulfathiazole. Drug was stopped because of toxic symptoms. Urine was clear of pus cells after four weeks.

I. B., a boy admitted to the Mount Sinai Hospital at 3 weeks of age because of fever and jaundice, was born at term weighing 9 pounds 1 ounce (4,110 Gm) after a seventeen hour labor. He developed fever on the third day of life but this quickly subsided, so that circumcision was performed on the eighth day and he was sent home two days later. On the fifteenth day he was irritable but four days later, when seen by a physician, he had symptoms of colic and a temperature of 102 F. The following day he was afebrile but passed a number of loose green stools. On the day of admission jaundice was noted. It was reported that 2 other infants who were in the nursery at the time this child first developed fever were subsequently hospitalized elsewhere, one with a gastroenteritis and the other with jaundice and *Escherichia coli* sepsis. When admitted the patient was afebrile, moderately well developed and jaundiced. He weighed 9 pounds 2 ounces (4,140 Gm). His throat was slightly reddened. The liver edge could be felt 1 cm below the costal margin, but the tip of the spleen was not palpable. The umbilical stump was clean. The penis was that of a normal circumcised newborn infant. The hemoglobin was 88 per cent, the red blood cells were 5,000,000 and the white blood count was 36,200 with 76 per cent polymorphonuclear cells. No nucleated red blood cells were seen. The icteric index was 48 (acetone method). It was found that the Rh factor was not responsible for the jaundice. Catheterized urine obtained on admission was cloudy, was positive for bile and albumin and contained many clumps of leukocytes and bacteria. On culture *Escherichia coli* was recovered from the urine and blood stream. Urine culture four days later again revealed *Escherichia coli*. Blood culture repeated at the end of the first week was sterile. On admission the blood urea nitrogen was 24 mg per hundred cubic centimeters. The cephalin flocculation test was negative. The child was given sulfathiazole orally for ten days. Blood levels of 39 to 98 mg per hundred cubic centimeters were attained. On one occasion when the blood level was 73 mg per hundred cubic centimeters, the urine contained 180 mg of free sulfathiazole per hundred cubic centimeters. The morning after admission the temperature again rose to 102 F and thereafter for five days slowly fell fluctuating between 100 and 102 F. Despite this the jaundice deepened, so that on the sixth day the icteric index was 160 (water) and 100 (acetone). Thereafter it rapidly cleared and four days later was normal. The pyuria persisted and though on the eleventh hospital day there were still a moderate number of clumped leukocytes in the sediment chemotherapy was stopped. This was done because the child had become extremely drowsy and the hemoglobin had fallen to 60 per cent. Although he continued afebrile and slowly became more alert one week later the urine still contained a faint trace of albumin and a moderate number of leukocytes, some of which were in clumps. At the beginning of the fifth week the urine was clear except for a faint trace of albumin. When discharged at the end of six and one-half weeks the child weighed 9 pounds 11 ounces (4,394 Gm) was alert and on physical examination was normal. He was reexamined three months later in the follow-up clinic. It was reported that he had been well, he had gained almost 6 pounds (2,728 Gm) and except for a very faint trace of albumin the urine was normal.

CASE 3—Illness started with fever at 13 days of age, five days after a ritual circumcision with resultant local inflammatory reaction. Pyuria was associated with *Escherichia coli* and an enterococcus. He was treated for fifteen days with sulfathiazole at which time the urine was clear except for an occasional leukocyte. After four weeks the urine was entirely clear.

M. K., a boy admitted to the Mount Sinai Hospital at 2 weeks of age because of fever, was born after a prolonged labor with the aid of forceps, weighing 6 pounds 15 ounces (3,153 Gm). On the eighth day of life a ritual circumcision was performed. Two days later the glans penis was noted to be dark blue. On the thirteenth day of life he developed fever. On admission he was a vigorous, well developed and well nourished infant weighing 7 pounds 2 ounces (3,231 Gm) with a temperature of 104 F. The abdomen was slightly distended. The umbilical stump was clean. The penis was red about the glans with some crusting over the meatus. The corona was red and indurated. Hemoglobin was 70 per cent and white blood cells were 24,000 with 85 per cent polymorphonuclear cells. The admission urine contained some albumin, numerous leukocytes and a few red blood cells. Culture of a clean catch specimen grew out an *Escherichia coli* and enterococcus. When repeated one week later both these organisms were again recovered, but after two weeks only the enterococcus and *Staphylococcus aureus* A were grown. Blood culture was sterile. Urea nitrogen was 23 mg per hundred cubic centimeters. Sulfathiazole was given orally and continued for fifteen days. Blood levels of 35 to 39 mg per hundred cubic centimeters were attained. Within twelve hours the temperature was normal and remained so. During the first week the urine continued to contain many white blood cells, but when the drug was stopped one week later there was only a rare cell in the urine. However it was not until almost two weeks later, four weeks after the onset, that the urine was entirely free from cells. The inflammation of the penis subsided a few days after admission, and when the child was discharged after five weeks he was well and had gained 2 pounds (907 Gm). He was reexamined six and one-half weeks later at which time the urine was normal except for a faint trace of albumin and he was symptom free.

COMMENT

As already mentioned, Craig³ reviewed the case histories of 53 newborn infants whose urine contained 5 to 140 white blood cells per high power field. Two thirds of these were boys. The onset of their illness was usually indefinite, though he found prolonged anuria, especially when accompanied by fever, to be very suggestive of a urinary infection. However, as a rule there was little in the clinical picture to direct attention to the genitourinary tract, and systemic signs predominated. Fever was common, although a few cases had an afebrile course. Convulsions were of grave significance. Recovery was usual. The average duration of illness when treated with fluids and diuretics was six weeks. Recurrence was noted rarely. The subsequent general health of these children was not impaired. Sauer,⁶ as a result of a study of 12 cases thought that a nonthriving newborn male infant with gastrointestinal symptoms was the most common clinical picture. His cases responded within six weeks to diuresis and alkalization of the urine.

The 3 patients present an element of interest in that they were all boys and each showed symptoms before they were 3 weeks of age. Case 3 is most easily understood and is representative of cases of this syndrome which have been reported. The onset of fever a few

6 Sauer L. W. Neonatal Pyelitis. J. A. M. A. 53: 327-329 (Aug 1) 1925.

7 Pater-on Donald. Lancet 2: 1186 (Nov. 28) 1931.

days following an infected circumcision should quickly suggest the possibility of an ascending urinary tract infection. The contact of patient 2 with 2 other children during the immediate neonatal period who later became ill, one with a gastroenteritis and the other with an *Escherichia coli* sepsis and jaundice, suggests strongly the possibility of a nursery infection and hematogenous spread to the urinary tract. Patient 1, who was admitted because of failure to gain weight after a number of formula changes and some diarrhea, comes closest to presenting Sauer's typical picture of pyuria of the newborn. Although the disease is in general benign, this case with the development of severe uremia serves to emphasize some of its potential dangers.

The occurrence of jaundice as a complication of pyuria has been pointed out by many observers and is of interest as it may be a dominating symptom of the clinical picture. It is presumed to be due to focal necrosis of the liver.⁸ It may be present as a part of a severe general sepsis, but, as has been noted by Finkelstein,⁹ even though very deep jaundice is evident it may disappear with great rapidity. An example of this type was observed by one of us. A boy developed gastrointestinal disturbance at the age of 3 months, became very deeply jaundiced and had high fever. An examination of the urine in a test tube showed that a third of its volume was pus. The culture of the urine showed *Escherichia coli*. Blood culture was sterile. Under alkalinizing therapy the child recovered, though it was several months before the urine was entirely free from pus. The child was carefully followed for many years and never again showed any urinary disturbance. At the age of 17 years he was perfectly well. Of interest was the enormous amount of pus in the urine, the depth of the icterus and the relatively rapid recovery.

Two of our 3 patients were jaundiced. In case 2 with sepsis jaundice and no apparent focus of infection, the occurrence of icterus immediately led to the suspicion of a renal involvement. In case 1 the jaundice was probably unrelated to the urinary tract infection but was rather a result of erythroblastosis fetalis. The importance of making this distinction is obvious if transfusions are to be given.

All of these patient's leukocyte counts were elevated and reflected their infection. Their urine showed albumin and great numbers of pus cells often in clumps. In this small group, like most of the cases already reported, *Escherichia coli* was the offending organism. Because of this, sulfathiazole was given as well as other supportive measures.

The so-called atypical *B. coli* recovered from patient 1 has been described in that case report. That there are many strains of *Escherichia coli*, each of which has a slightly different behavior, has been recently emphasized in studies of the effectiveness of sulfonamides.¹⁰ It has been shown that although sulfathiazole is effective against all strains of the organism, the concentration of drug needed before this becomes apparent varies from strain to strain. With this in mind an *in vitro* test of the susceptibility of the organism recovered in case 2 against sulfathiazole was performed for us by Dr. Lotte Strauss. She reported that 2 mg. of sulfathiazole per

hundred cubic centimeters was found to exert a good bacteriostatic action on a broth culture inoculated with 2 drops of a 10-8 suspension of organism and read after twenty hours' incubation at 37 C.

That sulfathiazole is effective in this disease is apparent when it is recalled that in the 2 cases treated for two weeks or more there was definite improvement at the end of the second week. At that time only an occasional pus cell was found in the urine. This contrasts strikingly with the five to six weeks needed for recovery before the use of sulfathiazole.¹¹ Newborn infants tolerate the drug well. The dosage used with these children varied between 0.1 and 0.2 Gm. per kilogram of body weight in twenty-four hours. Although the medication had to be stopped in case 2 after ten days because of the pronounced lethargy of the patient, it is not at all clear that this was not the result of cholemia. Even with this shortened course of chemotherapy the drug was probably effective in helping to cure the sepsis.

Because some of these cases have been associated with organic obstruction to the urine outflow,¹² several attempts were made in each of the 3 children studied to visualize the upper urinary tract with intravenous pyelography. Not one of these was successful, chiefly because of gas in the intestinal tract. However, it is unlikely that the majority of patients have very severe obstructions, since without surgical intervention the greater proportion of patients get well. Stasis due to some growth disturbance or nervous imbalance, perhaps as a result of local immaturity, would seem to fit the clinical picture better.

In the few fatal cases the pathologic changes have been slight. They have been most often found in the kidney substance. A suppurative interstitial pyelonephritis was found in a number of cases by Wilson and Schloss¹³ and also by Craig.³

SUMMARY

Of 3 cases of pyuria occurring in newborn boys, 1 was associated with uremia and failure to gain weight, 1 with jaundice and *Escherichia coli* sepsis and 1 probably was secondary to an infected circumcision. All boys were treated with sulfathiazole and recovered. The drug seemed to accelerate this recovery. The physiologic changes taking place in the neonatal period appear to be conducive to the peculiarities of urinary tract infection in this age group.

1097 Park Avenue

11 Craig³ Sauer Paterson⁷
12 Wilson J. R., and Schloss, O. M. Pathology of So Called 'Nephritis' in Infants, *Am. J. Dis. Child* 38: 227 (Aug.) 1929

Diagnosis of Gout—Gout is a distinct clinical entity and should be differentiated clearly from the other arthritides. It is most likely that many cases of nongouty joint diseases were mislabeled gouty rheumatism in ancient and medieval times. This error should be committed on a large scale no longer. 'Confronted, then, with a suspected case of gout, whether acute or chronic, what shall be our way of approach? Not the easy and hazardous path of lightning diagnosis affected by those who plume themselves on their so-called clinical 'instinct,' but the slow laborious route of clinical 'observation' that leads more surely to the vantage ground of the truth, this assuredly in all diseases, but in none more so than in joint disorders, whose outward resemblances so oft hark back to inward disparities.—Talbot, John H. Gout. New York: Oxford University Press, 1943.

8 Holt, L. E., and McIntosh, Rustin. *Holt's Diseases of Infancy and Childhood*, ed. 10, New York, D. Appleton & Co., 1933, p. 669.

9 Finkelstein, H. *Stuglingskrankheiten*, ed. 4, Amsterdam, Elsevier, 1938, p. 798.

10 Helmholtz, H. F. *J. Urol.* 45: 135-145 (Jan.) 1941.

TREATMENT OF ANKLE SPRAIN

OBSERVATIONS IN MORE THAN FIVE
HUNDRED CASESFIELD COMDR PAUL L. McMASTER
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Ankle sprains may cause much disability and often do in military industrial and other activities. Observations on various types of treatment in over 500 cases closely studied are presented. More than 200 of the patients were treated with injection of procaine hydrochloride solution and over 200 were strapped with adhesive tape. Sixty-eight received either no treatment or cold and hot packs or an elastic bandage for support.

The patients treated were men in active military service mostly in the late teens and twenties, although some were in the fourth, fifth and sixth decades. Eight women were treated. All degrees of sprain from minor to severe were seen but in each case the condition was sufficient to cause the man to seek relief either immediately or within the first day or so.

The most common ligament sprained was the anterior talofibular which occurred in over 90 per cent. Other ligaments in order of frequency and usually in association with the foregoing were the calcaneofibular, anterior inferior tibiofibular, medial or deltoid, posterior talofibular and posterior inferior tibiofibular.

Roentgenograms were made almost routinely. No cases of fracture including sprain fracture are included. Diastasis of the lower tibia and fibula was not demonstrated even though local signs pointed to injury of the tibiofibular ligaments.

Various treatments were used for comparison. Over 200 patients were strapped with adhesive tape, some of whom were sent immediately to duty and the others were instructed to limit weight bearing and protect the ankle by either complete bed rest or by use of crutches or cane. Bed rest without weight bearing for a day or more with initial cold applications and later hot to reduce swelling was tried in 22 cases. Twenty-eight patients were given only an elastic bandage support while 18 with mild to moderately severe sprains were given no treatment and both latter groups were sent back to duty immediately.

More than 200 patients received local injection of procaine hydrochloride and with but a few exceptions were sent to duty immediately.

The technic of local injection has been described by Leriche¹ and others. Fracture is excluded by radiographic study. The sprained ligaments indicated by tender points are determined by palpation. An antiseptic is then applied to the skin. Two per cent procaine hydrochloride solution without epinephrine is used routinely and with it a wheal is made in the skin over the site of injury with a fine needle. The latter is replaced by a larger needle and the underlying injured ligament is injected. All tender points, whether proximal, distal or intervening portions of the ligament, are injected. A search is then made for tender areas in other ligaments

and these are each carefully injected until no tender or painful areas remain either with palpation or ankle and foot motion. The amount of procaine solution varies from around 10 to 20 cc. There is no hesitancy to use an ounce or more if necessary. Next an elastic bandage is wrapped snugly around the ankle and the patient is requested to walk around the room. If any pain is experienced further injection is done. The patient is then returned to activity with instruction to use and move the foot and ankle normally except for running and jumping. Also it is stressed that while sitting as at a desk or table the foot should be moved and not kept immobile in one position even for short periods. The elastic bandage is to be removed and rewrapped by the patient in one to two hours to prevent possible circulatory constriction. Daily and periodic return for check-up is required in all cases.

RESULTS AND COMMENT

Invariably patients whether with moderate or severe sprain and almost irrespective of the type of treatment given who were immediately sent back to routine activity and use of the part did much better than those who were put at rest for a few days with limited or no use of the part. The ones who were inactivated for one or more days by either being put to bed for cold and then hot applications or having ankles taped and cautioned to bear limited or no weight on the leg with the aid of crutches or cane were often disabled for periods of a few days to two or three weeks. One patient was disabled eight weeks. The ankles in the latter cases usually remained swollen, tender, stiff and painful and only gradually did these conditions subside.

The patients who either received no local treatment or were given only an elastic bandage for support but were returned immediately to duty to use and move the part had remarkably little disability, which if any lasted not more than a few days. This was also true for the majority of patients who were only taped and sent back to duty immediately. Swelling, pain and stiffness rapidly disappeared and disability of longer than two to three days was not common if the man continued his weight bearing and moved the ankle as instructed.

Injection of procaine hydrochloride solution and immediate return to duty gave routinely the best results. Disability was entirely absent in many and rarely lasted over twenty-four or forty-eight hours in the others. Several patients were intentionally inactivated with bed rest and crutches after injection for several days, and these had somewhat similar prolonged disability periods to patients who were treated with other local methods and kept inactive. A few apprehensive patients failed to follow instructions of continued use and motion after injection and these also recovered slowly. Patients who had some complication such as an underlying chronic arthritis of the ankle or a pulled muscle (usually peroneal) experienced delayed recovery. Some patients were not permitted to return to hazardous activity, such as parachute jumping for a week to ten days even though they felt able to.

Pain rarely recurred after injection and in no case was reinjection necessary. Motion of the ankle on the day following injection was often normal or nearly so. Forced passive motions especially inversion and eversion were apt to be painful for several days. Swelling was less the next day and progressively decreased usually disappearing even in the severe cases within five to ten days. Tenderness of injured ligaments to

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This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writer and are not to be considered as reflecting the policies of the Navy Department.

1. Leriche R. The Problem of Osteoarthritic Diseases of Vaso-motor Origin. *J. Bone & Joint Surg.* 10: 492, 1928. Des regles a suivre dans le traitement des fractures articulaires par infiltration novocaïnique des ligaments et mobilisation active immédiate. *ibid.* 45: 373 (June 12), 1937. Leriche R. and Arnulf G. Treatment of Sprains by Interligamentary Injection of Novocain. *Am. J. Surg.* 32: 45, 1936.

palpation lasted, on an average, three to five days, even though there was no pain with active motion. Erythema, local or diffuse, over foot and toes often lasted seven to fourteen days.

Success of the injection procedure depends on two factors: first, total elimination of pain and tenderness by complete adequate initial intraligamentous injection and, second and more important, continued use and motion of the foot and ankle. If the injection fails to relieve pain the patient may limp and not use the part normally, or if he is apprehensive and does not use or move the part as instructed, stiffness, swelling and pain result and persist.

It appears that by maintaining active use and motion, circulation is improved, tissue metabolism and repair are thus enhanced and extravasated blood and serum tend to be mechanically expressed from the region, hence the swelling and stiffness with resultant pain consequent to stasis are materially reduced. Leriche explained the benefit of local injection for sprains on a basis of eliminating pain impulses and thus preventing the vasomotor change, which at first is a passive vasodilatation and later active. This explanation is not the sole answer, for it does not explain the excellent results which can be obtained by other methods, such as taping, in cases in which no injection is done but in which, if immediate and continuous use and movement of the part are done, recovery is rapid.

Many of these patients have been seen and examined after several months and all had normal ankle motion, no pain, no swelling and no tenderness.

The maintenance of normal ankle motion, namely flexion and extension, after injection does not aggravate the injured lateral or medial ligaments and thus normal active use is not contraindicated. Strenuous running or jumping, however, are inadvisable for several days because of the chance of "turning" the ankle again and thus reinjuring the ligaments.

Patients with old untreated sprain of a few to several days' duration are treated either with taping or with procaine hydrochloride injection and returned to activity with instructions to keep moving and to use the part. Recovery in these cases is as a rule slower but even so it is facilitated with active use and motion.

Cozen and Hollombe² used the ethyl chloride spray and reported satisfactory results in 8 cases of ankle sprain. Among those who have used and reported good results with local injection of sprains are Sperber and Sabatino,³ Kiser,⁴ Frankel,⁵ Ball⁶ and Alexander.⁷ Frankel recommended avoidance of exercise for a few days, while Ball had his patients use crutches after injection for three days. Alexander, who reported over 500 cases of ankle sprains, advocated, in addition to injection of procaine hydrochloride, strapping the ankle with adhesive tape and then immediate use of the part. He concluded that his results were superior by this method than by any other. His observations are substantiated by the results herein reported, especially that part having to do with immediate use.

- 2 Cozen, L. N., and Hollombe, B. S. Ethyl Chloride Spray for Sprained Ankles, *Surgery* 8: 468 (Sept.) 1940.
- 3 Sperber, P., and Sabatino, N. A. A New Treatment for Sprained Ankles, *M. Rec.* 142: 469 (Nov. 20) 1935.
- 4 Kiser, J. B. Procaine and Epinephrine Injection in the Treatment of Sprained Ankles, *Virginia M. Monthly* 63: 554 (Dec.) 1936.
- 5 Frankel, E. L. Treatment of Sprains by Injection of Procaine, *Lancet* 2: 597 (Sept.) 1940.
- 6 Ball, C. R. Sprained Ankles, *U. S. Nav. M. Bull.* 38: 499 (Oct.) 1940.
- 7 Alexander, H. H., Jr. Treatment of a Sprained Ankle, *Am. J. Surg.* 50: 581 (Dec.) 1940.

SUMMARY

More than 200 patients with ankle sprain were treated with injection of procaine hydrochloride and more than 200 with adhesive tape strappings. Others received no treatment, while still others were put to bed for cold and hot applications. Irrespective of the type of treatment, patients who returned immediately to normal activity and used and moved the foot and ankle improved much more rapidly than those who did not.

Injection with 2 per cent procaine hydrochloride solution into the injured ligaments followed by normal activity gave uniformly the best results. These patients, following complete elimination of pain and tenderness by injection, continued immediate use of the part, avoiding only especially strenuous activity as hard running or jumping.

CONCLUSIONS

Immediate and continued active motion and use of a sprained ankle and foot almost irrespective of any local treatment definitely hastens recovery.

The most satisfactory adjunct in the treatment of ankle sprain in order to maintain motion and use of the part is the complete elimination of pain by the injection of 2 per cent procaine hydrochloride solution into the injured ligaments.

A SURVEY OF METHODS FOR ARTIFICIAL RESPIRATION

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A survey of the commonly used methods of resuscitation from acute asphyxia is essential to the evaluation of their efficacy. Such a survey has been in progress for three years, beginning in 1940. It was deemed necessary because of the existing controversy and con-

TABLE 1—Sources of Case Reports

	Chicago Fire Department	Los Angeles Fire Department	United States Coast Guard	Chicago Health Department	Other Sources	Total
Complete cessation of respiration						
Survival						
Cardiac cases	9	2	0	0	0	11
Others	42	49	27	0	3	121
Death						
Cardiac cases	502	71	5	0	0	578
Others	195	104	43	6	0	348
Abnormal respiration						
Survival						
Cardiac cases	263	80	0	0	0	343
Others	372	181	14	0	0	567
Death						
Cardiac cases	18	0	0	0	0	18
Others	0	0	1	0	0	1
Deaths no treatment within thirty minutes	50	7	70	20	0	147
	1,454	499	100	26	3	1,122

fusion regarding the relative values and dangers of the different methods. Although the Schafer pressure method has received most widespread acceptance, other methods are taught and used by various groups. For example, the United States Coast Guard advocates the use of the Howard modification of the Sylvester method when a sufficient number of operators are present. Organizations such as the Chicago Fire

Funds to carry on this work were provided by the Council on Life Therapy of the American Medical Association.

INFORMATION REQUESTED IN CASE REPORT
OF ASPHYXIA¹FOR THE COUNCIL ON PHYSICAL THERAPY OF THE
AMERICAN MEDICAL ASSOCIATION

- 1 Name of Patient Age Sex
Address Occupation
- Site of accident
Date of accident Time discovered
- Time artificial respiration started
- 2 Cause of asphyxia Carbon monoxide? Electric shock?
Drowning? Heart (specify diagnosis)? Suffocation?
Other causes?
- 3 Had breathing completely ceased when patient was first discovered?
- 4 Was artificial respiration administered before life saving crew arrived? By whom? What method was used? How long?
- 5 Condition of patient at start of artificial respiration
Heart action Was patient breathing? Pulse
Respiration Color (pink? blue? white?)
- 6 Method of Artificial Respiration used
A Manual Schafer prone pressure How long?
Other manual method How long?
B Mechanical Resuscitator? How long?
Inhalator? How long?
Other mechanical device How long?
Make and manufacturer
- C Combination of manual and mechanical (If used please fill in A and B also) Was manual method used before or after resuscitator? Was manual method used directly before or at the same time as inhalator?
- 7 If two or more methods were used in succession was the patient breathing before the second (and/or third etc.) method was used?
- 8 Was the patient alive at end of artificial respiration?
Pulse after revival Respiration Any bleeding from nose or mouth? Remarks on general condition of patient
- 9 Was a physician present? Name
Address Phone number
How long after discovery of a physicia did physician arrive?
- 10 Who administered artificial respiration (name and address)
Physician
Fireman
Life guard
Coast guard man
Others
If not a physician what type of training did he have?
- 11 Was patient hospitalized after resuscitation?
Name of hospital
Address
- 12 Was person in average health prior to accident?²
Heart disease (specify diagnosis)?
Tuberculosis?
Diabetes?
Other disease
- 13 Subsequent history of recovered patient³
Pneumonia?
Other remarks
- 14 Was an autopsy performed By whom?
Was there any evidence of lung abnormality? Other findings?
- Signature of physician Date
Signature of person administering artificial respiration Date

1 This information is for a statistical study of methods of artificial respiration. If unable to fill in all items please give as much information as possible.

2 Resuscitator Any device for blowing and sucking air or some other gas mixture in and out of the lungs

3 Inhalator Any device supplying oxygen-carbon dioxide mixture for the patient to breathe without mechanically blowing and sucking

4 Information about history of patient to be obtained from family physician or relative

5 If insufficient space is allotted record additional information on separate paper Write a short history regarding accident on a separate sheet

THE LOS ANGELES FIRE DEPARTMENT
RESCUE SERVICE REPORT

Company	Date responded	
Responded in (vehicle)	Platoon	
Time responded	Time back	Time worked
Name of victim	Age	
Address		
Location responded to	Phone	
Condition of victim on arrival		
Nature of case		
Doctor in attendance		
Address		
Equipment used		
Method of artificial respiration used		
Amount of oxygen used		
Amount of oxygen-carbon dioxide mixture		
Case terminated (date and time if member was detailed)		
Results of treatment (Beneficial No effect? Died? Revived?)		
Names of men responding or detailed		
Remarks		
Company commander		

Department and the Los Angeles Fire Department employ mechanical methods. The mechanical devices used are supposed to be free from the dangers which caused such extensive condemnation of the oldtime pulmotor. They produce pressures which do not exceed 18 to 20 mm of mercury and are therefore not believed capable of injuring delicate pulmonary tissue.

Data for this survey were obtained from several sources. In order to facilitate correlation of the infor-

COAST GUARD REPORT ON RESUSCITATION OF THE
APPARENTLY DROWNED

- | Coast Guard Unit | Place | Date of accident |
|---|-------|------------------|
| 1 Name, age and sex of person imperiled | | |
| 2 I. O. address | | |
| 3 Exact time of accident | | |
| 4 Distance and direction from unit | | |
| 5 Was scene of accident visible from unit? | | |
| 6 Cause of accident | | |
| 7 Temperature of water and atmosphere | | |
| 8 Length of time under water | | |
| 9 How was time under water determined? | | |
| 10 By whom taken from water | | |
| 11 Did patient rise to the surface after first disappearing? If so how many times | | |
| 12 Did patient breathe or show any other signs of life when taken from the water? | | |
| 13 How soon after accident did members of Coast Guard arrive on scene | | |
| 14 Were efforts made to revive person before the Coast Guard took charge? If so state by whom how long and the means employed | | |
| 15 Was the patient apparently dead when taken in charge by members of the Coast Guard? | | |
| 16 Were patient's jaws clenched | | |
| 17 How soon after artificial respiration was begun did patient show signs of life? | | |
| 18 What were the first signs of life shown | | |
| 19 What signs of life if any were shown while water was first being expelled from the lungs | | |
| 20 State probable quantity of water expelled or drained through the mouth on turning patient on stomach the first time and second time respectively | | |
| 21 Length of time artificial respiration was employed | | |
| 22 How many Coast Guard men took part in this resuscitation? | | |
| 23 What means were employed during process of artificial respiration to impart warmth to the extremities? | | |
| 24 What other means were employed to restore circulation? | | |
| 25 What stimulants if any were administered? | | |
| 26 Give method of resuscitation employed | | |
| 27 Was patient resuscitated? | | |
| 28 State name and address of physician called time of arrival and service rendered | | |

REMARKS

U S C G
Commanding Officer

INSTRUCTIONS

1 This form shall be submitted by all units on each occasion of resuscitation of the apparently drowned whether or not resuscitation is successful. It shall be prepared in quadruplicate. The original and one copy shall be forwarded to headquarters via the district commander and a copy shall be included for his files; a copy shall be retained in the files of the unit concerned.

2 Under Remarks relate in detail the circumstances of the accident describe each step taken in restoring the patient and state the successive signs of returning life shown while resuscitation was being performed. If the attempt to revive the patient was unsuccessful obtain the opinion if available of physician or local health officials as to whether or not patient was dead on removal from the water and if death was due to causes other than drowning. State cause of death if known.

3 If necessary use separate sheets of paper 8 by 10 1/2 inches in size for the submission of additional remarks or in answer to any of the questions on page 1 of the form.

mation a case report form was devised. The Chicago Fire Department and the Chicago Health Department used this form in submitting reports on all cases as they occurred. The Los Angeles Fire Department and the United States Coast Guard sent in data on their regular departmental forms. The information requested in the case report forms is shown herewith. All cooperating organizations agreed to send in reports of all cases of asphyxia as they occurred, regardless of whether revival or death occurred in each instance.

Material presented in this paper represents reports of cases of asphyxia occurring in 1940, 1941 and 1942. Table I shows the number of cases from the various

sources and the distribution of the cases reported into groups. The patients who were asphyxiated because of heart disease were considered separately because of the poor prognosis in such cases. It was also found necessary to tabulate separately patients respiring spontaneously (gaspings, severe dyspnea and the like) at

Asphyxia neonatorum is the most frequent type of asphyxia in which revival occurred. Next come immersion, carbon monoxide and other less frequently occurring causes. Table 3 includes all cases of impaired respiration in which survival occurred. In each case breathing

TABLE 2—Cases of Survival in Which Spontaneous Respiration Could Not Be Noted at Start of Treatment

Cause of Asphyxia	Method											Total
	1 E & J Resuscitator	2 Schafer	3 (1) Schafer (2) E & J Resuscitator	4 Mouth to Mouth Breathing	5 Schafer with E & J Inhalator	6 (1) Schafer (2) Schafer with E & J Inhalator	7 Howard Silvester	8 Schafer Alternating with Howard Silvester	9 Draeger Pulmotor	10 (1) Schafer (2) Schafer with E & J Inhalator	11 (3) Schafer Schafer with E & J and H & H Inhalators	
1 Asphyxia neonatorum	13											33
2 Immersion		21	2			1	2	2				28
3 Carbon monoxide	5	4	1	1					1			12
4 Cardiac	5	1	1		1						1	11
5 Acute respiratory infection	1	1		1								5
6 Drugs	1											1
7 Suffocation	1	1	1	1						1		5
8 Convulsions	1	1		2								4
9 Asthma	2	1										3
10 Stroke	1		1									2
11 Miscellaneous	1	1	3									8
12 Undetermined	9	2		2	1	1						15
	60	28	12	7	4	2	2	2	1	1	1	133

TABLE 3—Cases of Impaired Respiration in Which Survival Occurred. In Each Case Breathing Had Not Stopped Completely at Start of Treatment

	Method										Total
	1 E & J Inhalator	2 H & H Inhalator	3 (1) Schafer (2) E & J Inhalator	4 E & J Inhalator Alter- nating with H & H Inhalator	5 Howard Silvester	6 Schafer	7 (1) Schafer with H & H Inhalator (2) H & H Inhalator	8 (1) Mouth to Mouth Breathing (2) E & J Inhalator	9 (1) Schafer with E & J Inhalator (2) E & J Inhalator	10 Various Methods Each Used in 1 Case Only	
1 Cardiac	330	7	6	9				1		1	354
2 Carbon monoxide	111	11	8	10		1	2		2	2	147
3 Asphyxia neonatorum	75										75
4 Asthma	46	1	3								50
5 Convulsions	39	1	1					1		1	43
6 Stroke	22			1							23
7 Pneumonia	17	1		1						1	20
8 Immersion	2		3		6	6					17
9 Hypnotic drugs	12		1								13
10 Ammonia	2	6									8
11 Suffocation	4		2								6
12 Epilepsy	6										6
13 Sulfur dioxide	4	1									5
14 Miscellaneous	56	4	2	4	1	1				2	64
15 Undetermined	66	4	3	2	2		1				74
	792	36	29	27	9	8	3	2	2	7	915

the start of treatment in contrast to those in whom spontaneous respiration had ceased. Results in the latter group are obviously more significant.

Table 2 represents the patients in whom spontaneous respiration had completely ceased by the time artificial respiration had been started and who survived. A total of 133 cases are presented in this group. The two methods employed most frequently are the E & J resuscitator and the Schafer prone pressure method.

had not stopped completely at the start of treatment. There are 915 cases in this group, in 792 of which the E & J inhalator was used. Acute cardiac conditions (coronary occlusion, acute cardiac dilatation and the like) were the most frequent causes of asphyxia in this group, numbering 354 cases.

Cases of carbon monoxide poisoning numbered 147, followed by the less frequent causes that are listed in the table.

Table 4 represents cases in which death occurred. In all of these cases there is no evidence that thirty minutes or more had elapsed between cessation of breathing and the start of artificial respiration. Seventeen patients with cardiac lesions and 1 whose illness was undiagnosed died although they were breathing when treatment was started. Thirty minutes was selected as the maximum interval between cessation of breathing and the start of artificial respiration, although a maximum of more than fifteen minutes is probably not entirely consistent with physiologic evidence. A thirty minute limit was chosen because owing to the emergency nature of the cases reported and the inherent confusion which naturally results, errors of as much as 100 per cent can easily be expected in the estimation of time by onlookers or participants and because periods of as long as one hour or more have been reported in the literature.¹ Of the 133 cases of survival presented in this report the maximum time between the

In its present state this survey does not present such data. Thus of 74 cases of asphyxia neonatorum (33 survivals and 41 deaths) in which spontaneous respiratory rhythm was not present at the start of treatment 72 were treated by the E & J resuscitator and none by the Schafer method. In all the data given in this report there are too few cases in which the Schafer and other manual methods were used. However, the material presented here does reveal the following:

1 There are 66 cases of acute asphyxia in which a mechanical method of artificial respiration with alternate blowing and sucking resulted in revival. None of the patients, 33 of whom were newborn infants, showed evidence of injury as a result of this procedure.

2 There are 35 cases in which the Schafer prone pressure method was successful in resuscitation. In none of these cases nor in any of the additional 215 cases in which the Schafer prone pressure method was used (either entirely or in part) was there any report of

TABLE 4—Deaths *

	Method														Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	E & J Resuscitator	(1) Schafer (2) E & J Resuscitator	Schafer	Howard Sylvester	(1) E & J Inhalator (2) E & J Resuscitator	Schafer with 1 E & J Inhalator	(1) Schafer (2) Schafer with 1 E & J Inhalator	(1) Schafer with 1 E & J Inhalator	(1) Schafer (2) Howard Sylvester	(1) Mouth to Mouth Breathing (2) E & J Resuscitator	(1) E & J Resuscitator (2) Schafer	(1) Chest Compression (2) E & J Resuscitator	(1) Schafer with 1 E & J Inhalator (2) E & J Resuscitator	Various Methods Each Used in 1 Case Only	
1 Cardiac	47 ₅	7 ₀	3	3	14 ₁₄			6			2	2	1	4 ₁	36 ₁₇
2 Immersion	6	13	21	1 ₁			3		6				1	2	64
3 Asphyxia neonatorum	39									1				1	41
4 Carbon monoxide	19	8													31
5 Suffocation	17	8				1				1				1	28
6 Electric shock	4	6												2	12
7 Acute respiratory infection	11	1													12
8 Stroke	7	1					1								9
9 Asthma	4					1									5
10 Miscellaneous	20	6						1		1				2	30
11 Undetermined	37	10	1 ₁											1	111 ₁
	139	120 ₄	25 ₁	1 ₁	14 ₁₄	13	9	7	6	3	2	2	2	13 ₁	633 ₁₈

* In all cases there is no evidence that thirty minutes or more had elapsed between cessation of breathing and start of artificial respiration. Subscript figures indicate cases in which patient was still breathing when treatment was started.

onset of asphyxia and the start of artificial respiration was fifteen minutes.

In table 4 933 fatalities are presented. The great majority of these (590) were victims of cardiac ailments. Other causes include immersion, asphyxia neonatorum and other less frequently occurring conditions. Use of the E & J resuscitator was the most frequent method employed. The second most frequent method was the use of the E & J resuscitator preceded by the Schafer method. This represents instances in which a passer-by had started the Schafer method and firemen subsequently took over with the E & J resuscitator.

RESULTS

It is evident that in spite of the large number of cases presented (no similar group of cases has previously been reported in the literature) it is not yet possible to make a comparative evaluation of the different methods that are listed. Theoretically, in order to compare the efficacy of two methods data should be presented in which each of the methods is used in a significant number of cases in each type of asphyxia

fractured ribs. Such injuries have been said to be a possible result of improper use of this method.

3 No instance of revival was reported in which more than fifteen minutes elapsed between the cessation of breathing and the start of artificial respiration.

4 Of 584 patients with asphyxia and complete cessation of respiration due to cardiac causes, only 11 survived. Of 371 patients with impaired respiration due to cardiac dysfunction, 354 survived and 17 died. According to the data the Chicago Fire Department and the Los Angeles Fire Department treat more cases of asphyxia due to circulatory failure than any other cause.

This paper is not presented as a final summary but as a progress report. It is hoped that in the future additional organizations using some form of artificial respiration routinely will cooperate. Reports of instances in which the Schafer or some other manual method of artificial respiration is used will be particularly helpful. A series of reports received from any life saving organization should include all patients treated by that organization within a given period. Report forms will be sent to any organization on request.

4549 Lake Park Avenue

STAB WOUND OF THE HEART

REPORT OF A SUCCESSFUL OPERATION

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Modern surgery has contributed many outstanding scientific achievements the most recent of which include successful operations on the organs of the chest. This has been made possible in great part by a better understanding of the problems caused by an altered physiology of the respiratory and cardiovascular systems. As a result newer and better methods in anesthesia have been devised and operative technique has been greatly improved. Today the morbidity and mortality of thoracic surgery is not much different from that of surgery elsewhere in the body. In addition, the use of the sulfonamide compounds has greatly reduced the incidence of fatal postoperative respiratory infections—complications more frequently seen in chest surgery.

Suturing of heart wounds is a relatively recent procedure. The first report in the literature of a human heart to be sutured was by Cappelen¹ in September 1895. However this resulted in a mortality, as did the case of Farina² in March 1896. Rehn³ of Frankfurt recorded the third case of heart suture in September 1896 and this operation resulted in recovery. As was to be expected many more successes soon were reported once the practicability of the operation was established.

The percentage of reported recoveries, however, must not lead one to believe that the mortality has been low.⁴ Unquestionably the large number of fatal cases has not been publicized while the individual favorable cases usually have. Most observers believe that the mortality has been 50 to 60 per cent. Bigger⁵ mailed a questionnaire to 427 surgeons, all members of the American Association for Thoracic Surgery, the American Surgical Association and the Southern Surgical Association. According to the answers received, 128 patients were operated on for wounds of the heart chambers and coronary arteries. Sixty-three patients recovered and 65 died, a mortality of approximately 50 per cent. Therefore, even though stab wounds of the heart are infrequent occurrences, many a life can be saved by an accurate diagnosis, an early, well planned operation and a thorough understanding of the treatment of post-operative complications. Herewith is reported a lacerated wound of the right ventricle successfully sutured

REPORT OF CASE

History—J. D., a boy aged 14 years, was admitted to St. John's Long Island City Hospital, Nov. 25, 1941 about a half hour after he had been stabbed. The weapon used was vaguely described as a pen knife of unknown length. The patient collapsed immediately after the stabbing and fell to the ground. A large amount of blood loss was not evident at the scene of the accident or on the patient's clothes. Two passers-by who happened to witness the stabbing brought the patient to the hospital.

Examination—On admission the patient appeared to be thin and undernourished and exhibited extreme pallor of the skin and mucous membranes. He was in shock but conscious and well oriented. The pulse was 120 to 130 a minute and regular

but barely perceptible. The systolic blood pressure was 60 mm of mercury and the diastolic pressure 40 mm of mercury. Respiratory difficulty was not evident. To the left of the sternum a 1 inch vertical lacerated wound was seen at about the level of the fourth intercostal space. The wound bled very little externally. The surrounding subcutaneous tissues were emphysematous but not ecchymotic. The left side of the chest anteriorly showed diminished breath sounds. The abdomen was soft and free from tenderness and seemed to be uninvolved. An emergency blood count showed 4,490,000 erythrocytes and 90 per cent hemoglobin, or 131 Gm per hundred cubic centimeters of blood. Examination of the precordial region was interesting, since heart sounds of fairly good quality were heard. Close inspection of the veins of the neck revealed definite enlargement and distention.

An immediate fluoroscopic examination by the roentgenologist, Dr. Joseph Sullivan, disclosed "no cardiac motion visible under the fluoroscope." Therefore the diagnosis of cardiac hemorrhage with tamponade was made, and immediate operation was decided on.

Operation—Anesthesia was by local infiltration and regional intercostal nerve block with 1 per cent procaine hydrochloride. The incision was U shaped, with the base to the left over the costochondral junctions and the anterior rib stumps. The curved portion was placed at the left sternal border extending from the third to the sixth costal cartilage. The superficial stab wound was included in the center of this flap. The incision was carried through skin, subcutaneous tissue and extracostal muscles down to the plane of the cartilages and ribs. The fourth, fifth and sixth costal cartilages were completely removed up to the sternum, together with 1 to 2 inch segments of corresponding ribs. All this was accomplished subperiosteally and subperiosteally.

The internal mammary artery and vein were doubly ligated above and below and then sectioned. At this point, one could see clearly that the wound penetrated the left pleura first and then the pericardium. The pericardial fat was swollen and extensively ecchymotic. The opening into the pericardium and pleura was now enlarged, and large clots could be seen in the pleural cavity. No lacerated pulmonary tissue was noticed. This was particularly searched for because of the subcutaneous emphysema. Incision into the pericardium resulted in the expulsion of several large clots with liquid blood. A hurried inspection of the heart disclosed a 2 to 3 cm wound of the right ventricle extending through the entire ventricular wall into the chamber. The wound was situated at the junction of the middle and lower thirds of the right ventricle near the interventricular septum. The heart was bleeding actively from the wound, but the beats were regular.

To control the bleeding the tip of the left index finger was placed lightly over the lacerated wound but not into it. A traction suture of silk was inserted through the cardiac apex according to the method first described by Beck⁷ in his work on experimental animals.

This permitted an assistant to steady the heart for suturing. Two figure-of-eight sutures of fine black silk were placed through the full thickness of the ventricular wall, completely closing the opening and controlling the hemorrhage. The ventricle was too thin in this region to obtain satisfactory closure of the laceration without carrying the suture material into the chamber. Clots and liquid blood were hurriedly removed from the pericardial and pleural sacs, but an attempt was not made to remove all of them. The lingula and anterior edge of the lower lobe of the lung were loosely sutured to the anterior margin of the pericardial incision. Drainage of blood and serum from the pericardial sac into the left pleural cavity was thus made possible by the incomplete closure of the pericardium. The rest of the wound was closed with interrupted chromic catgut sutures for the muscle and fascia and interrupted black silk sutures for the skin.

The anesthesia was good and the patient cooperated fully in spite of his youthful age. Only when the pericardium was incised and the clots evacuated did he become restless and

From the Surgical Service of St. John's Long Island City Hospital. The medical collaboration of Dr. E. W. McIave, director of the medical service, contributed to the favorable outcome in the case reported.
1. Cappelen, Axel. *Vulna Cordis. Suture af hjertet.* Norsk mag. f. Lægenvidensk. **11**: 285, 1896.
2. Farina, G. Discussion, *Centralbl. f. Chir.* **23**: 1224, 1896.
3. Rehn, L. *Über penetrierende Herzwunden und Herznaht.* Arch. f. klin. Chir. **55**: 315, 1897.
4. Elkin, D. C. Wounds of the Heart, *J. Thoracic Surg.* **5**: 590 (Aug.) 1936.
5. Bigger, I. A. Heart Wounds *J. Thoracic Surg.* **8**: 239 (Feb.) 1939.

6. Elkin, D. C. The Diagnosis and Treatment of Cardiac Trauma. *Ann. Surg.* **114**: 169 (Aug.) 1941.
7. Beck, C. S. Wounds of the Heart. The Technique of Suture. *Ann. Surg.* **13**: 205 (Aug.) 1926.

disturbed. However, this was not troublesome enough to interrupt the operation. Throughout the procedure 500 cc of citrated blood was administered. The entire operation including the time for induction of the anesthesia, consumed about forty minutes. The patient left the operating room in much better condition than when he entered, his pulse being only 108 beats a minute and of much better quality.

Postoperative Course.—After the patient's return to bed from the operating room his temperature by rectum was 101.8 F and his respiratory rate 40 a minute. He was immediately placed in an oxygen tent for relief of anoxia. During the first night more citrated blood was given making a total of 850 cc of blood administered thus far. On several occasions the patient complained of severe precordial pain for which several doses of morphine sulfate had to be given hypodermically. In the morning it was possible to give 1 Gm doses of sulthiazole and sodium bicarbonate by mouth every four hours since the patient was retaining fluids well without any symptoms of nausea or vomiting. Throughout his first postoperative day his breathing was labored, with a respiratory rate never below 40. At times he was so insistent about remaining outside of the oxygen tent that his wish had to be granted. However, no ill effects were observed and later on we were able to persuade him to be placed in the tent again. The precordial pain was particularly distressing and was his only complaint.

Three days later (twelfth postoperative day) aspiration was again done, resulting in the removal of 660 cc of the blood tinged fluid. Laboratory studies failed to detect bacteria or pus cells in the fluid.

On the seventeenth postoperative day the patient had severe pain over his heart, left shoulder and neck, respirations were rapid and cyanosis was present. This condition persisted for forty-eight hours during which time the temperature rose from 101 F to 103 F. Crepitant rales were elicited in the left base posteriorly. Roentgenograms (fig 2) showed less fluid but the lung seemed to be reexpanding. The pericardial shadow seemed widened and displaced to the right, indicating the possibility of pericardial effusion. Electrocardiographic studies were not helpful. However, aspiration of the pericardium yielded neither fluid nor blood. I believe that what appeared to be a widened pericardium was only a pericardium rotated to the right because of lack of support of the chest wall. Costal cartilages and ribs had not yet regenerated and this support was lacking.

Fortunately this acute episode of fresh pulmonary infiltration lasted only five days, after which time the patient suddenly and rapidly improved. Dyspnea, fever and rapid pulse subsided quickly, and from this time on the patient enjoyed a smooth convalescence. His improvement coincided with a stiffening of the chest wall in the operative region. He left the hospital Jan. 24, 1942, apparently entirely recovered.



Fig 1—Partially collapsed left lung and fluid in the left pleural cavity thirty-six hours after the operation. The mediastinum is not shifted to the right.



Fig 2—An apparently widened mediastinum suggestive of an effusion into the pericardial sac twenty-three days after the operation. Exploratory aspiration failed to reveal pericardial fluid or blood. A softened chest wall in the operative region permitted retraction and rotation of the parietal pericardium thus accounting for the confusing picture.

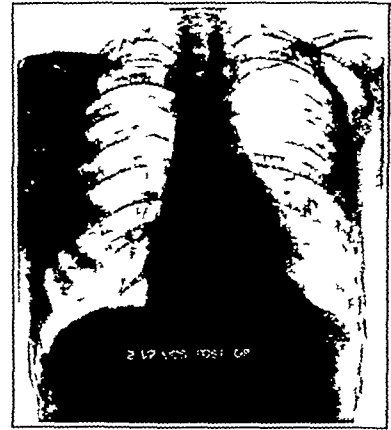


Fig 3—Appearance two and one-half months after the operation, practically normal except for thickened pleura in the left side of the chest.

On the second postoperative day his condition improved sufficiently to permit an electrocardiogram to be taken. These studies will be discussed at length later in this report. Three hundred cc more of blood was given. The temperature remained around 102 F, the pulse rate 130 and regular and the respiratory rate not less than 34 a minute. His blood pressure was 118 mm systolic and 74 mm diastolic. A bedside roentgenogram (fig 1) revealed a reexpanding left lung with a moderate amount of fluid in the left hemithorax, and there was a slight mediastinal shift to the right. The operative wound was inspected and found clean. Definite paradoxical movement of this area with respiration was noted.

From the third day on improvement was slow but progressive. A serum reaction from tetanus antitoxin caused generalized adenitis and orbital edema. Fluid accumulated in the left pleural cavity; the lung remained partially collapsed and paradoxical motion was still present over the precordium.

Nine days after the operation enough pleural fluid collected to require aspiration. This procedure was carried out in the seventh interspace in the midscapular line whereupon 260 cc of thin blood-tinged fluid was removed. On bacteriologic studies this material was reported sterile with an occasional mononuclear cell and a rare polymorphonuclear cell. This pleural decompression resulted in less dyspnea and an improvement in the patient's color. Even though the amount of fluid removed was small relief was considerable since the patient's chest was of small capacity.

He was readmitted twelve days later, on February 4, complaining of fever and chest pain. Physical examination and roentgen studies disclosed a limited area of consolidation in the lower part of the left lower lobe with a small amount of fluid. He responded favorably to sulfadiazine therapy and in five days was free from fever and fully recovered. He was discharged from the hospital for a second time on March 12.

Follow-up examinations revealed a well regenerated chest wall with only a small soft area in the center of the operative wound. For this he wears a small protective pad of felt to avoid accidental injury. There are no complaints of precordial pain or shortness of breath. He attends school and runs and plays as well as his friends do.

ELECTROCARDIOGRAPHIC CHANGES

The patient's past history disclosed that he had never been operated on or stricken with any serious medical illness. Therefore, it can be assumed that the boy had a normal heart prior to the accident and that if electrocardiographic studies had been made they would have been normal.

As indicated in figure 4, electrocardiograms were taken after the operation at intervals of thirty-six hours, three days, seven days, twenty-three days, thirty-two days and one hundred and fifty-two days. The find-

mgs parallel those reported by Davenport,⁸ Warthen⁹ and others. Our patient's records show the typical progression of changes seen in infarction on the anterior wall of the heart. Thirty-six hours after operation the

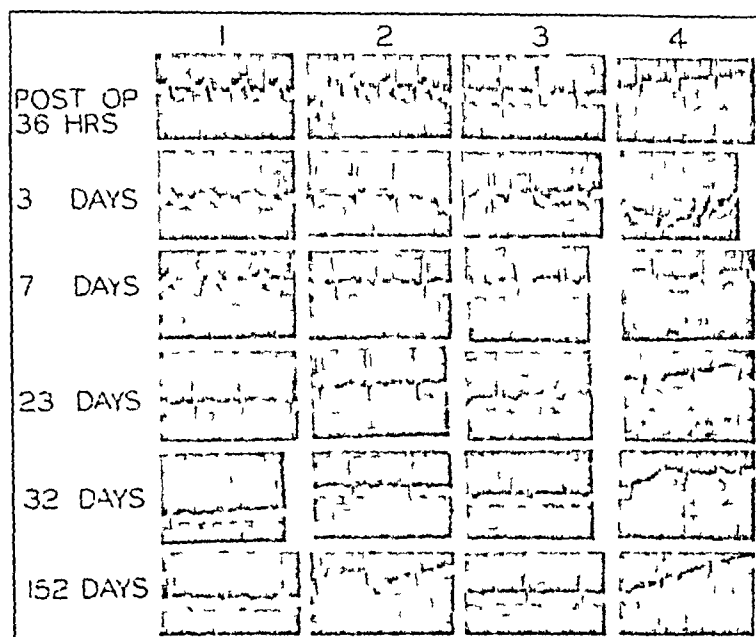


Fig. 4—Typical progression of changes postoperatively seen in infarction on the anterior wall of the heart. Thirty-six hours after the operation the tracing was typical of the acute phase of infarction. However, only one day later a second tracing demonstrated less displacement of the ST segment.

tracing was typical of infarction of the anterior wall in the acute phase. However, only one day later a second tracing demonstrated less displacement of the ST seg-

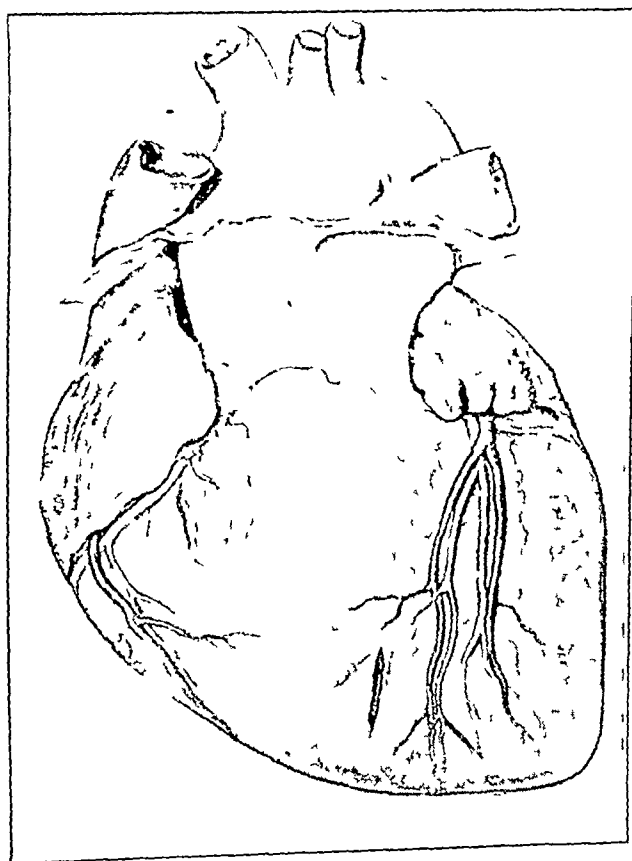


Fig. 5—The laceration penetrated through the entire thickness of the anterior wall of the right ventricle. It was possible to place the two interrupted silk sutures in the wound edges without involving any vessels.

ment. From this period on ST segments showed even less elevation together with those other changes indicative of progressive healing of the infarction. The last

electrocardiogram, taken one hundred and fifty-two days after the operation, was practically normal except for a small Q wave in leads 2 and 3 and inversion of the T wave in leads 3 and 4. However, these may be considered normal changes in children.

Should it become necessary to include branches of the coronary vessels in the suturing of lacerated wounds of the heart, abnormalities in the electrocardiogram may persist for many months.¹⁰ Olm and Hughes¹¹ described abnormalities in the fourth lead due to encroachment of the left anterior descending coronary vessels by the sutures.

Mention must be made here that heart wounds of small size, such as ice pick puncture wounds manifest electrocardiographic disturbances of lesser degree and also of shorter duration. On the other hand, large



Fig. 6—Appearance of patient about nine months after the operation. The wound is well healed and only a minimal amount of softening of the chest wall is present. The patient is free from any symptoms.

lacerations penetrating the heart wall completely and requiring more than one suture interfere to a greater degree with conduction and myocardial circulation.

COMMENT

Diagnosis—The classic signs of tamponade may not always be present. My patient showed only a slight diminution in the intensity of the heart sounds and very little shift of the maximum apical beat from the normal position. This can be explained by the thin chest wall and the effective plugging of the heart wound by clot and blood. However, fluoroscopy clearly demonstrated an immobile heart.

Warthen⁹ describes a case in which tamponade was not present. The clinical picture was one of profound

8 Davenport, G. L. and Markle, P. M. The Electrocardiogram in Stab Wounds of the Heart. *J. Thoracic Surg.* 3: 374 (April) 1934.
Davenport, Blumenthal and Cantil.¹⁰

9 Warthen, H. J. Stab Wound of the Heart, *Ann. Surg.* 102: 147 (July) 1935.

10 Davenport, G. L., Blumenthal, Basil and Cantil, S. T. Electrocardiographic Studies of a Stab Wound of the Heart, *J. Thoracic Surg.* 5: 208 (Dec.) 1935.
11 Olm, C. B., and Hughes, J. D. Stab Wound of the Heart with Coronary Ligation, *J. Thoracic Surg.* 9: 99 (Oct.) 1939.

shock and severe hemorrhage, heart sounds could be heard but only feebly. In fact the preoperative diagnosis was severance of the internal mammary vessels with active bleeding. At operation the pleural cavity was the seat of a massive hemothorax, since the pericardium was decompressing itself into the left pleural cavity.

Anesthesia—Patients in such grave states of shock tolerate surgical procedures best when local anesthesia is used. This can always be supplemented by inhalation anesthesia if the patient's behavior warrants it. In the literature mention has been made of the restlessness under local anesthesia at the time of opening the pericardial sac and relieving the cardiac compression. This procedure was not serious in my case and the operation proceeded without incident. I believe that the choice of anesthesia should follow the same principles as are applicable to operations elsewhere in the body; the surgeon should utilize that method which in his hands has given the best results.

Incision—Blalock¹² reported a successful case in which he used a sternum splitting incision, later approximated by encircling sutures of silver wire. This incision was originally described by Cutler¹³ in De in Lewis's Surgery, but thoracic surgeons in general condemn its use. The procedure is time consuming and shocking for the patient and fails to afford proper exposure, since lacerations of the pleura usually accompany stab wounds of the heart.

The flap incision used in this case affords a quick approach with adequate exposure. Subperichondrial and subperiosteal removal of the costal cartilages and ends of the ribs permits the regeneration of a stiff chest wall. This is important because the parietal pericardium derives considerable support from its attachment to this region of the chest. If this support is missing, the result is a more mobile mediastinum, definite paradoxical breathing, a rapid respiratory rate and a lessened negative pressure in the pleural cavity with delayed reexpansion of the left lung. Regeneration of these structures takes approximately four weeks. Figure 2 illustrates the rotation and displacement of the pericardium to the right simulating the shadow of pericardial effusion. However, exploratory pericardial aspiration was negative, disproving the possibility of pericardial effusion. At this time there was an insufficient amount of fluid in the left pleural cavity to cause a shift of the mediastinum to the right. But approximately four weeks after operation, the chest wall stiffened and the symptoms of tachypnea and respiratory distress suddenly ceased. Roentgenographic studies showed the mediastinum returning to the normal position with an increased reexpansion of the left lung.

Suturing of the Heart Wound—Heart muscle is friable and merits gentleness in handling.¹⁴ Mamikonoff¹⁵ relates an unusual experience in suturing a lacerated heart. He used silk, and on both occasions the sutures cut through. After these failures he applied a flap of pleuropericardial septum over the opening thus effectively plugging the bleeding area.

Even though many surgeons have used catgut successfully for closure, the use of silk, nylon or cotton is

preferred. There is less local foreign body reaction and a smaller area of fibrotic tissue results. Of course the suture material should be as fine as is consistent with adequate tensile strength. Mamikonoff states that he used "thick silk sutures which cut through." This may account for the failure of his sutures to approximate the heart wound without cutting through the muscle edges.

If an artery or its branches are close to wounds, every effort should be made not to include the vessels in the sutures. In an ingenious manner of suturing, Beck¹⁶ describes a method for approximating wound edges without involving vessels. He refers to the case of Olm and Hughes¹¹ and shows diagrammatically how inclusion of the vessel in the sutures could have been avoided.

Drainage—Instances are mentioned in the literature wherein cardiac tamponade recurred following an apparently successful operation for a stab wound. To avoid such complications pleuropericardial drainage should be instituted. Since most patients also demonstrate a pleural wound, such drainage can be conveniently established. In the case reported here in addition to allowing drainage from the pericardial sac into the left pleural cavity the edge of the lung in the region of the lingula was loosely sutured to the anterior border of the pericardial opening. This provides a buffer between the heart and the chest wall and at the same time permits decompression of blood and clots from the pericardial sac.

External drainage is mentioned only by way of condemnation. Olm and Hughes¹¹ summarize the subject well with the following arguments:

- 1 Drains are irritating and increase the amount of pericardial effusion.
- 2 Drains invite infection.
- 3 Drains predispose to the introduction of air into the wound, causing "sucking" and all the other complications of an altered intrapleural pressure.
- 4 Drains increase the possibility of pericardial fibrosis with adhesions even though no infection is present.

Respiratory Complications—These are to be expected since the pleural cavity is entered in almost every case and the pericardium is intentionally drained into it. However, the use of the sulfonamide compounds locally and systemically can usually be relied on to combat such infections. In the case reported here several aspirations of the pleural space were necessary but no bacteria or pus cells were ever seen in the fluid. These simple aspirations of 150 to 300 cc of fluid were sufficient to relieve the mediastinal and pulmonary embarrassment of this boy.

About five weeks after his discharge the patient was brought back to the hospital where a diagnosis was made of an infiltrative process involving the lower half of the left lung field, accompanied by a small amount of fluid ascending the lateral chest wall. Such a recurrence of the pathologic condition can be accounted for by the fact that the lung and pleurae were exposed to trauma and external infection. The delayed reexpansion of a collapsed lung, even with low grade infection results in widespread formation of fibrous tissue and peribronchial infiltration. The bronchi in the involved area of the lung may become thickened and distorted and their lumens narrowed. They are apt to drain their secretions incompletely, thus making the cough reflex

12 Blalock, Alfred. Stab Wound of Heart. *Ann Surg* 93: 1276 (June) 1931.

13 Cutler, E. C. in Lewis, Dean. *Practice of Surgery*. Hagerstown, Md. W. F. Prior Company, 1930. Vol. 14, chapter 13.

14 Beckman, Fenwick. Stab Wounds of the Heart. *Arch Surg* 26: 510 (March) 1933.

15 Mamikonoff, Michael. Cardiorrhaphy in Wounds of the Heart. *Ann Surg* 97: 547 (April) 1933.

16 Beck, C. S. Further Observations on Stab Wounds of the Heart. *Ann Surg* 115: 698 (April) 1942.

ineffectual. This accumulation of bronchial secretions blocks the airways, causing areas of atelectasis distal to the obstruction. The end result is the formation of patches of consolidation of various sizes distributed throughout the lung.

As for the pleural reaction, the formation of fluid is to be expected in almost all openings into the pleural cavity, accompanied by the usual changes in negative pressure and collapse of the lung. Lacerations of lung tissue are accompanied by bronchopleural fistulas, and these may be sealed temporarily or permanently. If fistulas remain open, severe contamination of the pleural cavity may follow since bronchi of medium and large size harbor many aerobic and anaerobic organisms. In this event an operation for empyema may be necessary. One should bear in mind the possibility of a pressure pneumothorax, because deflation at the proper time may be necessary as a life saving measure.

SUMMARY

1 The stab wound of the heart in the case reported was through the entire anterior wall of the right ventricle.

2 Pericardial effusion was suggested by postoperative roentgenographic studies. In reality, the softened chest wall permitted the mediastinum to fall away from the precordium, thus simulating a widening pericardium.

3 Serial electrocardiograms demonstrated tracings typical of an infarction of the anterior wall. In six to seven weeks electrocardiographic evidence of myocardial damage disappeared.

4 A recurrence of pleuropulmonary infection after discharge from the hospital responded favorably to sulfonamide therapy.

30-64 Thirty-Seventh Street

Clinical Notes, Suggestions and New Instruments

ACUTE AGRANULOCYTOSIS DUE TO ADMINISTRATION OF SUCCINYL SULFATHIAZOLE

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Cases of acute agranulocytosis due to the administration of sulfanilamide,¹ sulfapyridine,² sulfathiazole³ and sulfadiazine⁴ have been reported. A review of the literature reveals no cases of acute agranulocytosis due to succinylsulfathiazole. Because of the importance this drug has assumed in the treatment of gastrointestinal disease,⁵ it is important to present this case of fatal agranulocytosis.

REPORT OF CASE

R M Y, a white youth aged 19, a factory inspector, was admitted to the department of dermatology and syphilology of the University Hospital on April 4, 1942 complaining of a nonpruritic cutaneous eruption of six months' duration. The family history and the past history of diseases were noncon-

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1 Long, Perrin H, Haviland, James W, Edwards Lydia B and Bliss, Eleanor A. The Toxic Manifestations of Sulfanilamide and Its Derivatives, J A M A 115 364-368 (Aug 3) 1940. Rinkoff Solomon S, and Spring, Maxwell. Toxic Depression of the Myeloid Elements Following Therapy with Sulfonamides. Report of 8 Cases, Ann Int Med 15 89-107 (July) 1941.

2 Dolgopol, V B, and Hobart H B. Granulocytopenia in Sulfapyridine Therapy, J A M A 113 1012-1017 (Sept 9) 1939. Long, Haviland, Edwards and Bliss¹. Rinkoff and Spring¹.

3 Kennedy, Putnam C, and Finland, Maxwell. Fatal Agranulocytosis from Sulfathiazole, J A M A 116 295-296 (Jan 25) 1941. Thompson, Lee. Agranulocytosis Due to Sulfathiazole. Northwest Med 41 133 (April) 1942.

(Footnotes continued in next column)

tributory. The physical examination revealed a temperature of 98.6 F, a pulse rate of 80, a respiratory rate of 20 and a blood pressure of 120/80. The remainder of the physical examination was essentially negative except for the skin, which showed a dermatitis on the scalp and face, in the axillas, about the genitalia and on the extremities. The laboratory studies revealed that the urine was normal, the Kahn reaction negative, the hemoglobin 89 per cent, the white blood cell count 12,700 and the blood type O. The chest film showed calcified hilar and parenchymal scars. There was no active pulmonary tuberculosis. Sigmoidoscopy revealed minimal proctitis and internal hemorrhoids. The patient responded well to local treatment.

On May 19 the patient was readmitted to the hospital because of a recurrence of the cutaneous lesions on the sites previously affected. On entrance the hemoglobin was 100 per cent and the white blood cells numbered 8,100. On July 2 he received a single injection of 30 million killed typhoid bacilli. On the following day he was started on sulfathiazole and sodium bicarbonate therapy. After three doses of 1 Gm of the sulfathiazole in forty-eight hours chilliness, malaise, dizziness and loss of appetite occurred. The sulfathiazole was stopped immediately, though it was felt that all the symptoms were due to the intravenous injection of killed typhoid bacilli.

Twenty-six days later (July 31) the patient was again started on sulfathiazole 1 Gm with sodium bicarbonate 0.6 Gm four times a day. Concomitantly an intravenous injection of 30 million killed typhoid bacilli was given. On the first day the patient had an emesis with chills and muscular pains followed by fever for six days. During this period he received 15 Gm of sulfathiazole. At first it was believed that the typhoid vaccine was the cause of these symptoms, but the duration of the febrile response was so long that sulfathiazole had to be considered its cause.

On September 9 the patient was readmitted with a recurrence of his original dermatitis. On admission the white blood cell count was 10,500 and the hemoglobin content was 95 per cent. The fasting blood sugar was 84 mg per hundred cubic centimeters. The urine was normal. Scrapings from the skin of the axillas, groin and ears grew *Monilia albicans* on cornmeal agar. A skin test with oidiomycin 0.1 cc of 1:100 was positive in twenty-four and forty-eight hours. On the basis of these findings and the chronicity of the dermatitis, a diagnosis of moniliasis was made.

On Feb 9, 1943 the patient was readmitted to the hospital for the fifth time. He now complained of the loss of 5 pounds (2.3 Kg), diarrhea and his original dermatitis. The skin test with oidiomycin 0.1 cc of a 1:100 dilution was again positive. It was felt that the patient had moniliasis of the gastrointestinal tract as well as of the epidermis, so he was placed on succinylsulfathiazole 3 Gm every six hours. After taking 15 Gm of the drug the patient felt flushed. When he had taken an additional 3 Gm there was a chill followed by nausea and vomiting. Food and all medication were refused for twenty-four hours because of stupor. A blood sulfathiazole determination⁶ was too low to be read. On the fifth day following the administration of the drug the patient again willingly took his food and medication. There were no further complaints or febrile responses until ten days later (February 27), when following the injection of 20 million killed typhoid bacilli the temperature rose to 100 F. On the following day headache, dizziness and nausea occurred. On the next day, seventy-two hours before his death, he complained of a sore throat, fever and difficulty in swallowing. He refused his

4 Curry John J. Acute Agranulocytosis Following Sulfadiazine, J A M A 119 1502-1503 (Aug 29) 1942. Levin, Emanuel, Bethell, Frank H. Fatal Granulocytopenia Developing During the Administration of Sulfadiazine, Univ Hosp Bull, Ann Arbor 8 30-32 (1942) 1942.

5 Smyth, Charley J, Gould, Sylvester E, and Finkelstein, Morris B. The Treatment of Acute Bacillary Dysentery (Flexner) with Sulfadiazine and Succinylsulfathiazole, Proc Cent Soc Clin Research 15 11 (1942). Poth, Edgar J. Succinylsulfathiazole J A M A 120 1202 (Sept 26) 1942. Poth and Knotts.

6 Marshall, E K Jr, and Litchfield, J I, Jr. The Determination of Sulfanilamide, Science 88 83, 1938.

food bath and succinylsulfathiazole, of which he had taken 159 Gm. A blood succinylsulfathiazole determination⁶ taken at this time was again too low to be read. Physical examination showed that the patient was seriously ill with a temperature of 104.5 F, a pulse rate of 120 and a respiratory rate of 20. The skin was dry and noncyanotic. There was some swelling of the right side of the neck. The throat was bright red with a few small superficial ulcerations. There was uvular and pharyngeal edema. In twelve hours the temperature was 105 F, pulse rate 120 and respiratory rate 28. The edema of the throat had increased so much that it became difficult for the patient to breathe or even swallow water. In the mouth and throat appeared a thick gray tenacious mucoid material which added to the patient's discomfort. An epinephrine spray (1:100) to the throat and aspiration of the mucus from the mouth and throat gave a minimal amount of comfort. Repeated blood counts revealed rapidly developing acute agranulocytosis.

The patient was given a total of 1,250 cc of fresh citrated whole blood by transfusion over a period of three days. At the same time he received a daily intramuscular injection of 5 cc of liver extract. Pentnucleotide was administered in the following schedule: first day one injection of 10 cc, second day three injections of 10 cc each, third day four injections of 10 cc each. The oxygen tent was tried but was discontinued after one hour because the patient could not tolerate it. He also received daily 2000 cc of isotonic solution of sodium chloride intravenously. Frequent warm saline mouth and throat irrigations were found to be helpful in easing the patient's general discomfort.

On the last evening the temperature was 106 F, the pulse rate 130 and the respiratory rate 30. Purpura and Cheyne-Stokes respiration developed. At 2:30 a.m. on March 4 the patient had a two minute convulsive seizure followed by cessation of respiration. Permission for autopsy was not secured.

COMMENT

Acute agranulocytosis was fatal to a youth who had received a total of 159 Gm of succinylsulfathiazole over a period of seventeen days. The patient had demonstrated reactions on two previous occasions while taking sulfathiazole and concomitantly receiving injections or killed typhoid bacilli. Though the first episode of fever might have been due to the injection of killed typhoid bacilli, the second febrile reaction was undoubtedly due to sulfathiazole. On the second day following the administration of succinylsulfathiazole a fever developed which persisted for four days. As succinylsulfathiazole is partially hydrolyzed to sulfathiazole,⁷ this febrile response no doubt was due to a sensitization to sulfathiazole, which sensitization manifested itself during the second course of administration of the drug. However, with continued administration of succinylsulfathiazole the temperature, pulse, respiratory rate and white blood cell count became normal, so it was believed that his intolerance to the drug had ceased. For eight days the patient was asymptomatic with a normal temperature and white blood cell count. His final febrile response began with the injection of killed typhoid bacilli. Acute agranulocytosis began when he had taken 159 Gm of succinylsulfathiazole and continued to termination in spite of treatment which had cured attacks of acute agranulocytosis in rats fed succinylsulfathiazole.⁸ Sensitivity has been shown to be present not only when there has been an interruption in the course of medication⁹ but also when there has been a prolonged administration of large doses of the drug.¹⁰ Both of these conditions were present in this case.

University Hospital

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10. Long, Haviland, Edwards and Bliss. *Rinkoff and Spring's* Curr.

INSUFFICIENCY OF ADRENAL CORTEX COMPLICATED BY HYPERTHYROIDISM

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The physiologic relationships of the thyroid and adrenal glands, studies of which were initiated by Marine and Baumann¹ and by Davis and Hastings² have been reviewed by Lerman³. There is considerable evidence that patients with hypofunction of the adrenal cortex may be thrown into a crisis by administration of thyroid⁴ that thyroxine produces enlargement of the adrenal cortex and that other and often antagonistic correlations exist between these endocrine organs.

The clinical association of hyperthyroidism and insufficiency of the adrenal cortex has been noted but rarely. With the possible exception of 1 or 3 cases reviewed by Etienne and Richard⁵ and a more probable example described by Plé and Fabregat,⁶ we have been unable to find any references to the proved coexistence of these two diseases. Three cases have been described with a previous history of thyrotoxicosis and the subsequent development of Addison's disease⁷ and 5 others have been reported with the clinical picture of a toxic goiter in which the diagnosis of hypoadrenalism was also made but with little justification and no confirmatory evidence⁸.

Because of the physiologic antagonisms as well as the rare clinical association it becomes of interest to report a case in which hyperthyroidism and hypoadrenalism were simultaneously present.

FIRST ADMISSION

History.—M. G., an unmarried Irish woman aged 26, entered the Presbyterian Hospital in October 1940 complaining chiefly of nausea, vomiting, weakness and loss of weight for nearly two years. Her father and mother both died of cancer of the gastrointestinal tract. Three brothers and one sister were living and in good health. There was no recognized exposure to tuberculosis or family history of thyroid disease. Bilateral ovarian cysts were removed in 1937 without subsequent disturbance of the menstrual function. Otherwise she had always been well.

Two years before admission she began to experience nausea after meals and decreased her food intake. She also had excessive flatulence and belching with an occasional dull midepigastric pain. She lost weight and strength progressively, her normal weight of 125 pounds (56.7 Kg.) falling to 90 pounds (41 Kg.). Six months before entry weakness was so pronounced that she was virtually confined to bed and almost fainted whenever she got up. The systolic blood pressure then was reported to be 65 mm. of mercury. For four months there had been increasing dirty yellow pigmentation of the face and extremities without any exposure to direct sunlight. Puvria was discovered by her physician about this time, although she had no urinary complaints. Six weeks before admission cough and pain developed in the right anterior part of the chest. She was presently admitted to another hospital where after three

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3. Lerman, Jacob. The Physiology of the Thyroid Gland. *J. A. M. A.* 117: 349-359 (Aug. 2) 1941.

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5. Means, J. D., Hertz, Saul and Lerman, Jacob. The Pituitary Type of Myxedema or Simmonds' Disease Masquerading as Myxedema. *Tr. A. Am. Physicians* 55: 32-53, 1940.

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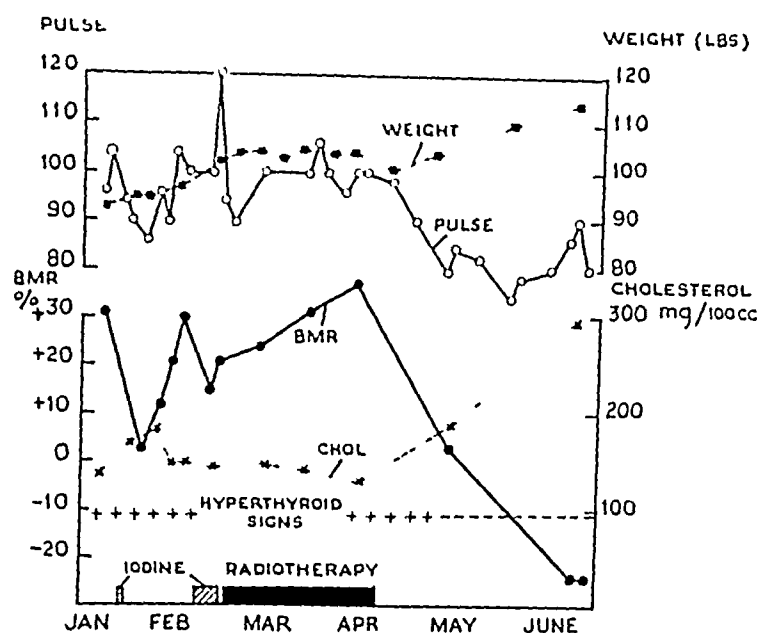
7. Plé, J. C. and Fabregat, A. Syndromes endocriniens pluriglandulaires. Hypertiroïdisme associé à une insuffisance suprarenale chronique. *Arch. urug. de med. cir. y especialid.* 1: 301-305 (Dec.) 1942.

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9. Chauffard, A. and Girod, L. Pathogenie thyro-surrenale du Basedowisme. *Rev. franç. d'endocrinol.* 3: 145-155 (June) 1925. Herman, Karl. Multiple Glandular Sclerosis. Addison's Disease and Basedon's Disease. *Endocrinology* 17: 30-42 (Jan. Feb.) 1933. Etienne and Richard.

days of vomiting she went into profound collapse, with unconsciousness, high fever and hypotension so extreme that the blood pressure could not be obtained. Vigorous therapy with adrenal cortex extract and infusions of saline solution and dextrose led to rapid improvement. Transfer to the Presbyterian Hospital was arranged for further observation.

Physical Examination—On admission the temperature was 99 F, pulse rate 100, respiratory rate 20 a minute and the blood pressure 95/65. She was fairly well developed but poorly nourished and appeared tired and chronically ill. There was no dyspnea, orthopnea, pallor, cyanosis, jaundice or edema. The skin of the head, neck and extremities showed moderate brown pigmentation, the mucous membranes of the mouth were not pigmented. The eyes, ears, nose and throat were normal. There was no generalized enlargement of the lymph nodes. The thyroid gland was easily palpable but did not appear enlarged. The lungs were resonant, a few fine rales were heard in the fifth right intercostal space posteriorly. The heart was not enlarged and had a regular rhythm; no murmurs were heard. The abdomen was soft and nontender; the liver, spleen and kidneys were not felt. Pelvic and rectal examinations gave negative results. The deep tendon reflexes were equal and active.



Patient's course during second admission to the hospital

Laboratory Data—Urinalysis showed a specific gravity of 1.017 and no dextrose, albumin or bile; the sediment contained occasional leukocytes. The red blood cell count was 4,810,000 per cubic millimeter, hemoglobin concentration 13.4 Gm per hundred cubic centimeters, and the white blood cell count 7,900 per cubic millimeter, with a differential count of neutrophils 55 per cent, lymphocytes 42 per cent, monocytes 2 per cent and eosinophils 1 per cent. The blood Kline test was negative. The erythrocyte sedimentation rate was 66 mm in the first hour. The basal metabolic rate was plus 19 per cent. Chemical analysis of the blood serum gave the following values per hundred cubic centimeters: protein 7.2 Gm, albumin 4.4 Gm, globulin 2.8 Gm, nonprotein nitrogen 26 mg, calcium 11.4 mg and cholesterol 197 mg. The fasting blood sugar was 75 mg per hundred cubic centimeters. The serum sodium measured 138.3 milliequivalents per liter and the serum potassium 4.4 milliequivalents. X-ray examination of the lungs showed peribronchial thickening in the left first interspace interpreted as healed or inactive tuberculosis and an irregular, sharply demarcated area of increased density in the lower part of the right upper lobe thought to represent an active tuberculous process. Films of the urinary tract demonstrated flecks of calcium over the upper poles of the kidneys in the position of the adrenals, and a few small flecks of calcium density projected through the right kidney shadow. A film of the heart taken at 2 meters showed it to be of normal size and configuration. Roentgenograms of the skull were not abnormal. Fasting gastric contents concentrated and then injected into a guinea pig did not produce tuberculosis in the test animal.

Course—The temperature ranged between 98.6 and 100 F. After three days on a regular diet without added salt and without injections of adrenal cortex extract she became very weak and began to vomit. The blood pressure then was 86/50, and the serum sodium concentration had fallen to 133 milliequivalents per liter. The injection of desoxycorticosterone acetate combined with intravenous infusions of saline and dextrose produced prompt and striking improvement in her condition, and the insufficiency of the adrenal cortex was thereafter well controlled by daily subcutaneous injections of desoxycorticosterone acetate plus the oral administration of enteric coated sodium chloride tablets. Because of the elevated basal metabolic rate (plus 19 per cent, plus 20 per cent) and gross twitchings of the arms and legs, the possibility of hyperthyroidism was considered. After ten days' treatment with sodium iodide (10 drops daily) the basal metabolic rate was plus 15 per cent and no subjective change was noted. She had no fine tremor and no objective signs of hyperthyroidism were observed. Repeated films of the chest showed no significant change in the lesion of the right upper lobe. After nine weeks she was transferred to a sanatorium.

SECOND ADMISSION

History—She remained in the sanatorium for a year. Tubercle bacilli were found in the sputum occasionally and were also present in the urine. She entered the Presbyterian Hospital again in January 1942 for reappraisal, feeling much improved over her state on the previous admission and without specific complaints. She had continued to take desoxycorticosterone acetate. Her appetite was excellent, although at times she vomited undigested food. The twitching and nervousness were much less than before.

Physical Examination—The arterial blood pressure was 108/60. She was well developed but rather thin, did not appear ill and was very restless. Pigmentation of the skin was not striking, but there were now several small areas of brown pigment on the right side of the tongue and on the buccal mucous membrane. There was slight symmetrical and diffuse enlargement of the thyroid gland. The eyes were bright and somewhat prominent, with a definite stare; there was some lid lag on downward gaze. Convergence was normal. The palms were warm and moist. There was an inconstant fine tremor of the outstretched hands. Resonance was diminished in the right interscapular region, but no rales were heard. The heart was normal. The abdomen was normal. The deep tendon reflexes were equal and active.

Laboratory Data—Urinalysis on admission showed a specific gravity of 1.019 and no dextrose, albumin or bile; the sediment contained 5 to 8 white blood cells per high power field (centrifuged specimen). A specimen of urine obtained by catheterization on January 10 showed albumin 1 plus; the sediment was loaded with white blood cells in clumps. Frequent urinalyses thereafter on routine specimens and on those secured by catheterization showed usually albumin 1 plus (although occasionally none was found) and white blood cells in the sediment varying from 5 to 50 per high power field. The red blood cell count was 3,970,000 per cubic millimeter, the hemoglobin concentration 12.3 Gm per hundred cubic centimeters and the white blood cell count 8,250, with a normal differential count. The erythrocyte sedimentation rate was 38 mm in the first hour. The guaiac test on the stool was negative. The blood Kline reaction was negative. Chemical examination of the blood serum on January 9 gave the following results: protein 6.2 Gm, albumin 3.7 Gm and globulin 2.5 Gm per hundred cubic centimeters and sodium 139.8 milliequivalents per liter. The blood nonprotein nitrogen was 30 mg and the fasting blood sugar 99 mg per hundred cubic centimeters. Roentgenograms of the chest showed little change from the previous admission. Films of the upper part of the abdomen showed the calcification in the region of the adrenals and the right kidney to be unchanged. Culture of the urine yielded *Staphylococcus albus*. Three twenty-four hour collections of urine on successive days were centrifuged separately; in two of the three specimens acid fast bacilli were demonstrated. A healthy guinea pig injected with a sample of the sediment from a twenty-four hour collection of urine failed to develop tuberculosis.

9 The desoxycorticosterone acetate used in the treatment of the patient was supplied by Dr. R. D. Shriner of Roche Organon, Inc., Nutley, N. J.

Course.—Five days after admission bilateral ureteral catheterization was done; no acid fast bacilli were found in the sediment of the urine obtained from either kidney. Following this procedure pain in the lower part of the abdomen, nausea and vomiting developed. The next day her temperature rose to 102.6 F. Because of the possibility that an Addisonian crisis might be impending, she was treated with an extra injection of 7 mg of desoxycorticosterone acetate in intravenous infusion of 1000 cc of 5 per cent dextrose in 0.85 per cent saline solution and the oral administration of 1 cc of compound solution of iodine and 2 Gm of salutarizine with prompt subsidence of fever and disappearance of the symptoms. In the ten days after this single dose of iodine her basal metabolic rate fell from plus 31 per cent to plus 3 per cent and the serum cholesterol rose from 138 mg to 182 mg per hundred cubic centimeters. After three weeks these values had returned to their former levels. She now received a dose of 1 cc of compound solution of iodine daily for ten days but no improvement in the clinical signs of hyperthyroidism was observed and the basal metabolic rate and serum cholesterol concentration failed to change toward the normal levels as they had before. In the face of definite clinical and laboratory evidence of thyroid overactivity treatment to diminish thyroid function was indicated. Roentgen therapy was considered to be preferable to partial thyroidectomy as the complicating insufficiency of the adrenal cortex materially increased the hazards incident to surgery. Accordingly she received a course of eight x-ray treatments to the anterior portion of the neck over the thyroid gland at the rate of 100 roentgens a treatment (150 kilovolts 4 milliamperes tube-skin distance 16 inches filter 3 mm aluminum). The dosage at the final treatment was double that of the others to make a total of 900 roentgens. At the end of the course of roentgen therapy she was unimproved but three weeks later there had occurred striking diminution in tremor, nervousness and stare and the basal metabolic rate was then plus 3 per cent. Two months after treatment was completed clinical improvement was even more striking; the basal metabolic rate was minus 24 per cent and she had gained 13 pounds (6 kg).

Throughout her hospital stay the insufficiency of the adrenal cortex was controlled by the daily subcutaneous injection of 4 mg of desoxycorticosterone acetate and the oral administration of 3 Gm of sodium chloride in enteric coated tablets. The arterial blood pressure and the serum sodium concentration remained at all times within normal limits. An x-ray film of the chest made on June 12 showed no appreciable change in the pulmonary lesion during her hospital stay. When she was allowed out of bed several weeks before discharge she complained of lumbar backache. Careful x-ray studies of the spine failed to demonstrate any lesions suspected of being tuberculous, and since the pain subsided spontaneously a complicating Pott's disease seemed unlikely. After five months in the Presbyterian Hospital she was discharged to return to the sanatorium for further care of the pulmonary tuberculosis.

COMMENT

There was no doubt that this patient had Addison's disease probably due to tuberculosis. The weakness, gastrointestinal symptoms, hypotension, pigmentation, calcification in the adrenal areas, systemic reaction and fall in the concentration of sodium in the serum following the withdrawal of salt from the diet were characteristic. Furthermore the subsequent dramatic response to therapy with desoxycorticosterone acetate and sodium chloride substantiated the diagnosis of insufficiency of the adrenal cortex with certainty.

At first the added presence of hyperthyroidism was merely suspected. However the appearance on the second admission of a diffusely enlarged thyroid, nervousness, stare and lid lag, tremor and hot moist skin together with an elevated basal metabolic rate on repeated determinations and a cholesterol level below normal made the clinical picture complete. Added confirmations were the rapid response of the basal metabolic rate and cholesterol after a single dose of iodine and the complete disappearance of all clinical and laboratory manifestations of hyperthyroidism following roentgen therapy.

It is of interest that this patient with established hyperthyroidism and hypoadrenalism, was able to withstand the

possible consequences of these combined disorders. It is of particular interest that hypoglycemic reactions, which might be anticipated on theoretical grounds did not appear. A prominent feature of her course was the subjective improvement in strength and sense of well being that followed irradiation of the thyroid, almost as pronounced as the clinical response after therapy had been instituted to alleviate the adrenal insufficiency induced by the withdrawal of salt.

A SERIOUS COMPLICATION OF CAUDAL ANESTHESIA

MURICE J. SMALL, M.D., PARSONS, W. VA.

Because of the widespread interest and enthusiasm now being shown in caudal anesthesia for obstetrics this case is reported as a warning of its most serious complication, namely high spinal anesthesia even though a technique was used which was designed expressly to avoid this complication.

A secundigravida, aged 23, whose previous medical and obstetric history was noncontributory except for a syphilitic infection acquired five years previously but adequately treated and with negative serologic and spinal fluid findings at present was admitted in active labor with the cervix three fingerbreadths dilated and the head in midpelvis the presentation being left anterior oblique. The membranes were intact. Blood pressure was 120/80. The general medical examination revealed no abnormalities. Caudal anesthesia was begun immediately the technique recommended by Hingson and Edwards¹ being used with one modification designed to minimize the danger of depositing the metycamine solution in the subarachnoid space. This procedure was devised at the obstetric division of the Sinai Hospital, Baltimore, and it utilizes the ordinary intravenous drip arrangement for a slow continuous flow of anesthetic solution instead of the injection of large quantities of solution at intervals. It is the contention of the originators of this modification that when the bottle containing the anesthetic solution is placed about 4 or 5 feet above the level of the patient the rate of flow of the solution will be between 60 and 100 drops per minute if the needle is in the caudal space but 150 drops or more a minute if it is in the subarachnoid space. They maintain further that a test dose of 8 cc injected as recommended by Hingson and Edwards¹ if it is in the subarachnoid space would cause serious and alarming reactions.

With this technique and a rate of flow of metycamine solution of 60 drops per minute with no pinch clamp applied to the tubing excellent caudal anesthesia was obtained in twenty minutes. My patient made rapid progress and at the end of one hour was fully dilated, the membranes were ruptured and the head was just on the perineum. The patient was smiling, talkative and cooperative. Rather suddenly she appeared to become drowsy, closed her eyes, rolled her head from side to side, gave several gasps and became apneic and rapidly cyanotic. Her teeth were tightly clenched, and it was with considerable difficulty that her jaw was pried open and a mouth gag inserted. Heart sounds were rapid and barely audible. The blood pressure could not be obtained. The needle was immediately withdrawn from its supposed position in the caudal space but it was noted before doing so that the rate of flow had not accelerated; in fact it was only about 50 drops per minute. One hundred per cent oxygen was given and nikethamide injected intravenously. Artificial respiration was applied. After about three minutes the patient began to breathe and the cyanosis began to clear. The pulse became stronger and slower. The baby was extracted by forceps while resuscitative measures were being applied to the mother and was normal in every respect, crying immediately after delivery. The patient did not regain consciousness to the point at which she was cooperative for half an hour and when tested at this time she displayed a complete sensory anesthesia extending as high as the lower axillary line. There was complete motor loss of the extremities. From this point on her convalescence was exactly like that of any other patient receiving a spinal anesthetic.

From the Tucker County Hospital.

1. Edwards, W. C. and Hingson, R. A. Continuous Caudal Anesthesia in Obstetrics. *Am J Surg* 57: 759-64 (Sept.) 1942.
2. Personal instruction was given by Dr. Nathan Block, resident in obstetrics, Sinai Hospital, Baltimore.

The total amount of metycaine solution used was 90 cc over a period of about one and one-half hours. Since the rate of flow was slow throughout this procedure, even though it came from a reservoir bottle at a level of 5 feet above the patient, with unobstructed outflow, the question arises as to whether it is possible for the anesthetic solution to diffuse into the subarachnoid space, even though the needle is properly placed in the caudal canal.

This case is reported as a note of warning to the many physicians who are now employing caudal anesthesia in obstetrics. I wish to stress the importance of having a patient receiving such anesthesia move her toes frequently, since this is one of the first functions to be lost during spinal anesthesia.

Special Article

REPORT OF THE COMMITTEE ON HEALTH PROGRAMS

OF THE FORTY-FIRST ANNUAL CONFERENCE OF
THE U. S. PUBLIC HEALTH SERVICE WITH
THE STATE AND TERRITORIAL
HEALTH OFFICERS

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Since the beginning of the national defense program, the deficiencies in physical fitness of our young men and women have been one of its most outstanding and discouraging developments. We wish to emphasize that it will remain discouraging so long as we fail to develop a program which will build up and maintain physical fitness in fathers and mothers, in infants and school children in youths of both sexes, in our productive adult population and in our older people. There are no short cuts to improving the physical fitness of a people. Improvement in this situation can be had only by a carefully planned, long-range program for the purpose of providing (1) wholesome physical environment, (2) adequate nutrition, (3) modern medical and dental services available to the people in response to their needs, (4) control of communicable disease, (5) elimination of hereditary defects, (6) sound mental hygiene and (7) effective industrial health procedures.

Many forces, social and economic as well as medical and scientific, must combine to make such a program possible. While its effect can be observed and measured only with the passing of decades, this affords us no excuse for delay in inaugurating practicable plans which would be acceptable to our people and which would secure their complete understanding and cooperation.

The medical profession of this country, including its public health agencies, has reason to be proud of its accomplishments, which are reflected in our morbidity and mortality rates. As great as these accomplishments have been, however, they afford no excuse for blindness as to our present needs or delay in starting to satisfy them. Experience in preceding years and in former wars should make physicians and health officers realize that in many of our congested industrial and war areas we are face to face with health hazards of great potentiality. These hazards bear heavily on our minds in view of our depleted resources in manpower. All states and localities have contributed many of their best qualified physicians, including health officers, engineers, nurses, technicians and educators, to the armed forces

Today, because of this shortage, too many of our health departments have little more than skeletal organizations. Further depletion of trained personnel will be disastrous. All health officers should make every effort to establish the essentiality of each key person in their departments and of each essential physician in their jurisdiction. There is no question that medical care and public health services have justified their existence in peacetime. There is even less question that they are doubly necessary in time of war, when both endemic and epidemic diseases threaten the maximal labor productivity which is demanded of all workers. The shortage of trained public health personnel makes it incumbent upon each health officer to begin planning at once to circumvent the public dangers which confront his people. Such planning may be aimed at (1) recruitment and training of professional personnel for public health work, (2) recruiting and training of lay personnel for subprofessional aides, (3) reorganizing health jurisdictions wherever it is possible to improve efficiency and equalize distribution of services so as to demand less strain on national, state and local budgets, (4) elimination of services when they are merely traditional and (5) distributing personnel in critical areas, especially in extracantonment zones and in war industrial areas, including always farming areas and food processing industries. Health officers must be confronted with and feel great responsibility about the problem of shortage of practicing physicians in many areas. The Surgeon General of the United States Public Health Service is to be congratulated on having participated with the Procurement and Assignment Service of the War Manpower Commission and the American Medical Association in developing between these agencies a joint approach to the solution of this problem. State health officers should realize that when this program is activated by the Congress with an appropriation, it will be necessary for them to follow through with official requests to the Surgeon General for personnel to be detailed to those areas where it is evident that need exists. It is feared that the problem of redistribution of physicians and dentists, already important, will become increasingly so. It will probably become so acute as to require far more drastic action than has been felt necessary up to the present time.

The shortage or absence of hospital services in many jurisdictions is rapidly increasing the number of persons requiring home nursing care. It may well be that this will make it necessary for state and local health officers to consider the extension of old and the establishment of new bedside or visiting nursing services in many communities. The shortage of registered nurses is developing as rapidly as that of physicians, and a visiting nursing service can frequently be handled during such an emergency most economically if the visiting nursing work is a part of the regular public health program and under the general direction of the local health officer.

We view with considerable alarm the announced plans of the armed forces to take over the physically fit outputs of the medical schools of this country in order to assure to the armed forces a continuing flow of young physicians. It is apparent that it is impossible for our people at home to be served over a very long period by the older physicians who have been kept at home. When it is realized that the portion of each graduating class which will be available for the civilian population will replace only one fourth of those who die or become incapacitated, this procedure becomes

that must receive serious attention from interested civilian and professional groups

We urge first, that the matter of assuring adequate medical facilities, supplies and equipment for civilians be immediately surveyed, so that the people may be assured that adequate provision will be made for these needs and second, that, having in mind the necessary redistribution of population following the war, a study be inaugurated in each state and community as to the needs for (a) medical dental nursing and other professional personnel and (b) facilities for making the services of such personnel of real value to the people they will serve, these service facilities to include additions to existing hospitals, health centers, clinics and offices. In such a survey the medical dental and nursing organizations should be fully represented.

In the distribution of physicians, both now and after the war it is essential that there be agreement as to principles and procedures among the American Medical Association, the Public Health Service, the Children's Bureau and state medical and health organizations. Such an agreement can be brought about by a meeting of minds under the auspices of the Procurement and Assignment Service and the Health and Medical Committees serving in an advisory capacity to the administrators of the Federal Security Agency. It is the considered judgment of the State and Territorial Health Authorities that adequate scientific medical care and health protection for all the people is a necessity. With statesmanlike leadership on the part of those who represent the people whose needs are involved, and the professions who are the only ones that can supply these needs, the whole suggestion of regimentation or socialization of medicine can and should be definitely and completely placed in the limbo of utopian and impracticable schemes. The freedom of the American people to choose their own physicians should be safeguarded as one of the essentials of free life.

During the present war emergency, in view of the increasing shortage of physicians, dentists and nurses in the important farming and industrial areas we approve the principle that the location of physicians within a given governmental unit should be the initial responsibility of the county or township, under the leadership of the county medical society and the local health officer. When these cannot solve their local problem it should be referred to the state. The state medical association, the State Procurement and Assignment Service and the state health organization should make by joint action every possible endeavor to provide for the necessary relocation. In instances in which this is impossible and we anticipate that there will be an increasing number of them, necessary legislation should be sought so that the states can call on the Public Health Service for such federal assistance as may be found imperative. Sometimes the solution will be found by so increasing facilities that they will invite the relocation of physicians. In other instances it will be necessary to provide temporary financial assistance to cover the expenses of the removal and maintenance of the physician, dentist or nurse until he or she becomes self sustaining. In some critical sections, over varying periods of time a considerable proportion of all the expenses of medical and health care will necessarily have to be borne by the federal government. In certain other instances during the emergency, and we trust they will be rare, the whole medical care and public health program will have to be rendered by officers of the service during a long enough period, with a sufficiently con-

structive plan, to enable the population of such localities to resume control of their own health and medical personnel under traditional standards. All investigations and all plans should be made by the Procurement and Assignment Service of the War Manpower Commission, the Public Health Service and the Children's Bureau, representing the federal government, and by local state and national medical organizations, representing the profession, and by county and state health organizations, representing the people.

We wish especially to emphasize the importance of an intensified program for the control of tuberculosis. The plan of providing for custodial care in sanatoriums of infectious cases requiring quarantine to prevent the spread of the disease should be continued. It is of the utmost importance that hospitals for the care of early cases of tuberculosis be provided wherever they are necessary. Confronted by the present demand for manpower such hospitals, with their necessary personnel, would mean that thousands of our young people can be restored to economic usefulness by prompt treatment which we cannot afford to neglect. In this connection, both the medical profession and the public should bear in mind that procedures for the finding of early minimal cases have been so simplified and perfected and the effectiveness of collapse therapy and other surgical procedures have been so successfully improved that the average treatment period in tuberculosis hospitals has been reduced from approximately two years in 1935 to six months or less at the present time.

Many public and private health services are limited because of shortage of professional personnel. The need for some of these services can be reduced through health education of the people in urban and farm homes and within industrial and war plants. Health education the purpose of which is to secure the participation of an informed and participating public becomes, therefore, the most realistic approach for fulfilling the needs of our people. The impelling motive for sustained health—patriotism, winning the war, sufficient income for self support, increased usefulness and productivity—are present now as never before, and this unusual necessity for and desirability of health education should be planned and carried on intensively at the local level. It must reach every one in the community, from the poorest to the richest. It must enlist the maximal understanding participation of the individuals who compose a community.

To be successful in health education, more attention should be given

- 1 To the employment of personnel skilled in educational techniques and informed of the facts of preventive medicine. Such personnel in local health departments can be secured because personnel capable of performing this task can be found among those not essential to the military forces.

- 2 To the provision of local health department budgets for the purchase of health education materials.

- 3 To the integration of health education with the whole plan of public education, through those responsible for primary and higher education.

As programs advance, the need for trained health educators to give leadership in this field will become acute. Health officials should anticipate this need by providing training now to possible leaders.

The paramount importance of a local, state and national nutrition program has been definitely demonstrated. With twenty federal agencies having inchoate and duplicating responsibilities for a share in the devel-

opment of this program, it is recommended that the primary responsibility for its development be placed in the Department of Agriculture. There are already a farm agent and a home economic expert in almost every county. Under the existing confusion at the federal level, they are compelled to spend so much of their time conferring with one another and somebody else that the results of the really great knowledge they have too rarely gets into the pots and pans or on the tables or in the mouths of the people. All state health departments should have those specially qualified in the medical aspect of this problem to consult with and sometimes initiate out of their routine those who should be made solely responsible for an adequate feeding program for the nation. We have an abundance of food. We can multiply this abundance indefinitely, but nothing will be accomplished unless this food is distributed so that the people have access to it and are taught how to select, cook and serve those things necessary for the preservation of healthy life.

The war has brought into bold relief the paramount importance of industrial hygiene. In the development of a health program for each state, we recommend that careful consideration should be given to the following suggestions:

The Industrial Hygiene Bureau should survey and evaluate industrial health hazards in all plants.

Potential exposures to toxic materials should be analyzed quantitatively to determine actual risk to the health of workers.

Engineering services should be extended to all plants having hazards in order to secure control.

Physicians should be stimulated to report all occupational diseases in order that investigation of the working environment may be made and corrective measures taken.

The bureau should sponsor more and better plant medical departments and augmented nursing service within industry.

The bureau should make available, through cooperation with other agencies, undergraduate and postgraduate study of industrial medicine.

It should work in the closest harmony and spirit of cooperation with the committees on industrial health of the national, state and county medical societies.

It should study occupational disease incidence and medical absenteeism recording and reporting and be able to make recommendations to industrial management.

The bureau should be available at all times for consultative service to private physicians on occupational diseases.

It should sponsor industrial programs on nutrition, venereal disease, dental services and the rehabilitation of sick or injured workmen.

Special plant studies should be made on sanitation, illumination, heat and humidity, noise, shock and other causes of fatigue and recommendations made to management.

A continuous and never ending educational program should be inaugurated to labor, to management and to the public to correct bad health, preserve good health and maintain industrial production, happiness and good will.

From the address of Dr. G. W. Cox, the distinguished state health officer of Texas, on Environmental Sanitation, we make the following additions to the public health program:

Since this nation will probably be confronted with a serious postwar unemployment and health problem, it appears most highly desirable that we now plan a definite health program along environmental lines so fundamentally sound and attractive that it will be acceptable to individuals, communities, states and the nation as a whole. Therefore, in conclusion, the writer would like to recommend that plans and estimates be prepared now which can be utilized the moment labor supply

becomes available and before the health problems become acute. These plans and estimates should cover at least in part the following projects:

1 Local health centers with laboratory and equipment to house local health personnel so as to enable sanitation forces to function at their maximum efficiency.

2 Plans for water supplies and treatment where needed.

3 Sewerage system and treatment works where needed.

4 Municipal or cooperative abattoirs.

5 Municipal or cooperative oyster shucking and shellfish picking establishments.

6 Municipal or cooperative canning or food processing plants.

7 The recruitment and training of more sanitation personnel to carry forward sanitary work not only at home but in our sister republics to the south and in occupied countries (as a matter of fact, on a worldwide basis).

8 The planning of drainage systems where such drainage will minimize the mosquito borne disease problem.

9 The planning of a mutual aid program in rodent control in rat stoppage of buildings.

10 The planning of a cooperative program on garbage disposal.

11 The planning for the elimination of slum areas and making available adequate housing for the population.

12 The planning of a program which will provide adequate lighting, heating and ventilation facilities in public buildings but more especially in our schools.

13 An advisory program that would be helpful to industries in the elimination of industrial hazards.

14 Promulgation of plans which will insure our farm population safe living conditions patterned somewhat after the Farm Security Administration program which provided aid in the correction of farm water supplies, waste disposal system, screening and the like.

15 Setting up short training schools for food handlers, water and sewage plant operators as well as swimming pool operators, operators of food processing plants such as pasteurization plants and hygienists for industrial plants.

16 The initiation of immediate steps toward securing an appropriation to the Public Health Service of necessary funds, in lieu of Lanham Act funds, to inaugurate and carry out a direct emergency program of community sanitation, as has already been done in the case of malaria control.

From the address of the president, Dr. Carl V. Reynolds, the state health officer of North Carolina, we recommend for the consideration of the United States Public Health Service and of each state health department the following suggestions in regard to mental health:

The incidence of mental illness constitutes a challenge which should stimulate us to better and wider application of our increased and increasing knowledge in this field. Psychiatry has now developed to the point where manifestations of mental disturbance can be detected in their incipience and so treated as to prevent the condition from becoming permanent. We are devoting too much effort to custodial care and too little to preventive measures.

Psychosis, in its broad interpretation, is a serious menace to our economic and social order. Inmates of our mental hospitals—state, federal, local and private—aggregate more than half a million. In 1940 first admissions to these hospitals totaled upward of 100,000 and these admissions are increasing year by year.

Our immediate approach to the problem should be to treat, first, patients without psychoses, mental deficiency, alcoholism, drug addiction and personality disorders, and, then, those with psychoses, dementia paralytica and the like. Solution of the problem demands sound organization, functioning intelligently and conscientiously.

To this end, the following recommendations are offered

1 Community surveys of the prevalence of persons with psychoses, the surveys to include study of all hospital records in the community selected

2 Community psychiatric service through mental hygiene clinics, throughout the country. Early diagnosis is the key to success. The patient's environment is the rational place to start correctional measures

3 Rehabilitation of the psychotic with and without psychoses, with emphasis on those without psychoses

4 Elimination of the overlapping of agencies in the mental social and physical fields. Medical agencies should direct, with the social and physical agencies cooperating under medical direction

5 Better distribution of environmental social and medical care with individual attention to the psychotic

6 More attention to etiology and prevention and less to custodial care and cure

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

VIOFORM (See New and Nonofficial Remedies 1942 p 90)

The following additional dosage form has been accepted
CIBA PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.

Vioform Vaginal Inserts Each insert contains viotorm 250 mg lactic acid 25 mg boric acid 100 mg and diluent to make 2 Gm

RIBOFLAVIN (See New and Nonofficial Remedies 1942 p 559)

The following additional dosage forms have been accepted
ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Capsules Riboflavin 5 mg

Tablets Riboflavin 5 mg

POISON IVY EXTRACT (See New and Nonofficial Remedies 1942 p 20)

The following preparations have been accepted
ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Poison Ivy Extract Packages of two 1 cc ampoules. Each cubic centimeter contains 45 mg of deoiled oily resin in a mixture of sweet almond and peanut oils.

Fresh leaves of *Rhus toxicodendron* are extracted with methanol. The solvent is removed in vacuo. The residue is dissolved in isopentane and decolorized by agitation with magnesium trisilicate. The solvent is removed in vacuo and the residue is dissolved in a sterile mixture of sweet almond and peanut oils containing chlorobutanol so that the finished solution contains 45 mg of the residue per cubic centimeter and 0.5 per cent W/V chlorobutanol.

PITMAN-MOORE COMPANY, INDIANAPOLIS

Poison Ivy Extract with Sterile Diluent 1 cc vial marketed in a package also containing three 0.9 cc vials of sterile diluent consisting of a sterile isotonic salt solution containing procaine hydrochloride 0.5 per cent and chlorobutanol 0.4 per cent.

Fresh leaves of *Rhus toxicodendron* dried at temperatures not exceeding 60°C and sieved to remove stems and leaf midribs are macerated with absolute ethyl alcohol, using 20 cc of alcohol for each gram of dried leaves. The extract is filtered through paper then diluted to five times its original volume by adding absolute ethyl alcohol.

TETANUS TOXOID (See THE JOURNAL, June 12, 1943, p 441)

The following dosage form has been accepted
E. R. SQUIBB & SONS, NEW YORK

Tetanus Toxoid 1 cc, 3 cc and 30 cc rubber diaphragm capped vials

DIGITALIS (See New and Nonofficial Remedies, 1942, p 265)

The following additional dosage form has been accepted

SHARP & DOHME INC., PHILADELPHIA

Tablets Digitalis 0.1 Gm (1½ grains) (1 U S P unit)

SODIUM MORRHUATE (See New and Nonofficial Remedies 1942 p 290)

The following additional dosage form has been accepted

BURROUGHS WELLCOME & CO., INC., NEW YORK

Hypoloid Sodium Morrhuate Injection 5% 25 cc rubber capped bottle. Each cubic centimeter contains sodium morrhuate 0.05 Gm and 0.5 per cent of phenol as a preservative.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies 1942 p 555)

The following additional dosage form has been accepted

DRUG PRODUCTS COMPANY, INC., LONG ISLAND CITY, N. Y.

Pulvoids Thiamine Hydrochloride 3 mg

CAFFEINE AND SODIUM BENZOATE (See New and Nonofficial Remedies 1942 p 294)

The following dosage forms have been accepted

BURROUGHS WELLCOME & CO., INC., NEW YORK

Hypoloid Caffeine and Sodium Benzoate Injection 0.5 Gm (7½ grains) in 2 cc

Hypoloid Caffeine and Sodium Benzoate Injection 0.25 Gm (3¾ grains) in 1 cc

THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO

Sterilized Solution Caffeine with Sodium Benzoate 25% 15 cc rubber stoppered vials. Each cubic centimeter contains 0.25 Gm (380 grains) caffeine with sodium benzoate, chlorobutanol 0.5 per cent added as a preservative.

Council on Foods and Nutrition

ACCEPTED FOODS

THE FOLLOWING ADDITIONAL FOODS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO ACCEPTED FOODS.

OFFICE OF THE COUNCIL

PREPARATIONS USED IN THE FEEDING OF INFANTS (See Accepted Foods, 1939, p 156)

Nestle's Milk Products Inc. New York

DEXTROGEN whole cow's milk evaporated and modified by the addition of dextrins and maltose, contains whole milk solids, dextrins and maltose disodium phosphate and ferric ammonium citrate.

Analysis (submitted by manufacturer)—Water 68.6% ash 1.2% butter fat 6.3% protein (N × 6.38) 5.5% total carbohydrates (by difference) 18.4% calcium 0.2% phosphorus 0.2% iron 0.0015%

Calories—1.54 per gram and 43.6 per avoirdupois ounce

Vitamins—The firm claims the following values per avoirdupois ounce of Dextrogen

115 U S P units of vitamin A

0.033 mg of vitamin B₁ (thiamine)

0.35 mg of vitamin C (ascorbic acid)

Mead Johnson & Company Evansville

PABENA a Pabulum like preparation of a single grain product contains 85 per cent oatmeal malt syrup whey powder bonemeal sodium chloride and yeast

Analysis (submitted by manufacturer)—Carbohydrate (by difference) 69.8% protein 14.0% moisture 8.0% minerals (ash) 4.8% fat (ether extract) 2.0% crude fiber 1.4% calcium 0.80% phosphorus 0.74% iron 0.03% copper 0.001%

Calories—3.5 per gram 100 per ounce

Vitamins—The firm has supplied evidence that this product furnishes 0.3 mg of thiamine per ounce

H. J. Heinz Company Pittsburgh

HEINZ STRAINED APPLESAUCE—SUGAR ADDED

Analysis (submitted by manufacturer)—Total solids 16.2% total sugar as sucrose 12.8% reducing sugar as invert 8.9% acidity as citric 0.38% protein (N × 6.25) 0.20% fat (ether extract) 0.03% crude fiber 0.7% ash 0.2% total carbohydrates other than crude fiber (by difference) 14.7% calcium 44.0 mg per kilogram phosphorus 32.0 mg per kilogram iron 1.5 mg per kilogram copper 1.7 mg per kilogram

Calories—0.5 per gram 14 per ounce

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SATURDAY, JULY 3, 1943

EXPERIMENTAL SELECTIVE NECROSIS OF THE ISLANDS OF LANGERHANS

Dunn, Sheehan and McLetchie¹ have recently recorded the discovery that certain chemical substances can cause a sharply selective necrosis of the islands of Langerhans in the pancreas, with characteristic physiologic effects and symptoms. The exocrine parenchyma of the pancreas is left untouched. This remarkable effect was observed first in the course of experiments on the production of certain renal lesions by styryl-quinoline, a synthetic compound foreign to metabolism, and by alloxan, a component of the uric acid molecule.

The study of the effect of styryl-quinoline is limited to the observation that it can cause necrosis of the islands on intraperitoneal injection into rabbits. The action of alloxan on intravenous injection in rabbits has also been studied in detail. A single intravenous dose of 300 mg per kilogram in an adult rabbit in average state of health and nutrition was found quite certainly to cause extensive necrosis of the islands with characteristic symptoms.

The bodily temperature fell rapidly. The blood sugar, initially 100 to 140 mg per hundred cubic centimeters, increased considerably for one to two hours and then fell to 100, 50 or even 30 mg. As a rule death resulted in twelve to forty-eight hours with subnormal temperature and extreme hypoglycemia pointing to overproduction of insulin. In the albino rat a lesion similar to that in the rabbit has been produced by the subcutaneous injection of alloxan and by styryl-quinoline. The rabbit and the rat are the only animals mentioned in the present report.

The principal morphologic effect in the experiments on rabbits has been a typical coagulative necrosis in the islands of Langerhans and, as stated, without any

changes in the acinar tissue of the pancreas or endocrine glands elsewhere, except in some cases congestion with small hemorrhages in the adrenal cortex and the thymus, and "minor cytological changes in the thyroid." In many of the rabbits the islands of Langerhans were all affected, at least in the central part, with only a ring or a crescent of normal cells at the periphery. The kidneys showed an early tubular nephritis.

Chemical substances have been found which cause such precise changes in the pancreas as to establish that its function with respect to sugar is limited to the islands of Langerhans. To blot out the endocrine elements of the pancreas without injury to the acinar parenchyma is a most significant step in advance for the study of fundamental problems of diabetes.

How is this necrotic lesion produced? Are the cells of the islands stimulated? Can acute necrosis of the islands have any significance for human diabetes? These questions are discussed briefly by the Glasgow investigators. They suggest that the necrosis they have described may be the effect of overstimulation of the islands, the cells dying from "overstrain." The extreme terminal hypoglycemia seems to indicate that, for a time at least, the production of insulin was stimulated. This possibility at once raises the question whether eventually harmless stimulants of island function may not be found which will be of value in the treatment of certain forms or stages of human diabetes.

In human diabetes the lesion of the islands as usually seen is of a chronic, quiescent nature. The cause and mechanism of this lesion are unknown. Is it not possible that it may concern the late or final stages of a process initiated by chemical action on the islands, more or less like that induced by alloxan in rabbits and rats? Alloxan is a natural constituent of the body, it exists in uric acid. A main source of endogenous uric acid is voluntary muscle, which is also the greatest consumer of sugar. This consideration led the Glasgow investigators to ask whether alloxan or a purine which contains it may not be a natural hormone of muscle that regulates and stimulates the activity of the islands of Langerhans.

Considerations like the foregoing all indicate the need of continued and new research in various directions. On this point, the Glasgow investigators state "so far we can say nothing about the possibility of maintaining animals alive after necrosis of the islands, nor have we obtained chronic lesions by any form of prolonged treatment." The results of new studies on chemical necrosis in the islands under varying conditions in different species of animals will be awaited with great interest.

¹ Dunn, Shaw J., Sheehan, H. L., and McLetchie, N. G. B. Necrosis of Islets of Langerhans Produced Experimentally, *Lancet* 1: 484 (April 17) 1943.

HEREDITY OF CANCER IN MAN

Students of the natural history of cancer in man were early impressed by the possibility that a hereditary factor might exist in its causation. The occurrence of numerous cancers, often of rare types, in certain families sometimes called cancer families, the similarities in type and in time of occurrence of tumors in identical or monozygotic twins, the racial peculiarities in susceptibility and resistance to some kinds of cancer and the tendency for some persons to develop more than one primary tumor, seen especially in those who had been cured of one cancer, were suggestive of hereditary influence.

Further investigation was made largely by geneticists who entered the field in the first decade of the present century. Their studies were almost entirely on laboratory animals, especially mice. Large, long range research projects, some of which are still under way, were begun by Tyzzer, Lathrop, Little, Slive, Strong and others. It is impossible to summarize adequately the results of the important studies, but a few general remarks can be made. While in mice a hereditary factor is present in many types of tumor, this factor is neither qualitatively nor quantitatively the same for all types of cancer. A genetic formula which would explain the occurrence of all cancers in animals has not been found. Furthermore, there appear to be species differences in the importance of the hereditary factor. While these studies have helped to define the problems of the role of heredity in human cancer, they have not solved them. They should, however, not be discontinued for that reason.

In contrast to the great effort devoted to the study of cancer in laboratory animals, the study of the heredity of human cancer has lagged, at least in the United States. Large scale long range investigations have not been reported here comparable to those of Waaler in Norway and Wassink in the Netherlands. The evidence which has accumulated indicates that the importance of hereditary factors is probably different for each type of human cancer, as in mice. Human tumors can be divided into three classes on the basis of our present knowledge in this respect: (1) a group in which a strong hereditary factor is unquestionably present, (2) those in which a hereditary factor is possibly but not surely important and (3) a group in which there is little or no suggestion of a hereditary factor. In the latter two groups a hereditary factor has not been demonstrated, but neither has it been excluded. Retinoblastoma and multiple neurofibromatosis are examples of the first group. All the more common forms of human cancer fall into the second and third groups. These include carcinoma of the stomach, colon, mammary gland, prostate, lung, uterus, biliary system and others.

More knowledge on the role of hereditary factors in human cancer is desirable from the point of view of

its own importance as well as for the direction of research in collateral fields. If it could be shown that a hereditary factor is not important in the causation of the major forms of human cancer as, for example, gastric cancer, then full efforts could be devoted to finding the immediate exciting causes, because only by controlling them could this form of cancer be prevented. If it should be shown, however, that a hereditary factor is important in the causation of this cancer, thought should be directed toward nullifying its action by genetic methods. Also known potential victims could be given special clinical observation to discover the early stages, just as care is now taken to discover early tuberculosis in contacts.

The uncertainty regarding hereditary factors in the major kinds of human cancer should be ended. This can be done only by the use of data based on human material. Serious consideration should be given to plans for collecting the necessary data.

IMMUNITY IN MALARIA

Malaria is probably now the prime disease problem of the world. Productive research has been greatly hampered by inability to infect lower animals with any of the human plasmodia and by the absence of a method for artificial cultivation of the parasite. Nevertheless progress has been made in elucidating certain aspects of the disease, even greater advances are foreshadowed by recent research.

Malarial infection, it has been assumed, confers a specific immunity against the infecting parasite. An infected person, even if untreated, generally tends toward recovery.¹ However, as pointed out by Coggeshall² in his recently published De Lamar lecture, the immunologic mechanism responsible for the conversion of an acute attack into the chronic form of the disease, the character and location of the various immune responses and the duration of infection and immunity are questions of considerable controversy.

Fortunately for the evolution of knowledge on the immunology of malaria, a malarial parasite since named *Plasmodium knowlesi*, was isolated from a cynomolgus monkey in Java in 1927. This parasite when inoculated into the rhesus monkey, almost invariably produces death. If antimalarial drugs are administered early in the course of the disease, however, the infection becomes chronic. Superinfection produced by the intravenous injection of large numbers of homologous parasites causes inapparent effects and the parasites are removed from the blood stream in the course of a few hours. When such highly immune monkeys are inoculated with *Plasmodium inui*, a morphologically similar but less virulent parasite, the course of the infection is similar

¹ Culbertson, James T. *Immunity Against Animal Parasites*. New York: Columbia University Press, 1941, chapter VII, p. 12.
² Coggeshall, L. T. *Immunity in Malaria*. *Medicine* 22: 87 (May) 1943.

to that which would occur in a normal previously uninfected monkey. These observations indicate a high degree of species specific immunity and apparently prove that some factor or factors other than a highly activated macrophage system must be involved in malarial immunity. Indeed it has been known since 1937 that protective antibodies can be demonstrated in the serum of rhesus monkeys with chronic P knowlesi infections. Furthermore it has been shown that relapse in these animals is actually a process of autohyperimmunization (and hence beneficial) rather than a phenomenon wholly detrimental to the host. The evaluation of the humoral factor in malarial immunity is not yet complete, the accumulated evidence demonstrates that malarial immune serum can affect the parasite independent of fixed tissue cells and that the two immunologic mechanisms work concomitantly rather than independently.

The need for an effective biologic preparation against malaria is obvious. Unfortunately there seems little likelihood that a sufficiently broad immunity could be induced by inoculation with any single parasite, even if the technical difficulties of the preparation of such a vaccine could be mastered. Except for the unlikely possibility of the discovery of a new strain of malarial parasite with broad pathogenic immunizing complexes, there is little hope for an effective living or attenuated vaccine in malaria. The conversion of an acute P knowlesi infection of rhesus monkeys into a chronic one by means of quinine, atabrine or immune serum and its destruction by sulfonamide drugs offers a clue to possibly more effective action. Partially effective immunity may be demonstrated after these measures for approximately six months. Animals thus treated may acquire severe infections when re-inoculated but they will survive. Furthermore, the degree of immunity following the eradication of infection does not seem to depend on the previous duration of the disease. These observations tend to disprove the hypothesis that immunity to malarial infection terminates immediately on the disappearance of the infection. Furthermore, the ability of sulfonamide drugs now in current use to eradicate P knowlesi in rhesus monkeys may have an implication in the problem of human malaria. Although thus far a sulfonamide or similar drug has not been discovered to be as efficient against human infections as they are against P knowlesi infection in rhesus monkeys, the possibility of discovering some similarly acting chemotherapeutic drug, Coggeshall says, is not remote. If this could be found it would serve as a method of true causal prophylaxis such as is completely lacking at present.

The fact that a form of latent malaria in an experimental animal can be completely destroyed by chemotherapy, that the duration of immunity thereafter is brief and that eradication of an acute infection in its earlier stages leaves the host without immunity gives promise of the anticipated direction of fruitful research

of the future. The detection of the specific antimalarial antibodies together with the elucidation of their specific reactions provides a means whereby the different aspects of the malarial problem may be entirely reexamined. Progress in this direction is an urgent need.

Current Comment

THE HEALTH OF YOUNG WORKERS

Many boys and girls of 16 and 17 years and even younger now take full or part time jobs or work during summer vacation periods. In a survey¹ of mortality of young people of 15 to 19 years the death rate from all causes combined (except enemy action) was 35 per cent lower among white boys and 47 per cent lower among white girls in 1942 than the average rates for the preceding three year period. There are, however, some unfavorable spots in the record. The death rate for tuberculosis increased among white males from 15 to 24 years of age and more particularly from 15 to 19, while it decreased at all other ages up to 75. Among adolescent girls aged 15 to 19 the tuberculosis death rate in 1942 continued to decline. The death rate from accidents among white boys from 15 to 19 was 17 per cent higher than in the preceding years. The trend for boys and girls to enter industry is likely to increase at an ever growing rate as the war continues. The health of these young workers should be conserved. Protective laws are the primary safeguards. Boys and girls should not be allowed to work in atmospheres which contain harmful dusts, fumes and gases. Young boys may be crippled by heavy manual labor or by work for long periods in cramped positions. Furthermore, information should be spread that boys of 14 to 17 usually do not possess the required skill or stability to permit them to operate dangerous machines. It must also be realized that farming is a hazardous occupation and that many accidents result from attempting to handle animals or farm machinery without adequate strength or training. Every effort should be made to strengthen the bodies of these young workers.

LUDWIG'S ANGINA

Williams and Guralnick¹ advocate in the treatment of Ludwig's angina early radical surgical intervention, use of sulfonamide compounds, zinc peroxide dressings in the presence of anaerobes and preliminary exposure of the trachea in every case prior to operation, or tracheotomy in the presence of respiratory embarrassment. Intravenous pentothal sodium is recommended as the most satisfactory anesthetic. The mortality in a recent group of 20 cases treated by this method at the Boston City Hospital amounted to only 10 per cent, whereas the mortality in Williams and Guralnick's previous series of 31 cases was 54 per cent. In both groups a dental lesion constituted the predominant etiology.

¹ Statistical Bulletin of the Metropolitan Life Insurance Co. 24:1 (April) 1943.
¹ Williams, A. C., and Guralnick, W. C. The Diagnosis and Treatment of Ludwig's Angina. A Report of Twenty Cases. *New England J. Med.* 228:443 (April 8) 1943.

factor—the irritating lesion in 18 (90 per cent) of the latter series. Dental extractions immediately preceded the onset of symptoms in 12. The act of extraction is not so important from the standpoint of etiology as is the preexisting septic tooth or mouth from which the subsequent spread of infection arises. Bacteriologic studies in these 20 cases revealed the presence of streptococci in all and the presence of Vincent's organisms in 50 per cent. Examination was not made for the presence of the microaerophilic streptococcus described by Melency. Because of the presence of streptococci in all cases the authors felt that sulfonamides were indicated throughout the disease. However in their experience chemotherapy alone could not be relied on in these synergistic infections and was regarded by them as secondary to the early radical incision of the area. The sulfonamides were used both generally and locally. In some cases they placed 5 to 8 Gm of sulfamidamide crystals in the depth of the wound and loosely packed it with iodotorn gauze. Melency's method of treating foul mouth and neck infections with zinc peroxide was found to be most effective in the presence of Vincent's organisms. In such cases dressings saturated with zinc peroxide frequently yielded a clean odorless wound in a very short time. The prophylactic use of zinc peroxide powder for several days prior to extraction would undoubtedly reduce the number of cases of this formidable infection.

CASTORIA

THE JOURNAL has previously commented on the Castoria incident.¹ A press release entitled 'Castoria Mystery Solved, Manufacture Is Resumed' issued June 23 by the Centaur Company Division of Sterling Drug Inc. offers the following explanation for the reactions which occurred following the use of Fletcher's Castoria.

The process of manufacturing Fletcher's Castoria starts with the aqueous extraction of senna, a crude drug. This extract is then added to sugar and other ingredients in a maturing tank for aging. A mild fermentation develops gradually, and the therapeutic values of the product are established with the oxidation of the active principles within it.

A year ago in our Rahway, N. J. plant, Castoria was made with a 20 per cent lower sugar content and it was up to standard in every respect.

In March and April 1943 to conserve sugar under wartime conditions we again used the lower sugar content. Our research now discloses that a change in the chemical characteristics of the water, harmless in itself in combination with the reduced sugar content interfered with the normal aging process. Fermentation was intensified and speeded up and this retarded normal reoxidation of the active principles. These deoxidized active principles known as anthraquinones, are known to have an irritant action upon the mucous membranes.

The changes which occurred during the aging of the March and April batches were so subtle that they escaped detection through our chemical testing procedures, indeed even after the presence of the irritant was known through its effect on persons its identification and the reason for its presence took weeks of research to determine.

Our research further established that when the deoxidized active principles are brought to their oxidized state either

naturally or artificially, their irritant action is entirely removed, and their laxating values developed.

Now that the cause of the condition has been definitely ascertained, procedures have been put into effect which will assure normal reoxidation of the therapeutically active principles.

As a further safeguard, the finished product will be subjected to added biological, as well as chemical, tests before it is offered for sale.

When Fletcher's Castoria is on sale again each bottle will bear a laboratory control number, which will relate to the manufacturer's full record of all production data and the packages will bear a green band instead of a buff one—to avoid confusion with any outstanding stock which may not have been returned.

FUTURE HOSPITAL BUILDING

In an interesting discussion of hospital building in the future, Elcock,¹ an English hospital architect, points out that hospitals have been constructed so far almost exclusively for the curative treatment of disease and injury. At least in details of construction, provision has not been made for the use of hospitals as health centers in a larger sense. In education toward healthful living and the prevention of disease, the hospital has assumed a rather secondary role. Firmly believing that hospitals should more and more become health centers on a broader scale than heretofore, Elcock urges that in hospital construction of the future special consideration be given to the provision of educative and preventive facilities in the form of ambulatory clinics, lecture halls, class rooms, swimming pools, outdoor and indoor gymnasiums and similar facilities. Undoubtedly there will be places and conditions in which such expansion of services would greatly increase the usefulness of hospitals as community or neighborhood health centers either by themselves or in cooperation and closer integration with health departments and other social institutions. To mention just one specific need, the increasing function of the general hospital as a center of education, diagnosis and treatment in cancer certainly demands thorough study in new hospital construction. In planning for postwar hospitals, the views advocated by Elcock merit attention.

NATIONAL HEALTH AND NUTRITION IN CEYLON

According to a recent report from the Society of Medical Officers of Health of Ceylon,¹ the high incidence of infant and maternal deaths in that country is associated with many other evidences of malnutrition. The main reason underlying the poor state of nutrition is economic. Together with economic improvement the report recommends that essential food requirements be met by adding milk, various grains, animal food—especially fish—and vegetables and fruits to the staple diet of rice, which must be continued. Vitamin A can be supplied by the production of shark liver oil. The ultimate aim, the report points out, should be to provide the population with optimum diets for full physical and mental development.

2 Melency, F. L. The Prophylactic and Active Use of Zinc Peroxide in Foul Smelling Mouth and Neck Infections. *Ann. Surg.* 107: 32 (Jan) 1938.

1 The Castoria Incident. *Current Comment* J. A. M. A. 122: 179 (May 15) 1943.

1 Elcock, C. E. Hospital Building—Past, Present and Future. *Proc. Roy. Soc. Med.* 35: 359 (March) 1942.

1 Nutrition in Ceylon. Its Bearing on National Health and Well Being. Society of Medical Officers of Health, Ceylon, 1942.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession

ARMY

PROCUREMENT OF PHYSICIANS

A revised procedure for the procurement of physicians, designed to overcome the lag in procurements caused by failure of many of the applications initiated to mature to the commissioned stage was announced by the Officer Procurement Service of the War Department on June 1. Briefly, the new procedure provides that state Procurement and Assignment chairmen will furnish new lists of 'available' physicians to district Officer Procurement Service offices, indicating which physicians have expressed preferences for army or navy duty but have failed to complete processing of applications for commissions. In states where physician procurement is permitted, solicitation of individual applications will then be undertaken by appropriate representatives of the Army, the Navy or the central Procurement and Assignment office. Names of those who, after a reasonable time, refuse or neglect to complete applications for commissions will be furnished to the state director of Selective Service for reclassification. Similar lists are to be furnished and contacts made in states where procurement of physicians is not permitted, looking toward the more active solicitation of all available physicians under 45 years of age.

BILLS OF CIVILIAN PHYSICIANS AND HOSPITALS FOR TREATMENT OF MILITARY PERSONNEL

The Army through its own facilities usually provides complete medical and hospital care for military personnel on the active list. Sometimes, however, soldiers are away from such facilities and emergencies arise when it is necessary to procure civilian medical and hospital treatment. Generally, accounts for such services at reasonable rates are proper public charges but, under the following circumstances, existing law or regulation forbids payment from public funds:

- 1 When the individual is absent from his station without proper authority or in desertion
- 2 When army or other government medical facilities (naval, United States Public Health Service, Veterans Administration, Indian, for example) are available in the vicinity
- 3 When the service covers treatment of an individual for a chronic disability or in elective operation for a condition which does not endanger the life of the individual and would not preclude travel or transfer to an army or other government hospital
- 4 When the individual is not on the active list of the Army—that is, when he is on the inactive retired list or is a member of the inactive reserve. Selectees who have passed their physical examinations and have been inducted into the Army, but are permitted to go home to arrange their personal affairs before reporting at a reception center for military duty, are listed as "enlisted reserve inactive" and are not entitled to treatment at public expense.

It is well, therefore, for a civilian physician or hospital to ascertain from the patient his exact status in determining whether bills for treatment should be submitted to the Army or to the individual. Bills for treatment of military personnel falling within any of the classifications 1 to 4 should be presented to the individual for settlement from his personal funds, bills for his treatment under other circumstances should be submitted to the Army for consideration.

Bills presented to the Army often give only the name of the patient and the total charge. It is important that bills show the individual's full name, army serial number, rank and organi-

zation, his post or station and his status (duty, furlough or leave, if on furlough or leave, the inclusive dates of the furlough or leave should be given). If this information is not stated, much time is lost in trying to identify the soldier, and settlement is delayed. The necessary information can generally be obtained from the soldier himself.

In addition to the information outlined in the preceding paragraph, bills should give the full diagnosis and should show complete itemization of charges with the exact period of the service, the number of visits or days of hospitalization and the rate of charges. Charges for extras not included in the rate for visits or for hospitalization such as x-ray service and medicines, should be itemized and entered separately with sufficient information to permit the audit required in connection with payments from public funds. All bills should be presented in triplicate. It is recommended that bills bear the following certificate signed by the physician or, in the case of a hospital, signed in the name of the hospital by the official authorized to receive and receipt for moneys, his official designation (superintendent, treasurer) to appear below his signature:

I certify that the above bill is correct and just, that payment thereon has not been received, that the services were rendered and the medicines furnished in the care and treatment of the persons named above, that they were necessary, and that the charges do not exceed those customary in this vicinity.

Unless this signed certificate appears on bills, War Department voucher forms bearing this certificate must be forwarded to claimants for signature before their accounts can be approved for payment.

The itemized certified bill in triplicate, accompanied by the request for treatment (if any) and other pertinent papers, should be forwarded to the commanding officer of the soldier's post. If the post is not known the bill should be forwarded to the commanding general of the service command within the geographic location of the place where the services were rendered, accompanied by all information possible respecting the soldier and the circumstances in the case, in order that necessary investigation may be made with a view to identification of the soldier and payment of the account.

NEW SURGEON GENERAL CONFERS WITH SERVICE COMMANDS

At a three day meeting in Washington in June Major Gen Norman T. Kirk, recently appointed Surgeon General of the Army, and other general officers discussed plans and programs for the coming year with medical officers of the various service commands, as follows: Col J. J. Reddy, Boston, First Service Command; Col C. M. Watson, New York, Second Service Command; Col T. B. Burnett, Philadelphia, Third Service Command; Col S. W. French, Atlanta, Fourth Service Command; Col E. C. Jones, Columbus, Fifth Service Command; Col Don Hildrup, Chicago, Sixth Service Command; Col Neil J. Everitt, Omaha, Seventh Service Command; Col W. I. Hart, Fort Sam Houston, Eighth Service Command; and Col Harvard Moore, Fort Douglas, Ninth Service Command. General Kirk gave a description of his recent trip to North Africa, detailing the medical problems encountered during the North African campaign.

HOSPITALS DESIGNATED FOR SPECIAL SURGICAL TREATMENT

The Adjutant General's Office, Washington, D. C., issued the following memorandum on May 20: Memorandum No. W40 9-43 this office 6 March 1943, subject as above, is rescinded and the following substituted therefor:

1 It has become evident that certain diseases and injuries will require treatment of a surgical nature in which a high degree of specialization is necessary. Patients received from overseas who require the specialized treatment indicated below will be classified by the general hospitals receiving them and reported to the Surgeon General for transfer to designated specialized hospitals. Patients requiring such treatment and whose disability was incurred in the continental United States will be treated in the general hospital to which originally transferred unless in the opinion of the commanding officer of the hospital adequate facilities do not exist for their proper treatment in which case they will be reported to the Surgeon General for transfer to designated specialized hospitals.

2 The following general hospitals have been designated for the specialized treatment indicated:

(a) Chest surgery

Fitzsimons Denver
Hammond Mode to Calif
Kennedy Memphis Tenn
Walter Reed Washington D C
Brooke San Antonio Texas

(b) Maxillofacial and plastic surgery Ophthalmic surgery

Bushnell Brigham Utah
O'Reilly Springfield Mo
Valley Forge Phoenixville Pa
Walter Reed Washington D C
Letterman San Francisco

(c) Blinded casualties

Letterman San Francisco
Valley Forge Phoenixville Pa

(d) Impaired hearing (defective hearing of a degree which precludes the return of the patient to duty)

Walter Reed Washington D C
Hoff Santa Barbara Calif
Borden Chickasha Okla.

(e) Amputation centers

Bushnell Brigham Utah
Lawson Atlanta Ga.
McCloskey Temple Texas
Percy Jones Battle Creek Mich
Walter Reed Washington D C

(f) Neurosurgery

Ashford White Sulphur Springs W Va
Brooke San Antonio Texas
Bushnell Brigham Utah
Fitzsimons Denver
Hoff Santa Barbara Calif
Kennedy Memphis Tenn
Lawson Atlanta Ga.
Lovell Fort Devens Mass
McCaw Walla Walla Wash
McCloskey Temple Texas
Nichols Louisville Ky
O'Reilly Springfield Mo
Percy Jones Battle Creek Mich
Schick Clinton Iowa
Tilton Fort Dix N J
Walter Reed Washington D C

(g) Vascular surgery (major vascular injuries and their sequelae such as arteriovenous fistulas, aneurysms and peripheral vascular disturbances such as chronic vasospastic conditions those resulting from frostbite, immersion foot and other conditions producing peripheral circulatory deficiency states but not including minor disturbances such as varicose veins)

Letterman San Francisco
Ashford White Sulphur Springs W Va.

CAPTAIN JADOSZ AWARDED SOLDIER'S MEDAL

The United Press recently reported from General MacArthur's headquarters in Australia that Capt. Frank C. Jadosz of the medical corps had been decorated with the Soldier's Medal for gallantry for rescuing wounded fliers from a plane that had crashed with a full bomb load. Captain Jadosz resided in Providence, R. I., where he interned at St. Joseph's Hospital entering active service in October 1941.

THE NEED FOR MORE ARMY NURSES

Army nurses are now stationed in thirty-five bases outside the United States as well as at 537 stations in the continental United States, the War Department announced on June 1. The need for more Army nurses remains pressing. Recruitment of nurses took an upward trend in the first three months of 1943 but the opening of new hospitals and an increasing number of overseas assignments are depleting the number of nurses in the reserve pool. It is estimated that one out of every four nurses in the nation will be needed by some branch of the armed forces by the end of this year. Courses in military orientation and physical conditioning established throughout the nation for Nurse Corps units generally require four weeks of classroom application and drill ground calisthenics at the time the nurses enter the induction centers for enrollment in the corps. Heading the Army Nurse Corps is Col. Florence A. Blanchfield, who was formerly appointed superintendent of the corps on June 1. Prior to the retirement of Col. Julia O. Flikke as superintendent of the Army Nurse Corps she was assistant superintendent, with the rank of lieutenant colonel.

COMMISSIONS FOR WOMEN PHYSICIANS

Women Physicians who are at present either members of the Women's Army Auxiliary Corps or Contract Surgeons may now secure commissions in the Medical Corps, Army of the United States. They should apply to the Office of the Surgeon General, Washington, D. C. If the application is approved after clearance by the Procurement and Assignment Service it will be forwarded to the Officer Procurement Service for further processing. Members of the WAAC will then secure a release through channels from the Director, Women's Army Auxiliary Corps. Contract Surgeons will be similarly processed except that they will be released by the Commanding General of the Service Command by whom their contracts were effected or in the case of the Military District of Washington by the Surgeon General.

DR. HENDERSON APPOINTED CONSULTANT

Dr. Elmer L. Henderson, Louisville, Ky., member of the Board of Trustees of the American Medical Association has been appointed special consultant to the Secretary of War in regard to surgical problems concerning the U. S. Army Air Forces. Dr. Henderson's appointment was made at the request of Brig. Gen. David Grant, the air surgeon. Dr. Henderson will maintain his position on the staff of the Kentucky Baptist Hospital and St. Joseph's Infirmary in Louisville and will go back and forth to Washington at regular intervals for conferences under the jurisdiction of the Surgeon General of the Army. His appointment became effective on May 18.

LENGTHEN M. A. C. TRAINING PERIOD

Beginning with the class which reports for training on July 9, the Medical Administrative Corps Officer Candidate School at the Medical Replacement Training Center, Camp Barkeley, Texas, is lengthening its training period from twelve to sixteen weeks. In announcing this scheduled compliance with a War Department directive, Col. George E. Armstrong, assistant commandant of the Camp Barkeley school, said the new schedules will involve no addition of material but will merely mean a more intensive coverage of the work now included. All departments of the school—training, administration, logistics, tactics, sanitation and chemical warfare—will be allotted some of the extra hours added to the curriculum.

The present field work will be especially affected by the new schedules which have been submitted to the War Department training division. A continuous problem in medical support will be carried out during a six-day bivouac for each Camp Barkeley class and the candidates will practice choosing and stationing evacuation routes and other medical installations in simulated battle conditions. The strength of the school's twelve companies will remain the same with the result that the output will be slightly decreased. Over six thousand men have already received commissions as second lieutenants in the

Medical Administrative Corps from the Camp Berkeley school. Another large group was commissioned by the school at Carlisle Barracks, Pennsylvania, before the M A C school there closed this spring.

MEDICAL SECTION OF TRAINING SCHOOL DISCONTINUED

The medical section of the AAF Officer Training School at Miami Beach, Florida, has been discontinued, it was announced, early in May. The six weeks program, which was under the direction of Major Sidney Davidson, flight surgeon, was an orientation course for medical officers which also furnished technical and tactical training. There were courses in aviation medicine, treatment of gas casualties, military art, military hygiene and sanitation. The other members of the staff were: Capt R. Beverly Ray, M. C., Capt Herman W. Roth, M. C., Capt Thomas J. Eaton, Sanitary Corps, Lieut Paul S. Anderson, M. C., Lieut Allan B. Crumden, M. C., Lieut Victor F. Thompson, M. A. C., Lieut Fred W. Dixon, M. C., Lieut Frank J. Pickett, M. C., Lieut Ronald J. Roemer, D. C., and Capt Irving S. Gordon, D. C.

GRADUATES AT CARLISLE AND CAMP BARKELEY

Graduation exercises were held on June 1 at the Medical Field Service School, Carlisle Barracks, Pennsylvania, for fifty-nine officers of the medical department, following completion of a course of training for particular assignments in medical battalions or a new infantry division. Of the class forty-six were members of the medical corps, twelve of the medical administrative corps and one of the dental corps. Twenty-eight members of the class had graduated previously from a basic course at the Medical Field Service School, and nine other members had previously attended special cadre training classes at Carlisle.

Physically hardened and well trained for duty with troops in the field, 268 officers of the army medical department graduated at the Field Service School at Carlisle Barracks, Pennsylvania, June 17. The physicians, dentists, veterinarians and members of the sanitary and medical administrative corps who composed this class proceeded to their new stations immediately after the ceremonies.

The seventeenth class of the Medical Administrative Corps Officer Candidate School at the Medical Replacement Training Center at Camp Berkeley, Texas, graduated on June 9. The new lieutenants who were chosen from the ranks were given special training in administration, supply, personnel, sanitation, evacuation and training. Among those commissioned were fifteen Negroes. The graduating address was given by the school commandant, Brig Gen Roy C. Hefebower.

THREE HUNDRED AMERICANS DIE IN JAPANESE PRISON CAMPS

Messages through the International Red Cross from Japan have notified the War Department of the names of more than 300 American soldiers who have died in prison camps since the fall of Bataan and Corregidor. Disease is stated in each case as cause of death. Malaria, diphtheria, dysentery and pneumonia are the major causes. Some cases of beriberi are reported. Earlier, more than 300 deaths due to battle wounds had been reported from Japanese sources. The deaths by disease are out of a total of 11,307 army personnel thus far reported as prisoners of war of Japan.

PROMOTIONS AT FORT CUSTER

The commanding officer at Fort Custer, Michigan, recently announced the following promotions of medical officers at the Station Hospital: commanding officer, Lieut Col John G. Slevin to colonel. Colonel Slevin has been commanding officer of the hospital since October 1942, Capt Allen W. Byrnes, M. C., assistant chief of the neuropsychiatric section, to major, the following first lieutenants to captains: Keith B. Appleby, William E. Nesbitt, Henry A. Hanelin, Elmer H. Tofteland, Claude M. Eberhart.

PRISONERS OF THE JAPANESE

The War Department has announced, according to the *Military Surgeon*, that Lieut Col W. Hinton Drummond and Major Eugene C. Jacobs, both of the medical corps, were held as prisoners of war by the Japanese. Lieutenant Colonel Drummond went to the Philippines from Walter Reed General Hospital in Washington in 1940 and was serving at the Sternberg General Hospital in Manila when the war broke out. Major Jacobs was serving at the headquarters of the Sixth Corps Area in Chicago in 1940 when ordered to the Philippines, where he served as post surgeon at Camp John Hay at Baguio.

Mr. and Mrs. Benson, Flint, Mich., have been notified that their son, Lieut Arthur L. Benson of the medical corps of the Army of the United States, has been located in a Japanese prison by the International Red Cross. Dr. Benson was on duty with a medical field unit on Bataan and has been carried as missing in action for more than a year. Dr. Benson graduated from the University of Michigan Medical School in 1937.

AVIATION PHYSIOLOGISTS

The eighth class of Aviation Physiologists graduated at the School of Aviation Medicine, Randolph Field, Texas, on May 29. The five weeks course treats of the effects of lowered barometric pressure, anoxia, the effect of flight on man, the operation of low pressure chambers, the use of oxygen equipment and high altitude indoctrination and classification. Among the graduates were the following physicians: Major Marco A. Gaxiola, Capts Joseph Ney and Hurley L. Motley, and 1st Lieuts Edward H. Ahrens, James Goodfriend, Sidney D. Lee, Robert J. McNeil and Dennison Young.

THE BAXTER GENERAL HOSPITAL

Baxter General Hospital in Spokane, Wash., 5 miles north west from the center of the city, is located in a pine grove on a high, wedge shaped plateau of land formed by a sweeping curve of the Spokane River. The hospital is named in honor of Jedediah Hyde Baxter, Civil War surgeon, whose appointment as Surgeon General on Aug. 16, 1890 was terminated by his untimely death on December 4 of that year. Baxter General Hospital was activated on Aug. 21, 1942. Originally planned as a 1,000 bed cantonment type hospital, it was within two weeks ordered enlarged to 1,500 bed capacity. Construction began on July 7, 1942 and includes about 150 buildings. The next few months should find the hospital ready for full activities.

The commanding officer is Col A. B. McKie, U. S. Medical Corps, and the executive officer is Lieut Col Charles H. Bremlitt, Medical Corps. The staff of medical and dental officers came from all corners of the country. As of April 24 the officers thus far assigned were:

MAJORS

Edwin S. Bennett, M. C., Operations and Training Officer
Henry S. Campbell, M. C., Chief, Dermatology and Outpatient Clinic Section
Henry B. Elkind, M. C., Chief, Neuropsychiatric Section
Wayland K. Hicks, M. C., Chief, Urology Section
Robert D. Johnson, M. C., Chief, Dental Service Branch
Nicholas C. Lacy, M. C., Chief, Eye, Ear, Nose and Throat Service Branch
John J. Loutzenheiser, M. C., Chief, Orthopedic Section
Charles H. Manlove, M. C., Chief, Laboratory Service Branch
Russell F. Miller, M. C., Chief, X-Ray Service Branch
Everett B. Muir, M. C., Chief, Eye Section
Merritt H. Stiles, M. C., Chief, Medical Service Branch
Maurice A. Walker, M. C., Chief, Surgical Service Branch

CAPTAINS

Murray M. Berger, M. C., Chief, Eye, Ear, Nose and Throat Section
Robert T. Boyd, M. C., Orthopedic Section
Maurice V. Lang, M. C., General Surgery Section
Estel B. McCollum, M. C., Septic Surgery Section
George J. McHaffey, M. C., Pathologist
George M. Pike, M. C., Chief, Officers Section
Wallace P. Sheely, M. C., General Surgery Section
Walter R. Springstun, M. C., Registrar
J. Ray Van Meter, M. C., Neuropsychiatric Section

LIEUTENANTS

Sidney S. Epstein, M. C., Ophthalmologic Surgery
Robert L. Rein, M. C., Receiving and Disposition Officer
Herman L. Rudolph, M. C., Physical Therapy Section
Elizabeth M. Beedles, A. N. C., Chief Nurse
Catherine W. Camper, A. N. C., Anesthetist
Lorene V. Stroup, A. U. S., Dietitian
Dorothy M. Eagon, A. U. S., Physical Therapy Aide

MISCELLANEOUS

CALL FOR UNUSED X-RAY EQUIPMENT

The Supply and Technical Supplies Division of the War Production Board has issued a statement calling on physicians and dentists throughout the country to release their x-ray equipment not now in use in order to provide sufficient x-ray equipment for civilian needs.

Members of the medical and dental professions going into the armed services and all others who are temporarily not using their x-ray apparatus are urged to dispose of it. Francis M. Shields, director of the Division, said: "The demands for this equipment by the armed forces are heavy and will necessarily increase. Moreover, production is limited by shortages of critical materials, skilled workers and other factors. It is imperative that every item of x-ray equipment should be kept at work."

Doctors and dentists who are not now using their apparatus should sell it not only as a patriotic duty but also as a matter of self interest. Because of rapid developments that are taking place, the doctor who stores his equipment when he goes to war may well find that it is obsolescent and of no use to him when he returns to civilian life and private practice. He can far better serve both his country and himself by letting someone else use it now when it is so greatly needed.

An inventory of used x-ray equipment available for sale is being compiled by the Supply and Technical Supplies Division and well over a thousand items are already registered. All owners of idle apparatus are asked to report to the Division on Form WPB 1976 giving complete data about the equipment: its condition and selling price. Some of the equipment already registered is too old or broken down to be of use; what is needed is apparatus capable of active service but now idle. Doctors, dentists, distributors, etc., looking for used equipment are in turn asked to make their needs known to the Division so that their requests may be checked against apparatus that is for sale.

Under the terms of Limitation Order L 206 issued in October 1942, Division officials explained, the sale of new x-ray equipment is registered to the armed forces and civilian purposes approved by WPB.

EXHIBIT OF AERIAL PHOTOGRAPHS
IN CHICAGO

The British Consul General Mr. W. H. Gallienne and the trustees of the Museum of Science and Industry issued invitations to a private viewing of an exhibition of aerial photographs at the Museum of Science and Industry in Jackson Park, Chicago, on July 2 between 10 a. m. and 5 p. m. These much enlarged photographs had just arrived from Britain and although some of them had been on view in the offices of the combined chiefs of staff in Washington, they had not been seen elsewhere in this country. They include among others photographs of the bombing of Berlin and of the Moehne and Eder dams. Officers of the Royal Air Force were present to explain and interpret the exhibition.

THE STUDENT WAR NURSING RESERVE

The first meeting of the advisory committee of the Student War Nursing Reserve set up by the Bolton-Bailey act was held on June 25 in Washington, D. C. According to an announcement by Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, under whom the war emergency project will be administered, Miss Lucille Petry and Mrs. Eugenia Spalding, both on the nursing education staff of the U. S. Public Health Service, have been appointed director and associate director respectively of the new program. Dr. Parran pointed out that the act was drafted with the cooperation of nurse training institutions, hospitals, the nursing profession and governmental agencies.

Money will be paid quarterly in advance in the amounts estimated in order to enable hospitals to carry out the provisions delegated to them by the act. Rules and regulations for post-graduate and refresher courses under the Bolton-Bailey act will be similar to those that have been in operation under the

Training for Nurses' (national defense) law. Payment to student nurses will be made through schools of nursing on the basis of the plan submitted by schools to the Surgeon General, U. S. Public Health Service, and approved by him. The law sets forth the requirements which must be incorporated in the plan. The bill passed without a dissenting vote in both the House of Representatives and the Senate, and was signed by President Roosevelt on June 15.

WARTIME GRADUATE MEDICAL
MEETINGS

An additional group of tentative programs of Wartime Graduate Medical Meetings, a preliminary list of which was given in THE JOURNAL, June 5, page 382, has now been prepared.

The suggested six-hour schedule on aviation medicine is under the direction of Lieut. Col. W. Paul Holbrook. The program is to include general orientation on the flight surgeon's work and discussions of the eye, ear, nose and throat, mouth and teeth, cardiovascular system, gastrointestinal system, genitourinary system, psychiatry and skin as they relate to aviation medicine. There are to be also discussions of the general problems of high altitude physiology including anoxia, bends and exposure to cold.

Chemotherapy is under the direction of Dr. Chester S. Keefer. The program is to include the treatment of bacterial meningitis, prevention and treatment of wound infections with sulfonamides, treatment of gastrointestinal and genitourinary infections as well as respiratory infections with sulfonamides and sulfonamide toxicity and sensitization.

The national consultant on clinical dermatology is Dr. Chester A. Frazier. The subjects suggested include care of the skin and interpretation of disease problems of acute infections of the skin and problems of minor trauma and hypersensitivity of the skin.

The program on the dysenteries is under the direction of Lieut. Col. Thomas T. Mackie. The suggested program includes discussions of classification, geographic distribution, military importance, epidemiology and control of the dysenteries and discussions of bacillary dysentery, amebiasis, other intestinal protozoal infections and helminthic dysentery.

Dr. David P. Barr is national consultant for hypertension and nephritis and diseases of the blood. The former will include discussions of the clinical manifestations, complications and management of hypertension, nephritis, glomerulonephritis, nephrosis, pyelonephritis and nephrosclerosis. Diseases of the blood will include those involving the red cells, those involving the white cells and the hemorrhagic states.

The program for physical therapy is under the direction of Dr. Frank H. Krusen. It is to include discussions of physical agents commonly employed in medical practice such as heat, electrotherapy, light and hydrotherapy. The clinical applications of physical agents with special reference to military medicine are also to be discussed.

Psychosomatic medicine is under the direction of Dr. John Romano. There is to be general orientation followed by clinical discussions of organ and system syndromes and special emphasis on the applications of psychosomatic medicine to military problems.

The program on laboratory medicine for which Dr. Roy R. Kracke will serve as national consultant is divided into six suggested six-hour schedules which could be given consecutively or individually.

The program on acute respiratory disease is under the direction of Dr. Francis G. Blake. It is to include discussions of epidemiology, clinical considerations of the acute upper respiratory infections, influenza and pneumonia and the prevention of these and their complications.

The national consultants for shock, burns and plasma are Comdr. Lloyd R. Newhouser and Lieut. Col. Douglas D. Kendrick. The suggested six-hour schedule consists of two hours devoted to shock, two and one-half hours devoted to burns and one and one-half hours devoted to blood derivatives.

The program on chest surgery which is under the direction of Dr. Leo Eloesser includes a considerable amount of time

devoted to the physiology of chest injuries and discussions on the prevention of infection and on the treatment of infection.

Dr. R. A. Vonderlehr is consultant for the schedule on venereal diseases. Under this program both syphilis and gonorrhea will be discussed from the standpoint of control, prophylaxis, diagnosis and treatment.

ADDITIONAL ALLOTMENT IN ILLINOIS FOR OBSTETRIC CARE TO WIVES OF SERVICE MEN

The state director of public health of Illinois, Dr. Roland R. Cross, announced on June 15 that the U. S. Children's Bureau had granted his request for an additional June allotment of \$86,000 to be used in paying physicians and hospitals for obstetric care to the wives of service men and pediatric care to their infants in case of acute illness. The demand for this service has increased greatly. In May alone the Illinois Department of Public Health authorized care for about 550 cases of newly as many as were authorized in the preceding six months. The regulations governing this project in Illinois, as approved by the state medical society, provide that the applications for this medical care should be signed both by the service man's wife and by the licensed physician or her choice and submitted to the state department of public health in advance. The necessary forms may be obtained from local health and welfare offices and Red Cross chapters or directly from the State Department of Public Health at Springfield.

PUBLIC HEALTH UNDER HITLER

Le Nouvelliste de Lyon of April 1 complains of the unnecessary difficulties encountered by expectant mothers in order to obtain special pregnancy cards. They have to waste many hours detrimental to their health, in going to distant offices, queuing and so on just for red tape formalities. The practice is contrary to the official propaganda campaign.

The *Journal officiel*, France, of April 4 carries the text of a law laying down the conditions under which the secretary of state for health will call up chemists, doctors and dentists for the "relève" (draft). Repatriated prisoners or those who on account of their age or their families are unable to comply will be granted exemption. Doctors, chemists or dentists who are liable to be called up under the "relève" will be chosen by the high council of the medical profession (Conseil supérieur de l'Ordre des médecins).

NPD, Poland, of April 6 reports from Cracow. The successful fight against typhus (fleckenfieber) in the Cracow district is making further progress. Mobile hot air chambers go from place to place to delouse people in the infected dwellings which have been discovered. Four emergency hospitals are ready to receive infectious cases and are able to cope effectively with the epidemic even when widespread. Leaflets, illustrated advertisements and exhibitions constantly draw the attention of the population to the dangers of typhus and the methods of meeting it.

What applies to military operations will apply all the more to the opening up and settlement of the East. This is the field of action of geomedicine, Prof. Dr. Heinz Zeiss explains in the *Zeitschrift für Geopolitik* of the science of topographic medicine (raumbezogene Medizin), which has to fulfil tasks without which the military, political, cultural and economic opening up of the East would be impossible. It deals with research into the relations as regards time and place between the development of disease and topographic features. A campaign against infectious diseases is impossible without a map, and thus it is one of the most urgent tasks to compile a reliable atlas of epidemic diseases. It will render great service to the military and civilian health services in the East. A number of examples (sweating sickness, poliomyelitis, cholera, tularaemia) show even at this early stage how close is the relationship between the topographic nature of a region and the

occurrence of epidemic diseases. It can be shown that waves of epidemic diseases come to a halt at certain definite geographic and biogeographic features. Science in turn will be able to draw conclusions regarding areas of a similar nature and thus take preventive measures. The development of the science of geomedicine thus opens wide fields of fruitful collaboration among the civilized European nations.

NDZ, Germany, of April 8 states that numerous Volksgenossen have repeatedly shown their interest in the question of how air raid protection during alerts is carried out in hospitals. The accommodation of the patients is arranged in accordance with the nature of their disease, under a decree of the Reich Air Minister quoted by the *Sirene*. Seriously ill patients must never be put on the upper floors, as it would be difficult to carry them from there to the air raid shelters. Only patients who can be easily moved or are able to walk may be put in these rooms. During air raid warnings the latter category have to go to the air raid shelters which have been set up in the basement for the hospital staff and patients who are not confined to their beds. The seriously ill confined to beds and patients who cannot be easily moved are from the outset to be put in wards which are specially protected against splinters and left there during the alert unless special arrangements have been made for these patients by order of the Reich Air Ministry. The ARP measures in hospitals are constantly being checked and improved in accordance with the latest experience.

According to *Svenska Dagbladet*, Stockholm, of April 10 the German authorities have now confiscated Trondheim Hospital and the patients have been removed to private houses which have been requisitioned from the civilian population, preferably from the opposition. The Red Cross hospital has been fitted up as a surgical department, while the medical department has been moved to Hispegaten and the epidemic department to the Craftsman's Home for the Aged. Tuberculous patients have still nowhere to go, but requisitioning for them is proceeding.

According to *Nationaltidende*, Denmark, of April 8 the diphtheria epidemic at Noeresundby is regarded as very serious. Of 40 patients, 13 have already died. The health authorities urgently request Aalborg municipality to take immediate precautions. This new diphtheria has been caused by war conditions of a hitherto unknown and serious character. The germs spread quickly, poison the patient and paralyze the heart. Mayor Jorgensen of Aalborg has agreed to summon the epidemics board on April 9 but continues to be skeptical regarding general vaccination for the children of the municipality.

The Berlin correspondent of *Svenska Dagbladet* of April 1 writes that it looks very much as if the German birth rate will be stimulated by the duty of women to work. A reader of the *Schwarze Korps* takes up this problem and accuses certain German women of preferring to have a child rather than work in a factory, as expectant mothers are exempt from the duty to register. Thus there are women who have not had any children for ten years but who are suddenly becoming pregnant. But the newspaper, which is usually very severe, does not agree with the writer. "The state expects this development. The war losses must be balanced and the population must be increased to such an extent that the conquered living space can also be filled with German life. The conception that work comes before children would cause a national catastrophe. We need children, who are as important as anything else, and this fact is quite indisputable."

"Another population problem which has become acute as a result of the war is marriage. War causes everything which is bad and rotten to decay more quickly and it is so in marriage." This statement by the newspaper is quite correct and tallies with the latest population statistics, according to which the number of divorces on the grounds of adultery has increased by 12 per cent among men and by 134 per cent among women.

ORGANIZATION SECTION

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status—S 696 has been reported to the Senate a bill to amend the United States Employees Compensation Act so as to bring postmasters within the purview of that act. The Senate Committee on Education and Labor has voted to report favorably S 1130 a bill to provide for the care of children or mothers employed in war areas. H R 986 has passed the House proposing to amend Veterans Regulation No 10 so as to reduce for compensation and pension purposes the term misconduct and to limit the meaning of that term to felonious misconduct. H R 997 has passed the House to amend certain provisions of the National Defense Act of June 3 1916 by eliminating the Medical Administrative Corps in the Medical Department of the Regular Army and substituting therefor a Pharmacy Corps. H R 2536 has passed the Senate with amendments proposing to provide for the promotion of vocational rehabilitation of persons disabled in industry or otherwise. H R 2965 has been reported to the Senate with amendments a bill making appropriations for the Department of Labor the Federal Security Agency and related independent agencies for the fiscal year ending June 30 1944. The Senate Committee on Appropriations recommended that there be eliminated from the bill the proviso that no part of any appropriation made for the Children's Bureau in the bill shall be used to promulgate or carry out any instruction order or regulation relating to the care of obstetrical cases which discriminates between persons licensed under state law to practice

obstetrics. H R 2936 has passed the House authorizing an additional \$200 000 000 for expenditure under the Lanham act for the construction of schools waterworks sewers sewerage garbage and refuse disposal facilities public sanitary facilities works for the treatment and purification of water hospitals and other places for the care of the sick recreation facilities and streets and access roads.

Bills Introduced—S 1168 introduced by Senator Reynolds North Carolina provides that on and after July 1 1943 each member of the various selective service local boards each government appeal agent and each examining physician who assists in the administration of the Selective Training and Service Act shall be entitled to receive compensation for his services at the rate of \$600 per annum payable monthly. S 1250 introduced by Senator Reynolds North Carolina and H R 3021 introduced by Representative May Kentucky propose to repeal section 2 of the act approved May 17 1926 which provides for the tortuosity or pay of persons in the military and naval service of the United States who are absent from duty on account of the direct effects of venereal disease due to misconduct. H R 3011 introduced by Representative O'Rourke Wisconsin proposes to authorize an appropriation of \$25 000 000 for the relief of resort owners and for sending convalescing veterans to resorts at a per diem weekly or monthly rate to be agreed on by the Veterans Administration and the resort owners.

WOMAN'S AUXILIARY

Arizona

At the annual meeting of the Woman's Auxiliary to the Arizona State Medical Association in Tucson May 1 Mrs. E. M. Hayden assumed the presidency succeeding Mrs. Harlan P. Mills. Mrs. James H. Allen of Prescott was elected president elect. Mrs. Frank N. Haggard President of the Woman's Auxiliary to the American Medical Association was guest speaker at the luncheon at the home of Mrs. Samuel H. Watson. Lieutenant Colonel W. J. Kennard commanding officer of Davis-Monthan Field at Tucson talked to the assembly on "The Flight Surgeon in the Combat Zone."

California

War-time Medicine in the South Pacific was discussed before the Alameda County auxiliary at a recent meeting. Lieutenant Robert Dennis Lee (MC) U. S. Navy spoke on "The Practice of Medicine Under Combat Conditions." Lieutenant Beth Veley of the Army Nurse Corps one of the last persons to leave Bataan discussed the care of the sick and wounded at Bataan and their escape.

At the meeting of the Los Angeles Long Beach Glendale and Pasadena auxiliaries Mr. Boyd Comstock spoke on the "Italian Reaction to Nazi Domination." Mr. Comstock formerly assisted the Italian government in its program for the development of young Italian athletes.

A five hundred word essay contest was sponsored by the Woman's Auxiliary to the California Medical Association among California high school students on the subject "Fight Cancer with Knowledge."

Georgia

The first doctors aide corps organized by the auxiliary to the Fulton County Medical Society under the presidency of Mrs. Edgar H. Greene has its headquarters and the principal laboratory of the Blood Type Registry at the Academy of

Medicine 875 West Peachtree Street N. E. Atlanta. The corps is composed of doctors' wives who after completion of a series of health education and civilian defense lectures work in one of four specialized avenues of endeavor. Of the 205 eligible auxiliary members, 143 registered for the doctors aide course. At the Academy of Medicine February 3 Dr. Thomas Parran Surgeon General of the United States Public Health Service, accepted the invitation extended him by Mrs. Greene to inspect the Blood Type Registry.

Missouri

The nineteenth annual meeting of the Woman's Auxiliary to the Missouri State Medical Society was held in St. Louis in April with Mrs. Frank L. Davis president presiding. One hundred and fourteen members attended this meeting. Guest speakers were Dr. Morris Fishbein of Chicago Editor of THE JOURNAL, Dr. H. L. Kerr president of the Missouri State Medical Society and Mrs. Frank N. Haggard President of the national auxiliary. Mrs. R. C. Haynes Marshall is president for the coming year and Mrs. J. B. McCubbin Fulton is president-elect.

OFFICIAL NOTES

SUMMER HEALTH HINTS

The next three programs for the new series of broadcasts over WLS on Thursdays at 2:45 p. m. under the title "Summer Health Hints" will be as follows:

- July 8 Insects
- July 15 Poison Oak or Ivy
- July 22 Keeping Cool

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF INTEREST OF MORE OR LESS GENERAL INTEREST, SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Physician Needed—A resident physician aged 21 to 55 to assist in the care and treatment of patients in the Los Angeles County General Hospital in the anesthesiology service is being sought by the Los Angeles County Civil Service Commission. Applications will be accepted from graduates of an approved medical school who have completed or who are now completing a one year's internship in an approved hospital. There will be no written examination. Candidates will be rated on their professional training and experience and their aptitude and personal suitability for advanced training in the specialty of anesthesiology is evidenced by investigation and interview. Full information may be secured from the office of the Commission, Room 102, Hall of Records, Los Angeles 12 California. Applications must be received on or before Wednesday, July 14.

DELAWARE

Twenty-Five Years in State Service—On May 2 Dr Mesrop A. Harmanian observed the twenty-fifth anniversary of his association with the Delaware State Hospital, Linthurst. The state journal reported that in 1918 he was appointed assistant physician. In 1925 after serving as assistant superintendent, he was made medical director. In 1926 he became superintendent of the hospital and in 1929 director of the mental hygiene clinic and state psychiatrist and criminologist.

Society News—Dr Jacob A. Bargen, Rochester, Minn., addressed the Academy of Medicine, Wilmington, May 21, on 'The Varieties of Ulcerative Colitis: Their Relation to the Current War and Their Management'. Dr George J. Bones discussed the Kenny treatment of infantile paralysis before the New Castle County Medical Society at a meeting in Wilmington recently. Drs Charles I. Wagner and Lewis B. Flinn participated in the discussion, all are of Wilmington.

GEORGIA

Graduate Clinics Canceled—The annual postgraduate clinics sponsored by the Emory Medical Alumni Association will not be held this year. The clinics are usually held in June.

State Medical Election—Dr Cleveland Thompson, Millen, was chosen president-elect of the Medical Association of Georgia at its annual meeting, May 14, and Dr William A. Selman, Atlanta, was installed as president. Dr Edgar D. Shanks, Atlanta, is the secretary-treasurer. The next annual session will be held in Savannah, May 9-12, 1944.

ILLINOIS

Personal—Dr George W. Nesbitt, Syracuse received a fifty year certificate and gold emblem on March 25 at a dinner of the De Kalb County Medical Society. Dr Clifford E. Smith is secretary of the society.—Dr Philip D. McGinnis has been appointed health officer of Joliet.

Chicago

Personal—Mr J. Dewey Lutes, formerly superintendent of the Presbyterian Hospital, has been named administrator of a new general hospital to be erected in Bethesda, Md., with funds provided by the Lanham act.—Dr Oswald H. Robertson, professor of medicine at the University of Chicago School of Medicine, has been elected to membership in the National Academy of Sciences.—John M. Storm, associate editor and chief editorial writer of the *Cleveland News*, has been named managing editor of *Hospitals*, effective May 1. *Hospitals* is the official publication of the American Hospital Association.

Cancer Prevention Clinic—A cancer prevention clinic for women has been opened at the Women and Children's Hospital, 1600 West Maypole Avenue. The clinic, which is staffed entirely by women physicians, will operate under an advisory committee comprising Drs James P. Simonds, chairman, Bowman C. Crowell, Frederick H. Falls, Augusta Webster and John A. Wolfer. Dr Webster is also chairman of the clinic staff. The hospital supplies the space and equipment, and the Women's Field Army of the American Society for the Control of Cancer furnishes a volunteer graduate nurse, a nurse's

aide, medical social workers and clerical assistance, pays the hospital for certain services and makes the appointments for the examinations. Patients who are able to pay are charged a \$5 fee that covers laboratory and fluoroscopic charges only. Free examinations are given to those who cannot afford to pay. Reports of diagnoses are sent to the patients' physicians. The Illinois Federation of Women's Clubs has given \$1,000 to the Women's Field Army as a contribution toward the clinic. Inquiries and applications for appointments at the clinic should be directed to the Women's Field Army, 48 West Division Street.

INDIANA

Tropical Medicine Program Initiated at Indiana University—The appointment of William H. Headlee, Ph.D., as assistant professor of parasitology in the Indiana University School of Medicine, Indianapolis, marks the introduction of a new program for the study of tropical medicine at the school. The launching of the program follows a recommendation of the Association of American Medical Colleges. In making the announcement Dr Willis D. Gatch, dean of the medical school, explained that the step had been taken, first, to prepare the future army and navy physicians now being trained in the Army Medical School for service in the tropical regions and, second, is a precaution against the introduction of rare tropical diseases in the United States. Dr Headlee graduated at Earlham College, Richmond, in 1929. At one time he taught at Purdue University, Lafayette, and served as a Rockefeller Foundation fellow at the Institute of Tropical Medicine, Tulane University of Louisiana, New Orleans, from 1932 to 1934, where he received his Ph.D. in 1935. He also spent a year as biologist and parasitologist in Venezuela, where he drew up the plans for the laboratories of the new Institute of Tropical Medicine at Caracas.

KANSAS

Zoologist to Study Vitamin E—Earl H. Herrick, Ph.D., professor of zoology and mammalogist of the Agricultural Experiment Station at Kansas State College of Agriculture and Applied Science, Manhattan, has been awarded the Elizabeth Clay Howald Scholarship of the Ohio State University, Columbus. Under the scholarship, which carries a stipend of \$1,000 for the year, Dr Herrick will devote his time to the study of vitamin E in relation to function of the anterior pituitary.

Annual Registration Due Between July 1 and October 1—Physicians licensed to practice medicine in Kansas are required to renew their licenses annually between July 1 and October 1 and to pay a fee of \$1 to the secretary of the board of medical registration and examination. The secretary must strike from the register of licensed physicians the names of all physicians who fail to pay their annual registration fees as required by law. Physicians whose names are so removed may be reinstated by paying the secretary \$5 and submitting to him satisfactory proof of moral fitness.

MAINE

Annual Gerrish Library Lecture—Dr Charles Sidney Burwell, dean of the Harvard Medical School, Boston, delivered the sixth annual Gerrish Library Lecture at the Central Maine General Hospital, Lewiston, May 14. His subject was 'Changing Viewpoints as to Disorders of Circulation'.

Medicolegal Meeting—"How Far Should the State Go in Taking Over from the Counties in Homicide Cases?" was the theme of the annual meeting of the Maine Medico Legal Society at the Augusta House, June 20. Franz U. Burkett, Portland, former attorney general, opened the discussion.

MICHIGAN

Student Scholarship Established—The Theodore A. McGraw Memorial Scholarship, to be awarded to the outstanding junior student in the Wayne University College of Medicine, Detroit, has been established as a memorial to the late Dr McGraw, at one time president of the college when it was known as Detroit College of Medicine and Surgery. The award is the gift of Dr James D. Bruce, Ann Arbor, and will amount to \$100 annually. Dr McGraw died in 1921.

Health Director Goes to Alaska in Charge of Maternal and Child Health—Dr N. Berneta Block, director of the Alger-Schoolcraft health department, has accepted a position as director of the maternal and child health service of the territory of Alaska, newspapers reported, June 3. Prior to her appointment in February as acting director of the health unit, Dr Block had been regional consultant in maternal and child health in Lansing. In her new position she will direct maternal and child health services throughout Alaskan territory. Her headquarters will be in Juneau.

Upper Peninsula Medical Meeting—The forty-sixth annual meeting of the Upper Peninsula Medical Society will be held at the Pine Grove Country Club Iron Mountain July 14 with the Dickinson-Iron County Medical Society acting as host. Among the speakers will be:

Dr. Alexander M. Campbell Grand Rapids The Abortion Problem
Dr. Lidden J. Teeter Indianapolis Anemias
Dr. Harry R. Foerster Milwaukee Occupational Dermatoses
Dr. Howard H. Cummings Ann Arbor Endometriosis
Dr. John M. Waugh Rochester Minn. Vaginal Hysterectomy
Dr. Herman C. Schumm Milwaukee Methods of External Fixation
Dr. Reed M. Nesbit Ann Arbor Diseases of the Prostate Gland

MONTANA

Personal—Dr. Walter A. McPhail, Missouri has been appointed director of the health service at Montana State University for the winter quarter.—Dr. Curtis W. Wilder, Lewistown, has been named health officer of Fergus County to succeed the late Dr. Charles C. Wallin. Lewistown. Dr. Wallin held simultaneously the position of county health officer and Lewistown city health officer and full time school physician. The two latter posts had not been filled at the time of this report.

NEW YORK

Tuberculosis and Diseases of the Chest—A teaching day on tuberculosis and diseases of the chest will be held at Onondaga Sanatorium, Syracuse, July 9 under the auspices of various county medical societies and other local health groups including the Syracuse University College of Medicine and the department of health state medical society and state department of health. Speakers will include:

Dr. Reuben J. Erickson Albany Pulmonary Tuberculosis Early Diagnosis and Differential Diagnosis
Dr. Irl H. Blaisdell Syracuse Bronchospasm as a Diagnostic Aid in Diseases of the Chest
Dr. Ethan Flagg Butler Ithaca Common Thoracic Emergencies
Drs. J. Maxwell Chamberlain Oneonta and Edward Sawtelle Welles Saranac Lake Surgical Treatment of Pulmonary Tuberculosis
Drs. Butler and Albert G. Swift Syracuse Surgical Treatment of Non-tuberculous Lung Conditions

New York City

Dr. Sebrell Gives Rothschild Lecture—William H. Sebrell Jr. surgeon U. S. P. H. S. Bethesda Md. delivered the Marcus A. Rothschild Lecture at Beth Israel Hospital June 15, on 'Trend of Recent Research in Vitamins and Clinical Symptoms of Vitamin Deficiency'.

Course in Ophthalmology Discontinued—The New York University College of Medicine, department of ophthalmology, announces that because of the educational program associated with the war effort the nine months graduate course in ophthalmology will be discontinued for the duration of the war.

Health Department Secretary Appointed—Matthew A. Byrne has been appointed secretary of the city department of health to succeed Dr. Frank A. Calderone, who recently was appointed deputy health commissioner in the department. The appointment was made on the fortieth anniversary of Mr. Byrne's service in the department. In his new position he will supervise the administrative activities of the department and will continue as a member of the personnel board.

OHIO

State Welfare Director Resigns—Charles L. Sherwood, Fremont, has resigned as state welfare director to become a member of the Ohio Pardon and Parole Division effective June 15. Assistant director of the department of welfare in 1929 and 1930 Mr. Sherwood formerly was secretary of the Ohio Council of Public Welfare, associate director of the Ohio Institute for Governmental Research and executive secretary of the Ohio Mental Hygiene Association. He has been state welfare director since 1939.

New Method of Handling Sale of Medical Liquor—On June 1 when the state liquor stores were reopened under the rationing of sales to the public, a new method of handling the sale of liquor for medicinal purposes became effective in Ohio. According to the state medical journal it is anticipated that the amount which may be purchased by any holder of a liquor ration book will be sufficient to meet the medicinal needs of many persons for whom liquor will be prescribed by the attending physician. However, in the event that an additional amount is needed for bona fide cases in which the uniform allowance under the rationing program is insufficient a specified additional amount may be purchased on the presentation of a lawfully issued prescription by a duly licensed Ohio physi-

cian and bearing the stamp of approval of the state liquor director. The prescription should be mailed by the physician or patient to the state liquor director. It approved it will be so mailed and returned to the patient. In urging the cooperation of physicians in the new plan, the state medical journal suggests that physicians not only minimize the prescribing of medicinal liquor but likewise minimize the amounts when prescribing is necessary. The regulation states that the amounts prescribed shall be for a period not to exceed one month.

PENNSYLVANIA

Society News—Dr. Oscar A. Batson, Philadelphia discussed 'Maxillofacial Emergencies' before the Reading Eye, Ear, Nose and Throat Society in Reading recently.—Dr. Thomas A. Limbic, Harrisburg formerly personal physician to Haile Selassie emperor of Ethiopia discussed 'Medical Practice in Ethiopia' before the Northampton County Medical Society June 18.

Philadelphia

Indictments Charge Theft of Army Medicine—On May 28 indictments charging participation in private sales of 53,000 sulfadiazine tablets intended for army use in combating tropical fevers and pneumonia were returned by a federal grand jury against a physician, seven druggists and six other persons. According to the New York *World Telegram* the thefts were said to be discovered by an employee of the manufacturing firm of Sharp & Dohme, Inc. who recognized army markings on a bottle of tablets he saw on a drug store shelf. According to the *World Telegram* those indicted were Dr. John Leonard Brill, 37, charged with conspiracy and receiving stolen tablets; three Sharp & Dohme employees: Altonso C. Master, James Jones and James A. Garry charged with conspiracy and theft of the tablets; Sidney J. Mervise, Joseph Soner, David R. Vasper, David Masters, Irving Kramer, Meyer Joseph Rosentfeld and Jacob M. Berenbaum, druggists all charged with conspiracy and receiving stolen tablets; and William Evans charged with selling; James E. Williams charged with delivering; and Anthony Frankina charged with assisting in the deliveries.

WEST VIRGINIA

New Director of Industrial Hygiene—Dr. Charles S. McKinley, Scotch Plains, N. J. has been appointed director of the bureau of industrial hygiene in the state department of health. His appointment was made on the recommendation of the U. S. Public Health Service. He succeeds Dr. John W. Crosson who recently resigned to become industrial consultant for Sharp & Dohme, Philadelphia. (THE JOURNAL, March 6 p. 776)

Regulations for Control of Cancer and Tuberculosis—Regulations governing the operation of the new division of cancer control in the state department of health were approved by the Public Health Council at a meeting in Charleston June 16-17. Standards for the qualifications of the director, assistant director and educational consultant of the new cancer division were set up by the council in consultation with the Merit System Council as required under the provisions of the cancer control bill passed at the 1943 session of the legislature. The director and assistant director must be qualified to practice medicine in West Virginia. In addition the director must have had at least two years postgraduate training, one devoted to the treatment and cure of cancer and the other to pathology or two years work in the field of cancer. It was also specified that the director must acquire a degree in public health within the period of three years after his appointment. The new division will be tied in with the West Virginia chapter of the Women's Field Army of the American Society for the Control of Cancer. A survey will be started at once to determine what clinics in the state can carry on the work incident to the diagnosis and treatment of cancer. Approval of the clinics will be given on the advice and counsel of the cancer control committee of the West Virginia State Medical Association. Standards now used by the department of public assistance will be used to determine the eligibility of a patient for treatment or care.

An investigation will be made within the next sixty days by the department of public assistance of all persons now in state tuberculosis sanatoriums to ascertain whether they are really needy and entitled to payment for treatment. The population of state tuberculosis institutions is now 901. After July 1 the state will be required to expend \$1 a day for each person for the continued treatment of the needy at these institutions. Under

the regulations adopted, the physician who believes that a needy tuberculous patient requires hospitalization should report to the local health officer. The patient will then be investigated by a field visitor of the department of public assistance, a representative of the West Virginia Tuberculosis and Health Association and three citizens of recognized standing in the community. Final approval will be given by an advisory committee consisting of three tuberculosis specialists who are members of the state medical association, together with a lay representative of the West Virginia Tuberculosis and Health Association. Unless it is an emergency case, the hospitalization request will be referred to the department of health for review.

WISCONSIN

Rocky Mountain Spotted Fever—What appears to be the first proved case of Rocky Mountain spotted fever in Wisconsin is reported in an original article in the state medical journal for June. The patient was being treated in May 1942, but public reporting was purposely delayed until the spring months so that the picture and methods of diagnosis would be vivid at a time when the disease becomes most prevalent, according to the state journal. The article points out that in June 1942 Wisconsin was reported as one of the few states remaining free from spotted fever.

GENERAL

Program on Industrial Eye Hygiene—Joseph LoPresti, Brooklyn, assistant surgeon, U. S. Public Health Service Reserve, has been assigned to the National Society for the Prevention of Blindness to carry on a program in the field of industrial eye hygiene. A release from the National Society stated that the addition of Dr. LoPresti to the staff will enable the society to develop more thoroughly its activities in the field of industrial eye hygiene. The appointment of Dr. LoPresti will also assist the society in cooperating more extensively with the medical profession and particularly with industrial physicians and industrial hygiene directors. Dr. LoPresti graduated at New York University College of Medicine in 1940.

New Grants in Tropical Medicine—The American Foundation for Tropical Medicine recently authorized grants to six North American medical schools totaling \$26,100. The grants, made possible by contributions and pledges during the current year of \$60,100 by nineteen American corporations, are being used to strengthen teaching or research programs in tropical medicine and parasitology at the various schools. The approved projects were selected by the medical committee of the foundation among a number of applications. The medical schools to receive aid were:

New York University College of Medicine, salary aid for full time instructor in tropical medicine and parasitology.

Tufts College Medical School, Boston, to employ clinical teaching fellow in tropical medicine.

Tulane University of Louisiana School of Medicine, New Orleans, budgetary needs of department of tropical medicine, which has trained forty-one physicians from Central and South American countries, from Africa and from Asia since 1940.

University of Manitoba Faculty of Medicine, Winnipeg, traveling fellowship for professor of parasitology and tropical diseases.

University of Nebraska College of Medicine, Omaha, for full time technical assistant to assist teaching in student laboratories and staff research.

Yale University School of Medicine, New Haven, Conn., to supplement salaries of teachers and laboratory assistants in order to expand tropical medicine teaching.

Other applications are pending, it was stated, and those which are approved will be financed out of the contributions. The foundation's program, adopted at the annual meeting of members in January, calls for the collection and disbursement of \$100,000 among medical schools and scientific journals and for special projects which fall within the scope of the foundation's activities.

Special Society Elections—Dr. Frederick A. Collier, Ann Arbor, Mich., was chosen president of the American Surgical Association at a special executive session on May 14. Other officers include Drs. Urban Maes, New Orleans, and Arthur M. Shipley, Baltimore, vice presidents, Warfield M. Firor, Baltimore, secretary, and Leland S. McKittrick, Boston, treasurer.—Dr. Ross Golden, New York, was elected president of the American College of Radiology at its meeting in Chicago on June 6 and Dr. Lyell C. Kinney, San Diego, Calif., vice president. Dr. Hollis E. Potter, Chicago, was reelected treasurer and Mac F. Cahal, Chicago, executive secretary. Dr. Lowell S. Goin, Los Angeles, is chairman of the board of chancellors of the college.—Dr. Calvin A. Walker, San Francisco, was chosen president of the Western Association of Industrial Physicians and Surgeons at its recent annual meet-

ing. Other officers are Dr. Rutherford T. Johnstone, Los Angeles, who was reelected secretary, Dr. James M. McCullough, Crockett, Calif., treasurer, and Elizabeth M. Caffrey, P. H. N., Crockett, who was reelected executive secretary.—Robert D. Potter, New York, science editor of the *American Weekly*, was elected president of the National Association of Science Writers at the annual meeting held in Chicago at the time of the annual session of the House of Delegates of the American Medical Association. He succeeds Watson Davis, Washington, D. C., director of Science Service. Capt. Stephen J. McDonough, M. A. C., of the Office of the Surgeon General of the Army, was reelected secretary-treasurer.

CANADA

Summer School—The Vancouver Medical Association conducted its summer school in the Vancouver Hotel, Vancouver, B. C., June 22-25. Among the speakers were:

Brig. Jonathan C. Meakins, R. C. A. M. C., Effort Syndrome and Allied Conditions in Civil and Military Practice.

Dr. Edwin M. Robertson, Kingston, Ont., Prolapse of the Pelvic Organs.

Dr. Maxwell M. Canton, Edmonton, Alta., The Clinical Application of Research in Nutrition.

Dr. Foster Kennedy, New York, Allergic Manifestations in the Nervous System.

Lieut. Col. Gordon S. Fahrni, R. C. A. M. C., The Newer Concepts in the Treatment of Wounds.

Lieut. Col. James D. Adamson, R. C. A. M. C., Chronic Nontuberculous Pulmonary Disease in the Army.

Dr. Brien T. King, Seattle, with others, participated in a round table discussion on "Thyroid Disease." Dr. Kennedy also addressed a luncheon on "De Propaganda Fide."

LATIN AMERICA

Costa Rica Venereal Program—Dr. Jose Amador Guevara has been appointed to head a reorganization program of venereal disease control in Costa Rica, according to the War Letter. Dr. Amador's title is chief general of the antivenereal disease campaign. He received his training under the Rockefeller Foundation.

Otorhinolaryngologic Congress—The second 10th American Congress of Otorhinolaryngology will meet at Montevideo in 1944 under the presidency of Dr. Justo M. Alonzo, the exact date to be announced later. Dr. Juan Carlos Oreggia, Calle Y1 1491, Montevideo, Uruguay, is the general secretary of the executive committee.

Deaths in Other Countries

Sir Arthur Newsholme, London, public health authority and author of numerous medical works, died on May 17 at his home in Worthing, Sussex, aged 86. He graduated at London University in 1881. Sir Arthur was a lecturer at Johns Hopkins University, Baltimore, in 1919. In 1928 he was in New York to act in a consulting capacity with the department of health. During his career he served as medical officer of health of Brighton, examiner in public health at Cambridge University, examiner in preventive medicine at Oxford University and examiner in state medicine, University of London. In 1901 he was president of the Society of Medical Officers of Health and was a former principal medical officer of the British Local Government Board.—**Alfred Erich Hoche**, director of the psychoanalytic clinic of the University of Freiburg, died May 17, aged 77. Dr. Hoche was at one time professor of psychiatry at Freiburg.—**Peter Muehlens**, professor and director of the Hamburg Institute for Tropical Diseases, died in Hamburg recently, aged 69.

Government Services

Food Rationing Problems of Hospitals

Leighton M. Arrowsmith, administrator of the St. John's Hospital in Brooklyn, has been appointed head of the hospital unit in the institutional user branch of the food rationing division, Office of Price Administration. Mr. Arrowsmith will be concerned principally with the food rationing problems of hospitals and similar institutions. He has been administrator of St. John's Hospital for fourteen years and during that time has been president of the Hospital Council of Brooklyn, president of the Greater New York Hospital Association and for the past three years president of the Hospital Bureau of Standards and Supplies. He is also active on the simplification and standardization committee of the American Hospital Association.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 22 1943

Lord Dawson on the Proposed State Medical Service

Lord Dawson formerly physician to the London Hospital, outlines in the *Times* a plan for the future health service. There is general agreement he says, that all methods of treatment should be available to every citizen but the future service should be built on and not destroy existing foundations. Its evolution should be gradual in the light of accrued experience. A prime desideratum is that preventive and curative medicine be brought together and be included in the education and practice of every teaching hospital. To secure areas of sufficient size for hospital services it will usually be necessary to combine several existing major local authorities into a new health authority under which the hospitals would work. There would be a key hospital or the area toward which the services would look for leadership and advice. If available a teaching hospital would fulfil this purpose.

These services will involve considerable changes in the duties both of the local authority and of the medical profession. For local government to be the ultimate administrative authority would conform not only with our constitutional usage but also with the fact that it is already responsible for the health services and its own hospitals. But the medical profession and the voluntary hospitals should not be expected to accept this unless such an administration for complex health and hospital service is guided by representative expert advice. This difficulty could be resolved as follows: 1 The larger outlines of policy should be laid down at the center with the aid of an advisory board representing the parties and including a large proportion of physicians. 2 Following the precedent of education the health authority should contain a minority of members chosen or nominated. 3 Corresponding to each health authority should exist an advisory body to give skilled guidance on medical and hospital policy. Like the central body it would consist of representatives of local authorities, voluntary hospitals and physicians.

Hospital and consultant services should be remunerated by appropriate salaries. Private practice though independent should be coordinated with the fabric of the service. Otherwise there would develop two sets of doctors and a divided profession. Pay beds—with the same treatment as other beds but with added amenities—are consistent with equality of opportunity. Of the whole time state salaried service for all doctors which is strongly favored by the labor party Lord Dawson says that it would make a tidy though rigid administrative machine, but man is not a machine, least of all the sick man. It would give doctors fixed hours but illness has no fixed hours. In this letter to the *Times* Lord Dawson has dealt with what are likely to be the most contentious points between the medical profession and the government.

Transfusion Accidents to Be Investigated

The Blood Transfusion Research Committee of the Medical Research Council has drawn up a memorandum for circulation by the Ministry of Health to hospitals and maternity services. If following transfusion the state of any patient gives rise to anxiety which can reasonably be ascribed to the transfusion, it is requested that the incident be immediately reported by telephone to the nearest blood supply depot in the London area or regional transfusion laboratory in the provinces, so that the necessary investigations may be initiated at the earliest possible moment. At the same time the hospital pathologist should be informed. The conditions which it is particularly desired to

investigate are hemolytic reactions due to deterioration or contamination of the blood or blood derivatives used for transfusion. Although the clinical picture is variable, it is suggested that sudden grave collapse, acute severe backache, hemoglobinuria or jaundice should be notified. Investigations would be made much easier if a sample of the blood or blood derivative from the bottle was available. It is therefore requested that a few cubic centimeters should be left in every bottle of transfusion fluid and kept for at least twenty-four hours and not thrown away until the patient has been revisited and it has become clear that he has not reacted unfavorably to the transfusion. As a routine, therefore, every bottle should be recapped and put in a refrigerator. If for any reason immediate contact with transfusion headquarters is impossible, a sample of the blood should be withdrawn from the patient under sterile conditions, with a dry syringe if possible, and divided between two dry sterile tubes and one dry ovalate tube for blood culture and other examinations. At the same time a clean specimen of the urine should be obtained from the patient and kept. In the ordinary course these specimens will be collected by the transfusion officer when he arrives to see the patient.

The Employment of Native Physicians in the West African Medical Service

The British government's plans for the reorganization of the colonial services include the employment of an increasing number of native officers in the West African medical service. At the annual meeting of the League of Colored Peoples, held in Liverpool, a letter from Mr. Oliver Stanley, secretary of state for the colonies was read in which he asked the league to believe that the Colonial Office had been actuated by a genuine design to abolish racial discrimination in the public service. Looking to the future we now could and should envisage a situation in which medical services would be mainly staffed by officers of local origin who had obtained their qualifications in West Africa. The present stage was one of transition, and no doubt for some time to come the medical services would include a strong element of European officers. But there was an increasing element of West African officers and he had every intention that this should expand as rapidly as possible. The Colonial Office was making plans for the reorganization of the colonial services, which it would be premature to disclose but which were designed to eliminate the difficulties to which the league had drawn attention. Thus the British have established in West Africa a medical school for the education of the natives who are now in increasing numbers taking the place of Europeans in the local medical service. That such a development is taking place in one of the most primitive peoples who have come under British rule is a striking testimony to the nature of this rule.

New Research Chair in Ophthalmology

The Royal College of Surgeons has founded a research chair in ophthalmology tenable at the Royal Eye Hospital Southwark (in London). It is the first chair of the kind in this country and the hospital has undertaken to raise \$200,000 for its permanent endowment. The holder of the chair will devote the whole of his time to clinical research at the hospital and to laboratory work at the Royal College of Surgeons.

The Lowest Maternal Mortality on Record

Though we have the usual wartime increase in venereal diseases and tuberculosis, we have also been able to record some actual improvements in the public health during the war. The latest is that the maternal mortality rate for 1942 is the lowest on record. It was 2.47 per thousand births. This compares with 2.77 for 1941 and is little more than half the rate of 4.41 for 1934. That is a fine tribute to the work of midwives, says

the minister of health. The number of maternity beds available has increased by more than 3,000, but the number does not keep pace with the growing demand under wartime conditions. There is shortage of midwives, which prevents more maternity beds from being opened.

BRAZIL

(From Our Regular Correspondent)

June 1, 1943

Hepatic Lesions in Infections by *Schistosoma mansoni*

Dr Eudoro Villela of Laboratory of the Brazilian Yellow Fever Service made a comparative study of *Schistosoma mansoni* microscopic lesions observed in 6,000 cases out of 150,000 liver specimens which were collected through the work of viscerotomy between 1930 and 1938. As reported in a previous letter, a medical representative of the Yellow Fever Service takes a small specimen of the liver, with the aid of the viscerotome whenever a case of death occurs after an illness of the maximum duration of ten days, in the little towns of the hinterland of Brazil. All the liver fragments, measuring an average of 2 by 1 by 1 cm. are immediately fixed in 10 per cent solution of formaldehyde. In the laboratory they are embedded in paraffin, cut to be 4 to 6 microns thick and generally stained by hematoxylin-eosin. For the study of the reticulum and collagen network the silver double impregnation method after Del Rio Ortega has been used in frozen specimens. The author himself recognizes the disadvantages inherent in the microscopic study of small fragments of the liver, but he believes that in spite of this the high number of specimens examined may enable him to draw from such a study valuable information regarding the hepatic pathology of visceral schistosomiasis. So constantly does the liver present lesions in the case of infection by *Schistosoma mansoni* that Lambert considers the routine microscopic examination of the organ the best way to express the schistosoma infection index of a given locality. Since the early phases of the infection small forms of *Schistosoma* are found in the lumen of the intrahepatic portal vein ramifications, and later eggs, toxins and pigments are discharged by the helminths in the blood stream. All these elements can harm the hepatic tissue, causing lesions the nature and intensity of which may vary according to the degree of infection and the time elapsed since its beginning. One of the most important contributions on this subject is that of Koppisch (Puerto Rico, 1937), who described the pathologic changes caused by experimental infection of the rabbit and the albino rat by *Schistosoma mansoni*. Koppisch ascertained that in the experimental infection the most frequent changes result particularly from the presence in the liver of the helminths, and their toxins and pigments, the eggs taking a minor part in the causation of the lesions. He found out that the embryos die immediately after the laying of the eggs, as the shells found in the liver are almost always empty. According to him this fact explains the rarity of the presence of pseudotubercles in the rabbit and in the albino rat, in contradistinction to what occurs in man, in whose infection the pseudotubercle is the fundamental lesion of visceral schistosomiasis. This is the consequence of the great resistance of the embryos in the interior of the egg, which is attested by the perfect chromophily of its internal structure. It seems therefore that the pathogeny of the liver lesions in the human infection is different, as the schistosomes are seldom found in the intrahepatic ramifications of the portal vein, and in this manner the products probably discharged by the helminths might not have any important role in the causation of the changes.

The lesions found in Dr Villela's investigation may be separated into three great classes. The first class includes the lesions that may be attributed to the probable toxins secreted

by the schistosomes, the most frequent being hyperemia of the hepatic venous sinuses, cloudy swelling, fatty infiltration and necrosis of the centrilobular zone. Acute or subacute liver atrophy has been found in but few cases, and the author is inclined to believe that the lesion was caused by the schistosome infection. Only once did he find, in the liver of a child, lesions appearing to be produced by yellow fever, but the clinical history of the cases revealed that the changes were caused by subacute antimony poisoning (fuadin). The second class of lesions includes the changes produced by the eggs of the helminth. In the human infection the eggs enter the liver through the portal vein, and in the initial phase of the disease they are generally found in the little veins of the portal spaces and in the venous sinuses, but rarely in the centrilobular veins. The most frequent lesions caused by the presence of the egg are the reactions of foreign body around the empty egg (giant cell and monocytic infiltration) and around the egg with living embryo (pseudotubercle) as described since 1931 by Brumpt and Chevalier. Several cases have been found by Dr Villela presenting a proliferative reaction with the structure of a pseudoabscess round the egg with living embryo. The egg is encircled by a layer of eosinophil and mononuclear cells with epithelioid cells in the periphery, but there is no zone of cellular rarefaction immediately round the egg. The area occupied by the pseudoabscess is larger than the corresponding one in the ordinary reactional process. This type of lesion has been identified by the author as an allergic reaction of the human organism to the material discharged by the embryo. Dr Villela's interpretation of this type of lesion is based on the findings of K. B. Kerr, who described abnormally intense reactions in the liver and in the lungs of guinea pigs, the nature of which to the experimental porcine ascariasis had been incited by a previous infection by *Ascaris suum*. Kerr, Coventry and others attribute this cellular reaction to an allergic manifestation, as Mainz and Pons had already described some human cases of urticaria and bronchial asthma associated with the infection by schistosoma. Dr Villela found also a few cases of a type of lesion never before described in the human infection by *Schistosoma mansoni* but previously reported by R. Hoeppli in the infection by *Schistosoma japonicum*. It is a pseudotubercle with stripes, intensely stained by eosin, irradiating from the egg shell. This oxyphilic substance has a strong necrosing power and, according to Hoeppli, is secreted by the lateral glands of the embryo. In some cases pseudotubercles of this type occurred side by side with reaction of the allergic type round eggs with living embryos. Dr Villela believes that despite the impossibility to affirm that this state of hypersensitivity of the liver tissue may be caused by the oxyphilic matter, the coincidence of the two conditions in the same individuals is worth mentioning. The third class of liver lesions caused by the schistosoma infection includes the fibrous type of reaction of which there are two kinds. The first kind of schistosomal liver fibrosis consists in the simple formation of fibrous tissue round the pseudotubercles located in the portal spaces. The second kind is represented in the early stage by the thickening of the reticular fibers between two or more pseudotubercles. This process, called by Villela "reticular sclerotic," immediately precedes the real fibrotic degeneration. When the process of fibrosis reaches the stage in which two or more portal spaces invaded by the eggs are united, an irregular network of trabeculae is formed, sometimes seen macroscopically under the aspect of the so-called claypipe stem cirrhosis or even portal cirrhosis, as has been described by W. S. C. Symmer. Dr Villela describes for the first time a type of lesion that he calls "circumscribed cirrhosis," represented by a fibrotic process that irregularly outlines a few lobules or pseudolobules in a determined zone of the liver, but he believes it is not easy to explain why the process of cirrhosis remains circumscribed.

AUSTRALIA

(From Our Regular Correspondent)

May 13, 1943

The Scheme for a Salaried Medical Practitioner Service

The National Health and Medical Research Council was established in 1957 by the federal government, its function being to promote the health of the people of Australia and to advise, coordinate and direct research into the cause and cure of disease. The council consists of representatives of the commonwealth and state departments of health, Australian universities having medical schools, the Royal Australian College of Surgeons, the Royal Australian College of Physicians, the Federal Council of the British Medical Association in Australia and one layman and one laywoman appointed by the federal government.

In May 1941 the council appointed a subcommittee to prepare a report on the most effective organization for the preservation of the health of the people of Australia. The preliminary report drawn up by this committee presented an admirably broad and lucid exposition of the question and is well worthy of study in other countries where projects for the reconstruction of medical practice are being considered. In this report it was claimed that a complete and efficiently organized system of hospital and medical health services could be provided at a cost easily within the capacity of the community and that the council was prepared to furnish practical details and to support these with evidence as to revenue and expenditure.

The federal government asked the council to give some indication of the general lines along which such a change could proceed and accordingly the council presented a report drawn up by its subcommittee giving an Outline for a Possible Scheme for a Salaried Medical Service. This has been described as the most important document ever received in dumb silence by the medical profession in Australia. The scheme provides for a complete salaried medical and hospital service for the commonwealth which would be under the control of the federal government and includes all aspects of preventive and curative medicine. The whole of the populated areas of Australia are divided into health districts each of which would be controlled by a district health officer appointed by the federal government. The scheme is based on (a) the district hospital system (each hospital district coinciding as far as possible with a health center) and (b) the group system of medical practice with special provision of specialist services. There is a complete gradation and coordination of medical and hospital services from those suitable for small country areas to the organization required in large cities. The unit of medical practice is the consultation center, which is also the center for preventive and protective medical services. Consultation centers are graded according to population and medical requirements and range from one man medical practitioner centers in small country districts to larger centers in towns provided with hospital facilities. These in turn link up with district divisional centers which would be the bases for health and administrative as well as for the clinical and specialist services for the district. Maternal and child welfare centers, school medical services and other similar health agencies will have their headquarters at the district centers. Medical specialists are organized into district consultant specialist services each group of specialists being available to one or more of the divisional centers. In metropolitan areas there will be a base hospital to be kept for serious and specialist cases and a ring of subsidiary hospitals reinforced by consultation centers staffed by groups of general medical practitioners. These centers will deal with the large mass of general practice now constituting 'outpatient' practice at general hospitals. Domiciliary visiting will not be encouraged but a certain amount will be necessary. The council

considers that the whole scheme is not inconsistent with the retention of private practice.

The scheme has been severely criticized by members of the medical profession in that among other things, it was not drawn up by a body familiar with the actual needs and problems of medical practice. On the other hand in its report the council has stated that the medical profession should be fully consulted on all points raised in the outline and that this was not intended as a final and complete scheme but as 'a basis for discussion of a reconstructed relationship between the government, the people and the medical profession.' As such it is being used by the Joint Parliamentary Committee on Social Security which is at present taking evidence from medical men in the different states on the question of medical and associated practices.

Control of Proprietary Medicines

After having been in operation for several months, the National Security (Proprietary Medicines) Regulations have been disallowed by the federal parliament. Since the introduction of the regulations in October 1942 a great deal of controversy has ensued and the validity of the order has been questioned. Certain amendments were brought into force in January 1943 but the opposition to the regulations still continued and on February 16 it was moved in the House of Representatives that the National Security (Proprietary Medicines) Regulations made under the National Security Act 1939-1940 be disallowed. There followed a lengthy debate which was adjourned before completion and resumed on March 5 when the issue was put to the vote. Mr Spender who moved the motion said that there were only two grounds on which the regulations could be justified (1) conservation of drugs in short supply and (2) conservation of manpower. The regulations could not be justified from either point of view because the government had already provided itself with adequate powers by other regulations under the National Security Act to cope with both these problems. When the regulations were examined he said it was clear that they were not designed primarily as a wartime measure to conserve materials and economize the use of manpower but that the real reason for their introduction was related to the matter of public health.

The principal clause in the regulations empowered the minister for health to ban the manufacture and sale of any proprietary medicine which in his opinion did not possess the qualities claimed for it. The supporters of the motion for disallowance of the regulations objected to judicial power being vested in executive officers or their nominees and claimed that such a prohibition desirable though it might be in the interests of public health could scarcely be justified on the grounds of wartime necessity or the conservation of manpower and materials. The validity of the regulations depended on whether it could be shown that they had some connection with the war effort. On the question being put the motion for the disallowance of the regulations was carried by a majority of one.

Marriages

ROBERT CLARK DAY New Orleans to DR. JANE MAYSEN MATTHEWS of Montgomery Ala. at Camp Cooke Calif. June 8

CLOYCE FLOWERS BRADLEY Powell Tenn. to Miss Mary McPheeters Jarnagin of Jefferson City in May

ERNEST HAROLD KING to Miss Marge Goodwin both of Los Angeles at Santa Monica Calif. June 12

SPENCER ALLEN TRUEX JR. Jackson, Tenn. to DR. BARBARA MAE BINKLEY of Nashville recently

SAMUEL S. ALLEN Robinson Ill. to Miss Bernice Quick of Oblong June 3

NIELS L. LOW to Miss Mary Margaret Cook both of Milwaukee May 29

Deaths

Arthur Trautwein Henrici, Minneapolis, University of Pittsburgh School of Medicine, 1911, instructor in pathology and bacteriology at the University of Minnesota Medical School from 1913 to 1916, assistant professor of bacteriology from 1916 to 1920, associate professor from 1920 to 1925 and since 1925 professor of bacteriology and immunology, professor of bacteriology and immunology at the University of Minnesota Graduate School, in 1941 Walker-Ames professor of bacteriology at the University of Washington, Seattle, member, past president and vice president of the Society of American Bacteriologists, member of the Society of Experimental Biology and Medicine, Linnological Society of America and the Mycological Society of America, served as a captain in the medical corps of the U S Army from 1917 to 1919, author of "Morphologic Variation and the Rate of Growth of Bacteria," 1928, "Molds, Yeasts and Actinomycetes," 1930, and the "Biology of Bacteria," 1934, second edition published in 1939, aged 54, died, April 23, in the University Hospital of coronary thrombosis.

Carl Wesley Apfelbach * Chicago, Rush Medical College, Chicago, 1922, professor of pathology at the University of Illinois College of Medicine formerly associate and assistant professor of pathology at his alma mater, specialist certified by the American Board of Pathology, Inc., member of the Central Society for Clinical Research, American Association of Pathologists and Bacteriologists, American Society for Experimental Pathology, American Society of Clinical Pathologists, American Association of Cancer Research and the International Society of Medical Museums, in 1942 appointed medical director of the Presbyterian Hospital, where he had been a member of the staff since 1924, for many years attending pathologist at the Cook County Hospital, aged 49, died, June 25.

John Barnwell Elliott, Birmingham, Ala., Medical Department of Tulane University of Louisiana, New Orleans, 1894, member of the Louisiana State Medical Society, specialist certified by the American Board of Internal Medicine, an emeritus professor of the theory and practice of medicine and for many years a member of the board of administrators at his alma mater, served as a lieutenant colonel in the medical corps of the U S Army in France during World War I, received the honorary degree of doctor of laws from Tulane University in 1937, aged 72, died, April 14, of myocarditis, hypertension, arteriosclerosis and cerebral hemorrhage.

Albert Frederick Spurney * Cleveland, Western Reserve University Medical Department, Cleveland, 1887, formerly associate professor of gynecology and obstetrics at the Cleveland College of Physicians and Surgeons, fellow of the American College of Surgeons, one of the founders of the Cleveland Medical Library, served on the staff of the Cleveland City Hospital, a member of the building committee, active on the surgical staff, and chief of staff of St Luke's Hospital, superintendent and president of the board of trustees of the Polyclinic Hospital, where he died, April 15, of hypertrophy of the prostate, aged 77.

Jules Victor Haberman, New York, Columbia University College of Physicians and Surgeons, New York, 1905, Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1908, instructor in neurology at Columbia University from 1908 to 1914 and psychotherapy from 1913 to 1918, physician to the U S Employees' Compensation Commission from 1920 to 1934, attending urologist and chief, neuropsychopathology clinic, Sydenham Hospital, assistant at the Vanderbilt Clinic from 1908 to 1914 and visiting physician from 1912 to 1918, served during World War I, aged 60, died, April 10, of Parkinson's disease.

William Haymaker Leet, Conneaut, Ohio, Western Reserve University Medical Department, Cleveland, 1895, served during World War I, served as mayor of Conneaut and on the board of education, president of the Citizens' Banking and Savings Company and for thirty-four years president of the Conneaut Creamery Company, on the staff of the Brown Memorial Hospital, a member of the board of trustees of Carnegie Library, a member of the chamber of commerce, aged 72, died, April 22, in Englewood, Fla., of coronary thrombosis.

John L. Adams, Crestview, Fla., Atlanta (Ga.) Medical College, 1914, served during World War I, aged 56, died in April at the Tuberville Hospital, Century.

Joseph Dioscore Bergeron, Negaunee, Mich., Laval University Faculty of Medicine, Quebec, Que., Canada, 1904, also a lawyer, aged 66, died, April 14, of heart disease.

William Richard Brown, Cincinnati, Medical College of Ohio, Cincinnati, 1890, aged 74, died, April 21, of angina pectoris.

Oren Manfred Deems * Springfield, Mass., University of Pennsylvania Department of Medicine, Philadelphia, 1904, served during World War I, on the staff of the Springfield Hospital, aged 63, died, April 11, of cerebral hemorrhage.

John Alexander Dinwoody, Chicago, Trinity Medical College, Toronto, Ont., Canada, 1890, member of the Illinois State Medical Society, medical examiner for merchant marine applicants during World War I, served on the staff of the Jackson Park Hospital, aged 77, died, April 17, of coronary thrombosis.

Louis William Dunavan, San Diego, Calif., Northwestern University Medical School, Chicago, 1892, aged 76, died, April 18, of duodenal hemorrhage.

Harold Webb Garcelon * Auburn, Maine, McGill University Faculty of Medicine, Montreal, Que., Canada, 1908, fellow of the American College of Surgeons, for ten years president of the school board, served on the staff of St Mary's General Hospital, Lewiston, aged 59, died, April 17, of coronary thrombosis.

Hyman Glanz * New York, Columbia University College of Physicians and Surgeons, New York, 1904, aged 62, died, April 15, of coronary thrombosis.

Harry Goldman * Boston, Tufts College Medical School, Boston, 1918, assistant professor of preventive medicine at his alma mater, deputy health commissioner of Boston, associated with the city health department for more than twenty years, served on the staff of the Beth Israel Hospital, aged 47, died, April 22, of coronary thrombosis.

Henry Philip Graul * St. Louis, St. Louis University School of Medicine, 1905, on the staffs of the Lutheran and St. Anthony's hospitals, aged 62, died, April 16, of heart disease.

Walter P. Grimes * Kansas City, Mo., University Medical College of Kansas City, Mo., 1901, an Affiliate Fellow of the American Medical Association, on the staff of the Veterans Hospital, aged 70, died, April 9, of acute coronary occlusion.

Robley Hackett, Churchville, Md., University of Pennsylvania Department of Medicine, Philadelphia, 1892, aged 73, died, April 11, of cerebral hemorrhage.

Meade Eugene Edgar Hagerty, Ferguson, Mo., Baltimore Medical College, 1908, member of the Missouri State Medical Association, served during World War I, served on the staffs of the Missouri Baptist Hospital and the Evangelical Deaconess Home and Hospital, St. Louis, aged 58, died, April 26, of hypertensive heart disease.

Henry Halpert * Scranton, Pa., Bellevue Hospital Medical College, New York, 1895, served on the staff of the Mercy Hospital, aged 70, died, April 18, of coronary thrombosis.

Jerome D. Hamilton, Detroit, Detroit Medical College, 1884, aged 80, died, April 21, of chronic myocarditis.

Edward A. Harper, Columbus, Ohio, Columbus Medical College, 1892, aged 78, was found dead in his home, April 2.

William T. Henry, Springfield, Tenn., University of Tennessee Medical Department, Nashville, 1909, member of the Tennessee State Medical Association, aged 85, died, April 17 in the Robertson County Hospital of coronary heart disease.

Edgar Milne Hewish * Philadelphia, Victoria University Medical Department, Coburg, Ont., Canada, 1883, L.R.C.P., Edinburgh, Scotland, 1883, served as a medical examiner for the draft board during World War I and until recently as a member of draft board number 74, received a testimonial certificate for more than fifty years' medical service from the Medical Society of the State of Pennsylvania, on the staffs of the Lankenau and Jefferson hospitals, aged 84, died, April 11, of chronic nephritis.

James Orville Hill, Huntington, W. Va., University of Louisville (Ky.) Medical Department, 1912, member of the West Virginia State Medical Association, aged 61, died, April 26, in the Memorial Hospital of hypertensive heart disease.

Thomas Jameson * Rochester, N. Y., McGill University Faculty of Medicine, Montreal, Que., Canada, 1892, fellow of the American College of Surgeons, honorary chief surgeon at the Highland Hospital and attending surgeon at St. Mary's Hospital, aged 76, died, April 23, of coronary thrombosis and pernicious anemia.

John J. Janss, Anaheim, Calif., Jefferson Medical College of Philadelphia, 1884, at one time coroner of Martin County, Minn., aged 86, died, April 13, of cerebral thrombosis and arteriosclerosis.

Charles Muntch Johnson * McVeytown, Pa Jefferson Medical College of Philadelphia 1889, past president of the Mifflin County Medical Society, for many years school medical inspector and physician for the Pennsylvania Railroad, a past president of the staff of Lewistown (Pa.) Hospital, in 1939 received a plaque from the Mifflin County Medical Society for completing fifty years of practice aged 78, died, April 8 of sarcoma of the upper lip

Herbert A. Johnson, Palatka Fla, Georgia College of Eclectic Medicine and Surgery, Atlanta, 1902, member of the Florida Medical Association, veteran of the Spanish American War aged 63, died, April 23, in the Veterans Administration Facility, Lake City, of heart disease

Josiah Leake, Portsmouth, Va, University College of Medicine Richmond, 1908 district health officer of Norfolk and Princess Anne counties, aged 62 died, April 17, of cerebral hemorrhage

Alonzo Chalmers Leslie, Snyder Texas (licensed in Texas under the Act of 1907), aged 82, died April 1, of heart disease

Gaylard M Leslie * Fort Wayne, Ind, Fort Wayne College of Medicine, 1898, for many years president of the Bass Foundry and Machine Company, aged 65, died, April 6, of coronary occlusion

Edward Augustus Lodge, Milford, Mich, University of Michigan Homeopathic Medical School Ann Arbor, 1879 aged 89 died, April 4, in the Pontiac (Mich) General Hospital of bronchopneumonia

Henry Christian Lovis, South Orange N J, College of Physicians and Surgeons New York 1893, member of the Medical Society of the State of New York also a pharmacist, aged 72, died, April 3

William Tappan Lum, Alameda Calif, Syracuse University College of Medicine 1895, served on the city board of health and the board of education, colonel in the medical reserve corps of the U S Army not on active duty, served during World War I, aged 73, died, April 7 in the Alameda Hospital of bronchopneumonia and myocarditis

Henry Martin McGehee, Talbotton Ga Emory University School of Medicine Atlanta, 1916 aged 50 died, April 10 in a hospital at Atlanta

Harry Oren Maldiner * North Tonawanda, N Y, University of Buffalo School of Medicine 1914 member of the Radiological Society of North America, Inc, on the staff of the De Graff Memorial Hospital, aged 55 died in April of coronary disease

Charles Markwell, Versailles, Ky Hospital College of Medicine Louisville, 1892 aged 75 died April 8 in the Eastern State Hospital, Lexington, of perforated gastric ulcer

John Masselink, Zeeland, Mich, Detroit College of Medicine, 1904, aged 65 died, April 2, in the Holland (Mich) City Hospital of cerebral hemorrhage

David Henry Mendelsohn * Paterson, N J Jefferson Medical College of Philadelphia, 1910 fellow of the American College of Surgeons, attending surgeon, Nathan and Miriam Barnett Memorial Hospital aged 55 died, April 7 in Miami Beach Fla., of heart disease

John O'Brien Jr, Hampton, Va Medical College of Virginia Richmond 1901, served in France and with the 76th division of the American Expeditionary Forces during World War I aged 66 died, April 2 in the Veterans Administration Facility, Kecoughton, of coronary arteriosclerosis

Frank William Pilliod, Toledo Ohio, St. Louis University School of Medicine 1915 member of the Ohio State Medical Association, served overseas as a captain in the medical corps of the U S Army during World War I for twenty years physician to the Ursuline Convent aged 52, on the staff of St Vincent's Hospital, where he died, April 11 of endocarditis

George Joseph Pomainville * Nekoosa, Wis Wisconsin College of Physicians and Surgeons Milwaukee, 1904 past president of the Wood County Medical Society served as mayor of Nekoosa health officer of Nekoosa and Port Edwards on the staff of the Riverview Hospital Wisconsin Rapids aged 62 died, April 10, of lymphosarcoma of the jejunum

Elmer Tower Prizer * Lancaster Pa, Hahnemann Medical College and Hospital of Philadelphia 1896 past president of the Lancaster County Medical Society, chief of the department of gynecology and obstetrics and vice president of the medical staff at St Joseph's Hospital where he took an active part in organizing the training school for nurses a

director of the former Peoples Trust Company and later of the Farmers Trust Company, aged 75, died, April 12, in the Hahnemann Hospital, Philadelphia, of carcinoma

Elwood Isaac Rogers, Ridgefield, Conn, Atlantic Medical College, Baltimore, 1910, aged 65, was killed, April 1, in an automobile accident

Donald William Schafer * Fort Wayne, Ind, University of Cincinnati College of Medicine, 1923, served during World War I recently an examining physician for the Allen County Selective Service System, on the staff of St Joseph Hospital, aged 48 died, April 12, of coronary occlusion

Walter William Schmid * Charleroi, Pa, University of Pittsburgh School of Medicine, 1916, served during World War I, member and secretary of the senior surgical staff of the Charleroi Monessen Hospital, aged 56, died, April 9, of hypertensive heart disease

Alvin Hiram Sippy, Clayton Mo Missouri Medical College St Louis 1885, aged 79, died, April 13, of arteriosclerosis

Arthur Howard Smith * Marietta, Ohio, Medical College of Ohio Cincinnati 1898 served as a major in the medical corps of the U S Army during World War I, for many years physician and surgeon for the Baltimore and Ohio Railroad on the staff of the Marietta Memorial Hospital, aged 70, died, April 7, of cerebral thrombosis and heart disease

John Soterios Soteropoulos, Kansas City, Mo National University of Athens School of Medicine, Greece 1904 aged 60, died, April 18, of acute coronary occlusion

John Madeira Spetnagel, New York University and Bellevue Hospital Medical College New York, 1901, aged 68 died, April 8 in St. Luke's Hospital of cirrhosis of the liver

William Cromwell Stone, Greenville S C Medical College of the State of South Carolina Charleston, 1913 served during World War I aged 59 died April 5, in the Veterans Administration Facility, Atlanta Ga, of bronchopneumonia diabetes mellitus and paraplegia of the lower extremities

Frank Wesley Sweetland * Angola, N Y, University of Buffalo School of Medicine 1878, for many years mayor, member and president of the board of education of Angola, aged 87, died, April 13, of acute uremia, chronic nephritis and arteriosclerosis

Jesse Adolphus Work, Blue Creek, W Va (licensed in West Virginia in 1898), aged 73, died, April 8

DIED WHILE IN MILITARY SERVICE

James Philip Citta, Toms River, N J Jefferson Medical College of Philadelphia 1937 diplomate of the National Board of Medical Examiners member of the staff of the Royal Pines Hospital, Pinewald major in the medical reserve corps of the U S Army flight surgeon stationed at Shawfield S C, was killed in an airplane accident near Roanoke, Va, May 15 aged 31

Henry Hill Connolly, Brookline, Mass Tufts College Medical School, Boston 1941 lieutenant, junior grade medical corps of the U S Naval Reserve aged 27 died January 5, in the U S Naval Hospital Chelsea, of meningococcal meningitis

Jacob J Horwitz * Milwaukee Rush Medical College, Chicago 1919 specialist certified by the American Board of Obstetrics and Gynecology Inc formerly clinical instructor in obstetrics and gynecology at the Marquette University School of Medicine, attending gynecologist and obstetrician to the Mount Sinai Hospital major medical corps Army of the United States aged 49, died, April 24 at Hot Springs National Park Ark. of exsanguination following incision of the wrists self inflicted

Abe A Hyman, Chicago Loyola University School of Medicine Chicago 1938 member of the Illinois State Medical Society first lieutenant in the medical corps of the Army of the United States aged 33 was killed May 17 when a truck in which he was riding overturned near Dermott Ark

Stuart Terry, Pontiac, Mich University of Michigan Medical School Ann Arbor 1933 member of the Michigan State Medical Society lieutenant in the medical corps of the U S Naval Reserve aged 35 was accidentally drowned in New Zealand, Dec 20 1942

Bureau of Investigation

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Products

The following items are abstracts of stipulations in which promoters of "patent medicines," medical devices and cosmetics have cooperated with the Federal Trade Commission to the extent of agreeing to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

Armi Mineral Water—This was reported by the Federal Trade Commission to consist of city tap water supplemented by certain minerals in small quantities and by a relatively larger amount of sodium sulfate, through which mixture has been conducted a current of electricity. In October 1942, one Ralph R. Markwood, trading as Armi Mineral Water Company, Toledo, Ohio, signed a stipulation with the Federal Trade Commission agreeing to discontinue the following misrepresentations for his product: that the treatment of the water by electrolysis imparts therapeutic value to it; that the water is effective in replenishing an impoverished blood stream, overcoming congestion in the intestinal tract, preventing or correcting the accumulation of toxins in the system or invigorating every organ and cell of the body; that the preparation when taken as directed will constitute a competent treatment or dependable relief for a long list of ailments including, among others, appendicitis, arthritis, asthma, common colds, diabetes, gallstones and heart, liver and kidney disorders; or that it has any effect on constipation other than by affording temporary relief such as any saline laxative would produce. Markwood further agreed to discontinue use of such statements as "scientifically balanced artificial mineral water" to imply that the mineral content of the water is of such kind, quantity and proportion as to supply the bodily requirements of minerals in adequate and correct proportion when the preparation is taken as directed.

Bathritis—In October 1942 one James P. Galligan, trading as Bathritis Company, Chicago, stipulated with the Federal Trade Commission that he would discontinue the following misrepresentations in his advertising of his product: that when used as directed in the bath it would have any therapeutic effect in the treatment of rheumatism, neuralgia or other ailments; or when applied as a liniment would be effective in excess of relieving pain; that it relieves sprains, stiffness and swelling; or works toward restoring normal active muscular health; that it is effective in comforting, inflamed tissues and dispelling body odors; or is a new discovery.

Delano's—In October 1942 F. H. Delano and the Delano Company, Inc., of Syracuse, N. Y., signed a stipulation with the Federal Trade Commission in which they agreed to cease representing their product as a remedy or cure for rheumatism and as a tonic or alterative. Further, they agreed to discontinue any advertising which represented that their preparation or any other of substantially the same composition, whether sold under the name "Delano's" or any other trade style, is safe and harmless, or any advertisement which failed to reveal that the product should not be used when abdominal pains, nausea, vomiting or other symptoms of appendicitis are present; that its regular or continued use might result in dependence on laxatives or that the administration of the mixture regularly or over a considerable period of time unsupervised by a physician may result in injury to the user. It was provided, however, that such advertisements need contain only the statement "Caution: Use only as directed," when the label itself contains sufficient warning.

Dulse Dene Vita Broth, Garlo-Min, Vege Molen Vita Lax and M 7—These were the subjects of a stipulation which one Andre Tempe, trading as Master Vita Min Laboratories, Chicago, signed with the Federal Trade Commission in October 1942. In this he agreed to discontinue the following misrepresentations in the advertising: that only organic compounds of iodine preparations are nutritionally effective; that the administration of iodine preparations will increase immunity to disease; or that the use of such a product in combination with vitamin A will improve vitality; or that his product, "Dulse Dene," is an adequate treatment for nervousness or arthritis; or produces vitality in general or remarkable results in school children; that the American dietary is deficient in minerals; that it is impossible to obtain adequate nourishment from the customary articles of diet; or that it is impossible to obtain sufficient minerals from various vegetables unless they have been subjected to a special treatment such as is used in preparing the vegetables contained in Tempe's product, "Vita Broth"; that "Garlo Min," because of its dried garlic or other content, has any therapeutic effect in treatment of high blood pressure, or prevents disease and promotes good health; or that the use of garlic promotes longevity; detoxifies the colon; soothes the nervous system; or has a favorable influence on arteriosclerosis or high blood pressure; that either okra or the respondent's product, "Vege Molen," is an effective treatment for stomach ulcers, duodenal ulcers, colitis, chronic constipation, hemorrhoids or acid stomach; or that cancer generally results from colon irritation; that "Vita Lax" prevents hyperacidity, toxemia or intestinal putrefaction; or is free from drugs and is not habit forming; that

vitamin A can be depended on as "anti-infective" to promote healthy skin and normal eyesight and build resistance against colds and infections; that vitamin B overcomes nervousness and irritability; that vitamin C maintains health of teeth and gums; that vitamin E promotes muscular normality and vigor to help prevent anemia; that vitamin G is a natural promoter of clear skin; or that the respondent's product "M 7," by reason of its vitamin or other content, constitutes a competent treatment for such diseases, symptoms or conditions. The concern further agreed to discontinue the use of the term "vitamin F" to describe the content of any of its preparations, or otherwise to designate any ingredient by a purported scientific name or term not recognized by the prevailing weight of authorities in such field of science.

Products of Allied Pharmaceutical Company, Inc., Cleveland—This concern also operated as Erie Laboratories, Inc., Avon Pharmaceutical Company, Victor Drug Products, Mason Pharmaceutical Company, Mack Pharmaceutical Company, Dale Drug Products and Murray's. In October 1942 the Federal Trade Commission accepted from the concern in question a stipulation agreeing to discontinue using or supplying to others for their use, advertising matter making the following misrepresentations for their products: "Lee's O B Tablets" (also sold under the name "Lee's Obesity Tablets") permanently reduces weight and increases vitality; "Quits" (also sold as "Chexs," "Halls" and "Braks") overcomes the liquor habit and is tasteless and harmless; "Murray's Procon Tablets" (also known as "Dale Urotone Tablets," "RLD Procon Tablets," "Hite's Inco Tablets" and "Mack's Inco Tablets") removes excess acid, neutralizes waste matter and has value in treating prostatic troubles or conditions secondary to or associated with prostatic or urinary disorders; "Elco Hepo (Hepatic) Tablets" (also sold under the names "Murray's Hepo Tablets" and "Hite's Okay Hepo Tablets") corrects habitual constipation, jaundice or gallstones or overcomes the cause of constipation, headaches, dizziness, marred complexion or poor eyesight; "Hay Fever and Asthma Preparation" is a remedy or cure for hay fever, asthma, sinus or summer colds or affords anything but temporary relief from symptoms of such disorders; "L. H. C. Lee's Herbal Compound" restores strength or vigor to persons suffering from nervousness or rundown condition because of overwork, excessive eating, or too strenuous living; "Elco Iocin Tablets" (also sold as "Dale's Salicol Tablets," "Grabill's Tablets" and "Hart's Tablets") is a competent treatment or cure for rheumatism, arthritis, lumbago, neuralgia or swollen joints or affords more than temporary or partial relief from muscular pains and aches caused by such disorders; "Furmas" (also known as "Mack's Moxel") corrects stomach disorders generally and gives relief from distress resulting from loss of appetite, sleeplessness and dizziness when not due to constipation; "Elco Evora Salve and Liquid" (known also as "Murray's Evora" and "Mack's E. Z.") is a remedy or cure for skin diseases or will clear up disfiguring skin conditions. The respondent corporation further stipulated that it will discontinue any advertisements of Quits, Elco Iocin Tablets, Furmas or Hay Fever and Asthma Preparation or any other products of substantially the same ingredients or properties as these, the use of which is patentable, dangerous to health and the advertising of which fails to reveal such potential danger. It was provided, however, that if the directions for use of these preparations, whether on the label or in the labeling, contain an adequate warning of the potential danger to health such advertising need carry only the statement "Caution: Use only as directed."

Taylor's Kolnox Compound—Roy E. Phipps, trading as Taylor Drug Company and Taylor Drug and Seed Company, Bessemer, Ala., stipulated with the Federal Trade Commission in October 1942 that he would discontinue the following misrepresentations for his product: that it will help the system maintain proper alkaline balance; that it is a cold remedy and will prevent, fight, control or rid one of colds; that it will clear the system of poisons, relieve bad coughs, or have any value with respect thereto, beyond its ability to exert a slight cooling effect on the throat; or that it will relieve or ease congestion. Phipps further agreed to cease representing that his product is safe to use in all cases and to discontinue any advertisements which failed to reveal that the preparation should not be used when symptoms of appendicitis are present. He was permitted, however, to limit this warning in the advertising to the brief statement "Caution: Use only as directed," provided the directions wherever they might appear, contain adequate warning to the same effect.

Vi Co Compound—The promoters of this, Irving Z. Harris and Pauline B. Harris, trading as Veltek Company and Vi Co Sales Company, North Birmingham, Ala., signed a stipulation with the Federal Trade Commission in August 1942 in which they agreed to discontinue the following misrepresentations: that this product is a vegetable and mineral compound; that it will afford relief from indigestion and sour stomach; and that in future advertising they will cease using the word "tonic" either alone or with other words to describe the preparation.

Vivi Ta Superior Wheat Germ—This is put out by Claire L. and Emil J. Specht, doing business as Vegetable Juice and Products Company and Vegetable Products Company, Rochester, N. Y. For a time the respondent represented that this product would provide users with vitamin A and the minerals calcium, iron, copper, magnesium and manganese; that it could be relied on to prevent colitis, sterility, eye cataracts, gray hair or successfully treat catarrh, arthritis, neuritis, eczema, anemia, stimulate the liver and pancreas, strengthen the heart muscle, retard old age, normalize calcium metabolism, improve the condition of the sinus membranes or of the hair, nails or scalp, increase reserve energy, vigor, mental powers, nerve and muscle tone, provide effective aid during the menopause, exert a specific nourishing effect on the nerves and brain, favorably affect cases of constipation or indigestion, and revitalize tissues and glands. These claims are now discontinued, according to a stipulation which the Spechts signed with the Federal Trade Commission in October 1942 in which they agreed that the claims should not be repeated except when and to the extent that the disorders named may be due to a deficiency of the vitamins which the product furnishes.

Correspondence

MEDICAL EDUCATION AT THE FRONT

To the Editor—About six weeks ago I requested a subscription be sent to me of THE JOURNAL. Communications are, of course, a bit uncertain across the sea lanes these days, and so I thought I would send a V mail inquiry as to whether you received my request.

Incidentally, I might say that the reason I've asked for the subscription is so I could keep the copies longer. For in this particular section of the service—under bomber command—the various medical officers in this wing are sent at periodic intervals copies not only of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION but also of the British journals—like the *Lancet* and the *British Medical Journal*. Lieut Col A L Streeter the wing surgeon has been quite attentive to details of this sort and has constantly sought to keep up the medical interest of his staff.

Medical officers in this wing are always encouraged to attend the weekly medical meetings held at Second Evacuation Hospital—staffed by the St Lukes (New York) unit. At the last meeting held May 21, the chief of the surgical service there, Lieut Col MacFee, introduced Col Rex L Divly who presented a kodachrome film on amputations. Colonel Divly also introduced Dr Freyberg from Sweden who was visiting England the previous three weeks at the request of the Swedish ministry of health. Professor Freyberg, a very mild mannered soft spoken blue eyed Nordic spoke of the present situation in neutral Sweden and talked at some length on the status of medicine in that country. According to the professor, the surgeon in Sweden must work for the government gets a salary rarely exceeding \$2000 does not become a chief of surgery in a hospital until he is over 40 and has but little opportunity for outside practice. Other interesting personalities in the field of medicine that have spoken at the weekly medical meetings at the Second Evacuation Hospital in the past few months are Col William S Middleton from the University of Wisconsin Medical School, Lieut Col Theodore L Badger chest specialist from Boston, and the neurosurgeon Capt Arthur Ecker, who spoke on the topic of low back pain.

The medical side of this war is doing well.

ASHER N LEBENSOHN, Captain M C A U S,
A P O 634 (%) P M
New York

'SMALLPOX VACCINATION REACTIONS'

To the Editor—I have read with great interest the communication on the subject 'Smallpox Vaccination Reactions' (THE JOURNAL, June 5 p 395). The loss of immunity to smallpox takes place gradually and is subject to considerable individual variation. In my experience beginning vaccinoïd reactions occasionally showed as early as the second day.

For the past two years I have promoted smallpox revaccination by emphasizing the fact that it should be regarded in the same light as the Schick test for susceptibility to diphtheria which has the added advantage of not requiring any further procedure to remedy the lack of protection, if immunity to smallpox is not present. I heartily second the proposal to attach Jenner's name to the immune reaction. However I should like to suggest that the appellation 'Jenner test' would be more appropriate in stressing its value as a routine public health measure as well as its importance in determining the immunity of contacts to a case of smallpox.

SIDNEY FRANKLIN MD Newberry Mich
Director District Department of Health No 6

USE OF SULFATHIAZOLE LOCALLY IN OTOLARYNGOLOGY

To the Editor—The editorial comment regarding the use of sulfathiazole locally in the nose, pharynx and larynx (THE JOURNAL, May 15 p 180) prompts me to suggest that a word of caution is in order. In the course of certain experiments that we were carrying out it became desirable to test the capillary network of the lung as an absorptive surface for drug administration. This was done first by using atomized mists from suspensions of various sulfonamides, with resulting high blood levels of the drug (Harris T N Sommer, Harriet E, and Chapple C C *Am J M Sc* 205 1 [Jan] 1943).

Certain disadvantages of the mists prompted the trial of dry sulfonamide powders as smokes from specially designed, though very simple blowers. This work is being reported in the *American Journal of the Medical Sciences* in detail, but one of the results should be mentioned here namely that three deep breaths in the adult taken while the smoke is being blown through the nose and/or mouth produce a sulfonamide blood level of 3 to 5 mg per hundred cubic centimeters of blood in less than fifteen minutes as measured at the finger tip. This level rises for some hours to approximately double the original figures and at the end of two days is usually still above 1 mg per hundred cubic centimeters. As the smoke contains very much less drug than the quantities mentioned in the editorial comment it would seem that some cognizance should be taken of this fact.

CHARLES C CHAPPLE MD,
Philadelphia

TRAUMATIC WINGED SCAPULA

To the Editor—In the February 27 issue of THE JOURNAL appears a clinical note entitled 'Two Additional Cases of Traumatic Winged Scapula Occurring in the Armed Forces,' by Majors Charles U Hauser and William F Martin of the Medical Corps Army of the United States. Two reasons prompt this immediate note for publication in THE JOURNAL.

1 The authors are inconsistent in their method of avoiding stretching of the paralyzed serratus magnus muscle and of its antagonists and in the prevention of contractures in their antagonists for in their first case they employ a most improper and inefficient mechanical measure the sling while in their second case they utilize the accurate principle of upward pressure beneath the flexed elbow with the arm adducted to the side.

2 The authors in discussing their use of the second method make the noncommittal statement 'We make no claims for originality in presenting the detailed pictures of a simple and expedient immobilization cast.' If the authors had reviewed the literature they would have found this method described for the first time by Tocantins and myself in the *Journal of Bone and Joint Surgery* in 1938. The efficient apparatus that we employed consisted of a pelvic celluloid base with an adjustable celluloid cup to force the elbow on the affected side upward.

THOMAS HORWITZ, Major M C,
A P O 678 Unit 1 care of Postmaster
New York

EFFECT OF pH ON ACRIDINE COMPOUNDS

To the Editor—In the May 8 issue of THE JOURNAL page 117 I note in the editorial describing the acridine compounds the statement 'As early as 1913 Browning and Gilmour demonstrated that the action of the diaminoacridine compounds in contrast to all other efficient antiseptics is intensified rather than reduced when the medium contains serum. More recent work has shown that it is not the serum which influences this intensification but the change of the pH of the medium.'

THOMAS BEATH MD Kingston Ont

Council on Medical Education
and Hospitals

CONTINUATION COURSES FOR
PRACTICING PHYSICIANS

In accordance with the plan of the Council on Medical Education and Hospitals, advance information concerning continuation courses for practicing physicians available in the various centers is published quarterly. The following list con-

sists of courses beginning during the period July 1, 1943 Sept 30, 1943. It is hoped that this material will be useful to physicians seeking opportunities for postgraduate work. Physicians called on to assume new responsibilities because of the war and physicians who are returning to practice may find here listed courses which will be of help to them. Since many of the classes are necessarily limited, those who contemplate enrolling in any of these courses are urged to communicate as early as possible with the proper executive officer.

VICTOR JOHNSON, M.D.
Secretary, Council on Medical
Education and Hospitals

Continuation Courses for Practicing Physicians—July 1, 1943–Sept 30, 1943

Institution	Schedule of Course	Title of Course	Number of Students Accepted	Registration Fee and/or Tuition
ALLERGY—See also Dermatology & Syphilology				
Harvard Medical School, 25 Shattuck Street, Boston, Mass. Write to Dr. Frank R. Ober, Assistant Dean, Courses for Graduates	July to 2 weeks, part time	Clinical Allergy	6 ¹	\$0
University of Pennsylvania Graduate School of Medicine, 237 Medical Laboratories, Philadelphia, Pa. Write to Dr. R. C. Buckel, Dean, The Medical-Chirurgical College	Arranged 4 weeks, about 10 hours	Allergy	Individuals ²	\$1.00
Dr. Vaughn and Graham, 201 West Franklin Street, Richmond, Virginia. Write to Dr. Warren T. Vaughn	1 year course Every 6 months	Training in Allergy	Limited	.
ANATOMY—See also Otolaryngology Surgery				
Harvard Medical School, 25 Shattuck Street, Boston, Mass. Write to Dr. Frank R. Ober, Assistant Dean, Courses for Graduates	July Aug. - 6 weeks	Microscopic Anatomy	Limited ¹¹	\$0 ¹¹
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 10th Street, New York City. Write to Dr. J. A. W. Hetrick, Dean	Arranged 100 hours	Applied Anatomy of Pelvis and Abdomen		\$20
ANESTHESIOLOGY				
Columbia University, Faculty of Medicine, at the New York Postgraduate Medical School, 305 East 20th Street, New York City. Write to Director of the School	Continuously 2 weeks Arranged 12 sessions	Anesthesia	12	\$100, \$50 for ad week ¹⁸
Harvard Medical School, 25 Shattuck Street, Boston, Mass. Write to Dr. Frank R. Ober, Assistant Dean, Courses for Graduates		Regional Anesthesia	2-4	\$15 ¹⁴
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 10th Street, New York City. Write to Dr. J. A. W. Hetrick, Dean	Monthly Days and hours arranged	Clinical Anesthesia	3	\$50
New York University College of Medicine, 477 First Avenue, New York City. Write to Dr. John H. Mulholland, Assistant Dean	Sept 27 1 yr basic sciences, 2 yrs approved residency, thesis examinations—leads to degree	Anesthesiology		\$101st yr \$50 2d & 3d yr
	Arranged Part time for 3 weeks	Inhalation Anesthesia	5	1-1
BACTERIOLOGY—See Ophthalmology Otolaryngology Pathology, Public Health				
BIOCHEMISTRY				
Harvard Medical School, 25 Shattuck Street, Boston, Mass. Write to Dr. Frank R. Ober, Assistant Dean, Courses for Graduates	Arranged	Research in Biological Chemistry		Arranged ¹¹
BRONCHOSCOPY—See Otolaryngology				
CANCER				
Tufts College Medical School, 30 Bennett Street, Boston, Mass. Write to Dr. Samuel Procter, Chairman, Postgraduate Division	On request	Cancer	Minimum 4	Arranged ¹³
United States Public Health Service, National Cancer Institute at approved institutions. Write to Surgeon General Washington, D. C.	Arranged Full time	Diagnosis and Treatment	Individuals	Varies ¹⁴
CARDIOLOGY				
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 10th Street, New York City. Write to Dr. J. A. W. Hetrick, Dean	Arranged 30 hours	Cardiology		\$100
New York State Department of Health, Cardiac Service, Write to New York State Reconstruction Home, West Haverstraw, N. Y.	Arranged 3 months	Rheumatic Cardiac Disease	Limited ¹⁴	\$0.25 ¹⁵
University of Pennsylvania Graduate School of Medicine, 237 Medical Laboratories, Philadelphia, Pa. Write to Dr. R. C. Buckel, Dean, The Medical-Chirurgical College	Weekly 5 days, about 30 hours	Electrocardiology and Cardiac Roentgenology	Individuals ²	\$0
CYSTOSCOPY—See Obstetrics & Gynecology Urology				
DERMATOLOGY & SYPHILOLOGY—See also Obstetrics & Gynecology				
	Throughout the year (4 sections) 6 weeks, 3 months	Clinical Dermatology and Syphilology	20	\$10, \$10 ¹⁶ , 1 section \$0 1st 2 sections \$20 3 sections \$30 4 sections \$40 5 sections \$50
	Arranged ¹ 6 weeks, 3 months	Diagnosis and Treatment of Syphilis	5	\$10, \$10 ¹⁶
	Arranged 6 weeks, 3 months	Practical Instruction in Dermatological Allergy and Immunology	3	\$10 ¹⁷
	Arranged 6 weeks, 3 months	Practical Instruction in Mycology and Animal Parasitology as Related to Diseases of the Skin	2	\$10 ¹⁸
	Arranged ¹ 6 weeks, 3 months	Practical Instruction in Minor Dermatological Surgery	2	\$10 ¹⁹
	Arranged ¹ 6 weeks, 3 months	Practical Instruction in Physical Therapy as Applied to Diseases of the Skin	3	\$10 ²⁰
	Arranged ¹ 6 weeks, 3 months	Practical Instruction in the Diagnosis and Management of Syphilis	12 ²¹	\$10 ²²
	Arranged 3 months, 6 months or 1 year	Practical Instruction in the Pathological Histology of Diseases of the Skin		\$10 ²³
Columbia University, Faculty of Medicine, at the New York Postgraduate Medical School, 305 East 20th Street, New York City. Write to Director of the School	Arranged 6 weeks, 3 months			

Continuation Courses for Practicing Physicians—July 1, 1943–Sept 30, 1943—Continued

Institution	Schedule of Course	Title of Course	Number of Students Accepted	Registration Fee and/or Tuition
DERMATOLOGY & SYPHILOLOGY—Continued				
Harvard Medical School 25 Shattuck Street Boston, Ma. Write to Dr. Frank R. Ober, Assistant Dean, Courses for Graduates	Arranged 2 months part time Arranged Full time Monthly 1 month part time July 1 year full time	Clinical Mycology Dermatology Skin Ward Work Dermatology Dermatology and Syphilology	6 Limited ³ Limited ³	\$30 Arranged ³ \$10 \$20
New York Polyclinic Medical School and Hospital 345 West 40th Street New York City Write to Dr. F. H. Dillingham, Executive Officer	First of any month 6 week 3 months part time	Dermatology and Syphilology		\$40
DIETETICS				
Tufts College Medical School 20 Banquet Street Boston, Mass. Write to Dr. Samuel Proger, Chairman, Postgraduate Division	On request	Dietetics	Minimum 4	Arranged ¹²
ELECTROCARDIOGRAPHY—See also Cardiology				
Columbia University Faculty of Medicine at the New York Postgraduate Medical School, 305 East 30th Street New York City Write to Director of the School	Sept. 25-29 6 days full time	Electrocardiography	Minimum 4	\$50 ¹⁰
Michael Reese Hospital 20th Street and Ellis Avenue Chicago, Ill. Write to Dr. Louis N. Katz, Director of Cardiovascular Research	Aug. 17-19 2 weeks full time Aug. 16-22 Full time	Electrocardiography Electrocardiographic Interpretation	Limited	\$100
New York Medical College Flower and Fifth Avenue Hospitals 4th Avenue at 104th Street New York City Write to Dr. J. A. W. Hetrick, Dean	Arranged 10 hours	Electrocardiography		\$100
ENDOCRINOLOGY—See Medicine Obstetrics & Gynecology				
ENDOSCOPY—See Obstetrics & Gynecology Surgery				
EPIDEMIOLOGY—See Military Medicine Public Health				
GASTROENTEROLOGY				
Columbia University Faculty of Medicine 650 West 16th Street New York City, at Presbyterian Hospital Write to Dean	Arranged 2 months	Gastrocopy	12	\$50
Hahnemann Medical College and Hospital 230 North Broad Street Philadelphia Pa. Write to Dr. William A. Pearson, Dean	Monthly 1 month full time	Gastrocopy	2	\$100
New York Medical College Flower and Fifth Avenue Hospitals 4th Avenue at 104th Street New York City Write to Dr. J. A. W. Hetrick, Dean	Arranged 1 month full time Arranged 3 hours Arranged 5 sections	Gastroenterology Gastroscopy Peritonescopy		\$100 \$100 \$20
University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories Philadelphia Pa. Write to Dr. R. C. Buckle, Dean, The Medico-Chirurgical College	Arranged 10 weeks part time	Clinical Course	Individuals ²	\$400
GASTROSCOPY—See Gastroenterology Otolaryngology				
GYNECOLOGY—See Obstetrics and Gynecology				
HEMATOLOGY				
Tufts College Medical School 20 Banquet Street Boston, Ma. Write to Dr. Samuel Proger, Chairman, Postgraduate Division	July 5-17	Hematology	Individuals ²	\$75 ¹⁴
INFANTILE PARALYSIS				
University of Minnesota Medical School Minneapolis Minn. Write to Dr. Harold S. Diehl, Dean	Arranged 6 days full time	Infant Treatment of Acute Poliomyelitis	25 ¹⁵	\$25
LARYNGOLOGY—See Otolaryngology				
MEDICINE				
Florida Medical Association Inc. Write to Dr. T. Z. Cason, Chairman, Medical Postgraduate Course 2033 Riverside Avenue Jacksonville Fla.	Arranged 2 week or more full time	General Medicine	10	\$5
Harvard Medical School 25 Shattuck Street Boston, Mass. Write to Dr. Frank R. Ober, Assistant Dean, Courses for Graduates	Continuously Part time Aug. 1-4 months full time Sept. 1 Sept. 15 1 year full time July 1-31 Full time Aug. 9 2 week full time	Diabetes General Course in Internal Medicine Internal Medicine Modern Diagnosis and Treatment of Heart Disease Selected Subjects in Endocrinology and Metabolism	Any number ²⁰ 4-5-5 20-30 Minimum 10	None \$150 \$500-75 \$150 \$20
Maine Medical Association 142 High Street Portland, Maine Write to Dr. Frederick R. Carter, Chairman, Committee on Graduate Education	Arranged Part time	Home Study Course	Limited ⁴	None
Michigan State Medical Society 2020 Olds Tower Lansing, Mich. Write to Mr. William Burns, Executive Secretary	Sept. 22-24 3 days full time	Postgraduate Conference on War Medicine		\$5
New York Medical College Flower and Fifth Avenue Hospital 4th Avenue at 104th Street New York City Write to Dr. J. A. W. Hetrick, Dean	Arranged 1 month Arranged 30 hours Sept. 27 1 year basic science 2 yrs approved residence the 1st examinations —leads to degree Arranged 1 month Arranged 30 hours	Clinical Pulmonary Disease Endocrinology Internal Medicine Medicine Physical Diagnosis and Hematology Course for General Practitioner	\$100 \$100 \$10-15 yr \$3-1 and 3-4 yrs \$100 \$100 \$100 \$150 ¹⁶	
New York Polyclinic Medical School and Hospital 345 West 40th Street New York City Write to Dr. F. H. Dillingham, Executive Officer	Arranged 6 weeks-3 months full time			
University of Maryland School of Medicine Lombard and Green Streets Baltimore Md. Write to Dr. Robert U. Patterson, Dean	Arranged	Subject Optional	Individual	Arranged
University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories Philadelphia Pa. Write to Dr. R. C. Buckle, Dean, The Medico-Chirurgical College	Arranged 2-4 weeks 75 hours	Diabetes Mellitus	Individuals ²	\$150
MILITARY MEDICINE				
Harvard Medical School 25 Shattuck Street Boston, Mass. Write to Dr. Frank R. Ober, Assistant Dean, Courses for Graduates	To be announced 2 weeks full time	Military Medicine and Surgery	Limited ⁵	

Continuation Courses for Practicing Physicians—July 1, 1943–Sept 30, 1943—Continued

Institution	Schedule of Course	Title of Course	Number of Students Accepted	Registration Fee and/or Tuition
MILITARY MEDICINE—Continued				
Navy Department, Washington, D C Write to Bureau of Medicine and Surgery	6 times yearly	Aviation Medicine (Aviation Medical Examiner)	Limited	None
	8 weeks, full time	Aviation Medicine (Flight Surgeon)	Limited	None
	1 year 5 months	Basic Instruction	Limited	None
	5 months, full time	Deep Diving	Limited	None
	6 times yearly	Epidemiology	412	None
	8 weeks, full time	Basic Course for Officers Exemplary Course	820	None
	1 year yearly	Maxillo Facial and Plastic Surgery	500	None
	6 months, full time	Officer Pool, 14 General Hospitals	150	None
	1 year yearly	Officer Pool Gulf Coast Air Corps Training Center	12	None
	6 months, full time	Officer Pool, Medical Field Service School	700	None
War Department, Washington D C Write to Training Division, Office of the Surgeon General United States Army	Monthly 170 hours	Officer Pool Medical Replacement Training Centers	200	None
	Monthly 1 month, full time	Officer Pool Medical Supply Depots and Medical Sections General Depots	150	None
	Arranged 1 month, 115 hours	Photocentgenology	200	None
	Arranged 1 month	Special Course for Division Officers	30	None
	Arranged 1 month	Specialized Surgical Team Training	20	None
	Undetermined			
	Undetermined			
	Arranged 1 1/2 months			
	Undetermined			
	Arranged 2 weeks, full time			
The Chicago Maternity Center 153 South Newberry Avenue, Chicago Ill Write to Dr Beatrice I Tucker, Medical Director	Sept -0 1 months	Practical Obstetrics		\$10
	Arranged 15 sessions (two sections)	Cystoscopy and Endocrinology (Gynecology)	6	\$12.50 for each section
Columbia University, Faculty of Medicine at the New York Postgraduate Medical School 305 East 20th Street New York City Write to Director of the School	Arranged 10 sessions (sections A, B, D), 15 sessions (section C)	Diagnosis and Office Treatment (Gynecology)	6	\$10 sections A B D \$20 section C
	Arranged (except July and Aug) 5 weeks	Gynecological Endocrinology	4	\$100
Columbia University Faculty of Medicine 650 West 166th Street New York City at Margaret Hague Maternity Hospital Write to Dean	Arranged 1 (except July and Aug) 4 weeks	Surgical Anatomy as Applied to Operative Gynecology (Cadaver)	23	\$10
	Arranged Monthly (except Nov and Dec) 3 months	Gynecological Pathology Internship Training		Arranged \$10
Florida Medical Association Inc Write to Dr T Z Cason, Chairman, Medical Postgraduate Course 2013 Riverside Avenue, Jacksonville Fla	Monthly 1 month	Observation Course in Obstetrics		\$100
	Continuously 2 weeks or more, full time	Gynecology	5	\$2
Harvard Medical School 25 Shattuck Street Boston Mass Write to Dr Frank R Ober, Assistant Dean (Courses for Graduates)	Monthly 1 month or more, full time	Clinical Obstetrics	8	\$125
	July Aug, Sept -0	Gynecology	4	\$10 per month
Indiana University Medical Center, 1010 1232 West Michigan Street, Indianapolis, Ind Write to Dr C J Clark, Chairman Department of Postgraduate Instruction	Monthly 10 exercises	Gonorrhea in Women	3	\$10
	Arranged 2 weeks full time	Obstetrics	10	\$10
Maine Medical Association, 112 High Street Portland Maine Write to Dr Frederick R Carter Chairman Committee on Graduate Education	Arranged	Home Study Course	Limited	None
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 105th Street, New York City Write to Dr J A W Hetrick Dean	Sept 27 1 yr basic sciences, 2 yrs approved residency, thesis examinations —leads to degree	Obstetrics and Gynecology		\$10 1st yr \$20 2nd & 3rd yr
North Carolina State Board of Health Raleigh, N C Write to Dr G M Cooper, Director, Maternal and Child Health Service --	Weekly 5 days, full time	Obstetrics and Pediatrics	16	None
University of Illinois College of Medicine, 1851 West Polk Street, Chicago, Ill Write to Mr George Moon, Assistant to the Dean	Arranged 2 weeks full time	Obstetrics and Pediatrics	Limited	None
OPHTHALMOLOGY				
Columbia University Faculty of Medicine at the New York Postgraduate Medical School, 305 East 20th Street, New York City Write to Director of the School	Arranged 15 sessions -1	Embryology, Histology and Pathology of the Eye	Limited	\$10
New York Eye and Ear Infirmary 218 Second Avenue, New York City Write to Mabel R Stewart Registrar	Monthly 10 part time	Anomalies of the Ocular Muscles	3	\$10
	Monthly 10 part time	Bacteriology of the Eye	4	\$10
	Monthly 10 part time	External Disease of the Eye	6	\$10
	Monthly 10 part time	Ocular Therapy	6	\$10
	Monthly 10 part time	Operative Surgery of the Eye	4	\$10
	Monthly 10 part time	Ophthalmology and Otology	Limited	\$10
	July 20 6 months, full time	Ophthalmoscopy	4	\$10
	Monthly 10 part time	Perimetry	6	\$10
	Monthly 10 part time	Physiological Optics	3	\$10
	Monthly 10 part time	Refraction	3	\$10
New York Eye and Ear Infirmary 218 Second Avenue, New York City Write to Mabel R Stewart Registrar	Monthly 10 part time	Slit Lamp Course	6	\$10

Continuation Courses for Practicing Physicians—July 1 1943–Sept 30, 1943—Continued

Institution	Schedule of Course	Title of Course	Number of Students Accepted	Registration Fee and/or Tuition
OPHTHALMOLOGY—Continued				
Tufts College Medical School 50 Bennet Street Boston, Mass. Write to Dr Samuel Proger, Chairman, Postgraduate Division	Monthly 1 month part time	External Eye Diseases	1 limited	\$50.15
	Arranged 5 week part time	Ocular Refraction	Individuals -	\$270
University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories Philadelphia, Pa. Write to Dr R C Buckle, Dean, The Medical-Chirurgical College	Arranged 5 week part time	Ophthalmic Histology and Pathology	Individuals -	\$2.10
	Arranged 2 weeks part time	Ophthalmic Operations (Cadaver)	Individuals -	\$2.0
ORTHOPEDICS—See Surgery				
OTOLARYNGOLOGY—See also Ophthalmology				
Columbia University Faculty of Medicine at the New York Postgraduate Medical School 305 East 20th Street New York City Write to Director of the School	Arranged 1 4 week or longer (Except in July and Aug.)	Diagnostic Procedures in Otolaryngology	6	\$50.15 - \$0.10 to 2 sections
	Arranged 1 10 c sessions	Diagnosis of the Head and Neck	Minimum 22	Arranged 1
	Arranged 1 (Except in July & Aug.)	Embryology, Histology and Pathology of the Ear, Nose and Throat	Limited 2	\$5.10
	Arranged 1 (Except in July & Aug.)	Surgical Anatomy as Applied to Otolaryngology (Cadaver)	20 -	Arranged 10
	Arranged 1 (Except in July & Aug.)	Surgical Anatomy as Applied to Rhinology and Laryngology (Cadaver)	20 -	Arranged 10
Harvard Medical School 25 Shattuck Street Boston, Mass. Write to Dr Frank R Ober, Assistant Dean, Courses for Graduates	Arranged 2 week full time	Bronchoscopy and Esophagoscopy	Limited 3	\$150
	Monthly (except Apr & Aug.) 1 month full time	Clinical Otolaryngology	23	\$50
	Arranged 2 week full time	Physiology of the Cochlea and Vestibular Apparatus	-	\$50
	Arranged	Technique of Submucous Resection of the Nasal Septum	Limited	\$75 for exercises
New York Eye and Ear Infirmary 215 Second Avenue New York City Write to Mabel R Stewart, Registrar	Monthly 19 4 week part time	Anatomy of the Ear	41	\$45.14
	Monthly 19 1 month or more part time	Bacteriology of the Ear	41	\$40.14
	Monthly 19 1 month part time	Clinical Otolaryngology	41	\$40.14
	Monthly 19 1 month part time	Operative Surgery of the Ear and Nasal Accessory Sinuses	41	\$110.14
	Arranged 50 hours	Applied Anatomy of Ear, Nose and Throat		\$100
New York Medical College Flower and Fifth Avenue Hospitals 5th Avenue at 105th Street New York City Write to Dr J A W Hetrick, Dean	Sept 1 yr basic sciences 2 yr approved residency thesis examinations—leads to degree	Otolaryngology		\$610.1 t yr \$50.2d and 3d yrs
University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories Philadelphia, Pa. Write to Dr R C Buckle, Dean, The Medical-Chirurgical College	Arranged 2 weeks full time	Bronchoesophagology, Gastroscopy and Laryngeal Surgery	Individuals 2	\$250
	Arranged 2 weeks part time	Otologic Operations (Cadaver)	Individuals 2	\$250
	Arranged 10 days part time	Rhinolaryngologic Operations (Cadaver)	Individuals 2	\$150
Temple University School of Medicine 340 North Broad Street Philadelphia, Pa. Write to Prof or Chas. L. Jackson, Director	July Full time	Bronchoesophagology and Gastroscopy	Individuals 2	\$250.1
Tufts College Medical School 50 Bennet Street Boston, Mass. Write to Dr Samuel Proger, Chairman, Postgraduate Division	Monthly Part time	Otolaryngology		\$50 - \$0.12
PATHOLOGY—See also Obstetrics and Gynecology Ophthalmology				
Harvard Medical School 25 Shattuck Street Boston, Mass. Write to Dr Frank R Ober, Assistant Dean, Courses for Graduates	Monthly Hours arranged	Pathology 10	4	\$40
	Monthly (except Aug.) 1 month full time	Pathology of Obstetrics and Gynecology 10	22	\$125
	July - 1 month full time	Pathology (General and Surgical)	6 11	\$50
	August - 2 weeks part time	Pathology of Tumors	8 11	\$50
New York Polyclinic Medical School and Hospital 345 West 50th Street New York City Write to Dr F H Dillingham, Executive Officer	Arranged	Research in Pathology Pathology and Bacteriology (Practical Laboratory Instruction)		Arranged 12 13 Arranged 16
PEDIATRICS—See also Obstetrics and Gynecology				
Columbia University Faculty of Medicine at the New York Postgraduate Medical School 305 East 20th Street New York City Write to Director of the School	July 1 4 weeks part time	Clinical Pediatrics	39	\$40.16
	July 12 16 (six days)	Symposium on Recent Advances in Pediatrics		\$35
Florida Medical Association Inc. Write to Dr T Z (a on Chairman Medical Postgraduate Course 2033 Riverside Avenue Jacksonville, Fla.	Continuously 2 weeks or more full time	Pediatrics	5	\$5
Harvard Medical School 25 Shattuck Street Boston, Mass. Write to Dr Frank R Ober, Assistant Dean, Courses for Graduates	July Sept - 1 year full time	Pediatrics	Limited 11	\$50
Maine Medical Association 142 High Street Portland, Maine Write to Dr Frederick R Carter, Chairman, Committee on Graduate Education	Arranged	Home Study Course	Limited 6	Non
New York Medical College Flower and Fifth Avenue Hospitals 5th Avenue at 105th Street New York City Write to Dr J A W Hetrick, Dean	Sept 27 1 yr basic sciences 2 yrs approved residency thesis examinations—leads to degree	Pediatrics		\$610.1 t yr \$50.2d and 3d yrs
New York Polyclinic Medical School and Hospital 345 West 50th Street New York City Write to Dr F H Dillingham, Executive Officer	Arranged 4 weeks part time	Pediatrics	10	\$50
PERITONEOSCOPY—See Gastroenterology				
PHYSICAL THERAPY				
American Congress of Physical Therapy Palmer House Chicago, Ill. Write to Executive Director 50 N Michigan Avenue Chicago, Ill.	Sept 8 11	Physical Therapy Lecture		\$2.10 lecture 15 full schedule of 9 lectures

Continuation Courses for Practicing Physicians—July 1, 1943–Sept 30, 1943—Continued

Institution	Schedule of Course	Title of Course	Number of Students Accepted	Registration Fee and/or Tuition
PHYSIOLOGY—See also Public Health				
Harvard Medical School, 25 Shattuck Street, Boston, Mass Write to Dr Frank R Ober, Assistant Dean, Courses for Graduates	Arranged	Research in Physiology		Arranged ¹²
PSYCHIATRY & NEUROLOGY				
Boston Psychoanalytic Institute Psychiatry Clinic, 82 Marlborough Street, Boston, Mass Write to Director	Arranged	Civilian War Neuroses and Their Treatment	40	None
Catholic University of America, Child Center, Washington, D C Write to Dean of the Graduate School	Sept -9 1/2 months, part or full time	Child Psychiatry		\$1.00 ¹³
Harvard Medical School 25 Shattuck Street, Boston Mass Write to Dr Frank R Ober, Assistant Dean, Courses for Graduates	Arranged	Neuroanatomy, Neurophysiology, Neuropathology, Clinical Neurology or Neurosurgery ¹³		Arranged
	July -9 1 week, full time	Neurology of Speech and Reading		\$50 ¹³
	Arranged	Psychiatry General Course or Special Fields	Individuals	Arranged
Institute for Psychoanalysis 11 East Ohio Street, Chicago, Ill Write to Helen Rose, Administrative Director	On demand 2 weeks, part time	Research in Neuropathology		Arranged
The Menninger Clinic, Topeka, Kan Write to Dr Karl Menninger, Chief of Staff	Continuously 12 weeks, part time	Clinical Discussions of War Neuroses	50	None
	Quarterly 1 year, full time	Application of Psychoanalysis to the Study of Psychiatric Problems and of the Psychoanalytic Instruction	41	\$70
	Quarterly 1 year, full time	Resident Training	41	None
	Arranged Full time	Short Courses		\$100 per mo
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 10th Street, New York City Write to Dr J A W Hetrick, Dean	Sept 1 15 hours	Techniques of Psychoanalytic Therapy		\$25
University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories, Philadelphia, Pa Write to Dr R C Buckal Dean, The Medico-Chirurgical College	Arranged 6 weeks, 240 hours	Clinical Psychiatry	Individuals	\$163
	Arranged 10 weeks, part time	Clinicobiologic Neurology and Psychiatry	Individuals	\$100
PUBLIC HEALTH				
Johns Hopkins University, School of Hygiene and Public Health, 615 North Wolfe Street, Baltimore, Md Write to I J Reed, Dean	August -9	Bacteriology Public Health Laboratory Practice	4-7	Arranged
	August -9 2 months	Courses in Public Health	Limited	Varies
	Continuously -9 2 months	Veneral Diseases Advanced Clinical Work in Veneral Disease	Limited	Arranged
Loyola University School of Medicine, 766 Wolcott Avenue Chicago Ill Write to Miss McGowan, Secretary, Department of Preventive Medicine, Public Health and Bacteriology	Quarterly (except in July or August)	Courses in Administration, Laboratory, Education, Mental Hygiene and Sanitation	Individuals	Arranged
New York State Department of Health at Albany Medical College 17 New Scotland Avenue Albany N Y Write to Extension Course Office, Albany Medical College	Arranged 1 year	Extension Course in Public Health	Limited	\$10
University of North Carolina (Chapel Hill) N C Write to Dr Walter Rhee Berryhill (Chairman, Division of Medical Sciences)	Summer quarter	Field Work in Public Health Education	Limited	\$100
	Throughout the year (summer quarter)	Public Health Problems		\$100 each quarter
	Throughout the year (summer quarter)	Research in Maternal Hygiene	Limited	\$100 each quarter
University of Minnesota Medical School, Minneapolis, Minn Write to Dr Harold S Dichtl Dean	Sept -9 13 quarters	Courses for Training Medical Health Officers		\$100
RADIOLOGY—See also Cardiology Military Medicine				
Harvard Medical School, 25 Shattuck Street Boston Mass Write to Dr Frank R Ober, Assistant Dean, Courses for Graduates	Monthly 1 month, full time	General Roentgenology	34	\$100
	Monthly 1 month, full time	General Roentgenology	21	\$100
	Monthly 1 month, full time	General Roentgenology	Limited	\$50
	Monthly 1 month, part time	Roentgenology in Diseases of the Eye, Ear, and Accessory Sinuses	3	\$50
New York Eye and Ear Infirmary, 218 Second Avenue, New York City Write to Mabel R Stewart Registrar	Monthly -9 6 weeks, part time	Ophthalmic and Otologic Roentgenology	Limited	\$10 ¹⁴
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 10th Street, New York City Write to Dr J A W Hetrick Dean	Arranged 2 months	Radiology		\$100
	Sept 27 1 yr basic sciences, 2 yrs approved residency thesis examinations —leads to degree	Radiology		\$100 1st yr, \$200 2d and 3d yr
New York Polytechnic Medical School and Hospital, 345 West 50th Street, New York City Write to Dr F H Dillingham, Executive Officer	Monthly 6 weeks or 3 months, full time	Diagnostic Roentgenology and Radiotherapy (Advanced)	102	\$1.00 200 ¹⁵
RHINOLOGY—See Otolaryngology				
SURGERY—See also Anatomy, Military Medicine, Obstetrics & Gynecology Ophthalmology				
Columbia University, Faculty of Medicine, at the New York Postgraduate Medical School, 305 East 20th Street, New York City Write to Director of the School	Arranged 8 sessions	Blood Transfusion Blood and Plasma Bank	13	\$20 ¹⁶
	Arranged (except in July and Aug)	Dissection and Surgical Anatomy	Minimum 22	\$120 ¹⁶
	12 sessions	Surgical Anatomy as Applied to Colon and Rectal Surgery (Cadaver)	2	\$50
	Arranged (except in July and Aug)	Surgical Anatomy as Applied to Thoracic Surgery (Cadaver)	20	\$120 ¹⁶
	Arranged (except in July and Aug) 12 sessions			

Continuation Courses for Practicing Physicians—July 1 1943–Sept 30, 1943—Continued

Institution	Schedule of Course	Title of Course	Number of Students Accepted	Registration Fee and/or Tuition
SURGERY—Continued				
Florida Medical Association Inc. Write to Dr T Z Caiaon Chairman Medical Postgraduate Courses, 2653 Riverchase Avenue Jacksonville Fla	Continuously 2 weeks or more full time	Orthopedic Surgery	10	\$5
Harvard Medical School 55 Shattuck Street Boston Mass Write to Dr Frank R Ober Assistant Dean Courses for Graduates	Monthly 1 month, part time	Clinical Orthopedic Surgery	1 or more	\$20
	Monthly (except Aug.) Hours arranged	Endo copy	2	Arranged
	Arranged 1 month full time	Minor Surgery Designed for Practitioners	Minimum 8	\$100
Maine Medical Association 142 High Street Portland Maine Write to Dr Frederick R Carter Chairman, Committee on Graduate Education	Arranged	Home Study Course	Limited ⁶	None
New York Medical College Flower and Fifth Avenue Hospitals 5th Avenue at 103rd Street New York City Write to Dr J A W Hetrick Dean	Arranged 160 hours 4 1/2 hours	Abdomen—Including Pelvis and Perineum, either sex ¹ both sexes ²		\$250 1/2 \$170
	Arranged 40 hours	Lower Extremities—Orthopedic		\$50
	Arranged 60 hours	Lower Extremities—Surgical		\$110
	Arranged 160 hours	Surgical Anatomy Head and Neck		\$275
	Arranged 32 hours	Surgical Technique Thorax Including Axillae and Pectoral Region		\$100
Tufts Medical School at Beth Israel Hospital Write to Chair man Postgraduate Division 30 Bennett Street Boston Mass	Arranged 40 hours	Upper Extremities Including Shoulder Girdle Axillae and Mammæ—Orthopedic		\$50
	Arranged 60 hours	Upper Extremities Including Shoulder Girdle Axillae and Mammæ—Surgical		\$115
	July 12 21	Clinical Teaching on Surgical Wards in Operating Room and in Surgical Outpatient Clinics		\$150 ¹³
SYPHILOLOGY—See Dermatology & Syphilology				
TROPICAL MEDICINE				
Tulane University of Louisiana School of Medicine Write to Director Department of Graduate Medicine 140 Tulane Avenue New Orleans La	Last week of Sept 4 1/2 months	Tropical Medicine and Medical Parasitology	Limited ¹¹	\$300
TUBERCULOSIS				
California Tuberculosis Association 45 Second Street San Fran cisco Calif Write to Mr William F Higby Secretary	Arranged 1 week	Tuberculosis	Individuals	None ¹⁷
City of Chicago Municipal Tuberculosis Sanitarium 2019 Wash ington Boulevard Chicago Ill Write to Department of Clinics	On request 2 months part time	Comprehensive Course in Tuberculosis	Minimum 20	None
	Continuously Part time	Tuberculosis		None
Mississippi State Sanatorium Sanatorium Miss Write to Dr Henry Boswell Superintendent	Arranged 2 weeks or more	Clinical Medicine and Chest Diseases		None
UROLOGY—See also Surgery				
Columbia University Faculty of Medicine at the New York Postgraduate Medical School 305 East 20th Street New York City Write to Director of the School	Arranged ¹	Short Courses in Special Subjects	Individuals ²	Arranged ¹⁰
Joint Committee on Postgraduate Education 1313 Bedford Ave nue Brooklyn N Y at the Long Island College of Medicine Write to Dr Simon R Blattels Chairman	Monthly 1 month or more part time	Urology	3	\$25 per mo
New York Medical College Flower and 5th Avenue Hospitals 5th Avenue at 103rd Street New York City Write to Dr J A W Hetrick Dean	Sept 27 1 yr basic sciences 2 yrs ap proved residency theoretical examination —leads to degree	Urology		\$610 1st yr \$50 2d and 3d yrs
University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories Philadelphia Pa Write to Dr R C Buerki Dean The Medico Chirurgical College	Arranged 6 weeks part time	Cystoscopy Chromocystoscopy copy and Pyelography	Individuals ²	\$ 00
VENEREAL DISEASE CONTROL—See also Public Health				
Institute for the Control of Syphilis University of Pennsylvania Hospital 3400 Spruce Street Philadelphia Pa Write to Dr John H Stokes Director	Arranged 5 or 10 days	Management of Syphilis and Other Venereal Diseases		\$25
	Arranged 1 month or more	Management of Venereal Diseases	Individuals	\$50 per mo
New York City Department of Health Bureau of Social Hygiene 125 Worth Street New York City Write to Dr Theodore Rosenthal Director	Continuously	Practical Seminar in the Diag nosis Treatment and Control of Venereal Disease		None
United States Public Health Service Medical Center Hot Springs National Park Ark Write to Dr Austin V Deibert Medical Officer	4 weeks full time ¹⁰	Management of Venereal Diseases	30 ¹²	None

1 Physicians who have had adequate preliminary training and/or
experience

2 Specialists

3 Limited to applicants approved by the instructor, department
head etc

4 Male physicians only

5 Physicians licensed to practice in the state

6 Members of the organization

7 Officers of the United States Army Navy or Naval Reserve on
active duty

8 Medical Reserve Officers of the United States Army

9 A faculty course for staff member of mental institutions

10 Microscope required

11 A temporary license to practice medicine in the state is required

12 A registration fee of \$5 covers all courses taken within the year

13 Plus a laboratory fee

14 Plus a matriculation fee and/or incidental fee

15 Returned on satisfactory completion of the course

16 Grants may be made from a scholarship fund

17 Per diem and/or maintenance provided

18 Assistantships Internships residencies available

19 Register two to six weeks in advance

20 Repeated

21 Longer courses arranged in units of 12 sessions each

22 Given at separate hospitals for Negro and White physicians

23 Applicants must not be over 30 years of age

24 Plus service in the outpatient department

25 For M.D.s under 40 years of age

26 Fifty dollars for M.D.s in armed forces

27 Students working for degree given preference

28 Limited to special venereal disease students

29 Primarily Internists and Pathologists

30 Women are admitted

31 Physicians with medical degree

32 Physicians recommended by directors of state or city health
departments33 Evening instruction in applied surgical anatomy on cadavers may
be arranged at extra fee of \$25

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL*, June 26, page 637.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. *Parts I and II*, August 24. *Part III*, June and also at different times at various centers having 5 or more eligible applicants. See Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY. *Written*. Various centers. Sept. 27. *Oral*. Philadelphia. Nov. 5-6. Final date for filing application is August 16. See Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE. *Written*. Oct. 18. Final date for filing application is Sept. 1. Asst. Sec. Dr. William A. Werrell, 1401 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY. *Written*. *Part I*. Locally. Feb. 12. Final date for filing application is Nov. 15. See Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh, Pa.

AMERICAN BOARD OF OPTHALMOLOGY. *Oral*. *Parts I and II*. Chicago. Oct. 8-9. See Dr. John Green, 6810 Waterman Ave., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY. *Part I*. New Orleans. Oct. 8-9. New York. Oct. 15-16. Chicago. Oct. 22-23. San Francisco. Oct. 29-30. Final date for filing application is Aug. 10. See Dr. Guy A. Caldwell, 3505 Pryor St., New Orleans, Louisiana.

AMERICAN BOARD OF PEDIATRICS. *Written*. Locally. Oct. 8. *Oral*. New York City. Nov. 20-21. and Cincinnati. Dec. 11. Final date for filing applications is Aug. 10. Starting July 1, 1943, Group I will be abolished. See Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY. *Written*. Locally. Oct. 30. *Oral*. Locally. Dec. 20-21. Final date for filing application is Sept. 30. See Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF SURGERY. *Written*. *Part I*. Oct. 7. Final date for filing application is Aug. 1. See Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY. *Oral*. Chicago, February. *Written*. Various centers, December. Final date for filing application is Nov. 1. See Dr. Gilbert J. Thomas, 1409 Willow St., Minneapolis, Minn.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Federal Food, Drug and Cosmetic Act *Marmola Tablets for Obesity Misbranded*—The United States filed a libel in the federal district court, western district, Wisconsin, for the condemnation of a shipment in interstate commerce of Marmola Prescription Tablets, marketed as a cure for obesity, on the grounds that the preparation was misbranded within the meaning of the Federal Food, Drug and Cosmetic Act. The Raladam Company, hereinafter referred to as the claimant, which marketed the preparation to wholesale and retail outlets, intervened in the proceeding, denied the allegations of the libel and contended that the provisions of the Federal Food, Drug and Cosmetic Act relied on by the government were unconstitutional.

The district court first disposed of the claimant's contention that the provisions of the Federal Food, Drug and Cosmetic Act relied on by the government were unconstitutional. That act, said the court, was designed to regulate commerce in food drugs and cosmetics and to protect the public against foods and drugs that are dangerous to health as well as those which are falsely branded. It is well settled that Congress has the power, under the commerce clause of the Federal Constitution, to condemn the interstate transportation of misbranded drugs and to make such articles contraband when so transported. Section 502 of the act [21 U. S. C. A. 352] provides that a drug or device shall be deemed to be misbranded "(a) if its labeling is

false or misleading in any particular dangerous to health when used in the dosage, or with the frequency or duration prescribed, recommended, or suggested in the labeling thereof." Subsection n, section 201 of the act [21 U. S. C. A. 321], provides that in determining whether the labeling of an article is misleading there shall be taken into account, among other things, not only representations made or suggested by statements, words, designs, devices or any combination thereof but also the extent to which the labeling fails to reveal facts material in the light of such representations or material with respect to consequences which may result from the use of the article to which the labeling relates under the conditions of use prescribed in the labeling. There is no constitutional objection to any of these sections. There was no unlawful delegation of legislative power by Congress, nor do the acts of the government pursuant to the provisions of the statute constitute an exercise of legislative power in violation of the constitution. Congress has set up in the act its own policies and standards, and the act and the sections thereof involved in these proceedings are well within the powers of Congress to enact.

The libel alleged that the preparation was misbranded within the meaning of the three sections of the act mentioned because (1) it was dangerous to health when used in the dosage or with the frequency prescribed in its labeling and (2) the labeling was false and misleading by reason of its failure to reveal facts with respect to consequences which may result from its use under the conditions of use prescribed on the label. The claimant denied these allegations. There was present in each tablet of the preparation $\frac{1}{2}$ gram (0.03 Gm) of desiccated thyroid, containing approximately 0.3 per cent organic iodine which is about 50 per cent more organic iodine than is present in desiccated thyroid U. S. P., producing consequently greater physiologic effect than equivalent amounts of a U. S. P. product of desiccated thyroid. It was the failure of the label adequately to conform to the provisions of the act previously discussed because of the presence of the desiccated thyroid in the preparation that formed the real basis of the government's libel. According to the labeling of the preparation, it is intended as a cure for obesity and is for use only by obese persons who are otherwise normal and healthy and whose obesity is caused by hypothyroidism with accompanying subnormal metabolism. The labeling further represents that hypothyroidism is the basic cause of obesity, which results from a lack of a substance which Marmola supplies, and recommends a dosage, where indicated of 4 tablets daily. This daily dosage recommended, the court observed, is equivalent to 2 grains (0.13 Gm) of desiccated thyroid containing 0.3 per cent organic iodine, or to 3 grains (0.2 Gm) of desiccated thyroid containing 0.2 per cent organic iodine in a U. S. P. product. The court then went on to discuss the reasons why the preparation if marketed as labeled was potentially dangerous.

The preparation, said the court, is offered to the public as a treatment for obesity, which was defined by the expert witnesses in the case as an excessive development or excessive storage of fat throughout the body. Those witnesses differed in their opinions as to the cause of obesity and its cure. Some believed that overweight is caused by excessive eating and lack of proper exercise and that the weight may be reduced by dietary measures coupled with adequate exercise. Some witnesses called by the claimant believed that most obesity is caused by endocrine disturbances or disorders, that the thyroid gland is the regulator of the metabolic processes and that obesity is due at least in a large part to the deficient activity in this gland and hence that in its treatment thyroid medication is indicated. Other witnesses believed that obesity is caused both by overeating and by endocrine disturbance. To determine the significance of the objectionable labeling in the light of the expert testimony, the court then found it necessary to discuss hypothyroidism and metabolism. Hypothyroidism, said the court, is the underfunctioning of the thyroid gland which is a condition of disease, and is accompanied by a subnormal

basal metabolic rate and by other symptoms such as dryness of the skin, sparseness of hair and eyebrows, sluggishness of physical and mental reactions, decreased appetite, slower pulse rate and characteristic changes in the composition of the blood and in advanced stages of hypothyroidism or myxedema, by puffiness and swollen appearance of the face and other parts of the body due to a collection of mucoid fluid beneath the skin. Metabolism is the total of the various processes by which food is transformed in the body into the chemicals which are absorbed in the blood stream and lymphatic system to nourish and build up or repair the body and by which tissues are destroyed and waste matter is excreted. The health of the body depends on the well balanced use of the body chemicals. The rate of metabolism is measured by the rate at which the body produces or gives off heat. The basal metabolic rate is the lowest rate of chemical activity that will maintain the absolutely essential functions of the body sufficiently to keep an individual alive. Every activity of the body increases the amount of energy consumed. Having ascertained the basal requirements of a person a physician can by the addition of the demands of that person's other activities compute what his total needs will be. Average normal standard rates have been established but normal healthy persons may vary from the average standard normal rate from 10 per cent to 15 per cent more or less than standard. Desiccated thyroid is used in the treatment of hypothyroidism and the optimum daily dosage in such treatment must be determined for each individual case as it varies with each individual and is established only by trial and error. That optimum may be as little as $\frac{1}{4}$ grain (0.016 Gm.) a day and in most cases less than 2 grains a day although there are some cases in which dosage exceeds 2 grains a day depending on the under functioning of the individual's thyroid gland. The labeling on Marmola however it will be recalled prescribes in all events and for all individuals of what would be equivalent to 3 grains daily of a U S P product.

There was a substantial agreement continued the court among the medical witnesses concerning the following facts: The overdose of desiccated thyroid results in an increase in the metabolism of the person taking it and has a toxic effect on hypothyroid persons in that it increases their basal metabolic rate and injuriously affects the functioning of the endocrine glands, kidney and liver impairing their capacity for normal functioning. Overdosage places an extra burden on the organs of the body and results in symptoms undistinguishable from those disclosed in spontaneous hyperthyroidism such as rapid heart, heart pains, shortness of breath, sleeplessness, nervous and emotional instability, headaches, dizziness, tremor, muscular weakness, disturbances of the alimentary canal, fatigue, nausea and in women menstrual disturbances. The symptoms of hyperthyroidism will disappear days or weeks after the discontinuance of desiccated thyroid but sometimes a more serious and permanent disease and injury to health results. Many persons who consider themselves normal and healthy have been found to have physical impairments or diseases such as impairment of the heart, diabetes or tuberculosis which may be discovered only by a thorough physical examination by an experienced physician. Were such a person to take 2 grains of desiccated thyroid a day the heretofore unknown disease or ailment would be aggravated. In sound medical practice a physician will prescribe thyroid for hypothyroidism only after a careful physical examination is made of the patient's head, eyes, throat, chest, lungs, heart, abdomen and reflexes covering the nervous system to ascertain whether the patient is suffering from any latent or underlying disease of which he is unaware such as diabetes, tuberculosis or heart ailment. In some instances a basal metabolism is done, roentgenograms of the chest are made and an electrocardiogram of the heart is obtained. Any drug the court emphasized which is marketed in its use requires diagnosis and evaluation and when taken in the dosage and with the frequency recommended and suggested in its labeling may expose the users to disease and pain is dangerous to health. Marmola is such a drug. In it there is

an inherent and potential danger that may reasonably be expected to attend its use when one considers that it will be used by the strong, the weak, the old, the young, the well and the sick without first having a physical examination or a diagnosis made by a competent physician.

Obesity continued the court is not caused by hypothyroidism as is suggested in Marmola's labeling. Those suffering from hypothyroidism are sometimes overweight owing to the deposit in the body of a mucoid substance which is not fat and which desiccated thyroid may remove under proper treatment. Desiccated thyroid may stimulate the appetite and its use may result in increased weight unless the dosage is so large as to result in hyperthyroidism which is a disease. Obesity is not affected materially by the use of Marmola prescription tablets as prescribed or by desiccated thyroid of comparable daily dosages except by producing and maintaining a condition of hyperthyroidism. The discontinuance of Marmola on the appearance of unpleasant effects or unusual circumstances or conditions does not avoid danger. When these effects or conditions appear the user is in a state of hyperthyroidism, which in some cases may result in the precipitation of more serious and permanent injury. A substantial portion of the public, after reading the labeling on the preparation would conclude that obesity is caused by the lack of some substance in the human body which Marmola supplies and that Marmola is a safe and efficient remedy for obesity which is not a fact. The labeling fails to inform the prospective user that if he is suffering from hypothyroidism he is not healthy and normal. It places a duty on the user to make a self diagnosis to determine whether he is suffering from hypothyroidism. The layman lacks familiarity with medical terminology. He has little or no knowledge of medical science and does not possess that skill and learning required to determine whether he is suffering from hypothyroidism. The labeling does not recommend that an obese person considering the use of Marmola should first consult a physician. It does advise that he consult a physician if he desires special advice in any unusual condition or more advice than appears on the label.

The Federal Food Drug and Cosmetic Act said the court was not made for experts nor is it intended to prevent self medication. The purpose of the law is to protect the public, the vast multitude which includes the ignorant, the unthinking, and the credulous who when making a purchase do not stop to analyze. It was enacted to make self medication safer and more effective and to require that drugs moving in interstate commerce be properly labeled so that their use as prescribed may not be dangerous to the health of the user. The court after stating that the administration of thyroid tablets in Marmola dosages is a dangerous procedure and should not be undertaken without a thorough examination by a competent physician was convinced that Marmola when used as prescribed in the labeling was neither a safe nor an appropriate nor an efficient remedy for obesity, that it was dangerous to the health of the user when used in the dosage or with the frequency and duration prescribed, that the labeling is false and misleading in its representations that it is a safe remedy for obesity and in that it fails to reveal facts material with respect to consequences which may result from the use of Marmola under the circumstances prescribed in the labeling. The court held that the product was misbranded within the meaning of the Federal Food Drug and Cosmetic Act. Accordingly it ordered that a decree of condemnation issue—*United States v. 62 Packages More or Less of Marmola Prescription Tablets* 48 F. Supp. 878 (1943).

Society Proceedings

COMING MEETINGS

Montana Medical Association at Billings July 7-8 Dr. Thomas F. Walker, 206 Medical Arts Building Great Falls, Secretary
Utah State Medical Association Salt Lake City Aug. 27-28 Dr. D. G. Edmunds, 619 McIntire Bldg., Salt Lake City, Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints are a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J Obstetrics and Gynecology, St. Louis

45 365-546 (March) 1943 Partial Index

- Presidential Address: Factors Influencing Geographic Distribution of Obstetricians and Gynecologists G. D. Royston—p. 365
Effect of Preoperative Irradiation on Adenocarcinoma of Uterus H. F. Schmitz, J. I. Sheehan and Janet Towne—p. 377
Radium Therapy in Benign Uterine Bleeding: Study Based on 350 Cases A. J. Rony and A. D. Seely—p. 390
Glycogen Index in Menopause: Study of Certain Estrogen Functions Based on New Method of Staining Vaginal Smears H. C. Mack—p. 402
Clinical Differentiated Demonstration of Uterine and Tubal Contractions by Kymographic Uterotubal Insufflation I. C. Rubin—p. 419
Hydatidiform Mole and Associated Tumors of Chorion I. J. Williams—p. 432
Sarcoma of Uterus C. I. Randall—p. 445
Postpartum Observation of Pelvic Fissure Damage H. I. Gamely—p. 457
Urinary Incontinence in Women A. S. Counseller—p. 479
Posterior Vaginal Interocele: Hernia of Childbearing Douglas I. E. Phinicut—p. 490
Icterial Proctitis I. M. Kandall and I. A. Bine—p. 505
Effects of Estrogenic Therapy on Ovarian Function II. When Employed During Anovulatory Cycles I. C. Hamblen, D. V. Hirst and W. K. Cusler—p. 513
Management of Ovarian Tumors in Elderly Women J. W. Goldsmith Jr.—p. 518
Implantation of Trichomonas Tenax (Buccellis) into Human Vagina L. G. Leo and R. M. Stabler—p. 529
Actinomycosis of Ovary B. H. Neiman and A. H. Fehner—p. 534

Glycogen Index in Menopause—Mack reports on the application of the iodine vapor method of staining and the estrogenic response of vaginal smears during the menopause of 130 women and the glycogen response of the smears (as determined by the method) to various commercial estrogens. The method is based on the observation that the normal vaginal glycogen content parallels estrogen sufficiency, whereas diminution of glycogen is indicative of estrogen deficiency. Vaginal smears of 130 climacteric women (after staining by the iodine vapor procedure) were graded according to their glycogen content. Possible "antihormonal" effects of various systemic and local disorders (febrile states and vaginitis) on estrogenic activity are suggested by observation of tuberculous women. The method provides a sensitive index of human estrogenic activity. The persistence of vaginal glycogen in variable amounts in menopausal women provides additional evidence of continued estrogen elaboration by the ovary or extragenital sources. The clinical usefulness of the method is at present limited to the control of estrogen therapy in vaginitis and to the investigation of estrogen potencies in women with advanced menopausal atrophy. Experience with the glycogen index in the human subject permits the following tentative deductions: Theeolol is less effective than an equal weight of theelin. Alpha-dihydrotheelin produces an estrogenic effect comparable to that induced by an equal weight of theelin in oil. Diethylstilbestrol in oil solution produces a more rapid glycogen effect when given by mouth than equal weights of theelin and alpha-dihydrotheelin. The glycogen response to diethylstilbestrol fluctuates widely in comparison to that obtained with theelin and alpha-dihydrotheelin. A theelin-theeolol mixture (0.5 mg of each in oil solution) orally produces a glycogen reaction curve comparable to that induced by 0.5 mg doses of theelin alone. Theelin produces uniform response and maintenance by all routes of administration and can serve as a standard for comparative assays of estrogen in the human subject.

American Journal of Physiology, Baltimore
138 391-564 (Feb) 1943 Partial Index

- Role of Pressoreceptors in Regulation of Blood Pressure in Rabbit. Ichimura H. Sumister and Ruth E. Conklin, Poughkeepsie, N. Y.—p. 391
Gluconeogenesis and Cellular Injury: Further Inquiry into Mechanism Involved in Diabetes Enhanced by Inflammation V. Menkin, with assistance of M. A. Kadish and A. A. Warren, Boston—p. 396
Removal of Red Cells from Active Circulation by Sodium Pentobarbital P. F. Hahn, W. F. Bale and J. T. Bonner Jr., Rochester, N. Y.—p. 415
*Studies on Hemococoncentration and Shock Following Severe Hemorrhage R. L. Weston, Martha Junota, S. O. Levinson and H. Necheles, Chicago—p. 420
Effect of Nembutal Ether Anesthesia on Blood Concentration L. W. Jircho, New York—p. 458
Sympathetic and Vagal Interaction in Emotional Responses of Heart Rate D. D. Bond, Boston—p. 468
Reactions of Aorta in Hemorrhagic Hypertension and Shock C. J. Wickers, R. Weger and N. D. Nickerson, Cleveland—p. 491
Capillary Permeability to Intravenously Administered Gelatin J. M. Little and H. S. Wells, Winston Salem, N. C.—p. 495
Studies in Experimental Traumatic Shock, with Particular Reference to Plasma Potassium Changes Jeanne F. Manery and D. Y. Solandt, Toronto, Canada—p. 499
Role of Oxygen in Metabolism and Motility of Human Spermatozoa J. MacLeod, New York—p. 512
Observation on Various Factors Influencing Increase of Erythrocytic Fragility Induced by Stasis Chiao Tsai, C. J. Chen and K. Y. Chu, Chungking, China—p. 519
Effect of Bile in Intestine on Secretion of Pancreatic Juice J. E. Thomas and J. O. Crider, Philadelphia—p. 548
Absence of Rennin from Adult Human Gastric Juice L. B. Dotz and I. S. Kleiner, New York—p. 557

138 565-686 (March) 1943 Partial Index

- Plasma Proteins (Albumin and Globulin) and Red Cell Volume Following a Single Severe Nonfatal Hemorrhage R. Elman, C. E. Lischer and Harriet Wolf Dreyer—p. 569
Venous Pressure and Circulation Time During Acute Progressive Anoxia in Man I. Ershler, C. E. Kossmann and M. S. White—p. 593
Regional Relationships of Rate of Water Loss in Normal Adults in a Tropical Climate G. E. Burch and W. A. Sodeman—p. 603
Study of Effect of Spontaneous Variations in Blood Pressure on Venous Variations in Volume of Finger Tip C. Neumann—p. 618
Variability of Certain Factors in Blood Picture of Women Eva G. Donelson, June M. Leichsenring and Margaret A. Ohlson—p. 636
Roentgenkymographic Determination of Cardiac Output in Snakes Induced by Gravity H. S. Maverson—p. 630
Disappearance Curves of Dye T 1824 After Its Injection into Blood Stream B. G. King, K. S. Cole and E. T. Oppenheimer—p. 636
Distribution in Leads I, II and III of Potentials Applied to Surface of Heart H. E. Hoff, L. H. Nihum and W. Kaufman—p. 644
Anhydrous Crystalline Papain and Fibrin Clot J. H. Ferguson and P. H. Ralph—p. 648
Effects on Man of Severe Oxygen Lack S. M. Horvath, D. B. Dill and W. Corwin—p. 659
Effect of Dietary Composition on Pancreatic Enzymes M. I. Grossman, H. Greengard and A. C. Ivy—p. 676
Effect of Atropine on Coronary Blood Flow of Trained Dogs with Denervated and Partially Denervated Hearts H. E. Essex, J. F. Herrick, T. C. Mann and E. J. Balder—p. 683

Hemoconcentration and Shock Following Severe Hemorrhage—Weston and his associates caused typical shock to occur in 11 nondehydrated and 15 dehydrated, unanesthetized normal dogs by graded hemorrhage. In 2 of the nondehydrated and 8 of the dehydrated animals hemoconcentration occurred. Determination of the plasma volume and plasma protein, before and after hemorrhage, revealed that in the animals with hemoconcentration additional plasma fluid and protein were actually lost as shock developed. Pathologic changes, consisting of gastrointestinal engorgement and hemorrhage, pulmonary congestion and engorgement and occasional changes in other viscera, were observed in a number of animals. The nondehydrated animals tolerated an average total blood loss of 49 per cent as compared to the 43 per cent tolerated by the other animals. The changes in plasma protein concentration after hemorrhage indicated that the hemoconcentration in dehydrated animals was hemodiluted during and after hemorrhage to a lesser degree than in the other animals. This relative inability to hemodilute could explain the animals' inability to tolerate as much bleeding before shock and could lessen the magnitude of earlier hemodilution of the subsequent hemoconcentration as shock develops. The conflicting reports on hemoconcentration after hemorrhage may be related to the animals' state of hydration. There are no definite grounds for differentiation between hemorrhagic shock and shock from other causes.

American Journal of Public Health, New York

33 201-216 (March) 1943

- Moquito Vectors and Inapparent Animal Reservoirs of St. Louis and Western Equine Encephalitis Viruses—W. M. Hammon, W. C. Reeves and M. Cray—San Francisco—p. 201
- Public Health Problems Concerned in Disposal of Carcasses by Feeding It to Swine—W. R. Wright, Bethesda, Md.—p. 208
- Age and Sex as Factors in Development of Typhoid Carrier State and Method for Estimating Carrier Prevalence—W. R. Ames, Orleans, La., and M. Robin, Albany, N. Y.—p. 221
- Use of Vital Records in Military Service—The Navy—C. S. Stephenson and C. W. Churchill—p. 231
- Use of Vital Records in Military Service—The Army—G. D. Williams, Washington, D. C.—p. 235
- Community Nursing Service During Wartime—Hortense Hilbert, New York—p. 239
- Outbreak of Typhoid Fever Due to Small Colony Variety of *Escherichia Typhosa*—Janie F. Morris, Catherine G. Barnes and T. F. Sellers, Atlanta, Ga.—p. 246
- Nutritional Needs of American Youth—H. D. Kruse, New York—p. 249
- Attitude of Nation Toward Immunization Procedures—Study Based on Public Opinion Poll Made in 1941—Leona Baumgartner, New York—p. 250
- Variations in Phenol Coefficient Determinations of Certain Disinfectants—C. M. Brewer, Washington, D. C.—p. 261
- Comparative Nutritive Value of Butter Fat and Vegetable Oils—E. B. Hart, Madison, Wis.—p. 265

Attitude Toward Immunization Procedures—From the results of a public opinion poll taken in September 1941 among the adult white population in the United States it appears to Baumgartner that: 1. In general the public is aware of the value of immunization against and of the serious nature of diphtheria, smallpox and typhoid and sees no specific drawbacks connected with its being inoculated against them. Therefore, public health officials and private physicians should urge the procedure. 2. More than 50 per cent of those who are in need of protection as they might be willing to be protected. 3. The public is not well informed concerning when or how often it is necessary to be immunized. The importance of having children protected against diphtheria and smallpox in infancy needs particular emphasis. 4. Adults responsible for the care of children are generally better informed concerning immunization than other adults.

Butter Fat and Vegetable Oils—The experiments of Hart with young rats indicate that butter fat as compared with certain vegetable oils is superior for their growth. This superiority rests on a constitutional difference and is not related to the differences in the vitamin content. As the sole article of nutrition for infants a filled milk in which a vegetable oil has been substituted for the butter fat, based on rat experiments, could give inferior growth; however, no such experiments have been carried out. Until they have been the burden of proof of equal value must rest with the purveyor of filled milk and the public should be protected from a substitute for natural milk.

Anesthesiology, New York

4 113-232 (March) 1943

- Analysis of Blood for Certain Barbiturates and Variability of Their Concentration in Blood—B. M. Anderson and H. E. Essex—p. 113
- Utility of Demerol as Substitute for Opiates in Preanesthetic Medication—E. A. Rovenstine and R. C. Batterman—p. 126
- Pharmacology of Sodium Cyclopentylallyl Barbiturate (Cyclopal)—J. M. Dille and Helen M. Kipple—p. 135
- Arterial Oxygen Tension with Nitrous Oxide Anesthesia—W. O. McQuiston, S. C. Cullen and Evelyn A. Cook—p. 145
- Stellate Ganglion: Its Significance in Practice—C. B. Hickcox, R. M. Tovell, R. R. Kind and W. B. Scoville—p. 150
- Studies in Carbon Dioxide Absorption—W. A. Connor and M. H. Seavers—p. 160
- Pentothal Sodium Anesthesia for Dental Surgery in Office Practice and Control of Recovery Time—A. O. Hubbell—p. 174
- Comprehensive Review of Continuous Caudal Analgesia for Anesthetists—R. A. Hingson and W. B. Edwards, Stapleton—p. 181

Demerol as Substitute for Opiates—Rovenstine and Batterman used Demerol as a preanesthetic medication in scopolamine combination for 286 patients and Demerol alone for 52 patients between 15 and 89 years of age. Demerol was given in doses of 50, 75 and 100 mg. and when combined with scopolamine the amounts of the latter were 0.4, 0.5, 0.6 mg. A dose

of 100 mg. of Demerol was used whenever it was thought that the patient would have required 0.016 Gm. ($\frac{1}{4}$ grain) of morphine. Preanesthetic medication was considered satisfactory when the patient at the time of induction was calm and emotionally undisturbed but not depressed to the extent that he would not respond readily to ordinary questions. With the Demerol-scopolamine combination regardless of the anesthetic used a satisfactory response was obtained with 100 mg. of Demerol hypodermically in 76 per cent of the 166 patients treated while undue depression was the result in 3 per cent. An equivalent amount of morphine (0.016 Gm.) given to a corresponding number of patients in another service resulted in a satisfactory response in 81 per cent and in deep depression in 9 per cent. Demerol in doses smaller than 100 mg. produced less favorable results except in patients older than 60. A satisfactory preanesthetic state was obtained in 83 per cent of the older patients receiving 75 mg. but this dose was insufficient for 60 per cent of patients between 20 and 60. Three of the 56 patients receiving 75 mg. were too depressed. The 50 mg. dose was likewise unsatisfactory, especially in those less than 60. No individual receiving this amount was too depressed. In 4 aged 63 to 69 the results were satisfactory but more than half of those between 15 and 60 were apprehensive or the drug appeared to have had little or no effect. The optimal time that should elapse after Demerol and scopolamine were administered and before anesthesia was begun was between forty-five and ninety minutes. Demerol appears to provide psychic sedation not surpassed by morphine; it does not depress respiration or other vital functions to the same degree as morphine does; it facilitates the induction of anesthesia as does morphine; it is more effective in drying secretions than morphine; it has fewer untoward side effects and it reduces the usual amount of anesthetic agent required for an optimal narcosis.

Continuous Caudal Analgesia—Since October 1941 Hingson and Edwards have used continuous caudal analgesia in 250 surgical gynecologic and urologic procedures and in 600 deliveries. The advantages of the method are ease of administration, accurate control, safety to the mother and the child, freedom from pain during labor or after operation, expedited labor, reduction of the third stage complications and the complications of the puerperium and the indications that such a regimen would facilitate the handling of wartime injuries with considerable and prolonged relief of pain for the injured. The method should be studied in the large recognized obstetric clinics by especially trained physicians before a final appraisal of its merits is given. It is not a procedure to be experimented with in an occasional case. The utmost cooperation must exist between the experienced physician-anesthetist and the obstetrician in the handling of a patient so anesthetized. The problem of securing equipment through the wartime rationing is being given serious consideration. Substitute apparatus, especially with regard to needles, should not be encouraged.

Archives of Ophthalmology, Chicago

29 341-522 (March) 1943

- Bacteriophage Therapy of Staphylococcal Septic Obstruction of Cavernous Sinus: II. Report of Cases—W. J. MacNeal, Frances C. Frisbee and Anne Blevins—p. 341
- Experimental Studies of Ocular Tuberculosis. VII. Effect of Denervation with Tuberculin in Experimental Ocular Tuberculosis—A. C. Woods and E. L. Burki—p. 369
- Dynamics of Intracapsular Cataract Extraction: Experimental Studies with Reference to Suspensory Ligament, Hannover's Canal and Petit's Space—J. Goldsmith—p. 380
- Eyelid Closure Reaction—M. B. Bender—p. 435
- Teratoid Tumor of Conjunctiva and Other Developmental Anomalies with Nevus verrucosus of Scalp: Report of Case—A. R. Sherman—p. 441
- Incidence of Green Red Blindness—R. C. Gray—p. 446
- Visual Loss Following Distant Hemorrhage—M. M. Scheffer—p. 449
- Pressure in Central Artery of Retina in Allergy with Description of New Ophthalmodynamometer—A. Gutmann—p. 457
- The Eye as Factor in Wartime Lighting—C. E. Ferree and G. Rand—p. 461
- Leiomoma of Iris—J. E. Kahler, W. E. Wallace, R. Irvine and I. R. Irvine—p. 479
- Viruses and Virus Diseases of Eye. II. Viruses of Ocular Importance—P. Thygeson—p. 483

California and Western Medicine, San Francisco

58 103-154 (March) 1943

- Bronchiogenic Carcinoma: Role of Bronchoscopy P. C. Samson—p. 109
- Ectopic Pregnancy: Review of 65 Cases Occurring in General Hospital over an Eight Year Period W. C. Rogers—p. 110
- Ureteral Calculus: Its Management L. W. Beach—p. 113
- Chronic Bronchitis: Diagnostic Points Noted in 100 Cases J. F. Githens—p. 118
- Mental Illness: Its Early Signs: Role of Family Physician W. G. Barrett—p. 125

Journal of Allergy, St. Louis

11 195-272 (March) 1943

- Antibodies to Histamine Induced in Human Beings by Histamine Conjugates M. B. Cohen and H. J. Friedman—p. 195
- Allergic Properties of Vegetable Gums: Case of Asthma Due to Tragacanth H. H. Gelland—p. 203
- Insulin Hypersensitivity with Desensitization: Report of Case M. A. Weitz—p. 220
- Detection of Thermostable Antibody by Means of Precipitin Reaction: Preliminary Report S. Hampton, Mary C. Johnson, H. I. Alexander and K. S. Wilson—p. 227
- Mold Fungi in Etiology of Respiratory Allergic Diseases: II. Mold Extracts—Statistical Study W. H. Brown—p. 231
- Source of Allergic Activity of House Dust Marion I. Davidson—p. 244
- *Palindromic Rheumatism in Allergic Persons W. F. Vaughan—p. 256

Palindromic Rheumatism in Allergic Persons—Vaughan determined the incidence of arthritis in 1000 consecutive adults with asthma hay fever, urticaria, angioneurotic edema, migraine, gastrointestinal allergy or allergic dermatitis. Of the total, 382 were males and 618 females, 206 (20 per cent) complained or had complained of rheumatic pains. All but 6 received careful physical examination including the joints. Of the 200 so studied 90 presented some evidence of articular pathologic changes. Of the 90 with recognizable articular changes, 9 were classified as rheumatoid or atrophic and were characterized especially by spindling of the proximal joints of the fingers, 32 were classified as hypertrophic or osteoarthritic as characterized by nodal enlargement of the terminal joints of the fingers and velvety or sandpaper crepitation of the knee joints, 29 were classified as combined arthritis and in 18 the involvement was limited to large joints other than the knees, in 2 the condition was traumatic. Of the 206, 64 were males and 142 females and of the 90 with articular changes 25 were males and 65 females. Of the 206, 143 had allergic symptoms attributable to food, 48 inhalant allergy and 15 had only contact dermatitis. The incidence of food allergy was 69 per cent in the 206 with rheumatic history, and the 90 with articular changes and the remaining 31 per cent had no important food allergy. The allergy in 55 per cent of 749 allergic persons without rheumatic complaints was due to food. The foods mentioned as rheumatic offenders did not include the conventional hearsay foods usually suspected in rheumatism.

Journal of Clin. Endocrinology, Springfield, Ill.

3 131-194 (March) 1943

- Metabolic Effects of Testosterone Propionate in Addison's Disease A. T. Kenyon, Kathryn Knowlton, Irene Sandiford and Lillian Fricker, Chicago—p. 131
- Addison's Disease in 7 Year Old Boy S. Rosin and S. Friedman, Los Angeles—p. 137
- *Value of Desoxycorticosterone Acetate in Treatment of Peripheral Vascular Diseases H. H. Sirota, Brooklyn—p. 141
- *Nutritional Therapy of Infertility in Male, with Special Reference to Vitamin B Complex and Vitamin E M. S. Biskind and H. C. Falk, New York—p. 148
- Serum Diastase and Its Relation to Estrogen Metabolism in Pregnancy and Menstrual Cycle Sara Schuller and O. W. Smith, Brookline, Mass—p. 154
- *Treatment of Menstrual Disturbances in Adolescent Girls B. B. Rubenstein, Chicago—p. 163
- Secondary Amenorrhea: Case B. L. Cimberg New York—p. 167
- Vaginal Smear Technique: Its Use in Diagnosis of Ovarian Failure, as Index to Efficacy of Endocrine Therapy and as Human Assay Method H. C. Mack, Detroit—p. 169

Desoxycorticosterone Acetate and Peripheral Vascular Diseases—Snota states that the beneficial physiologic effect of hypertonic solution of sodium chloride intravenously in thromboangitis obliterans and arteriosclerosis obliterans can

within limits be attained by the intramuscular injection of desoxycorticosterone acetate, which also often appears to lower the blood pressure, more often it may cause an increase in the local cutaneous temperature and occasionally an increase in oscillometric readings. A permanent lowering of the blood pressure was not obtained, rest also was a contributing factor in these cases. The encouraging results in 20 cases appear to warrant more extensive clinical study. Desoxycorticosterone acetate cannot be regarded as a substitute for intravenous saline therapy, but it may serve as an excellent adjuvant. It is useful when an intravenous technique or sudden increases in blood volume are contraindicated.

Infertility in Male and Vitamin Therapy—According to Biskind and Falk, nutritional therapy, especially with the vitamin B complex, alone or in combination with vitamin E, improved the number, motility and morphology of the sperm of previously infertile men. In others with sterility whose initial specimens of spermatic fluid were apparently normal, therapy with vitamin B complex alone apparently restored fertility without the production of any significant detectable changes in the sperm. Excluding one man among twelve with virtual azoospermia who were so treated, eight impregnations occurred. The wife of one of these patients aborted at the fourth month, but the others are approaching term or have been delivered of normal babies.

Treatment of Menstrual Disturbances in Adolescent Girls—The vaginal smears of 7 girls from 11 to 15 years of age who complained of severe and/or prolonged menstrual bleeding were studied by Rubenstein. On the basis of the cell types he separated the cases into two groups, one to be treated with estrogen and the other with progesterone. The bleeding of all patients was successfully controlled by the appropriate therapy.

Journal of Immunology, Baltimore

46 47-112 (Feb) 1943

- Antibody Response to Hemoglobin Adsorbed on Muminum Hydroxide Francis E. Holford, J. B. Ludden and W. H. Stevens, Madison, Wis—p. 47
- Studies on Precipitin Production and Anaphylactic Sensitization in Guinea Pigs H. R. Cohen and M. M. Mosko, Chicago—p. 59
- *Individual Specificity of Human Serum R. W. Cumley and M. R. Irwin, Madison, Wis—p. 63
- Studies on Toxins of Shigella Dysenteriae (Shiga) L. Oltzki, J. Bendersky and P. K. Koch, Jerusalem, Palestine—p. 71
- Allergy and Immunity in Tuberculosis: I. Immunization and Rectification of Guinea Pigs with Homologous Variants of Human Tubercle Bacillus H. A. M. Steiner and B. Zuger, Brooklyn—p. 83
- Id. II. Relationship of Tuberculin Cutaneous Reactivity to Experimental Infection in Guinea Pig B. Zuger and M. Steiner, Brooklyn—p. 91
- *Nonspecific Factors in Resistance: VI. Incidence of Common Cold in Persons With and Without Accessory Symptomatology of Nonreaginic Food Allergy W. B. Brown, Irma Graham, Ariel Niedringhaus and A. Locke, Pittsburgh—p. 101

Individual Specificity of Human Serum—According to Cumley and Irwin, following the absorption of precipitins in antihuman serum produced in rabbits, the reactions that were obtained with the serums of different persons led to the conclusion that the serum of human beings contains antigenic components by which the serum of one individual can be distinguished from that of another.

Nonspecific Factors in Resistance—A study is reported by Brown and his co-workers which extends the evidence recently reported by Coca for the existence of a cause and effect relationship between the presence of nonreaginic food allergy and the predisposition to the common cold. Two or more of Coca's eleven symptomatic evidences (urticaria, indigestion, abdominal pain, constipation, headache, canker sores, dizziness, tiredness, nervousness, neuralgia and sinusitis) of the presence of nonreaginic food allergy were present in 79 per cent of 222 college girls. Each of the symptoms, when present, was associated on the average with a higher incidence of colds than observed in their absence. There was a progressively increasing incidence of colds when the number of symptoms increased.

There was no correlation between the presence of symptoms and poor condition based on the performance of a modified Flick test. The handicap of poor condition was however reflected in a heightened cold incidence, as was the handicap of addiction to smoking. The girls with the greatest total handicap from all sources, had roughly four times as many colds as those with the least.

Journal of Lab and Clinical Medicine, St. Louis

28 671-796 (March) 1943 Partial Index

- Lesions in Tissues of Body Following Sulfanilamide Therapy H. J. Schattenberg and W. H. Harris Jr.—p. 671
Intestition with Strongyloides Stercoralis M. B. Levin—p. 680
Effect of Cinchophen on Bile Formation A. I. Berman, E. F. Snap, A. J. Atkinson and A. C. Ivy—p. 684
Drug Prophylaxis Against Lethal Effects of Severe Anoxia IV. Standardized Technique Influence of Body Weight Injection of Saline Molecular Reagent Rate of Ascent and Pretreatment with Oxygen or Helium Oxygen in Anoxic Mice C. A. Emer and E. J. Van Lier—p. 689
Comparative Toxicity of Pentobarbital in Newborn and Adult Rat B. Esten, F. A. D. Alexander and H. E. Hinrich—p. 706
Species of Tribes Mureae, Neisseriaceae and Streptococcaceae Which Cause Diagnosis of Gonorrhea by Smears C. C. De Bord—p. 710
Effect of Ethyl Alcohol Intoxication on Development of Local Inflammatory Reactions in Rabbits R. H. Rigdon—p. 714
Alcoholic Cirrhosis of Liver Clinical and Pathologic Study of 359 Fatal Cases Selected from 12,267 Necropsies J. D. Kirkham and A. Shure—p. 721
Sex Hormone Assays in Menopause Their Clinical Significance B. A. Watson, N. Yolton and L. Rauls—p. 732
Note on Blood Guanidine Level in Migraine Subjects H. D. Palmer, D. B. McVicar Scott and K. A. C. Elliott—p. 735
Apparent Fructose Content of Human Extracellular Fluid R. S. Hubbard and E. Holley—p. 737
*Sterility Test for Sulfanilamide Powders M. Landy and Elizabeth J. Oswald—p. 743

Sterility Test for Sulfanilamide Powders—The report of a death from tetanus traced to a contaminated sulfonamide powder makes it evident that there is need for a test to determine their sterility. There seems to be some controversy as to the amount of heat which can be applied without altering the drug to such an extent as to render it useless and in some cases actually dangerous. The margin of safety between the amount of heat necessary to kill organisms present and the amount which will yield a product unfit for use is small. It is therefore important to have available a sterility test. The procedure which has been used by Landy and Oswald is as follows: The contents of a shaker package (5 Gm. of sulfanilamide) are transferred aseptically to a flask containing 500 cc. of sterile water. The flask is vigorously shaken for five minutes, allowed to stand for thirty minutes at room temperature and shaken again for five minutes. The undissolved sulfanilamide is allowed to settle and 5 cc. of the supernatant fluid is added to each of two tubes containing 20 cc. of Brewer's medium. The tubes are incubated at 37°C. for a period of seven days and examined for evidence of growth. Brewer's medium contains a sufficient amount of sulfonamide inhibitor to permit growth of three selected test organisms: *Staphylococcus aureus*, *Escherichia coli* and *Clostridium tetani* in the presence of 50 mg. of sulfanilamide. This amount of sulfanilamide is the maximum amount which could be present per tube of Brewer's medium in the execution of the aforementioned sterility test. In order to determine the efficiency of the method in the recovery of a spore bearing pathogen from sulfanilamide powder samples, were artificially contaminated with small numbers of *Clostridium tetani*. No growth was observed in the sterile sulfanilamide controls while tubes containing contaminated sulfanilamide powder showed excellent growth of *Cl. tetani* within forty-eight hours. This is further evidence of the extreme resistance of *Cl. tetani* spores to high concentrations of sulfanilamide. This procedure is applicable to other sulfonamides as well. It is necessary however, first to determine the maximum quantity of drug which is inactivated by the sulfonamide inhibitors present in Brewer's medium.

Journal of Nutrition, Philadelphia

25 207-308 (March) 1943 Partial Index

- Vitamin B Complex Studies in Dogs Production of Cirrhosis of Liver P. J. Fouts—p. 217
Result of Feeding Rats Thiamine Low Diet of Type Consumed by Human Beings C. M. Higgins, R. D. Williams and H. L. Mason—p. 229
Basal Metabolism of Normal College Women J. McCrery, Mina Wolf, Lamb and Neva Deen Bayousett—p. 245
Influence of Feeding on Fat and Vitamin A Absorption in Man D. Adlerberg and H. Sobotha—p. 255
Vitamin B Complex of Pecked Wheat Bread R. R. Sealock and A. H. Livermore—p. 265
Nicotinic Acid Content of Common Fruit and Vegetables as Prepared for Human Consumption W. C. Russell, M. W. Taylor and J. F. Beuk—p. 275
Nutritive Adequacy of Certain Low Cost Food Mixtures Frances Hempill, Ruth Adele Koenig, and Jet Winter—p. 285

Medical Annals of District of Columbia, Washington

12 87-130 (March) 1943

- Contributions of Medicine to the Nation F. H. Laker—p. 37
Segmental Dilatation of Anal Ring J. Horgan—p. 94
Eye and Related Functional Disturbances J. Dessoff—p. 97
Modern Approach to Child Cudance L. M. Dub—p. 102
Insight into Psychotic Mechanisms and Emergency Psychotherapy, Frieda Fromm Reichmann—p. 107

New England Journal of Medicine, Boston

228 271-298 (March 4) 1943

- Renal Complications of Leukemia D. Merrill and H. Jackson Jr.—p. 271
Renal Hypertension Review of Its Status Including Report of Case of Hypertension Relieved After Nephrectomy B. A. White, R. E. Durkee and C. Mirabile—p. 277
Mechanism of Heart Failure and Related States L. B. Ellis—p. 284

228 299-326 (March 11) 1943

- Sporadic Infections Caused by *Salmonella* *Supestiter* and *Salmonella* *Oranienburg* B. A. Jager and M. E. Lamb—p. 299
Rheumatoid Arthritis as Cause of Increased Cerebrospinal Fluid Protein Study of 101 Patients A. O. Ludwig, C. L. Short and W. Bauer—p. 306
Mechanism of Heart Failure and Related State L. B. Ellis—p. 311

228 327-380 (March 18) 1943

- Toxic Dust, Fumes and Gases in Industry G. E. Morris—p. 327
Conditioned Reflex as Treatment for Abnormal Drinking Its Principle, Technique and Success J. Thimann—p. 335
Varicella Following Exposure to Herpes Zoster J. Garland—p. 350

Salmonella Infections—Jager and Lamb observed in a period of one year 6 patients with *Salmonella supestiter* infection at the Boston City Hospital. Two more patients were subsequently found to be infected with *Salmonella oranienburg*, a closely related bacterium. In no case was the source of infection determined. Two of the 6 cases of *S. supestiter* infection had typhoid-like symptoms. In 1 case anatomic observations suggested that an endocardial thrombus might have been the focus of infection but this could not be established. Clinical or roentgenologic evidence of pulmonary involvement existed in 5. In 1 case a large single renal calculus caused obstruction and was associated with *S. supestiter* infection of the involved kidney. In another case there was a unilateral salpingitis with a localized fibrinous peritonitis from which *S. supestiter* was cultured. Fever was present in 5 at the time of admission and developed in another postoperatively. Two patients had chills. Diarrhea occurred once. Relative bradycardia occurred once. There was enlargement of the liver in 3 cases, in 2 however there was a history of chronic alcoholism. Jaundice occurred in 1. Chemotherapy was employed in 4 cases but did not have a beneficial effect. A moderate anemia was present in 4 cases, in several of them chemotherapy may have been a factor in its production. In 3 cases the initial white cell count was low or normal whereas in 3 it was elevated. In 4 of the 5 cases in which blood cultures were made the organism was recovered. Urine cultures were positive in only 1 case. Stool cultures were negative in every case as were also sputum and throat cultures. Cultures of the wounds in the 2 cases with surgical complications gave repeatedly positive results. In 4 instances the patients' serum agglutinated their organisms. *S. supestiter* can be separated from other members of the *Salmonella* group by its selective fermentation reactions and by agglutinations.

with specific antisera. It belongs to the typhoid-paratyphoid organisms. The six strains of *S. supestifer* isolated belong to the type *Salmonella cholerae-suis*, var. *kunzendorf*, a monophasic organism. *Salmonella oranienburg* is a rare pathogen. The selective fermentation reactions of this organism are identical with those of *Salmonella paratyphi C*. If, however, fermentation tests with Stern's glycerol medium and Bitter's rhamnose medium are carried out it is possible to make a differentiation, since *S. oranienburg* gives positive fermentation reactions on these two mediums, whereas *S. paratyphi C* yields negative reactions. With stock *S. supestifer* serum *S. oranienburg* gives a somitic (finely granular) type of agglutination. This is in accord with their common somitic antigens. The diphasic *S. supestifer* (*S. cholerae-suis*) serum absorbed with the monophasic strain (*S. cholerae-suis* var. *kunzendorf*) failed to agglutinate the two *S. oranienburg* strains. This is to be expected since the two organisms have distinct flagellar antigens.

Rheumatoid Arthritis as Cause of Increased Protein in Cerebrospinal Fluid—Ludwig and his associates point out that the neurologic manifestations of rheumatoid arthritis are numerous, variable and at times so striking as to simulate disease of the central or peripheral nervous system. The present investigation concerns the aspects of the cerebrospinal fluid in rheumatoid arthritis. The cerebrospinal fluids from 101 patients with rheumatoid arthritis, 42 having spondylitis with or without peripheral arthritis, and 59 having involvement of the peripheral joints alone, were examined. The only significant abnormalities observed were increased protein contents, abnormal colloidal gold curves or a combination of the two. Nine, or 12 per cent, of the 59 patients with rheumatoid arthritis involving the peripheral joint alone and 16, or 38 per cent, of the 42 patients with spondylitis exhibited such abnormalities. Fifteen of the 16 patients with increased cerebrospinal fluid protein had either spondylitis or symptoms suggesting spinal involvement. This fact points strongly to a relation between an elevation of the spinal fluid protein and the presence of rheumatoid arthritis in the spinal and sacroiliac articulations. Cerebrospinal fluid alterations occurred more frequently in the spondylitis patients with severe pain or sciatica or both and hence presumably with a higher degree of inflammatory activity. Factors probably involved in the production of these abnormalities are alterations in the serum proteins and increased permeability of the meninges from their proximity to inflamed articular tissue. Attention is called to the diagnostic difficulties presented by patients with rheumatoid spondylitis and increased cerebrospinal fluid protein, with particular reference to their differentiation from cases with ruptured intervertebral disks.

Ohio State Medical Journal, Columbus

39 201-308 (March) 1943

- Can Foods Supply Our Need for B Complex Vitamins? Martha Koehne, Columbus—p 217
 *Clinical Use of Mixtures of Insulins M I Sparks and H J John, Cleveland—p 226
 Uses of Strophanthus in Heart Disease E Podolsky, Camp Butler, N C—p 229
 Hodgkin's Disease Complicated by Amyloidosis and Nephrotic Syndrome Case Report R G Lehman—p 232
 Detection and Control of Defective Vision in Industry H W Reid, Cincinnati—p 233
 Mixed Tumors of Palate R S Rosedale, Canton—p 235
 Industrial Aspects of Peripheral Vascular Disease L N Atlas, Cleveland—p 238
 Treatment of Myasthenia Gravis with Roentgen Ray C D Aring, Cincinnati—p 241
 Importance of Sulfur in Nutrition J Forman, Columbus—p 244
 Latent Bronchogenic Carcinoma Case Record Presenting Clinical Problems H T Karsner, Cleveland—p 245
 Economic State and Mortality in Appendicitis, from Cleveland Appendicitis Survey H R Hathaway, Lakewood, and R M Watkins, Cleveland—p 247

Clinical Use of Mixtures of Insulins—Sparks and John adequately controlled 140, or 93.5 per cent, of 150 ambulant diabetic patients by a single daily injection of insulin. Of the series 53 per cent received protamine zinc insulin and were controlled by it alone, 38 per cent a mixture of protamine zinc insulin and amorphous insulin and 2.5 per cent crystalline zinc insulin. The remaining 6.5 per cent (10 patients) form a heterogeneous group. The patients who were adequately controlled by protamine zinc insulin either had mild to moderate

diabetes and required 30 units or less per day or were those in whom diabetes developed after 40 years of age. For the 47 per cent who cannot be adequately controlled with protamine zinc insulin, who are determined by the taking of their blood sugar after each meal, protamine zinc insulin and amorphous insulin given at one injection has proved satisfactory in 38 per cent of the total. In place of such stock mixtures of fixed proportions of the two insulins the authors at the time of injection first take the amorphous insulin into the syringe, add the proper amount of protamine zinc insulin and make the injection immediately. This order is followed so that no protamine zinc insulin may be introduced into the bottle of amorphous insulin. This manner of mixing the insulins can be varied to meet the needs of each individual as may be necessary from time to time, as proportions necessary for adequate control have varied widely. Most of the patients treated with the mixture had moderately severe diabetes, so that the total dose of insulins was between 40 and 60 units. It was used with advantage for 1 patient receiving a total dose of only 15 units, and at the other extreme were 2 patients given 70 to 80 units and 90 units in all to another 1. The juvenile diabetic patients were the ones who benefited most from the mixtures even when the total dose was small. There were no patients who could not accomplish the mixing of the two insulins.

Oklahoma State Medical Assn Jour, Oklahoma City

36 93-138 (March) 1943

- Aviation Medicine W M Scott—p 93
 Industrial Dermatoses E S Lain—p 96
 Five Year Report of University of Oklahoma Student Health Service W A Fowler—p 98
 Management of Peptic Ulcer A W White—p 104

Public Health Reports, Washington, D C

58 377-416 (March 5) 1943

- Coliform Confirmation from Raw and Chlorinated Waters with Brilliant Green Bile Lactose Broth Elsie Wattie—p 377
 Parental and Familial Factors in Acceptance of Diphtheria and Smallpox Immunization L Breslow, Pearl R Shaht and G W Anderson—p 384
 *Experiments in Cooking of Garbage for Destruction of Trichinae in Pork Scraps W H Wright and J Bozicevich—p 396

Cooking of Garbage—To determine the minimal time required for cooking garbage to destroy trichinae in pork scraps which it contained, Wright and Bozicevich introduced pieces of trichinous pork into garbage cooked by steam in open tanks. The pieces of pork varied in dimension from 1 by 1 by 1 inch to 6 by 6 by 4½ inches and in weight between 20 Gm (0.04 pound) and 2,297 Gm (5.06 pounds). The samples were placed in the garbage while it was still cold before the steam was turned into the tank and held in the tank for various periods after the garbage came to a boil. The internal temperature of each piece of pork was ascertained by means of a meat thermometer inserted into the center of the sample. The data from the experiments warrant the conclusion that the boiling of garbage for thirty minutes in an open container will effect the destruction of trichina larvae in pieces of pork up to 3 inches in thickness and probably in pieces of pork of greater thickness provided the garbage is allowed to cool gradually. Such a procedure would seem to constitute an effective measure for preventing the transmission of trichina infection to swine maintained on garbage and thus aid in the control of swine trichinosis primarily and human trichinosis secondarily.

Rhode Island Medical Journal, Providence

26 33-50 (March) 1943

- Rhode Island Cash Sickness Compensation Act H C Pitts—p 33
 Treatment of Pneumonia with Large Immediate Doses of Sulfonamide Without Complications J F Kenney—p 37

South Carolina Medical Assn Journal, Florence

39 53-78 (March) 1943

- Half Century of Practice R Wilson—p 53
 Roentgen Ray Aspects of Sarcomas of Soft Tissues F B Mc—p 59
 Post Traumatic Painful Osteoporosis (Sudeck's Atrophy) H G—p 63

Southern Medical Journal, Birmingham, Ala

36 167-240 (March) 1943

- *Use of Intrapelvic Coagulum in Pyelolithotomy Preliminary Report J E Dees Durham N C—p 167
- Bronchogenic Carcinoma Report of Case Diagnosed from Fixed Frozen Sections of Sediment from Pleural Exudate D R Venable Columbus Ga—p 175
- Ankylosing Spondylarthritis Marie Strumpell Arthritis Roentgen and Orthopedic Therapy L D Baker Durham N C—p 189
- Practical Solution of Some Common Anorectal Problem A D Smith Rochester Minn—p 184
- Primary Dysmenorrhea W Bickers Richmond Va—p 192
- Some Observations on Use of Nicotinic Acid Amide as Adjunct in Obstetric Analgesia Preliminary Report J R Perdue Miami Fla—p 198
- Treatment of Congenital Syphilis with Aclarone (Stovaryl) Result of Ten Year Study J M Vreus Durham N C—p 201
- Civilian Medical Care in Total War T Pirran Washington, D C—p 204
- Personnel Problems of Medical Department C H Tetlev Washington D C—p 209
- *Acute Hemolytic Anemia in Fertilizer Workers New Industrial Hazard R Wilson Jr and G H Mangun Charleston S C—p 212
- *Causes for Unsuccessful Sulfonamide Therapy of Pneumonia H F Flippin Philadelphia—p 219
- Physical Therapy Measures in Treatment of Peripheral Vascular Diseases E J C Hildenbrand Washington D C—p 224
- Ocular Motility Then and Now W T Davis Washington D C—p 228
- Clinical Significance of Serum Protein B M Kazan Richmond Va—p 234
- Intestinal Parasites and Skin Diseases M T Van Studdtford New Orleans—p 238

Use of Intrapelvic Coagulum in Pyelolithotomy—Dees outlines a new approach to the problem of the surgical removal of renal calculi. The incidence of recurrence after pyelolithotomy is too high and this, he believes, is due to the incomplete removal of stones at operation. The new technique promises complete removal of all free renal calculi regardless of their size or position within the renal pelvis. A coagulable substance (clotting globulin) is injected into the renal pelvis at open operation. The resulting clot completely fills the pelvis and forms a perfect mold or its ramifications. Within this coagulum are incorporated all free renal calculi. The coagulum together with all stones enmeshed within it may then be removed through a pyelotomy incision. The technique has been used in 5 cases of nephrolithiasis without apparent ill effect. Although the method is still in an experimental stage calculi that probably would not have been removed by pyelolithotomy as usually performed have been removed by this means.

Acute Hemolytic Anemia in Fertilizer Workers—Within the last three years Wilson and Mangun encountered 3 cases of acute hemolytic anemia with hemoglobinuria which occurred under similar circumstances in the fertilizer industry. Subsequent investigation clearly points to a metallic poisoning, an industrial hazard previously unsuspected in the fertilizer industry. An active hemolysin was isolated from the blood of 1 of the patients and from the urine of another. The authors believe that adequate ventilation of ships carrying fish scrap to fertilizer mills would prevent the occurrence of this industrial accident.

Unsuccessful Sulfonamide Therapy of Pneumonia—Flippin states that the following should be thought of as possible causes when sulfonamide therapy is not successful: (1) pneumonia not due to sulfonamide affected organisms, (2) improper selection of a drug, (3) belated chemotherapy, (4) inadequate chemotherapy, (5) drug toxicity, (6) presence of antisulfonamide substances and (7) failure to employ other established therapeutic measures.

Southwestern Medicine, Phoenix, Ariz

27 1-32 (Jan) 1943

- General Considerations in Treatment of Malunited and Ununited Fractures R G Packard Denver—p 2
- Skin Diseases Under War Conditions G P Lingenfelter Denver—p 9

27 33-60 (Feb) 1943

- Emergency Treatment of Abdominal Traumas E P Palmer Phoenix Ariz—p 34
- Nonobstructive Jaundice V G Presson Tucson Ariz—p 41

Surgery, Gynecology and Obstetrics, Chicago

76 257-384 (March) 1943

- Multiple Gastric Polyposis Supplementary Report of 41 Cases Including 3 New Personal Cases F L Pearl and H Brunn San Francisco—p 257
- Development of Vertebral Column as Related to Certain Congenital and Pathologic Changes J L Lhrenhaft Iowa City—p 282
- *Mesonephroma or Teratoid Adenocystoma of Ovary W B Stromme and H F Traut New York—p 293
- Experimental Observations on Reconstructive Intrathoracic Esophago-gastric Anastomosis Following Resection of Esophagus for Carcinoma E B Kay Ann Arbor Mich—p 300
- Cranular Cell Nodulostoma R C Horn Jr and A P Stout New York—p 315
- Hemorrhagic Infarct of Testicle in Newborn J T MacLean New Haven Conn—p 319
- Immediate Effects of 3,3 Methylene Bis (4 Hydroxycoumarin) on Experimental Animals K C Wakim K K Chen and W D Gitch Indianapolis—p 323
- Significance of Extent of Axillary Metastases in Carcinoma of Female Breast S Warren and V N Tompkins Boston—p 327
- Shock and Anesthesia in Transthoracic Gastric Surgery H K Beecher Boston—p 331
- Modification of Callander Amputation M Grodinsky Omaha—p 337
- Shock Cart J Scudder New York—p 341
- Ambulatory Method of Treatment for Intertrochanteric Fractures of Femur W J McKibbin Seattle—p 343
- Arthroplasty of Hip for Osteoarthritis Utilizing Foreign Body Cups of Plastic P H Harmon Sayre Pa—p 347
- Plasma Clot and Silk Suture of Nerves I Experimental Study of Comparative Tissue Reaction I M Tarlov and B Benjamin Brooklyn—p 366

Multiple Gastric Polyposis—Since 1926 when they collected 84 cases Pearl and Brunn have collected 41 cases of multiple polyps of the stomach from the literature and to this they add 3 proved cases of their own. Multiple gastric polyposis may be congenital (neoplastic) or inflammatory (hyperplastic). The two types may often be differentiated on gross examination alone. Microscopically in neoplastic polyps the muscularis mucosae enters the tumor for a variable distance and usually becomes fragmented or split with the submucosa entering the tumor for a variable extent. In the hyperplastic type the muscularis mucosae is intact and forms a delineating membrane the submucosa plays no part in the formation of the tumor. Borderline cases may be difficult to classify. The symptoms are not characteristic, epigastric pain and tenderness were most frequent. Bleeding in the vomitus stool or gastric content was found in more than 50 per cent of the patients. In pedunculated tumors and those near the pylorus, separation of polyps or pyloric obstruction is more likely. Some patients have had symptoms for more than twenty years. Physical changes may be indefinite or entirely lacking. Diagnosis may be difficult. The roentgenogram may fail to differentiate multiple polyps from chronic hypertrophic gastritis retained food bezoar or sarcoma. The correct diagnosis is made most often at operation. Roentgenology and gastroscopy are complementary their combined use will greatly enhance diagnostic acumen. Free hydrochloric acid was absent from the fasting gastric content of almost every patient. Careful search should be made in the gastric content for particles of tumor which may establish the diagnosis. In the previous series a malignant alteration was observed in 12 per cent and in the present series in 19 per cent. This alone argues for radical surgical removal of the area bearing the tumor. The results are greatly superior in gastrectomized subjects.

Mesonephroma or Teratoid Adenocystoma of Ovary—Stromme and Traut report 10 cases which fulfil the criteria outlined by Schiller for mesonephroma or teratoid adenocystoma of the ovary. In their series they have usually been at a loss to demonstrate structures which resembled the architectural arrangement of wolffian glomeruli. The tumors abounded in acini into which papillary tufts or epithelium projected with or without a supporting connective tissue stalk but any one of several well recognized ovarian or uterine tumors could be named mesonephric if the demonstration of this arrangement of cells should be taken as the criteria of such origin. They are skeptical of Schiller's explanation of the etiology of this group of tumors and prefer not to accept his term of mesonephroma ovarii. They are convinced that the tumors are not

rule, that they form a morphologically distinct group of ovarian tumors with a characteristic life history and that for this reason they should have a distinctive name (teratoid adenocystoma). These tumors are not merely a hydropic form of serous cystadenoma, for they almost invariably produce a mucin-like substance which reacts to the usual stains for mucin. While the mucin stain is nonspecific, the fact that it is positive differentiates it from the serous group in which it is not positive. This suggests a probable relationship to wolffian or teratoid antecedents. These neoplasms are different morphologically and in their mode of growth from the pseudomucinous cystadenomas. Whether benign or malignant, they are essentially solid tumors which tend to become cystic only as they degenerate.

Tennessee State Medical Assn Journal, Nashville

36 89-126 (March) 1943

- Diets in Dermatologic Conditions R. N. Buchman Jr., H. Kunk and C. M. Hamilton—p. 59
Hyperparathyroidism Symposium N. S. Shotner, I. H. Barksdale and I. M. Reken—p. 97

United States Naval Med Bulletin, Washington, D. C.

11 299-612 (March) 1943

- Observations on Treatment of Battle Wounds Aboard Hospital Ship I. K. Ferguson, K. B. Brown, J. I. Nicholson and H. I. Stedman—p. 299
Experiences of Surgical Service of United States Naval Hospital, Auckland, New Zealand with Casualties from Initial Solomon Islands Engagement G. Crile Jr.—p. 306
Os Calcis Fractures in Naval Warfare W. I. Rogers—p. 321
Treatment of Fractures of Fibula on Board Ship R. S. Silvis—p. 331
Experimental Study of Underwater Concussion F. C. Greaves, R. H. Drucker, O. A. Brines, J. S. Shaver and E. I. Corey—p. 339
Experimental Immersion Blast Injury Preliminary Report M. F. Friedell and A. M. Ecklund—p. 353
Preliminary Appended Report on Causation of Blast Injury M. T. Friedell and R. Burke—p. 363
Fifteen Days Adrift on a Raft Clinical Evaluation of Five Survivors H. S. Good—p. 367
Night Blindness Improvement with Vitamin D Including Experimental Production of Retinitis Pigmentosa and Its Treatment in Humans with Vitamin D A. A. Knappp—p. 373
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Lead Hazard Occurring During Repair of a Burned Ship W. E. Fleischer and F. J. Viles—p. 386
Ruptured Intervertebral Disks D. H. Warden—p. 388
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New Aspect of Muscle Reinnervation Preliminary Report H. E. Billig Jr. and A. van Harreveld—p. 410
Intramuscular Pressure VI Physiology of Venopressor Mechanism and Importance of Maintaining Intramuscular Pressure in Treatment of Peripheral Collapse of Shock and Shocklike States L. Gunther—p. 414
Distribution of Influenza Antibodies Among Vaccinated and Unvaccinated Naval Personnel Personnel of Naval Laboratory Research Unit No. 1 A. P. Krueger, M. C., Officer in Charge—p. 426
Experiences with Fever Therapy at Philadelphia Naval Hospital W. H. H. Turville and F. Fetter—p. 431
Examination of Heart in Navy Applicants H. E. Ungerleider, T. F. Duhigg and R. S. Gubner—p. 441
Functional and Simulated Deafness F. Herbert—p. 458
Psychometric Procedures in Detection of Neuropsychiatrically Unfit W. A. Hunt, C. L. Wittson, H. I. Harris, P. Solomon and M. M. Jackson—p. 471
Inapt Naval Recruit M. Gerstle Jr., R. L. Wagner and T. Lodge—p. 480

Experimental Study of Underwater Concussion —

Greaves and his associates present data on the effects of underwater concussion on rats, guinea pigs and goats. The amount of explosive necessary was 5 Gm of tetryl for adult white rats and 6 Gm for adult guinea pigs. Death immediately following the blast was due to pulmonary damage. The respiratory function of the lungs was immediately and totally destroyed. The animals were not rendered unconscious by the blast but continued their swimming motions for several seconds. Cyanosis appeared and the nose and mouth exuded a bloody, frothy liquid. Occasionally bloody froth was present about the nares, and the respirations were shallow and rapid. Some of these animals died after a few hours. Those that survived regained

their normal actions within a short time and demonstrated no further ill effects. The lesions produced under comparable conditions in all animals were surprisingly uniform. Pulmonary lesions were always found if any injuries resulted from the blast, but intestinal lesions were not constant. None of the other organs or tissues in the thorax or abdomen showed injury. No cerebral or central nervous system lesions were encountered. A few fractured extremities resulted from explosions of high order. The determining factor in the production of injuries by blast is the presence of air or gas in the tissues; the more air or gas that is present, the greater is the injury. When a compression wave greater than 500 pounds per square inch strikes the body it is transmitted through the tissues and, on striking the air within the lungs or the gas bubble within the gastrointestinal tract, it breaks through into the gaseous medium with a shredding effect, tending to "blow off" the surface of the tissues exactly as it blows off the surface of water when it breaks through into air. Gastrointestinal tissue, as such, is resistant to the effects of the compression wave, but if gas is present in the lumen the wave will shred as it breaks through. If the gas is displaced without compression, the only lesion will be a hemorrhagic area of the wall, marking the site of the shredding. Perforation will occur when the gas bubble is trapped. If the wall has been sufficiently weakened by the shredding injury it will break down before the reexpanding bubble and a "blow out" perforation will result. Injuries were minimized when the animals were protected about the trunk by a lifejacket covering of foam rubber or kapok that was not waterlogged. Animals completely protected by dry kapok received only minimal lesions when subjected to two and a half times the lethal charge. The protective action of kapok and foam rubber is due to their ability to disperse the compression wave sufficiently to prevent or to minimize its destructive effect. Any protective device worn by men should be of the sleeveless coat type. The kapok should be enclosed in muslin bags, which in turn are encased in a pliable, waterproof material. It should have a padded collar attached that fits snugly about the neck when tied in front. The coat should be slightly double breasted and the skirt should reach to the greater trochanters of the femur. The jacket should have a padded "tail" to be drawn and tied between the legs to protect the scrotum and testicles. The thickness of the pads should be the same as those used in the standard Navy life jacket.

Experimental Immersion Blast Injury—Friedell and Ecklund determined in animals the types of abdominal and other injuries that immersion blast causes. Two types of abdominal lesions observed were a hemorrhagic condition of the muscular portion of the intestinal wall and perforations and larger tears in the intestinal wall. The lesions in the chest were symmetrical hemorrhagic areas on the surfaces of the lung nearest to the explosive source, thus the dependent edges of the middle lobes were usually involved and the posterior surface when the back was turned toward the blast. The severity of thoracic lesion depended on the distance of the explosion, the size of the charge and the protection afforded the thorax. Thoracic involvement usually accounted for the fatal outcome. Abdominal lesions were not produced except when the pulmonary damage was so severe that death ensued in five to ten minutes after the explosion. All such animals were fairly lively for two to three minutes, air hunger then ensued, the eyes began to bulge, and minor convulsions followed. With a chamber devised to minimize the effects on the thorax the lungs were protected so that previously fatal explosive conditions were no longer lethal. However, abdominal lesions were present and as the force of the charge grew greater the hemorrhagic lesions gave way to perforations. When the force of the charge was overwhelming perforations were frequent. The effect of charges was apparently somewhat minimized when the animal was placed on its back. In the patients observed by the authors after the battle of Midway, they felt that possibly life jackets prevented severe injury to the lungs as to cause death and that the unprotected abdomen bore the brunt of the explosion. This can

be borne out by experiments in which the previous lethal condition was repeated, except that the chest was protected. Perforations then occurred in the intestinal tract. At necropsy the changes in the chest were not severe enough to explain the lethal outcome. Peritonitis appeared in 1 animal which survived the pulmonary blast injury for twenty-three hours thus duplicating the picture encountered in some instances of human immersion blast injury. The authors suggest that the life jackets be made to cover the abdomen.

Night Blindness Improvement with Vitamin D—Of all ocular conditions giving rise to night blindness Knapp states that retinitis pigmentosa stands in the forefront. Fortunately it is a rare disease. Night blindness may be caused by a deficiency of at least two vitamins A and D. Another condition often complicated by night blindness is myopia. Among 93 patients with various degrees of myopia 64 complained of poor vision in reduced illumination. As routine treatment these 64 were given 60 drops of viosterol and at least 1 Gm. of available calcium. With some the vitamin D dose was increased to 200 drops daily. After six to twenty-seven months of observation during which time the patients were checked at least once a month there was an actual reduction of the myopia in 20. Casts of the anterior segment of many eyes and in 1 instance a fundus photograph before and after treatment proved beyond doubt that the eyeball in both its anterior and posterior segments may shrink following treatment with vitamin D and calcium. Of the 64 persons suffering from poor vision at night 48 noticed distinct improvement in respect to their nyctalopia in no way dependent on their myopic status. Several weeks usually elapsed before definite clinical improvement was seen. The majority of those patients whose myopia was reduced spoke of their greater ability to see after nightfall and others had better vision at night when their myopia was stationary or even in the presence of an increase of their near-sightedness. In 16 the condition apparently remained the same. During the treatment of both the patients with retinitis pigmentosa and the myopia toxicity was watched for. Seldom did a toxic sign develop—a mild rash, nausea, vomiting or constipation—but these symptoms disappeared soon after the medication was stopped or reduced.

War Medicine, Chicago

3 223-336 (March) 1943

- *Primary Atypical Pneumonia Etiology Unknown J H Dingle T J Abernethy G F Badger G J Buddingh A E Feller A D Langmuir J M Rueggsegger and W B Wood Jr—p 223
- *Primary Atypical Pneumonia and Malaria E T Campbell—p 249
- Effect of Exposure to Anoxia of Moderate Degree on Excretion of Ascorbic Acid in Urine Preliminary Report L R Krasno A C Ivy J Atkinson and W B Johnson—p 256
- Neuroses in Soldiers Use of Sodium Amytal as Aid to Psychotherapy L L Altman—p 267
- Gastroscopy and Use of Gastroscopy in Military Services J T Howard—p 274
- Allergic Rhinitis and Asthma in Hawaii C T Young W R Cook and I A Kawasaki—p 282
- Vascular Surgery in War Geza de Takats—p 291
- Effects of Increased Flying Time on Aviation Instructors J E Dougherty—p 297
- Intravenous Migration of Metallic Foreign Body J A Siegling—p 303

Primary Atypical Pneumonia—Dingle and his associates members of the Commission for the Investigation of Atypical Pneumonia and Other Respiratory Diseases at Camp Claiborne Louisiana report that clinically, epidemiologically and etiologically atypical pneumonia at Camp Claiborne was in general agreement with the observations of other investigators. The infection occurred in epidemic and in endemic form. The causation has not been ascertained. The most characteristic clinical feature of the syndrome was the late development of physical signs in the lungs in contrast to the comparatively extensive x-ray evidence of the lesions. This observation emphasizes the need for early and repeated x-ray examination and for frequent physical examination during the course of the acute illness to determine the true incidence of the disease. The clinical and epidemiologic data support the possible relation between atypical pneumonia and certain of the minor acute illnesses of the respira-

tory tract without demonstrable pulmonary lesions observed by Gallagher and by Rimmann and his associates. The agent or agents undetermined as yet, causing atypical pneumonia may produce a constitutional reaction of varying degrees of severity both with and without obvious pulmonary involvement. At present there is no specific measure for determining the proportion of the minor illnesses which are of the same causation. The factors determining the incidence and the conditions incident to the epidemic remain obscure. The existence of a non-human reservoir of infection was not discovered, but neither was its possibility completely excluded. Its widespread occurrence at the camp and its scarcity among the population suggested that susceptibility to the pneumonic form was low. Its epidemiology is consistent with the hypothesis that the disease is communicable from person to person and that inapparent instances act as the effective spreading source of the infection. No evidence was obtained that predisposing factors, such as chilling, fatigue or previous infections of the upper respiratory tract, were important in the pathogenesis of the disease. If an appreciable number of minor illnesses are of the same origin as some evidence now indicates the infection must be considered an important disease of the respiratory tract which causes disability not only in the armed forces but in the civilian population.

Primary Atypical Pneumonia and Malaria—Campbell reports 50 cases of primary atypical pneumonia in Panama and the Canal Zone complicated by concurrent malaria. In a locality in which malaria is endemic, cases of primary atypical pneumonia must be considered with the possibility of a dual infection in mind. Such cases can be separated into two groups: those admitted to the hospital with the pneumonia in many of which subsequently a blood smear is positive for malarial parasites and those admitted for malaria in which atypical pneumonia develops later on. In the first group the onset is usually gradual and the patient complains of having felt bad for several days. There are a nonproductive cough, vague pains in the chest, sore throat and fever. Although uncomfortable he is not prostrated. His fever is usually intermittent, and the temperature varies between 100 and 102 F. occasionally it may be higher. Defervescence by lysis usually begins about the fifth to the eighth day of illness. Moist rales can sometimes be heard at the onset and can usually be heard at the height of the pulmonary involvement. Approximately 68 per cent of the patients of this group had blood smears positive for malaria parasites. This 'secondary infection' seems to have little or no effect on the eventual recovery except that hospitalization to eradicate the parasite is longer than is usually necessary for the pulmonary infection alone. The two diseases run independent concurrent courses. Treatment of the pneumonitis is symptomatic. Codeine is often necessary to control the cough. When malaria is present it is treated with quinine or atabrine in the routine manner. There have been no deaths. The malaria of the patients of the second group responds well and is controlled rapidly but during convalescence a nonproductive cough may develop with pain and discomfort in the chest and an elevation of temperature. This usually may occur over several days but may be ushered in suddenly with a chill. Examination may or may not reveal positive physical signs in the chest. The diagnosis is made by x-ray examination. The complication develops in only a small percentage of the total cases of malaria but it is by no means uncommon and must be borne in mind. Treatment is symptomatic and antimalarial measures are continued as usual.

Wisconsin Medical Journal, Madison

42 273-372 (March) 1943

- Dysphagia Review of Clinical Roentgen Ray and Esophagoscopy Aspects of 150 Cases G D Straus Milwaukee—p 293
- Pulmonary Nodular Infiltrations in Influenza Resembling Early Tuberculosis B H Schlomovitz Milwaukee—p 296
- Recent Advances in Use of Human Serum and Plasma M Hardgrove Milwaukee—p 298
- Sulfadiazine in Chronic Infections W H Oatway Jr Tucson Ariz. J B Bingham Jr and J L Sims Madison—p 302
- Some Psychologic Aspects of Medical Disorders D A R Morris on Milwaukee—p 306

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Lancet, London

1 355-386 (March 20) 1943

*Early Diagnosis of Wound Infection with Special Reference to Gas Gangrene. D. McClean, H. J. Rogers and B. W. Williams, with a technical section by C. W. Hale—p. 355

*Prefrontal Leukotomy—Further Contribution. G. W. I. H. Fleming and W. McKissock—p. 361

*Results of Prefrontal Leukotomy. I. I. Hutton—p. 362
Pulmonary Tuberculosis As Discovered by Mass Radiography. H. J. Frenchard—p. 366

Primary Pneumococcal Peritonitis. 2 Cases with Recovery. I. Matheson—p. 367

Early Diagnosis of Gas Gangrene—McClean and his collaborators studied the possibility of detecting the presence of actively proliferating pathogenic organisms at a stage when the infection cannot be recognized by clinical or ordinary bacteriologic examination. Organisms of the gas gangrene group, staphylococci, streptococci and pneumococci produce, in addition to their recognized toxins, substances which cause an immediate increase in the permeability of the connective tissues. These diffusible or spreading factors are closely associated, it not identical with a group of enzymes that hydrolyze the mucopolysaccharide known as hyaluronic acid, which is widely distributed in the connective tissue. The enzymes are therefore called hyaluronidases. The presence of hyaluronic acid causes the infecting organisms to produce in increased amount of the enzyme and a vicious circle is set up which promotes the extension of the infection. It was of interest to determine how early in an infection these bacterial enzymes could be detected in the edema fluid or wound exudate, the distribution of these substances in the body fluids and then correlation with the progress of infection. If these enzymes could be detected at an early stage, the knowledge might provide a rapid means of early diagnosis, a more vigorous and objective antitoxin therapy and less extensive operative excision with a consequent reduction in both mortality and mutilation. Although experimental evidence indicates that hyaluronidase and lecithinase can be detected in the edema fluid as soon as there is sufficient to collect for examination, the authors do not know how early these enzymes will appear in the infected wound or how the time of their appearance will be correlated with clinical signs of infection. Animal experiments suggest that this is likely to be early in the infective process and before local changes are diagnostic. It remains to be proved whether the fact that the infecting organisms are proliferating in sufficient numbers to produce these enzymes in the tissues is evidence of active wound infection or whether this proliferation can occur when the organisms are present only as apparently harmless contaminants. The authors believe that the methods can be applied to the examination of clinical material. They suggest that a negative result from the examination of a wound exudate should not induce a false sense of security and should not be allowed to contraindicate the routine administration of antitoxin or sulfonamide compounds or both.

Prefrontal Leukotomy—Fleming and McKissock report the results of prefrontal leukotomy performed on 15 additional patients. Of this number 12 were melancholic, 1 of the remaining 3 obsessional, 1 schizophrenic and 1 manic-depressive. Of the 12 patients with melancholia, 7 have made a complete recovery and 1 has shown considerable improvement but the other 4 so far have shown little improvement. The obsessional patient has completely recovered, but the schizophrenic remains much the same although quieter, while the manic-depressive is improved. Two patients with involutional melancholia were not doing well but suddenly began to improve after being spoken sharply to and told that they must "pull themselves together to go home." One patient, with schizophrenia, has had a single seizure since the operation, and 1 had a series of thirteen seizures, but as her blood pressure was 240 mm. of mercury it is possible that the seizures were of hypertensive origin. Several of the patients have found complete "peace of mind" after the operation, and these were patients who for years had been suffering torment. The operative risk seems small. There have been no deaths in 15 cases. Of the involutional melancholic,

2 had had fifteen electric shocks followed by a prolonged shock of twenty seconds with no clinical improvement. One of these has shown no improvement after leukotomy, the other a moderate degree of benefit. Some of the patients had urinary incontinence after the operation. The impression was gained that the more severely mentally affected the patient is before the prefrontal leukotomy, the more likely he is to have urinary incontinence after it.

Results of Prefrontal Leukotomy—Hutton reports the results obtained on 50 patients subjected to prefrontal leukotomy. Of the two deaths (4 per cent mortality) only one could be attributed directly to the operation. It was due to cerebral hemorrhage caused by accidental section of the anterior cerebral artery. In most of the cases the postoperative course has been uneventful, enuresis, usually transitory, has occurred in several cases, but other neurologic complications have been rare. In view of the radical nature of the treatment, it has been advocated only in cases in which the prognosis was poor and in which other methods had been tried and had failed. Considering the chronicity of many of the cases the results are extremely encouraging. Not a single patient is recorded as being worse after the treatment than before, and even the patient with the least satisfactory results is usually found to be quieter, less impulsive and more amenable. The treatment has been tried in varying forms of mental disorder and improvement has been obtained in every type. Results seem to be best when there is a very strong negatively toned emotional factor, such as apprehension, anxiety, inadequacy or guilt. The least successful results have been obtained in cases of dementia simplex characterized by emotional apathy and general mental reduction. The rehabilitation after the operation is of the utmost importance; personal attention and encouragement are essential, and where these are lacking the results tend to be disappointing. The greatest success is obtained with patients of good intelligence whose relatives have sufficient interest, affection and understanding to help in this process of reeducation. Prefrontal leukotomy converted many patients suffering from supposedly hopeless mental disorders into contented and useful members of society.

Transactions Royal Soc. Trop. Med. and Hyg., London
36 253-318 (March) 1943

*Dysentery in Middle East with Special Reference to Sulfaguanidine Treatment. N. H. Fairley and J. S. K. Boyd—p. 253
Child Mortality in Lagos, Nigeria. E. C. Smith—p. 287
Bactericidal Effect of Tin and Its Application to Treatment of Typhoid Fever. R. Reitler and K. Marberg—p. 305

Dysentery in Middle East with Reference to Sulfaguanidine—Fairley and Boyd state that in the Middle East dysentery is mainly fly borne. Bacilli causing dysentery included the six Flexner and three Boyd strains, as well as Bacterium dysenteriae of Shiga, Schmitz and Sonne type. Sigmoidoscopy is valuable in the diagnosis of subacute and chronic dysentery, in the control of treatment and in detection of the carrier. Material collected by direct swabbing of the ulcers may yield positive findings when previous culture studies of the stools were negative. Therapeutic results proved disappointing with polyvalent antidyenteric serum. The refined antidyenteric Shiga serum prepared by partial peptonization produced clinical improvement. The benefit was too often only temporary. The serum was given intravenously in a dose of 5 to 10 cc. (100,000 to 200,000 international units), serum sickness or other untoward reactions were not observed. The cases treated with sulfaguanidine comprised over 500 cases. The analysis has been confined to 96 Shiga cases. The conclusion reached was that sulfaguanidine constitutes a specific cure for this disease. It exerts a bacteriostatic or bactericidal action which rapidly leads to a decrease in toxemia and to cessation of damage to the intestine. In subacute and chronic cases which had been resistant to other treatment were observed to heal rapidly. The drug is relatively non-toxic and never led to hematuria or renal blockage. The action of sulfaguanidine, which is bacteriostatic, and antidyenteric Shiga serum, which is antitoxic, are mutually complementary. The most important indication for the administration of antitoxin is in fulminating or severely toxic cases of dysentery.

Confinia Neurologica, Basel

4 309-308 (No 6) 1942 Partial Index

- Relations Between Benign Lymphocytic Meningitis and Poliomyelitis P. Cauter and C. Heintz —p 309
- Encephalitis Following Inclusion Conjunctivitis F. Brummer —p 314
- Disturbances of Equilibrium in Thalamolenticular Syndrome H. Brunn-Schweizer —p 322
- Meningitis A. Jentzer —p 327
- Traumatic Leptomeningopathy G. de Morsier —p 333
- Sjogren's Syndrome Its Relation to Plummer-Vinson Syndrome and Riboflavin Avitaminosis A. Franceschetti —p 343
- Simultaneous Variations in Retinal and General Arterial Pressure During Caloric Vestibular Stimulation E. B. Streiff, A. Montandon and M. Monnier —p 47
- Electroencephalography by Direct Registration M. Monnier —p 50

Sjogren's and Plummer-Vinson's Syndromes and Riboflavin Avitaminosis—Sjogren called attention to the fact that the filament keratitis described by Leber in 1882 is not merely an ocular manifestation but part of a general syndrome characterized by extreme dryness of the mucous membranes. Franceschetti, as well as Steinmann, found normal vitamin A values in patients with Sjogren's syndrome. Franceschetti points out that Sjogren's syndrome resembles the Plummer-Vinson syndrome. Meulengracht and Bichel detected a close resemblance between the Plummer-Vinson syndrome and ariboflavinosis. If the Plummer-Vinson syndrome is due to riboflavin avitaminosis then the same can be said of the syndrome of Sjogren especially since the latter presents the ocular sign suggestive of ariboflavinosis and the former does not. Franceschetti found a porphyrinuria in 2 patients with Sjogren's syndrome. He feels, however, that it is not always safe to base the cause of a disorder on analogies. The increased sedimentation rate and the frequency of joint symptoms does not permit the exclusion of an infectious factor. The author injected daily into 2 patients with Sjogren's syndrome for a week 2 cc of a preparation containing thiamine, riboflavin, nicotinic acid, aderman (B₆) and pantothenic acid. One of the patients was favorably influenced so far as the condition of the buccal mucous membrane was concerned, in the other only the rhagads were influenced. He concludes that although the role of riboflavin in the syndromes of Plummer-Vinson and of Sjogren is far from clarified one is justified in pursuing investigation along these lines.

Schweizerische medizinische Wochenschrift, Basel

72 1113-1140 (Oct. 10) 1942

- *Influenza-like Epidemic with High Incidence of Pulmonary Infiltrates (Virus Pneumonia) in an Infantry Battalion E. Haemig and W. Heyden —p 1115
- Prothrombinosis of Hypoprothrombinemia in the Newborn with Vitamin K O. Ballon —p 1119
- Iron Medication with Combination of Iron and Ascorbic Acid L. Feil —p 1121
- *Meynet's Nodes Infrequent Manifestation of Rheumatic Disease R. Junet and P. Alphonse —p 1125
- Otologic Examinations of Soldiers Operating Infantry Cannons L. Vetter —p 1127
- Lionardo da Vinci as Anatomist O. Bucher —p 1130

Epidemic of Virus Pneumonia—Haemig and Heyden report an influenza-like epidemic which broke out in an infantry battalion at the end of February 1942. Of 105 men who contracted the disorder 59 had roentgenologically demonstrable pulmonary infiltrates. The onset was acute with headache, dry cough, high intermittent temperature and profuse sweats but without dyspnea. There was a discrepancy between the slight or entirely absent auscultatory signs and the roentgenologic findings. The infiltrates were delicate, small and round or fan shaped. They originated in a widened hilus. Their absorption was accomplished within one to three weeks after the lytic defervescence. Chemotherapeutic preparations had no effect on the fever. The scanty and uncharacteristic sputum contained a mixed flora. The leukocytes at the beginning were either normal or diminished in number and there was considerable deviation to the left. The leukocytes frequently rose to 15,000 in the course of the disorder. The sedimentation reaction was not uniform; usually it was slightly increased. The course was benign. Complications developed in only 4 cases. Dense pneumonic infiltrates with effusion were present in 3 of these. The pathogenic organism could not be determined. The authors

assume that it was virus pneumonia because the symptoms and the character of the pulmonary infiltrates resembled those of the atypical pneumonia described by Smiley and others.

Meynet's Nodes—Junet and Alphonse point out that Meynet in 1875 called attention to the appearance of subcutaneous nodules in the course of acute articular rheumatism. Other observers subsequently referred to these nodules as Meynet's nodes. Neglected for many years, they have received more attention in the last two decades, chiefly because they are encountered in all forms of rheumatism and are regarded as a link between acute articular rheumatism and chronic infectious rheumatism. Some observers, particularly Coombs, regard them as the most specific manifestation of the disease. Meynet's nodes are rarely encountered in Geneva in spite of the relative frequency of acute articular rheumatism and of chronic rheumatism. The authors report the case of a girl in whom the nodes constituted the only typical manifestation during the early stage of cardiac rheumatism. Acute articular rheumatism, chronic infectious rheumatism and Still's disease belong to one nosologic family. Meynet's nodes are their common manifestation.

Revista Clinica Española, Madrid

7 93-144 (Oct. 30) 1942 Partial Index

- Poliomyelitis E. Arjona Trigueros —p 8
- Painful Hepatic and Perihepatic Syndromes in Course of Cardiac Insufficiency F. Ferrer y Solericens —p 103
- Changes in Intestinal Absorption Protein Impoverishment After Resection of Stomach C. Jimenez Diaz, J. M. Romeo —p 116
- Determination of Nicotinic Acid in Foods F. Grande Covan —p 127
- *Intracranial Hemorrhages in the Newborn L. De la Villa —p 133
- Focus of Contagion in Tuberculosis of Children M. Santos de Cosio —p 141

Painful Hepatic and Perihepatic Syndromes in Cardiac Insufficiency—Ferrer y Solericens points out that in cardiac insufficiency the true cardiac pains are often accompanied by pain in other organs involved in the existing circulatory failure. In chronic congested liver pain is dull and continuous. If the congestion increases suddenly as the result of temporary insufficiency of the right ventricle paroxysms of pain may appear in the right hypochondrium. They resemble severe hepatic colics. This is the case particularly when the right ventricle empties its blood into rigid sclerotic lungs incapable of storing blood. Cardiac insufficiency may develop in the course of diseases of the liver, the bile passages, the stomach and the duodenum and may aggravate and prolong them. Acute or subacute dilatation of the stomach and duodenum may be observed in insufficiency of the right heart with hepatic cirrhosis and pulmonary sclerosis. Diseases of the liver and of the neighboring organs may cause cardiac insufficiency in patients whose cardiac reserve is small or they may intensify an already existing cardiac insufficiency.

Intracranial Hemorrhage in the Newborn—According to De la Villa intracranial hemorrhages are a frequent cause of death in newborn infants. He observed 74 fatalities among 3,000. Intracranial hemorrhage was the cause in 42 or 56 per cent. Congenitally weak children develop intracranial hemorrhages most frequently. Vitamin K is valuable in the prophylaxis and treatment of intracranial hemorrhages of the newborn. The vitamin should be given to all parturient women. The newborn should be bled within the first eight hours after delivery.

Revista de Neuro-Psiquiatria, Lima

5 432-521 (Dec.) 1942 Partial Index

- *Meniere's Vertigo A. Asenjo and S. Riesco —p 452
- Experimental Pathogenesis of Epilepsy and Hysteria F. Sal y Roas —p 450

Meniere's Vertigo—Asenjo and Riesco treated 18 patients with Meniere syndrome by administering 6 to 8 Gm of potassium chloride daily, 0.25 Gm of vitamin B₁, nicotinic acid, phosphorus and a diet rich in vitamin B. The treatment was continued for four to six months. The immediate and late results were good in 12 patients who were observed for more than three years. The immediate results were good in 2 patients who recently completed the treatment. Vertigo was almost entirely controlled. Deafness and buzzing ear sounds persisted. Resection of four fifths of the acoustic nerve was resorted to in 3 of the 4 cases in which the medical therapy failed. The results were excellent in all 3.

Book Notices

Medico Legal Blood Group Determination Theory Technique, Practice By David Harley M.D. B.Sc. F.R.C., The Laboratories of the Inoculation Department St. Mary's Hospital, London. Cloth. Price \$3.50. 129 pp. 119 with 11 illustrations. New York: Grune & Stratton, London: William Heinemann Ltd. 1943.

This small volume fulfils the promise of the title. It is divided into three sections. The first gives a brief but clear picture of the present day knowledge of the A, B, O and M, N systems of blood groups and types, including the inheritance, distribution in tissues other than blood and the principles of medicolegal application. Section two describes in considerable detail the technique of the author for paternity tests and for blood and secretion stains. It is based on the capillary tube technique of Wright. In the last section (the largest of the three) the results in sixty-five paternity tests with ten exclusions and records of studies of blood, semen and saliva stains in fifteen criminal investigations are presented. Proposed bastardy bills and an interesting report of a committee of the House of Lords on the bastardy bill should be read by those who are interested in passage of laws permitting the use of blood groups in paternity litigation in our courts. The book can be recommended to all who are interested in the subject.

Family Treasures A Study of the Inheritance of Normal Characteristics in Man By David D. Whitney Ph.D., Professor of Zoology, University of Nebraska, Lincoln. Cloth. Price \$1.50. Pp. 299 with 211 illustrations. Lancaster, Pa.: J. B. Lippincott Press. 1942.

If one possesses a family photograph album covering three or four generations of ancestors and close relatives, one has therein a convincing demonstration of the inheritance of many normal human traits. Professor Whitney has made liberal use of his own family photographs as illustrations for his book. The best part of the book consists largely of photographic illustrations of the recurrence of similar characters in two or more generations of a family. These characters include shape of the ears, nose, lips, chin, jaws and teeth, form, color and pattern of head hair, face and body hair, shape, color and peculiarities of the eyes, shape, size and peculiarities of the hands and feet, fingers and toes and finger and toe nails, peculiarities of the skin such as dimples and freckles, general health and vigor, temperamental traits and special abilities, and numerous other miscellaneous human traits revealed by photographs. For the physician there is little of interest in the book, for the author has purposely omitted all traits that are obviously pathologic though he does allow himself to mention such abnormal traits as brachydactyly, polydactyly, color blindness, hemophilia, baldness and susceptibility to allergic symptoms. Little attention is given to the many human traits that differ quantitatively and which have been dealt with by exact biometric methods. No mention is made of the extensive use of twins in assessing the relative shares of genetic and environmental factors in determining many human differences. Nearly all characters are dealt with as though inherited as simple mendelian dominants or recessives, whereas it now seems clear that most human traits have a more complex mode of heredity. For the general reader, however, it may be wise to simplify the story of heredity even to the extent of oversimplification in order to make the point that nearly all human differences have a hereditary basis and are not altogether, as so many believe, the result of differences in the environment or maternal impressions. The main purpose of the book is to humanize the science of human heredity. This purpose it successfully accomplishes. The book should have a wide sale, even in wartime.

Insuficiencia circulatoria periférica. Colapso—shock Por Blas Mola, Doctor en medicina docente libre de patología médica de la Facultad de medicina de Buenos Aires. Papel. Pp. 80 with 5 illustrations. Buenos Aires: Librería y editorial "El Ateneo" 1942.

This short monograph is an enlarged version of a series of lectures given by the author before several audiences in the Argentine Republic. Although the book is essentially practical the reader is prepared by an excellent chapter on physiopathology of the circulatory system logically leading to those concerned with pathogenesis and etiologic factors. The remaining chapters are devoted to the clinical symptoms, differential diag-

nosis, prognosis and treatment. The indication of the different therapeutic means to be used in each case is especially good. The sources of the monograph are largely American, e.g. Cannon, Moon, O'Shaughnessy, but important Argentine contributions are also quoted. The subject is developed with remarkable clarity and conciseness, and the monograph appearing in these days is most timely. It should be read by the general practitioner and carried in the pocket by the military physician.

A Surgeon's Fight to Rebuild Men An Autobiography By Fred H. Albee M.D. F.A.C.S. F.R.C.S. Foreword by Lowell Thomas. Cloth. Price \$3.50. Pp. 349 with 11 illustrations. New York: E. P. Dutton & Co. Inc. 1943.

The autobiography of Fred Albee could almost be accepted as a history of modern bone surgery. Every page of this thoroughly interesting volume is stamped with his dynamic personality. Many who read the book may question some of the claims made by Dr. Albee of having originated so many of the now widely accepted principles of bone surgery. No reviewer, however, can be honest with himself or with the medical profession in general without acknowledging the tremendous debt which the orthopedic surgeon of today owes to Fred Albee who, together with other pioneer surgeons, helped to change the practice of bone and joint surgery from that of manipulation and strap and buckle therapy to one of the most highly skilled of all surgical specialties. This book constitutes much more than a partial history of orthopedic surgery. It is adventure, drama and philosophy. Albee has been spoken of as a bone carpenter. He is infinitely more than that. Throughout the pages of this book he is an architect and a creator of methods and ideas. As this book unfolds the interesting events of his life, the reader will become acquainted with the constructive imagination and driving energy of Albee the man as well as Albee the surgeon.

The Infectious Diseases of Domestic Animals with Special Reference to Etiology, Diagnosis and Biologic Therapy By William Arthur Hagan D.V.M. D.Sc. Professor of Bacteriology and Dean of the Faculty of Veterinary Medicine, New York State Veterinary College, Cornell University, Ithaca, New York. Cloth. Price \$6. Pp. 665 with 146 illustrations. Ithaca, New York: Comstock Publishing Company, Inc. 1943.

This is a first edition. The broad field indicated by the title is considered in the manner in which courses in veterinary pathogenic bacteriology are usually taught, but the breadth of the information has not heretofore been available in any one textbook. As the author states, "the work is less than a text book of bacteriology in that a knowledge of the general principles of the subject is taken for granted and this part of the usual text is omitted." An introductory division of the text contains a consideration of the general fundamentals of disease causation and transmission and of immunology. The succeeding major divisions are devoted to pathogenic bacteriology, mycology and protozoology and to virology. The methods of preparation of materials and the techniques usually employed for the study of the taxonomy, cultural features and physiology are largely omitted. The pertinent information, however, concerning the results that may be expected from such studies of the various micro-organisms is briefly stated. Similarly given are the characteristics of nonpathogenic micro-organisms that are close relatives of the pathogens. The major part of the text space is devoted to the pathogenic attributes and the methods of transmission of the infectious agents and to important diagnostic features of the infectious processes and methods of their control, including hygiene, biologic treatments and chemotherapy.

The subject material is confined to 565 text pages. The various major divisions are divided into forty-four chapters. The chapter labels are derived from the generic names of the various micro-organisms or from certain features or their morphology and physiology or from the tissue tropisms of the infectious agents. References to important literature are cited throughout the text and grouped for convenience at the end of various divisions. Excellent illustrations are given which include cellular and colonial characteristics of various micro-organisms, gross and microscopic pathology of various disease processes.

The subject of the transmission of infectious agents from animals to human beings is thoroughly presented. This information imparts to the text a high public health value.

presentation of the pertinent knowledge concerning the infectious diseases of the domesticated animals by an author whose substantial contributions to and teaching in this field of science are well known bids well to insure the text having a wide usage among veterinary students, practitioners and investigators in the broad field of infectious diseases.

This authoritative volume is worthy of the highest praise and can be recommended without reservation to physicians and others desirous of having in a single volume the pertinent facts concerning the infectious diseases of domestic animals. The book is a notable contribution to the literature of comparative bacteriology and pathology. The publishers have contributed admirably to the enterprise. The text is attractively and substantially bound and represents a fine example of good book making.

Electrocardiografía práctica Por Luis Herve L. Prólogo del Prof. A. Garretón Silva. Second edition. Paper. Pp 118 with 36 illustrations. Santiago de Chile. Central de publicaciones 1942.

This monograph on practical electrocardiography, written in Spanish, by one of Professor Silva's associates, compares favorably with the more elementary of the American publications on this subject. The author in this edition has incorporated the newer terminology or taking precordial leads. He shows his thorough familiarity with the recent American literature and has incorporated much of this knowledge in the monograph, which should be of great value to the Latin American physician interested in utilizing the electrocardiogram in his practice. It is regrettable that the reproductions of the illustrations are poor and that in one or two places the printing of the text is slightly blurred. However, the contents are excellent, the ideas are simply expressed, the material is well organized and the publication accomplishes satisfactorily the purpose for which it was written.

An Introduction to Biophysics By Otto Stuhlman Jr. Ph.D. Professor of Physics University of North Carolina Chapel Hill. Cloth. Price \$4. Pp 375 with illustrations. New York John Wiley & Sons Inc. London Chapman & Hall Ltd 1943.

In spite of the great importance of physics for the understanding of physiologic and therapeutic procedures, relatively little has been done to prepare students of medicine adequately in the physical foundations of physiology and medicine. The present book is a successful attempt in this direction. It deals with the physics of x-rays and radioactivity and discusses the physical principles involved in the microscope and the electron microscope. In addition, physical problems encountered in the study of the functions of the eye and ear are presented. Moreover, a discussion of the physics of surface membranes is given. The presentation of these problems is clear and is supported by numerous diagrams. Unfortunately it is somewhat difficult to the average student of medicine. The reviewer suggests for a further edition an expansion and possibly a more elementary treatment of the problems involved. Topics which could be added should include the physics of temperature regulation, calorimetry and the mechanics of movements. The reviewer would also find it exceedingly useful if a thorough discussion should be given of the various electrical devices used in modern physiology for stimulation of nerves as well as for recording of action potentials.

Synopsis of Diseases of the Skin By Richard L. Sutton M.D. and Richard L. Sutton Jr. M.D. Assistant Professor of Dermatology University of Kansas Medical School. Fabrikoid. Price \$5.00. Pp 481 with 413 illustrations. St. Louis C.V. Mosby Company 1942.

The value of synopses and compends or branches of medicine has often been debated. Those initiated in the subject matter may frown on such abbreviated works, though they are popular with students. Judging by the number appearing recently, the publishers find a demand for them now greater than ever. If there must be synopses this one by the Suttons is good. With their large experience at textbook writing they could be depended on to turn out a good one. There is a large amount of material simply and appetizingly presented in this pocket-sized book. It is questionable whether some of the uncommon and rare entities such as parapsoriasis, are worth including. The few lines devoted to them give the novice no conception

of them. The pace sacrificed in order to be inclusive could more profitably be given toward enlarging the view of the common and more important everyday diseases. The illustrations are excellent and well chosen. The paper is of a good quality and thin which permits compression into a narrow space. The binding is sturdy.

Nutrition and the War By Geoffrey Bourne D.Sc. Second edition. Cloth. Price \$1.00. Pp 148. New York Macmillan Company Cambridge University Press 1944.

This little book has been designed to help the average person gain some knowledge of foods and nutrition. There is a discussion in general terms of foods as sources of calories, proteins, fats and carbohydrates. The significance of vitamins and minerals is not neglected. An interesting chapter is concerned with nutrition problems under wartime conditions. Approximately half the book is devoted to a listing of the composition of many common foods. The data are provided in terms of numbers of calories and percentage composition in terms of protein, carbohydrate and fat. The data on the vitamins and minerals however are not presented in quantitative terms. The book has a suitable index and should prove useful to those who wish an elementary knowledge of the subject of nutrition.

Contribución al estudio anatómico clínico de las afecciones del endocardio Por el Dr. Manuel Perla Muñoz. Tesis de doctorado Universidad Nacional de Buenos Aires Facultad de ciencias médicas. Paper. Pp 363 with 12 illustrations. Buenos Aires 1942.

In a survey of 206 cases of fatal endocarditis the author analyzes the different types of the disease mostly from an etiologic and clinical point of view. The principal conclusion reached is that many patients died because the effort required in their trades was above the capacity of effort imposed by their heart lesions. Accordingly, many lives could have been saved if these patients had had the right occupations for their conditions. It is gratifying to know that the city of Buenos Aires under the inspiration and direction of Professor Bullrich, has started a Service for the social assistance of the cardiac patient."

Diseases of the Nose, Throat and Ear Medical and Surgical. By William Lincoln Ballenger M.D. F.A.C.S. and Howard Charles Ballenger M.D. F.A.C.S. Associate Professor of Otolaryngology Northwestern University School of Medicine Chicago. Eighth edition. Cloth. Price \$12. Pp 975 with 631 illustrations. Philadelphia Lea & Febiger 1943.

This is the eighth revised edition of a well established favorite of both students and specialists. It contains a great deal of factual material and numerous enlightening illustrations. The authors have made an earnest effort to keep the work up to date by constantly adding to it material from the current literature. They have had the help furthermore, of a number of associate editors of excellent standing and the result of their combined labors is a worth while textbook of established value.

Las posibilidades de diagnóstico precoz en las osteomielitis agudas de los huesos largos de los niños Por Hector Jorge Sanchez. Tesis de doctorado Universidad Nacional de Buenos Aires Facultad de ciencias médicas. Paper. Pp 46 with 13 illustrations. Buenos Aires 1942.

The author describes a new radiologic sign which he interprets as subperiosteal osteoporosis, which would allow diagnoses of osteomyelitis within the first week of the disease. This view is supported by several clinical observations and illustrated by good reproductions of x-ray plates.

Virilización suprarrenal Por el Dr. Enrique B. del Castillo. Tesis de profesorado Universidad Nacional de Buenos Aires Facultad de ciencias médicas. Paper. Pp 203 with 49 illustrations. Buenos Aires 1941.

A comprehensive review on the subject with numerous references including important contributions by South American authors. The author himself contributes more than sixty studies some thoroughly done on patients, children and adults.

Uretrografía Por Hector Daniel Muñoz. Tesis de doctorado Universidad de Buenos Aires Facultad de ciencias médicas. Paper. Pp 128 with illustrations. Buenos Aires S.A. Casa Jacobo Peuser Ltda 1942.

A detailed description of the method and a complete study of the numerous cases observed by the author. Numerous reproductions of x-ray plates and fifty-six references are appended.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ELECTROCARDIOGRAPHIC INTERPRETATION OF BUNDLE BRANCH BLOCK

To the Editor—Fifteen years ago we were taught (I quote from McLeod's *Physiology and Biochemistry* 1922 "Defects of the right or left branch of the A-V bundle give electrocardiograms which closely resemble those described as characteristic of left or right ventricular hypertrophy respectively. In the left bundle branch defects the electrical changes of the right ventricle will impress themselves on the electrocardiogram." In Graybiel and White's book on electrocardiography just the opposite views are expressed. What McLeod calls a right bundle branch block Graybiel and White call a left bundle branch block. Will you please explain?

Angeline Piscitelli, M.D., San Francisco

ANSWER—The change in the point of view concerning the particular bundle branch involved in the electrocardiographic interpretation of bundle branch block records is well expressed in a number of the recent textbooks on electrocardiography. Pardee in the fourth edition (1941) of his book entitled *Clinical Aspects of the Electrocardiogram* (New York: Paul B. Hoeber) states that for many years the localization of the lesion in hearts showing bundle branch block was incorrectly stated because too close an analogy was drawn between the human electrocardiogram and the records obtained from dogs after cutting or crushing the branches of the bundle. Ashman and Hull (*Essentials of Electrocardiography*, second edition, New York: Macmillan Company, 1941) give the following evidences for the newer terminology: "1. In lead I of the exposed human heart, stimulated on the anterior surface of the right ventricle, the chief deflection is upright and the deflection is directed downward upon similar stimulation of the left ventricle. 2. The interval which elapses between the onset of the QRS complex and the beginning of the carotid arterial pulsation averages longer in patients with wide R₁. If, in such cases, the left ventricle is activated late because of block in the left branch, a late carotid pulsation is obviously to be expected. 3. Chest leads from over the right ventricle indicate early activation of the underlying subepicardial muscle layers in left and late activation in right, BBB, as we have named them. Chest leads from over the left ventricle indicate the reverse. Animal experiments have shown that the method is valid when large differences in times of activation are involved. 4. The cardiac anatomy of the monkey is closer to that of man than the anatomy of the dog. In monkeys, section of one or the other branch produces electrocardiograms which agree with Wilson's terminology. 5. In human hearts, revived by perfusion after death, section of one or the other branch produces the expected picture according to modern terminology. 6. The fact that the human limb lead records can be given a reasonable explanation if Wilson be right, whereas they would be wholly inexplicable if the older terminology were correct, is cogent evidence. 7. Late in rheumatic mitral or in pulmonary stenosis, RBBB, according to Wilson's terminology, is seen not infrequently. In late aortic regurgitation, what he names LBBB may appear. The reverse findings are much rarer. These facts were hard to understand on the basis of the older interpretations. 8. What is now designated RBBB is much more likely than the other type to be unassociated with clinical evidence of heart disease. That the right branch extends for a considerable distance as a single fiber bundle without branching, whereas the left branch subdivides promptly, makes this fact understandable. A small, clinically unimportant lesion may more easily interrupt the right, than the left branch."

ABSORPTION OF GAS THROUGH MIDDLE EAR MUCOSA

To the Editor—Is there any danger of gas being absorbed through the ear of a patient who is without an ear drum as a result of chronic otitis media?

Captain, M. C., A. U. S.

ANSWER—The mucosa of the middle ear is able to absorb both gases and liquids with considerable rapidity, as is evidenced by the rapid absorption of oxygen and nitrogen from the middle ear when the eustachian tube is occluded. The amount of gas that could be absorbed when the drum membrane is absent would depend on the amount that would penetrate to the depth of the ear canal.

DIAGNOSIS AND TREATMENT OF VAGINAL BLEEDING

To the Editor—A woman aged 37 has had irregular vaginal bleeding for twelve years. Sometimes the flow has been continuous for months at a time. Other symptoms are dizziness and stomach distress. The blood pressure is 140/80. The blood Wassermann reaction is negative. She is short in stature, with much fat around the hips and thighs. There is excess hair on the upper lip. Before coming to me she had taken injections of a pituitary extract. She had also had one curettage with only temporary relief from bleeding. I treated her with progesterone in oil seven injections, 2 units each, which reduced the flow but did not stop it. She was sent to a surgeon, who found her uterus normal in size and recommended injections of a combination of chorionic gonadotropin and solution of posterior pituitary. She was given eight injections (a total of 10 cc), this caused her bleeding to be more excessive. I should be glad of advice in the further treatment of this case. M.D., Wisconsin

ANSWER—If the curettement was performed more than two years ago, it should be repeated now. If malignant growth is not found and the bleeding recurs after the curettement or if the curettement was done recently, the patient may be treated with an oral estrogen preparation. A 5 mg tablet of diethylstilbestrol may be taken every night for twenty nights, provided the drug does not produce disagreeable side effects such as nausea or abdominal distress.

In some cases one course of diethylstilbestrol will regulate the menses but in other instances the beneficial effect is only temporary. Nevertheless the treatment is distinctly worth while in this case. Another remedy is the use of testosterone propionate. Twenty-five mg may be given intramuscularly three times a week for four weeks. If the estrogen or androgen produces temporary relief, repeated courses may be given at intervals even for a period of years, but there must be intervals of a few months between the courses of therapy. If the bleeding is not checked or definitely reduced by either the diethylstilbestrol or the testosterone propionate, a hysterectomy should be performed, because irregular bleeding of twelve years' duration not amenable to conservative treatment is serious enough to warrant removal of the uterus.

VENTRICULAR SEPTAL DEFECT AND MARRIAGE

To the Editor—Should matrimony be discouraged for a woman aged 20 with a loud, harsh, widely heard systolic murmur, maximal in the fourth left interspace, typical of a ventricular septal defect, definite thrill over the precordium, and the apex in the fifth left interspace ½ inch to the left of the nipple line? The electrocardiogram showed a rate of 84 with a bisbasal QRS complex in all leads. An x-ray examination of the chest revealed a general enlargement of the heart of approximately 30 per cent, involving chiefly the left ventricle. There were accentuated vascular markings in both hili. At present the girl is physically fit to perform her secretarial duties and shows no signs of decompensation even after moderate physical exertion. If matrimony should be allowed, would it not be advisable to avoid pregnancy?

M.D., Illinois

ANSWER—It is a moot point as to whether matrimony should be advised in a case like this. If there was an uncomplicated ventricular septal defect, that is, uncomplicated by cardiac enlargement of any significance, one might give permission with the idea of restricting the size of the family. Even so there is the hazard, which is an appreciable one, of subacute bacterial endocarditis. With cardiac enlargement, however, which here seems to be considerable and with accentuated lung hilus shadows, it is obvious that the heart is already under considerable strain and might do badly if exposed to the extra burden of pregnancy. It would seem, therefore, advisable to avoid pregnancy, although marriage otherwise might be compatible with a good many years of survival.

VITAMIN A AND PROGRESSIVE MYOPIA

To the Editor—I should like to have some information regarding the injectable (intramuscular) vitamin A for progressive myopia. Who manufactures it? What is the dosage and what results have been obtained?

Jack Canfor, Lieutenant, M. C., A. U. S.

ANSWER—There is as yet no convincing evidence that vitamin A has any effect in progressive myopia. In most cases of vitamin A deficiency, oral use of a vitamin A concentrate is effective. Probably the only exception to this is in keratomalacia associated with dysentery or some other intestinal disorder which prevents assimilation of vitamin A by the oral route. Such a case was reported by Goldberg and Schleich (*Acta Ophthalmologica* of the Cornea Due to Vitamin A Deficiency, *Arch. Ophthalmol.* 25:122 [Jan.] 1941), who injected 100,000 units of vitamin A in sesame oil intramuscularly daily. The Council on Pharmacy and Chemistry has not accepted any vitamin A preparation for parenteral use, and available evidence affords no proof of the therapeutic value of vitamin A in progressive myopia. It is believed that vitamin A preparations suitable for parenteral administration have been supplied for experimental use by such firms as Abbott Laboratories, S. M. A. Corporation and Winthrop Chemical Company.

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RELATIONSHIP BETWEEN VITAMIN B COMPLEX INTAKE AND WORK OUTPUT IN TRAINED SUBJECTS

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Factual evidence that is slowly being accumulated both in this country and in Canada, although it is as yet meager, shows that nutritional deficiency disease prevails in many parts of the country.¹ Sebrell² believes that it is no exaggeration to say that at least one third of the American population is eating a diet which is not adequate in all respects. Basing our judgment on the requirements which modern nutritionists consider as optimum nutrition, not mere adequacy, we believe that widespread improvement in health is possible. The evidence of malnutrition is not restricted to low income groups or families on relief but is just as apt to be found in the middle and upper class families.

Although it was suspected that the average American diet might be well below the optimum in certain essential nutrients, there was no means of proof available until the classic publication of Stiebeling and Phipard³ appeared on the diets of employed workers' families, which has been widely quoted. They found only 26 per cent of more than 2,000 workers' families classified as having good diets, the diets of 45 per cent were fair and those of 26 per cent were poor. In respect to these studies, it is well to remember that these were the families of employed workers and not the studies of the unemployed or the families on relief. In addition to this fact, the percentage of poor diets would have been even greater if the statistical data of the diets studied had been measured by the present yardstick of the Food and Nutrition Board's recently recommended daily allowance.

Attention has been called⁴ to a greater need for more thiamine under conditions of increased strain and physical activity. There are thousands of workers in boomtown communities under greater strain and activity than

they have been for years. These people have been moved from their homes into sections not prepared either to house or to feed them properly. Among other factors contributing to poor dietary intake among workers are soft drinks and candy. Many persons arrive at work having had a breakfast of only coffee and a sweet roll. Later they make a widely selected mid-morning and mid-afternoon snack of soft drinks or candy. Large war production plants have been built so fast that feeding facilities are entirely inadequate, and rather low grade restaurants and stands have sprung up of necessity. Industry is beginning to realize the value of optimum intake of nutrients for promoting efficiency and reducing absenteeism.

Keys and Henschel⁵ at the University of Minnesota carefully tested the value of supplementing a United States Army ration with little amounts of available vitamins. It was concluded that supplementation of an adequate diet with additional vitamins serves no useful purpose. We⁶ likewise found no influence on recovery from fatigue or increase in muscular efficiency by parenteral injections of vitamin concentrates in any persons already on an adequate diet.

Such evidence demonstrates the fact that vitamin B complex supplementation added to an already adequate diet has no influence on work output, recovery or other manifestations of physical exertion. Some investigators have contended that work output could be enhanced by the supplementation of the diet with one or more components of the vitamin B complex.⁷ However, it is possible that the subjects of the latter group of investigators might have been on deficient diets, because no exhaustive studies of the subjects' diet or blood and urine determinations for vitamins were carried out. This may account for the apparent discrepancy between these two groups of reports.

Williams, Mason, Wilder and Smith⁸ observed the effect of a thiamine deficient diet on work output. A "chest weight exerciser" was used, but the subjects were not trained. Thus this aspect of the experiment was not well controlled. The diet was not one widely eaten and was deficient only in thiamine. An apparent decrease in work output occurred.

Aided by a grant from the Abbott Fund of Northwestern University From the Passavant Memorial Hospital and the Department of Physiology, Northwestern University Medical School

Chemical analysis made by the Laboratory of the Abbott Fund of Northwestern University under the direction of Dr. Theodore E. Friedemann. 1 Jolliffe, Norman, Mc Lester, J. S. and Sherman, H. C. Prevalence of Malnutrition. *J. A. M. A.* 118: 944-950 (March 21) 1942.

2 Sebrell, W. H. Urgent Problems in Nutrition for National Betterment. *Am. J. Pub. Health* 32: 15 (Jan) 1942.

3 Stiebeling, Hazel K. and Phipard, Esther F. Diets of Families of Employed Wage Earners and Clerical Workers in Cities. Circular 307 U. S. Dept. of Agriculture, January 1939.

4 Sebrell, W. H. The Vitamin B Complex. *J. Iowa M. Soc.* 32: 60 (Feb) 1942.

5 Keys, Ancel and Henschel, Austin. Vitamin Supplementation of U. S. Army Rations in Relation to Fatigue and the Ability to Do Muscular Work. *J. Nutrition* 23: 239-269 (March) 1942.

6 Foltz, E. E., Ill, A. C. and Barborka, C. J. Influence of Components of the Vitamin B Complex on Recovery from Fatigue. *J. Lab. & Clin. Med.* 27: 1396 (Aug) 1942.

7 Morell, Theo. Ermüdungs-bekämpfung durch körpereigene Wirkstoffe. *Deutsche med. Wchnschr.* 66: 398 (April 12) 1940. Gounelle, Hugues. Action de la vitamine B₁ dans l'exercice musculaire et la prevention de la fatigue. *Bull. et mem. Soc. med. d. hop. de Paris* 56: 255 (May 31) 1940. Rosenbaum, E. E., Fortus, Sidney, and Soskin, Samuel. The Relief of Muscular Weakness by Pyridoxine Hydrochloride. *J. Lab. & Clin. Med.* 27: 763 (March) 1942.

8 Williams, R. D., Mason, H. L., Wilder, R. M. and Smith, B. F. Observations on Induced Thiamine (Vitamin B₁) Deficiency in Man. *Arch. Int. Med.* 66: 735 (Oct) 1940.

It is well known that many people in the United States are existing on diets low, by our present recommended standards in the vitamin B complex without exhibiting symptoms or signs diagnostic of vitamin deficiency. Does this state of nutrition prevent maximal work output or does the decrease in work output, if it

TABLE 1—Composition in Four Diets

Diets	Vitamin A, I. U.	Thiamine, mg.	Riboflavin, mg.	Ascorbic Acid, mg.	Calcium, gm.	Phosphorus, gm.	Iron, mg.
1	11,000	1.80	2.70	176	1.11	1.6	11.0
2	7,700	0.65	0.91	82	0.39	0.97	10.1
3	11,000	1.80	2.70	176	1.11	1.6	11.0
4	11,000	1.80	2.70	176	1.11	1.6	11.0

occurs, begin only after the signs and symptoms of vitamin deficiency are well established? In times of war when manpower should be at peak efficiency, this is especially important to know. If a commonly used mildly deficient diet has a detrimental effect on work output it then becomes desirable to know the effect of vitamin supplementations. In an attempt to answer some of these questions this experiment was undertaken.

METHOD

Four medical students were used. They were provided with board and room in a hospital near the laboratory. They were trained from nine months to one year on a normal adequate diet the B complex composition of which is shown in table 1 (diet 1). At the end of this period, they were put on a diet deficient particularly in the vitamin B complex (table 1 diet 2). The corn flakes used in the deficient diets were not restored with thiamine, riboflavin or nicotinic acid and the toast and bread used were unenriched. The butter fat of the cream used was approximately 18 per cent. The calculations of the thiamine and riboflavin content of the food

TABLE 2—Typical Days Menu of Deficient Diet

		Grams
Breakfast	Orange juice	100
	Corn flakes	15
	Toast	25
	Butter	25
	Cream	100
	Jelly	10
	Sugar	10
Luncheon	Frankfurter	70
	Potato chips	30
	Bread	30
	Butter	25
	Cream	100
	Apple raw	130
	Coca cola	one bottle
Dinner	Roast beef	50
	Potato	100
	Bread	30
	Butter	25
	Ice cream	100
	Raspberries	100
	Cream	100
	Sugar	20
	Coca cola	one bottle

used was determined by three methods. First, analyses of each of the items of food were made at various times during the past two years. Second, duplicate diets at intervals were simultaneously prepared and sent to the laboratory for analysis. Bread, milk and other liquids were transferred to a tared bowl and the contents mixed until the bread was disintegrated. The meats, vegetables, fruits and salads, which had previously been passed several times through a meat grinder, were then

added. The bowl, which now contained all the constituents of the diet, was again weighed. The composite sample was homogenized in the Waring blender. The entire procedure was carried out as quickly as possible in a cold, darkened room to prevent loss of riboflavin and other vitamins. Determinations of thiamine and riboflavin were made by modifications of the methods of Conner and Straub.⁹ The procedures were standardized by adding known quantities of the vitamins to aliquot portions of the diet. Third, the vitamin content of the diet was calculated by using the averages of recently published data. The result of all three methods of calculation was approximately the same. The caloric, carbohydrate, fat and protein values remained essentially unchanged. The subjects were told that they were being put on a high carbohydrate diet and were unaware that the diet was deficient. A typical day's menu of one of the deficient diets is shown in table 2.

After two months on this regimen, half of the fat calories were taken from their diets and replaced by isocaloric amounts of carbohydrate (diet 3, table 1). This high carbohydrate diet was given in an attempt to precipitate more pronounced symptoms and signs of a vitamin B complex deficiency. After three weeks of this modification they were returned to diet 2 (table 1), supplemented with a yeast concentrate given in a lemon and tomato juice mix, thus preventing its recognition by the subjects. This was diet 4 (table 1). They remained on this diet until the conclusion of the experiment, an interval of four weeks.

The subjects were chosen on the basis of their willingness to cooperate and not on the basis of muscular development, the work of the tests being their only source of physical exercise. The work was done three times each week on an electrodynamic brake bicycle ergometer at the rate of 1,235 kilogrammeters a minute with a pedaling rate of 54 revolutions a minute. The subjects worked to complete fatigue at this rate, rested ten minutes and worked to complete fatigue again. This method of fatiguing the subjects was chosen because it has been demonstrated¹⁰ that the total work output of the double work periods is less variable than the work output of a single work period, and because by this method we are able to study recovery from fatigue. That is, the experiment was so constructed that the second period of work output was almost invariably a fraction of the first, and thus the percentage of recovery from the fatigue following the first period could be calculated. Consequently, we were able to observe the effect of the diets not only on work output but also on recovery from fatigue.

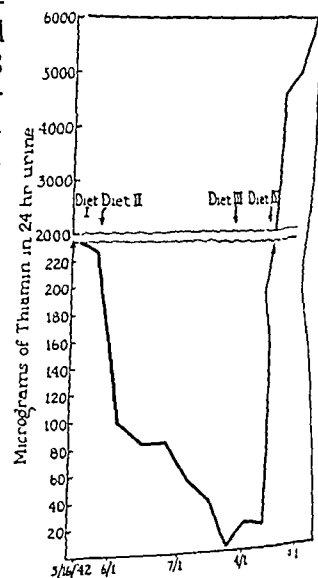


Chart 1—Twenty four hour thiamine urinary excretion (subject J A)

⁹ Conner, R. T. and Straub, G. S. *Indust. & Engin. Chem. (Anal. Ed.)* 13: 385, 1941.
¹⁰ Foltz, E. E., Ivy, A. C. and Barborka, C. J. *The Effect of Work Period in the Study of Fatigue and the Influence of Ca Recovery*. *Am. J. Physiol.* 136: 79-85 (March) 1942.

RESULTS

Thiamine and Riboflavin Levels—In any protracted dietary experiment in which the subjects are not kept under lock and key, their actual intake may vary somewhat from that calculated. That our subjects adhered to their diets reasonably well is shown by charts 1 and 2, data from subject J A, which were characteristic of the entire group. During the depletion period the daily urinary thiamine output dropped to levels of from 5 to 35 micrograms and rose abruptly following supplementation of yeast. The daily urinary riboflavin output fell to levels of from 100 to 200 micrograms daily. The thiamine in whole blood fell somewhat but did not become abnormally low at any time during the experiment (chart 3).

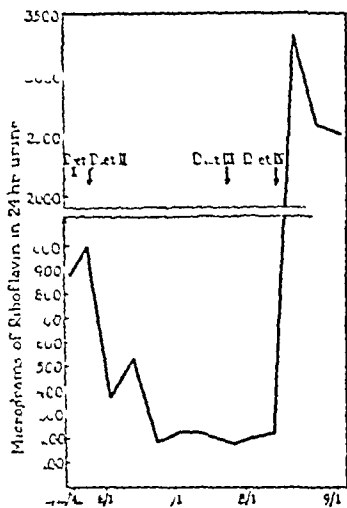


Chart 2—Twenty-four hour riboflavin urinary excretion (subject J A)

Basal Metabolic and Electrocardiographic Studies—Frequent basal metabolic rates and electrocardiograms were taken. In no subject was a significant change in the basal metabolic rate observed. The electrocardiograms of 2 subjects remained unchanged. Those of the other 2 showed an increase in the PR interval of four hundredths of a second. Even with this increase the intervals were not abnormally long. This change persisted throughout the period of yeast supplementation.

Pyruvic Acid Determinations—At frequent intervals blood for pyruvic acid determination was drawn between seven and eight minutes after the second work period. There was no appreciable increase in the blood pyruvic acid following exhaustion during the period of the deficient diets 2 and 3. However, if these values are divided by the number of calories of total work output of corresponding days, a significant change is demon-

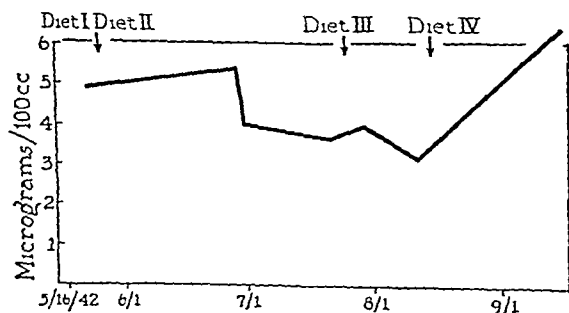


Chart 3—Thiamine in whole blood (subject J A)

strated. Chart 4 is a graphic representation of milligrams of blood pyruvic acid produced per calory of work done. Thus it is seen that as the deficiency progressed, that is, up to diet 4, more pyruvic acid was produced per calory of work done, and when the yeast concentrate was added less pyruvic acid per calory was produced.

Work Output—The subjects were trained from nine to twelve months on the adequate diet 1. The work output rose during the first three to four months of the training period until it reached a plateau. This plateau was maintained for six to nine months prior to the institution of the deficient diet 2. There was a definite decrease in the work output shortly after the deficient diet was begun. There was a definite increase in work output following the addition of the yeast concentrate to the deficient diet. This increment was shown by all subjects within forty-eight hours following the yeast supplementation. Within four days, the work output of 1 subject had surpassed that which he had done on a normal diet. The work outputs of the other 3 subjects at the end of four weeks of yeast supplementation had increased to approximately what they had been on the adequate diet.

This is illustrated by chart 5, the graph of subject T N, which is representative of the group. In the upper graph, the top line represents the total work output, the middle line the work output of the first period and the bottom line the work output of the second period. The lower graph represents the percentage of recovery. There was no significant change in the percentage of recovery.

A more detailed consideration of the data obtained on each subject is reported elsewhere by us¹¹.

COMMENT

Four subjects who had been existing on a controlled, adequate diet and who had been trained on the bicycle ergometer for from nine months to one year were placed on a diet deficient principally in the vitamin B complex. During the eighty-two days on the deficient diet the subjects developed irritability, easy fatigability, lack of pep, anorexia and increased leg pain during the work periods, but at no time did they develop any objective physical signs of vitamin B complex deficiency. The twenty-four hour urinary excretion of thiamine and riboflavin dropped to low levels. The blood thiamine remained in the normal range. The blood pyruvic acid following exhaustion was likewise unaffected. However, as the deficiency progressed, the milligrams of pyruvic acid in the blood per calory of work done increased more than 50 per cent. This ratio may prove to be a useful indicator of fairly early vitamin B complex deficiency.

The recommended daily allowances for the various dietary essentials (prescribed by the Food and Nutrition Board of the National Research Council) were set up to serve as a guide for planning adequate nutrition for the civilian population of the United States. We used,

11 Foltz, E. E., Ivy, A. C., and Barborka, C. J. The Influence of Vitamin B Complex Intake on the Work Output of Trained Subjects to be published.

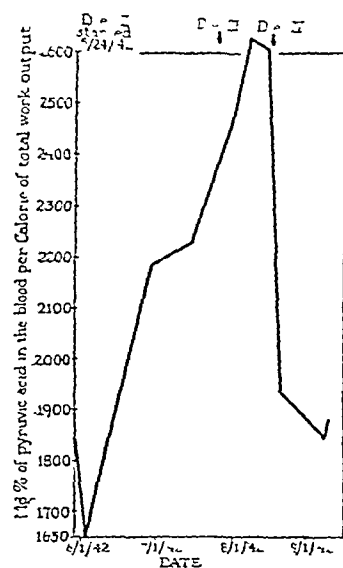


Chart 4—The relationship of blood pyruvic acid to total work output.

therefore, in our adequate controlled diets (during the training period and establishment of the plateau level of work output) 18 mg of thiamine and 27 mg of riboflavin, which is the recommended daily amount of these special nutrients for moderately active men in health.

The deficient diet was composed of common foods, and the menus (example table 2) were such as might be found on the tables of about one third or more of the population of the United States. The deficient diets used (diets 2 and 3, table 1) contained approximately 0.65 mg of thiamine and 0.94 mg of riboflavin, which is about one third of the recommended daily requirement. This deficient diet produced a definite decrease in work output shortly after it was begun, in spite of the lack of physical signs of a deficiency. All of the changes mentioned returned to normal or better following the administration of the yeast concentrate.

Difficult muscular effort such as the civilian, industrial or Army worker must exert, with consequent greater combustion of carbohydrate, should lead to a greater requirement of vitamins. The use of natural foods to bring inadequate diets to the required level is

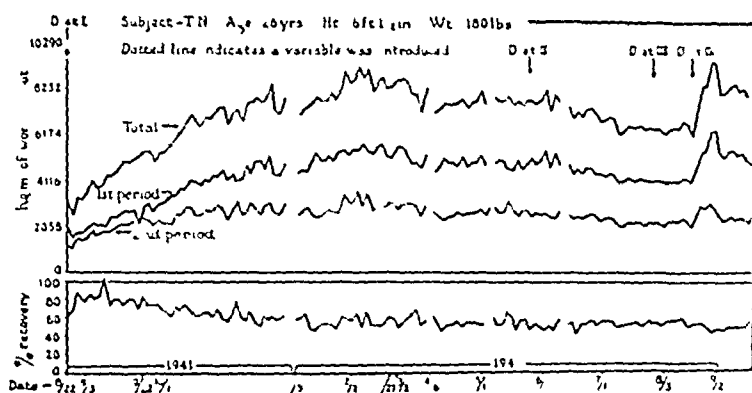


Chart 5—The graphs here presented of subject T-N are representative of the group. In the upper graph the top line represents the total work output, the middle line the first period work output and the bottom line the second period work output. The lower graph represents the percentage of recovery.

the ideal solution of the problem. Until this plan shall have become workable, discriminate vitamin administration to the civilian or industrial worker on an inadequate diet is a sound policy.

CONCLUSIONS

1 Diets deficient in vitamin B complex in trained subjects decrease work output.

2 Early mild states of malnutrition, with no objective evidence of deficiency disease, do prevent maximal work efficiency.

3 Diets with about one third (0.65 mg of thiamine and 0.94 mg of riboflavin) of the vitamin B complex of the recommended daily requirement do produce subjective symptoms of easy fatigue, irritability, lack of pep, anorexia and increased leg pain during work periods, in spite of the fact that no objective evidence of deficiency disease is present.

4 The ratio of blood pyruvic acid to the total work output increases proportionately as diet deficiency progresses.

5 Subjective symptoms of fatigue, irritability, lack of pep, anorexia and leg pains all disappeared and work output returned to normal or better within a few days following the supplementation of vitamin B complex.

6 Vitamin B complex supplementation added to a vitamin B complex inadequate diet restores work output to efficient levels.

700 North Michigan Avenue

A PRINCIPLE FROM LIVER EFFECTIVE AGAINST SHOCK DUE TO BURNS

PRELIMINARY REPORT

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CLARA MARGOLES, MD

AND

GEORGE FEIGEN, BS

LOS ANGELES

Following the development of a method for satisfactorily evaluating therapeutic activity in shock due to burns various agents, some of which have been proposed for the treatment of shock, have been tested. Our purpose in this preliminary report is to present evidence for a principle from liver which has the activity of significantly decreasing the mortality of rats and mice subjected to severe burns and to describe briefly a method for producing standardized burn shock. Evidence is presented which demonstrates that this factor effective against burn shock, which is present in commercial liver extracts prepared to contain the anti-anemia principle, is separate and distinct from the anti-anemia activity.

METHODS

The evaluation of therapeutic agents in shock using the usual shock producing procedures in large laboratory animals is complicated by factors which are difficult to control adequately. It would appear that a satisfactory method should possess the following features. The degree of trauma should be objectively controlled and reproducible; the method should be simple and fast, so that a sufficient number of animals to yield results of statistical significance may be employed under identical conditions; finally, the shock producing procedure should resemble a type of trauma which produces shock in human beings.

During the past year and a half, using 15,000 rats and mice we have developed a satisfactory shock producing procedure which has permitted evaluation of therapeutic activity in shock due to burns. The basis of the method consists in immersing the entire body surface, except for the head and neck, of etherized rats and mice for definite periods of time into a thermostatically controlled water bath set at scalding temperatures. The degree of trauma inflicted by scalding as evidenced by time-mortality curves is a function of the duration of exposure and the temperature of the bath. By lowering the bath temperature or the period of immersion one lowers the degree of trauma; the converse is likewise true. It has been found that when the degree of trauma is too slight an insufficient number of control animals die and therapeutic activity is not measurable. On the other hand, when trauma administered by scalding is too great, then the animals die rapidly irrespective of treatment. We have therefore attempted to use a degree of trauma intermediate between these extremes and have arbitrarily selected the minimal conditions of immersion duration and bath temperature which would kill most of our control animals in a forty-eight hour period. Survival observations were conducted over a forty-eight hour period following scalding. The experiments were terminated at that time to prevent the effects of infection and other secondary disturbances which later become operative following burns from influencing the mortality curves.

The usual conditions for scalding for our animals which have proved to be satisfactory for evaluating therapeutic activity were an immersion duration of 15 seconds at 60°C or at 150°F.

Dr. Yellapragada Subbarow of the Lederle Laboratories, Inc., East Rutherford, N. J., gave invaluable aid. From the Research Laboratory, Cedars of Lebanon Hospital and University of Southern California Medical School. Aided by grants from the Beaumont Trust Fund, the Martha K. Haft Memorial Fund and Messrs. Tom May, Walter Kitchner, M. J. May and Fred Glick.

seconds at 65 C for mice weighing approximately 20 Gm and of 10 or 15 seconds at 75 C for rats weighing approximately 200 Gm. The bath temperature in these experiments varied no more than ± 0.25 degree C and the intervals of immersion are probably accurate to ± 0.5 second. It should be emphasized that the conditions which proved satisfactory for evaluating therapeutic activity in this laboratory may vary for other strains of animals or under different laboratory conditions. In all instances, therefore, these conditions of immersion duration and bath temperature should be experimentally determined before testing therapeutic agents for burn shock.

In general, the experiments were designed so that the treated and control groups of animals had approximately the same distribution of the sexes, were in the same weight range and were derived from the same strain with identical previous histories. The number of animals in each group varied from 20 to 40 in different experiments. Following the start of the experiment the animals were not allowed access to food or water.

The therapeutic activity of various agents was evaluated by comparing the time-mortality curves and the calculated average survival time of treated animals with those of suitable control groups. The survival period following scalding was determined by observing the animals at regular intervals, the dead animals being removed and the time of death noted. All animals dying within thirty minutes after scalding were discarded on the basis that death may not have been due to shock but could have been the result of excessive etherization. All animals alive forty-eight hours after scalding were arbitrarily assigned a survival period of forty-eight hours. Rosenthal has recently described a similar method.¹

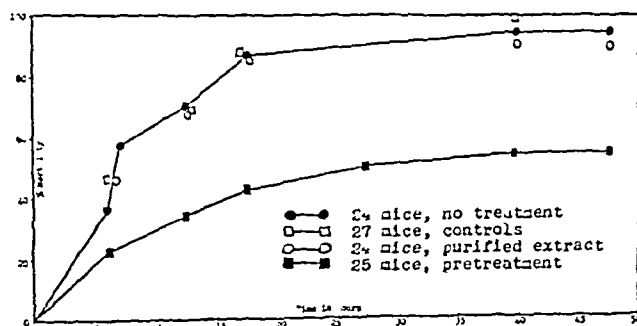
After a variable period of time following traumatic scalding, depending on the conditions used, scalded animals show a sharp decrease in skin temperature, exhibit hemoconcentration as evidenced by an increased hemoglobin value, become profoundly asthenic, exhibit dyspnea and finally die. At autopsy, pulmonary congestion was regularly observed and characteristic visceral congestion was usually found while hemorrhagic adrenals and hematuria were irregularly seen.

Further details of our findings will be published elsewhere.

RESULTS EFFECT OF LIVER EXTRACT

Preliminary experiments revealed that three commercial liver extracts, prepared to contain antianemia activity, all appeared to increase significantly the survival time of rats and mice subjected to severe burns. Extensive testing of one of these extracts was then undertaken to establish whether or not this action of

be seen that liver pretreatment definitely decreases the mortality which follows burns and significantly increases the average survival time. This activity of liver against burn shock is highly consistent, as evidenced by the finding that in nineteen consecutive experiments liver extract showed significant activity in 17 instances, in 1 case questionable activity was observed while in only one



A representative experiment showing the time mortality curves of four groups of mice after scalding at 65 C for 10 seconds: black dots curve obtained with 24 mice which received no treatment; the average survival time being 12.8 hours; white squares, the control group of 27 mice receiving 0.2 cc of saline solution; average survival time 11.2 hours; white circles a group of 24 mice receiving 0.2 cc. of a highly purified liver anti-anemia extract 4-149D; average survival time 12.9 hours; black squares curve obtained with 25 mice by pretreatment with 15 unit liver extract; average survival time 28.2 hours. It will be seen that 15 unit liver extract decreases the rate and degree of mortality as compared to the control groups but that highly purified antianemia extract 4-149D is without significant effect. This and other findings demonstrate that the antipernicious anemia principle is not the antishock factor.

experiment was liver extract without effect. The accompanying chart shows a typical time-mortality curve, in which 15 unit liver decreases the rate and degree of mortality following scalding burns.

It was of interest to determine whether or not the activity of liver against burn shock was due to the antianemia activity present in the extract. Highly purified extracts of liver antianemia principle prepared by Dr. Yellapragada Subbarow of the Lederle Laboratories by methods described previously² were furnished us. These purified extracts were administered in amounts equivalent to the antianemia activity of the comparatively crude 15 unit liver. The chart shows a representative experiment in which the activity of 15 unit liver is compared to that of a highly purified antianemia liver extract designated as 4-149D. It will be seen that extract 4-149D containing equivalent antianemia activity is inactive while 15 unit liver exhibits its normal activity. It has been found that several other purified extracts of the liver antianemia principle are without significant activity in combating burn shock. These findings clearly indicate that the liver principle effective against shock due to burns is not the antianemia principle.

At the present time, in collaboration with Subbarow and Bohonos of the Lederle Laboratories we are attempting to isolate the active principle. To date, evidence has been obtained which indicates that the activity is (a) relatively thermostable, remaining undiminished after boiling aqueous solutions for twenty minutes, (b) not destroyed by aeration at high temperatures, (c) soluble in water and precipitated from aqueous solution by acetone or ethanol. It may be mentioned that choline, which is present in liver extracts has been tested and has been found inactive.

TABLE 1—Effect of Liver Extract Given One-Half Hour Prior to Scalding on Survival Time of Mice

Treatment	Number of Mice	Number of Mice Survived	Per Cent Difference	Mean Time Survival, Hrs.	Standard Error	Per Cent Difference
Lederle 15 unit liver	573	274	+292	24.8	± 1.80	90.6
Saline control	558	63		13.0	± 1.31	

liver extract was consistently reproducible and statistically significant. In these experiments, mice were the test animals; liver extract containing 15 injectable U S P antianemia units (henceforth referred to as 15 unit liver) was injected intraperitoneally in a dose of 1 cc per hundred grams of body weight one-half hour prior to scalding. The control group received an equivalent volume of saline solution under similar conditions. Table 1 shows the composite data of nineteen experiments on a total of 1,131 mice in which it will

1. Rosenthal S. M. Experimental Chemotherapy of Burns and Shock. I. Methods. II. Effects of Local Therapy on Mortality from Shock. *Pub Health Rep* 57: 1923 (Dec.) 1942.

2. Jacobson B. M. and Subbarow Yellapragada. Studies of Principle in Liver Effective in Pernicious Anemia. *Recent Advances in Purification of Active Substances* J. A. M. A. 116: 367 (Feb. 1) 1941.

It is, of course, important to know whether liver extract is therapeutically effective after the onset of shock. We have found that the intraperitoneal injection of 15 unit liver extract has only occasionally shown such activity. This finding seems most likely due to the fact that large amounts of extraneous tissue constituents are present in all types of commercial liver extracts. Large amounts of such impurities are undoubtedly extremely deleterious to shocked animals. Experiments to determine the activity of liver principle administered after shock will therefore be repeated when more purified extracts are obtained. Likewise, questions related to dosage, route of administration and the like have been deferred until complicating constituents accompanying the antishock activity have been removed from the liver extracts.

The mechanism by which liver extract exerts this antishock activity is unknown. From a priori considera-

TABLE 2—The Effect of Nine-Tenths per Cent Solution of Sodium Chloride and of the Combined Liver Plus Saline Treatment on the Survival Time of Scalded Rats

Experiment	Treatment	Dose, Cc per 100 Gm Body Weight	Time of Administration, Hours Before Scalding	Number of Rats	Mean Survival Time, Hrs	Standard Error
1	Saline	5.0	0.5	35	7.0	±1.0
	None			35	3.2	±0.6
2	Lilly					
	2 unit liver Plus saline	0.6	18.0	93	15.6	±1.5
	Saline	5.0	0.5	63	9.0	±1.7
3	Lederle					
	15 unit liver Plus saline	0.7	18.0	45	18.8	±1.7
	Saline	5.0	0.5	45	12.6	±1.9

tions it is possible that liver principle may act either to correct the fluid loss associated with burns, to inhibit the activity of toxic substances believed by some to play a role in the etiology of shock or possibly to correct some other factor, as yet unknown, important for the production of shock. The mechanism of action of liver principle in shock due to burns, as well as the testing of liver in other types of shock, is now the subject of investigation in this and other laboratories.

EFFECT OF 0.9 PER CENT SOLUTION OF SODIUM CHLORIDE AND OF LIVER PLUS SALT SOLUTION

We have observed that the intraperitoneal administration of 0.9 per cent solution of sodium chloride given in large amounts (5 or 10 per cent body weight) to mice and rats after scalding significantly decreases mortality. Rosenthal³ has independently observed this effect and has shown that the sodium ion is the therapeutic agent. He has further shown that sodium salt solutions administered orally are more effective than the same solution injected intravenously. It was of interest to us to determine the effect of prophylactic administration of large volumes of salt solution and to establish whether or not pretreatment with combined liver plus salt solution was superior to salt solution alone. Table 2 illustrates data on this point. It will be seen that the administration of saline solution one-half hour prior to

trauma in amounts equivalent to 5 per cent of the body weight significantly increases the survival time but that pretreatment with a combination of liver plus salt solution is superior to that with salt solution alone. Further details will be published elsewhere.

OTHER AGENTS

In view of reports that adrenocortical hormones afford protection against certain types of experimental shock,⁴ the activity of desoxycorticosterone acetate and whole adrenal cortex extract against shock due to burns was determined. Neither desoxycorticosterone acetate (25 mg per hundred grams of body weight) given in sesame oil nor adrenal cortex extract (10 cc per hundred grams of body weight) given one-half hour before or following scalding possesses significant antishock activity in rats or mice.

Thiamine hydrochloride, which has been reported to be therapeutically effective in hemorrhagic shock,⁵ failed in our hands in doses of 3 mg per hundred grams of body weight given either before or after scalding to modify the time-mortality curves. Other vitamins such as ascorbic acid, pantothenic acid, nicotinamide and riboflavin given in large doses likewise seemed to be ineffective as regards antishock activity.

The finding that a renal humoral substance, presumably renin, appears in the blood following the induction of experimental shock,⁶ has led to the concept that a renal pressor agent is discharged in response to the hypotension accompanying shock, which then tends to restore the blood pressure toward normal levels. These considerations led us to test the effect of nephrectomy on the survival time of animals shocked by scalding burns. On the basis that the renal homeostatic mechanism is important for combating shock, nephrectomized animals should show definitely decreased resistance to burn shock. However, it was found that nephrectomy does not significantly affect the mortality rate. It therefore appears that the renal homeostatic mechanism, although operative, is not of great importance in influencing mortality following burn shock.

Details will be published elsewhere.

CONCLUSIONS

1. There is a principle in liver which possesses the activity of combating shock due to burns.

2. This antishock factor present in some commercial liver extracts is not identical with the antianemia principle.

4. Swingle, W. W., Parkins, W. M., Taylor, A. R., and Hays, H. W. The Effect of Priming Doses of Desoxycorticosterone in Preventing Circulatory Failure and Shock in the Adrenalectomized Dog, *Am. J. Physiol.* **124**: 22 (Oct.) 1938. Swingle, W. W., Hays, H. W., Remins, J. W., Collings, W. D., and Parkins, W. M. The Effect of Priming Doses of Desoxycorticosterone Acetate in Preventing Circulatory Failure and Shock in the Adrenalectomized Dog, *ibid.* **132**: 249 (Feb.) 1941. Selye, Hans, Dosne, Christianne, Bassett, Lucy, and Whittaker, Joan. On the Therapeutic Value of Adrenal Cortical Hormones in Traumatic Shock and Related Conditions, *Canad. M. A. J.* **43**: 1 (July) 1940. Hays, H. W., and Andrus, W. D. The Effect of Adrenal Cortical Extract in Controlling Shock Following the Injection of Aqueous Extracts of Clostridial Intestinal Loops, *Ann. Surg.* **100**: 734 (Oct.) 1934. Wolfram, J. A. Surgical Shock by Cortical Hormone and Saline, *Proc. Soc. Exper. Biol. & Med.* **43**: 397 (Feb.) 1940. Zwemer, R. L. Cortin Protection Against Anaphylactic Shock in Guinea Pigs, *J. Exper. Med.* **61**: 9 (Jan.) 1935. Perla, David, Friedman, D. G., Sandberg, Marta, and Greenberg, S. S. Prevention of Histamine-Induced Shock by Cortical Hormone and Saline, *Proc. Soc. Exper. Biol. & Med.* **43**: 397 (Feb.) 1940. 5. Govier, W. M., and Greer, C. M. Studies on Shock Induced by Hemorrhage: Effect of Thiamine on Survival Time, *J. Pharmacol. & Exper. Therap.* **72**: 317 (Aug.) 1941. 6. Sapirstein, L. A., Ogden, E., and Southard, F. D., Jr. Renal Substance in the Blood After Hemorrhage, *Proc. Soc. Exper. Biol. & Med.* **48**: 505 (Nov.) 1941. Hamilton, A. S., and Collins, D. A. The Role of the Kidney in the Maintenance of Arterial Blood Pressure in Hemorrhage, *Am. J. M. Sc.* **202**: 914 (Dec.) 1941. Homeostatic Role of Humoral Mechanism in Hemorrhage and Shock, *Am. J. Physiol.* **134**: 275 (April) 1942. Braun-Mendez, S. Personal communication with authors.

3. Rosenthal, S. M. Experimental Chemotherapy of Burns and Shock. III. Effects of Systemic Therapy on Early Mortality, *Pub. Health Rep.* **58**: 513 (March) 1943.

3 It appears that the liver principle effective against burn shock is not readily destroyed by heat or oxidation and is precipitated from aqueous solution by acetone and ethanol

4 Nine-tenths per cent solution of sodium chloride, when administered in amounts equivalent to 5 or 10 per cent of the body weight is definitely effective against burn shock when given either after or thirty minutes prior to trauma

5 Pretreatment with liver extract plus large amounts of 0.9 per cent solution of sodium chloride is significantly more effective than salt solution alone

6 The liver factor described and large volumes of salt solution are the only agents which in our hands, have been found to be effective in burn shock, adrenocortical hormones, thiamine hydrochloride and other vitamins being without significant action. The renal pressor system likewise does not prolong the survival time of animals subjected to burn shock

4833 Fountain Avenue

PRIMARY ATYPICAL PNEUMONIA

A REPORT OF TWO HUNDRED CASES AT
FORT EUSTIS, VIRGINIA

CAPTAIN THOMAS A CAMPBELL

CAPTAIN PAUL S STRONG

CAPTAIN GEORGE S GRIER III

AND

LIEUTENANT RAYMOND J LUTZ

MEDICAL CORPS ARMY OF THE UNITED STATES

During the past few years there has been recognized, with increasing frequency, an acute respiratory infection associated with peculiar pulmonary lesions.¹ The vast majority of these cases have occurred among young adults, especially at colleges,² among hospital staffs³ and in army camps.⁴ Inability to isolate a common pathogenic bacterium has led to the use of the term "virus pneumonia." Numerous designations, including "current bronchopneumonia of unusual and undetermined etiology," "atypical pneumonia with leukopenia," "pneumonitis," "acute influenzal pneumonia," "acute diffuse bronchiolitis" and a variety of other names have been used in reporting similar cases. Actually, none of these terms adequately describe the pathologic picture. It would, we believe, be more nearly correct to call this disease an "acute bronchiolitis with associated atelectasis."

Our purpose in this report is to emphasize the epidemiologic importance of the disease to consider its clinical features with special reference to the roentgenologic findings and to attempt to clarify the involved pathologic processes, omitting entirely the problem of etiology.

Col Daniel L Borden commanding officer of the Station Hospital encouraged the writing of this paper. Major Joe M Blumberg of this hospital and Capt Victor Tompkins of the Thirty Third General Hospital made the necropsy report. Dr W Edward Chamberlain and Mr William Taylor of the Temple University School of Medicine made the photographs of the roentgenograms and Dr Beryl Paige of the Columbia University School of Medicine and the Babies Hospital made the photomicrographs.

¹ Gallagher J R. Bronchopneumonia in Adolescence. *Yale J Biol & Med* 7:23 (Oct) 1934. Longcope W T. Bronchopneumonia of Unknown Etiology (Variety N). A Report of Thirty Two Cases with Two Deaths. *Bull Johns Hopkins Hosp* 67:268 (Jul) 1940. Pneumonitis or Virus Pneumonia. Practitioner 148:1 (Jan) 1942. Goodrich Ben E and Bradford H S. The Recognition of Virus Type Pneumonia. *Am J M Sc* 204:163 (Aug) 1942. Dingle John H.

(Footnotes continued in next column)

EPIDEMIOLOGY

It is not at all unlikely that atypical pneumonia has existed for many years and has appeared among the cases described as atypical influenza or grip. Many of the cases of pneumonia encountered during World War I in which it was impossible to find the pneumococcus were probably of this type. Reports of this disease have emanated from all parts of the United States, continental Europe and England. Rates of attack have been variable and difficult to evaluate. It does seem certain that the disease tends to occur both endemically and in minor epidemics. While the increased frequency with which x-ray films have been taken during the past year has undoubtedly accounted for the recognition of many of these cases, there has been an actual increase in the incidence of the disease at this post to an extent to which it is now assuming major epidemic proportions (fig 1). Physicians in neighboring civilian hospitals have also reported a sudden increase of this disease during the past few months.

The effectiveness of a command for training or combat purposes is dependent on the number of men physically fit for duty each day. To indicate the number of men incapacitated because of illness, the term "non-effective rate" was adopted. This term is merely an expression of the number of men sick per thousand strength on the day for which it is calculated. It may also be used to designate the average daily non-effectiveness for a period of more than one day, in which case it denotes the number of men sick per thousand strength during that specified time.

It is clearly seen in table 1 that during the month of September an unusually large number of men (2.2 per thousand strength) were incapacitated for each day of that month because of atypical pneumonia.

The concurrent existence of a large number of infections of the respiratory tract, classified as acute

TABLE 1—Non-effective Rate of Atypical Pneumonia per Month per Thousand Strength at Fort Eustis, Virginia

May	0.46
June	0.61
July	0.82
August	1.70
September	2.23

bronchitis, influenza, grip and nasopharyngitis, at a season when such infections are very common did not justify our inclusion of these cases as a mild form of the disease being described. It was recognized, however, that there did exist at this post, during this same interval of time, a moderate number of cases which

and Finland. Maxwell. Virus Pneumonias. II. Primary Atypical Pneumonias of Unknown Etiology. *New England J Med* 227:378 (Sept 3) 1942. Reimann Hobart A. and Havens W Paul. An Epidemic Disease of the Respiratory Tract. *Arch Int Med* 65:138 (Jan) 1940. Bowen Allen⁴, Reimann³, Smiley², Kneeland and Smetana², Whiteley Bernstein and Goldman⁴, Green and Eldridge⁴, Moore Tannenbaum and Smaha⁴.

² Smiley D F, Showacre E C, Lee W F and Ferris H W. Acute Interstitial Pneumonitis. *J A M A* 112:1901 (May 13) 1939.

³ Reimann Hobart A. An Acute Infection of the Respiratory Tract with Atypical Pneumonia—A Disease Entity Probably Caused by a Filtrable Virus. *J A M A* 111:2377 (Dec 24) 1938. Kneeland V R and Smetana H F. Current Bronchopneumonia of Unusual Character and Undetermined Etiology. *Bull Johns Hopkins Hosp* 67:229 (Oct) 1940.

⁴ Bowen A. Acute Influenzal Pneumonitis. *Am J Roentgenol* 34:169 (Aug) 1935. Allen W H. Acute Pneumonitis. *Ann Int Med* 10:441 (Oct) 1936. Whiteley J H, Bernstein Abraham and Goldman Mervin. Primary Atypical Pneumonia—A Report of Twenty Five Cases. *Mil Surgeon* 91:499 (Nov) 1942. Green D M and Eldridge F G. Primary Atypical Pneumonia. Etiology Unknown. *ibid* 91:503 (Nov) 1942. Moore G B, Tannenbaum A J and Smaha T G. Atypical Pneumonia in Army Camp. *War Med* 2:615 (Jul) 1942.

clinically were identical with atypical pneumonia except for the lack of definite abnormalities of the chest and x-ray signs. These were considered cases of bronchiolitis, of probably the same etiology but without the associated atelectasis. The lack of adequate facilities for making etiologic studies led us to omit such cases from our series.

The majority of the reports have dealt with outbreaks almost entirely limited to adolescents and young adults. In view of the several minor epidemics at army posts during prewar times, it is not at all surprising that the disease should become prevalent during a period when mass mobilization is in effect.

Most of the larger outbreaks have occurred during the late fall or early winter months, although sporadic cases have appeared at all seasons. Our cases have followed this general pattern with the trend still upward in the month of October (fig 1).

Very little data were obtained on the incubation period of the disease, but most investigators estimate this period to be about seven to twenty-one days. In 1 of our cases it seemed almost certain that it was fourteen days.

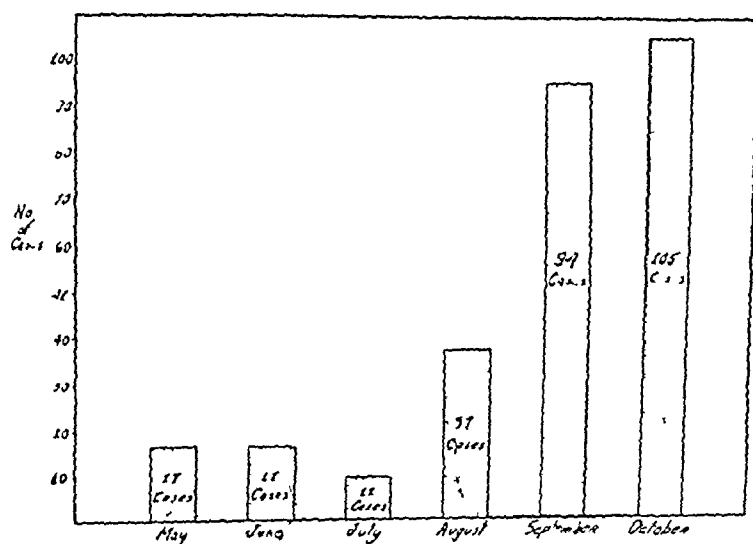


Fig 1—Seasonal incidence of atypical pneumonia at Fort Eustis, Virginia.

While atypical pneumonia does not seem to be highly contagious, prolonged contact, such as occurs in barracks, college dormitories and hospitals, results in a high incidence of the disease. Six of our cases occurred among doctors and nurses who had worked in wards in which the disease was prevalent.

CLINICAL OBSERVATIONS

A gradual onset was noted in the majority of patients and was associated with prodromal symptoms of non-productive cough, low grade fever, muscular aching, malaise, headache and an occasional sore throat. The most common early symptom was a dry cough, which later became productive and often paroxysmal. Substernal soreness, chilly sensations, occasional frank chills and profuse sweats were frequently noted as the infection progressed. Pleuritic pain was uncommon, but substernal soreness on coughing was a common and often distressing symptom. Expiratory grunt and flaring of the alae nasi were absent. With a few exceptions the patients did not demonstrate toxicity, cyanosis or respiratory embarrassment. Soreness of the abdominal muscles due to prolonged coughing was commonly noted. Abdominal pain and tenderness, with occasional nausea and vomiting, were observed in

several instances. One patient displayed such definite abdominal signs that an appendectomy was performed even in the presence of physical signs and x-ray evidence of pneumonia.

The physical examination, on admission, usually revealed that the patient was moderately ill, with

TABLE 2—Statistical Data

	Percentage of Cases
Gradual onset (more than 24 hours)	63
Productive cough	51
Substernal soreness	44
Sore throat	26
Muscular aching	25
Dyspnea	3
Cyanosis	2
Blood tinged sputum	6
White blood cells (5,000-10,000)	75
Polymorphonuclear differential (60 to 80)	90
Termination of fever by lysis	91
Respirations less than 24 per minute	85
Pulse less than 110	85
Accompanying fever of 6 days or less	75
Admission temperature between 100 and 102 F	80
Hospitalized 16 days or less	60

flushed moist skin, injection of the exposed bulbar conjunctivas, coated tongue and slightly inflamed pharynx. The most significant and frequently the only abnormal initial chest signs were suppressed breath sounds. Fine dry crackling rales were often heard at the end of inspiration, particularly after coughing. A small percentage of the patients who showed no abnormality of the chest on admission developed the typical findings after a period of forty-eight to seventy-two hours. Abdominal examination of those patients complaining of gastrointestinal discomfort frequently revealed some superficial tenderness but was without associated spasm.

The laboratory data were of value in differentiating this disease from the bacterial pneumonias. The

TABLE 3—Differential Criteria in Pneumococcal and Atypical Pneumonias

	Pneumococcal	Atypical
Onset	Abrupt	Slow
Cyanosis and dyspnea	Frequent	Rare
Herpes	Frequent	Rare
Pulse rate	Rapid	Normal or only slightly accelerated
Respiratory rate	Accelerated	Normal
Physical signs	Impaired resonance, bronchial breathing	Very slight change in resonance; rare bronchial breathing, frequent rales
Sputum gross	Rusty	Greenish mucoid
Sputum, microscopic and culture	Pneumococci	No predominating organism or occasional higher type of pneumococcus
White blood cell count	Both high	Normal white blood cell count; slightly elevated polymorphonuclear count
Polymorphonuclear count		
X-ray appearance	Dense consolidation	Stringy and mottled type densities
Crisis	Frequent	Rare
Severity	Severe	Mild
Response to sulfonamides	Good	None

majority of the white blood cell counts were normal. A definite leukopenia was rare. There was a tendency for the neutrophilic percentages to be slightly increased, values in the region of 75 to 85 per cent not being infrequent. No predominating pathogenic organisms were found in the sputum except in 3 instances, and these were all pneumococci of higher types which were considered to be without causative significance. A transient albuminuria was noted in those with very high fevers. All blood cultures were sterile.

COURSE

In the presented series only 6 patients were considered to be seriously ill 1 of whom died. The patients rarely looked as sick as their temperatures would indicate. The temperatures on admission ranged from normal to 105 F averaging 102 F and fluctuated widely over twenty-four hour periods. The maximum fever was frequently reached within thirty-six hours after admission and terminated by lysis in about five days regardless of the form of therapy. A few patients continued to have fever for as long as twelve to eighteen days. Pulse and respirations were not accelerated in proportion to the fever.

As the patients improved, the muscular aching, sweats, headache, sore throat and malaise disappeared while the cough became more productive and frequently lasted several days after the temperature reached normal. Spread of the disease process from one lobe to another or from one lung to the other was noted occasionally. Complications were rare but slight pleural effusion was noted in a few cases. One patient developed a rapidly spreading myelitis which proved to be fatal.

TABLE 4—Statistical Summary of Radiographic Findings

Condition	Cases	Per Cent
1 Basilar involvement	102	51
2 Bilateral involvement	44	22
3 Right sided involvement	73	39
4 Left sided involvement	75	39
5 Upper lobe involvement only	2	1
6 Right upper lobe involvement only	22	10.5
7 Left upper lobe involvement only	1	0.5
8 Involvement of left upper and lower lobes only	10	5
9 Involvement of right upper and lower lobes only	4	2
10 Involvement of all lobes	1	0.5
11 Involvement of both lower lobes and right upper	4	2
12 Involvement of upper lobe irrespective of other lobes	36	18
13 Involvement of right lower and left upper lobe		15
14 Presence of pleural fluid (very slight in every instance)	17	8
15 Elevation of diaphragm or shift of mediastinum or both	13	10
16 Spread of lung disease after initial film study	38	6
17 Average number of days for film clearing	11.5 days	
18 Case negative on admission and developed density later	1	0.5

The average period of hospitalization was twelve days, but this high figure is partially due to the necessity of keeping these patients in the hospital until they are ready to assume full military duty.

THERAPY

It has been shown conclusively that sulfathiazole and sulfanilamide did not alter the course of the disease in any way. In this series the average duration of fever for all 200 cases was 5.1 days, whereas in the 98 cases in which a sulfonamide compound was given the fever lasted 5.8 days and in the 102 cases in which symptomatic treatment was given the average duration of the fever was 4.4 days. Routine therapy was supportive in nature and included bed rest, adequate fluids, antipyretics and sedatives. A persistent cough often responded favorably to steam inhalations and expectorants. The oxygen tent was of value for those patients who were cyanotic or dyspneic.

ROENTGENOLOGIC ASPECTS

An analysis of the roentgenograms in this series of 200 cases of atypical pneumonia demonstrated that 81 per cent of the pulmonary lesions were basilar, that 39 per cent were located on the right side while a similar percentage was seen on the left and that 11 per

cent of the cases showed involvement of the right upper lobe and in 5 instances were misdiagnosed as pulmonary tuberculosis (fig 3). Differentiation between pulmonary tuberculosis and atypical pneumonia could be made only by repeated progress film studies and sputum examinations. In 1 of Kneeland and Smetana's cases³ pneumothorax had been instituted before the true nature of the lesion in the upper lobe was appreciated.

Although in all our cases initial roentgenograms were made in only 100 were adequate progress film studies done. Of these 100 cases it was found that 57 per cent had cleared radiographically at the end of ten days, 85 per cent in twenty days and the remaining 15 per cent in the ensuing twenty day period.

Since 81 per cent of these cases demonstrated basilar disease, detailed description will be confined to this type of involvement (fig 3). Careful examination of the basilar shadows revealed a streaking type of density which radiated downward from the lung root and extended outward over the leaf of the diaphragm. These shadows conformed to the general distribution of the bronchi. Superimposed on the stringy density was a mottled type of shadow which occurred in any part of the chest but was most commonly seen at the right cardiophrenic angle at or below the lung roots or along the left border of the heart. Kornblum and Reimann, in reference to a similar epidemic, described these streaking densities radiating from the lung roots and used this finding as an x-ray criterion for diagnosis of tracheobronchitis. The underlying disorder in our 200 patients was in accord with this interpretation, but all roentgenograms demonstrated superimposed mottled densities. The mottled densities were interpreted as a lobular form of atelectasis based on

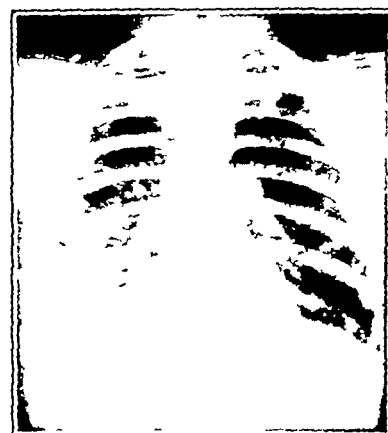


Fig 2 (case 1)—Basilar stringy and mottled density seen in 81 per cent of our cases. The radiating stringy densities represent diseased bronchi and bronchioles. The hazy mottled density represents atelectatic lung. Note the platelike areas of atelectasis with associated elevation of the right leaf of the diaphragm.



Fig 3—Patchy atelectasis of the right upper lobe resembling pulmonary tuberculosis.

a definite mechanical factor—the complete block of the smaller bronchi and bronchioles by collected exudate and swollen epithelium. It was thought that the stringy type of densities represented a combination of

³ Kornblum, Karl and Reimann, Hobart A. The Roentgenological Aspects of an Epidemic of Acute Respiratory Tract Infection. *Am J Roentgenol* 44: 333 (Sept.) 1940.

exudation within bronchi and bronchioles, swollen bronchial and bronchiolar epithelial lining, and peribronchial and peribronchiolar cellular infiltration (fig 7). The majority of the soldiers in question were ambulatory during the days prior to their initial x-ray examination and because of the dependent drainage of



Fig. 1—A, the homogeneous density in the right upper lobe has the appearance of a lobar pneumonia. However, the decided right sided shift of the trachea and heart with elevation of the diaphragm reveals its true atelectatic nature. B, same case seventeen days later demonstrates complete re-aeration of the right lung. The mediastinal structures and the right leaf of the diaphragm have assumed their normal positions.

exudate the basilar portions of the lung fields would be the part most frequently involved. This conception was verified by the fact that 81 per cent of these cases demonstrated basilar pulmonary disease. Snow and Cassasa⁶ in their reviews of bronchiolitis in children and influenza in adults stressed the importance of dependent drainage of exudate in the mechanism of basilar atelectasis.

The fact that 19 per cent of these cases showed a shift of the mediastinal structures, or an elevation of the diaphragm toward the site of lung involvement, gave further substantiation to the diagnosis of atelectasis (fig 4). On rare occasions a complete lobe became atelectatic (fig 4), and in these roentgenograms the shift of the mediastinum and the elevation of the diaphragm was pronounced. The collapsed lobe often simulated lobar pneumonia, but the diminished volume of the involved lobe, narrowing of the rib interspaces, shift of the mediastinum and elevation of the diaphragm revealed its true atelectatic nature.

A distinctive feature of this disease was the variability of the pulmonary involvement. In many cases the mottled densities were seen to appear and disappear over night. The intermittent obstruction of the smaller bronchi and bronchioles was thought to be responsible for the transient pulmonary changes, and this may have accounted for the negative x-ray appearances when physical signs were present beforehand. Snow and Cassasa⁷ have conclusively shown that bronchiolitis in children will give the pathologic appearance of atelectasis and emphysema, with the latter being the prominent radiographic finding. In children, air is allowed to enter the alveolus through the diseased bronchiole but is not permitted to escape. In effect, the involved bronchiole acts as a ball valve which holds the alveolus in a state of constant inflation. In contrast, the adult cases of bronchiolitis, such as those

being described, demonstrated complete bronchial block with associated absorption of alveolar air.

One striking feature that was quite apparent in the majority of cases was the presence of horizontal linear densities overlying either diaphragm (fig 5). This finding was usually discovered after considerable clearing of the basilar shadows. These band densities had the appearance of the platelike atelectasis described by Fleischer and his associates,⁸ who proved conclusively, by correlation of postmortem teleoroentgenograms with gross and microscopic studies, that the band shaped horizontal basilar densities represented atelectatic lung.

It is remarkable to note that in only 6 per cent of these patients radiographic evidence of pleural fluid developed, and in these instances the amount of fluid was insignificant (slight obliteration of either costophrenic angle).

On review of the case illustrated in figure 6 it is noted that the density in the right lower lobe had not changed in a period of forty-six days. A bronchogram made with iodized oil at the end of that time not only revealed atelectasis but also demonstrated localized fusiform bronchiectasis. It is universally agreed that unrelieved atelectasis, as well as an acute bronchiolitis, may cause bronchiectasis. With these facts in mind, one can readily see that bronchiectasis could be a serious complication in the 15 per cent of chests which failed to clear after twenty days of hospitalization. (This phase of the problem, we believe, would warrant further investigation.)

An unusual complication encountered in 6 cases was the presence of multiple rib fractures, apparently the result of prolonged severe coughing. These fractures were usually overlooked in the initial roentgenograms but became apparent on subsequent studies, which demonstrated callus formation.

A TYPICAL CASE

CASE 1—G. H. L., a white soldier aged 21, was well until September 24, when a nonproductive cough developed. Two days later he began to have fever and generalized muscular aching, which continued until his admission on September 28.

The principal physical findings on admission consisted of slight inflammation of the pharynx, moderate enlargement of the right tonsil, decreased breath sounds at the base of the right lung posteriorly and a few rales over the same area.

The admission temperature and the pulse and respiratory rates were 103.2 F, 112 and 28 respectively.

The white blood cell count was 6,500 with 70 per cent polymorphonuclears. A roentgenogram of the chest taken on September 28 revealed both mottled and stringy densities at the base of the right lung and elevation of the diaphragm on that side (fig 2).

General supportive measures were instituted on admission.

In addition, sulfathiazole was given for the first three days but, conforming with our experience, no beneficial effect was noted. The course of the disease was uncomplicated.



Fig. 3—Complete collapse of the right upper lobe is noted with platelike areas of atelectasis overlying each leaf of the diaphragm. The mediastinal structures have been pulled to the right side.

⁶ Snow, William, and Cassasa, C. S. B. Obstructive Emphysema and Atelectasis in Influenza, *J. A. M. A.* 109: 1886 (Dec. 4) 1937, footnote 7.

⁷ Snow, William, and Cassasa, C. S. B. Obstructive Emphysema and Atelectasis in Acute Respiratory Disease in Infants, *Am. J. Roentgenol.* 37: 217 (Feb.) 1937.

⁸ Fleischer, Felix, Hampton, Aubrey O., and Castleman, B. Linear Shadows in the Lung, *Am. J. Roentgenol.* 46: 619 (Nov.) 1936.

signs in the chest persisted up until the eighteenth day of hospitalization. The patient was discharged to full duty on the nineteenth hospital day.

REPORT OF THE FATAL CASE

CASE 2—R. W. S., a soldier aged 24, was admitted to the medical service of the Station Hospital Fort Eustis, Virginia, on Sept 15, 1942. His chief complaints were those of cough, pain in the chest and fever of two days' duration. The temperature was 102 F, the pulse rate was 112 and the respiratory rate was 22. The patient did not appear acutely or seriously ill. A few moist rales were noted over the middle lobe of the right lung. The remainder of the physical examination was negative.

The white blood cell count was 6,750 per cubic millimeter, with 80 per cent polymorphonuclear leukocytes. The urine was normal. Smears and culture of the sputum showed no pneumococci. A roentgenogram taken September 16, showed a diffuse area of density spread throughout the right lung field, most pronounced along the lower portion of the right upper lobe. Another film taken on September 23 revealed considerable spread of the process in the right lung with some involvement of the left lung. A blood culture was sterile after twenty-two hours' incubation.

For the first four days in the hospital the patient received symptomatic treatment. His temperature during this period varied from 99 to 104 F, although at no time did he seem seriously ill. On September 19 his temperature rose to 105 F and he was started on sulfathiazole medication with an initial dose of 2 Gm, followed by 2 Gm in two hours and then 1 Gm every four hours. There was little response to the drug as far as the febrile course was concerned although the patient seemed clinically improved.

On September 22, the seventh day in the hospital, the patient seemed more acutely ill and began to complain of transient pains and numbness in his feet. Physical examination which included a careful neurologic examination failed to reveal anything to account for these changes. The following morning the patient was unable to move his legs. Examination at that time revealed a flaccid paralysis of the lower extremities with loss of sensation extending up as high as the second thoracic vertebra. There was slight nuchal rigidity but the Kernig and Brudzinski signs were negative. No other pathologic reflexes were noted. His subsequent clinical course was characterized by rapid progression of the paralysis which reached the upper extremities and diaphragm twelve hours after its onset. Lucid periods alternated with periods of considerable confusion. Lumbar puncture revealed cloudy fluid under increased pressure with 2,000 cells, 90 per cent of which were polymorphonuclears, increased protein, a normal sugar and a negative smear and culture. Associated with the rapid spread of the paralysis the temperature rose progressively, and with the approach of 108 F, respirations ceased.

POSTMORTEM EXAMINATION

Gross—The body was well developed but rather thin, measuring 69 inches (175 cm) and weighing about 65 Kg. There was a linear scratch over the right aspect of the right side of the abdomen measuring 12 cm in length and a skin puncture in the midlumbar region. The chest was symmetrical. There was no peripheral lymphadenopathy.

The head was ovoid, hair on the head was abundant, dentition was good, there was a small amount of mucoid fluid in the mouth, hazel irises were surrounded by round, regular pupils, each 0.6 cm in diameter.

The peritoneal cavity contained no excess free fluid. The heart appeared slightly dilated. The epicardial fat was abundant. The maximal transverse diameter in situ was 16 cm. The thymus measured 3 by 4 cm.

The pleural cavity contained about 200 cc of bloody fluid; the lungs filled the available space.

The heart weighed 450 Gm and had a small amount of adherent fat. The auricles appeared normal, measuring 2 to

3 mm in thickness. The circumferential measurement of the tricuspid valve was 11.5 cm. The pulmonary valve measured 8.25 cm and was normal otherwise. The right ventricle measured 6 mm in thickness; the left auricle measured 1 mm and was normal. The mitral valve in circumferential measurement was 9.5 cm. The leaflets contained no vegetations. The right ventricle had an average thickness of 12 mm; the mus-

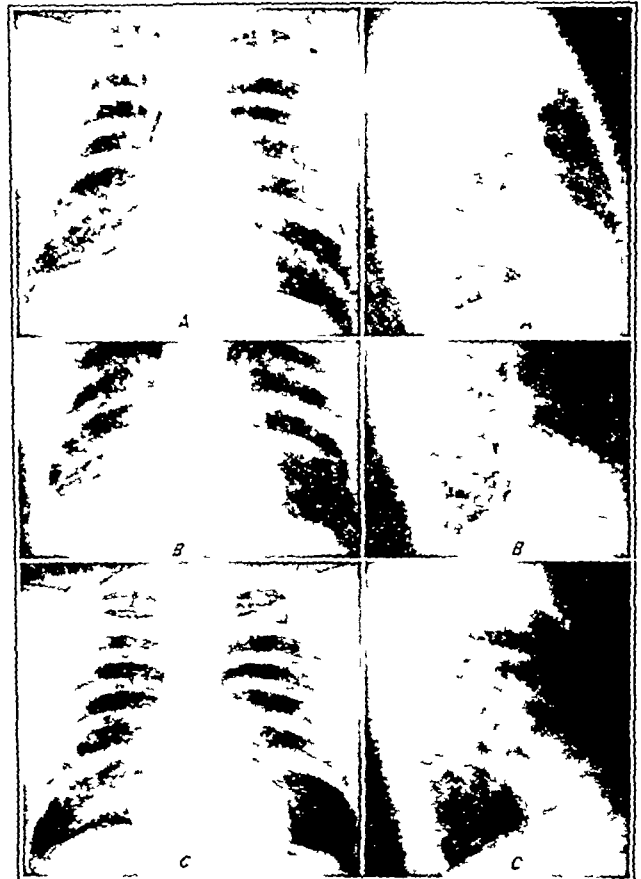


Fig 6—A: initial film study done on July 5, 1942 demonstrates a dense horizontal band of atelectasis overlying the right leaf of the diaphragm. B: studies made with iodized oil on August 20 after the right lower lung field failed to re-aerate demonstrates the crowded lower and middle lobe bronchi typical of atelectasis. Note the bronchiectasis. C: re-aeration is shown on a progress study done on September 11. Note the iodized oil remaining in one of the bronchiectatic bronchi of the right lower lobe.

cles were normal; the aorta contained a few early formed atheromatous plaques, some of which appeared to encroach around the coronary openings.

The right lung weighed 1,130 Gm. The pleura was smooth, shiny and translucent. The pleural surface displayed a quilted effect. Small (1 to 3 cm in diameter) pink aerated crepitant segments of tissue were slightly elevated above dark red rubbery tissue. On section the major portion of all lobes presented a bloody surface which was fairly dry when scraped. There was no spontaneous fluid or foam flow. On pressure some pink thin foam welled from minor bronchi. The cut surface varied considerably in color. Salmon pink alternated with dark red in scattered fashion the foci of each being poorly demarcated. Near the hilar portion most of the lung was dark red. The pink tissue was crepitant and visibly aerated. The dark tissue was noncrepitant but soft and spongy. Finger pressure produced a pit here. The absence of tractability and of firmness was remarkable in the consolidated portions. A very few firm nodular foci were palpated. These did not account for the extensive lack of aeration. The bronchial mucosa was reddened, velvet and thickened. The bronchial tree contained thin bloody fluid. The pulmonary veins and arteries were patent throughout. The lymph nodes of the bronchial and

peritracheal group were enlarged, moderately firm and dark brownish red on section

The left lung weighed 660 Gm. The pleural surface presented a number of confluent superficial hemorrhages. The lower lobe was completely subcrepitant but remained elastic. It was reduced in volume. The upper lobe near the margin



Fig. 7—Severe bronchitis with peribronchial infiltration. Note the intrabronchial cellular exudate.

of the lappet contained air and was crepitant. On section the upper lobe was dull red and uniform. The lappet was salmon pink. The inferior lobe, besides the general doughy feel, presented a central focus of ill defined firmness roughly 2 cm in diameter. The bronchial tree contained thin bloody fluid, the bronchial walls were injected. The upper lobe, particularly the anterior lappet, was well aerated.

The liver weighed 1,950 Gm. Throughout it showed a rather normal architecture and contained slight yellow focal areas, otherwise it appeared normal throughout, it was moderately congested. A small Riedel lobe was present.

The gallbladder contained dark green bile fluid. On pressure bile was expressed through the ampulla of Vater.

The spleen weighed 240 Gm and was purplish red and soft. On section it was mottled, fibrous and a mottled reddish brown. It appeared moderately congested, otherwise it was normal.

The right adrenal weighed 11 Gm, the left adrenal 8 Gm.

The right kidney weighed 300 Gm, was reddish purple and appeared normal. The capsule stripped with ease. The left kidney weighed 300 Gm and appeared similar to the right kidney.

There were small punctate petechial hemorrhages on the stomach.

The pancreas weighed 135 Gm and appeared fibrous in structure.

The bladder contained about 20 cc of cloudy straw colored fluid. The ureteral orifices were patent and the trigone appeared normal.

The brain weighed 1,620 Gm. The brain grossly showed a rather definite generalized hyperemia and what appeared to be edema of the piamatral areas. The sphenoid sinuses were free of pus.

The entire spinal cord showed a moderate degree of hyperemia. The lumbosacral region was moderately yellow, appearing with small attached plaques adhering to the arachnoid-pia area.

Microscopic—The important changes in the lungs were those of bronchitis and peribronchitis, interstitial pneumonitis and atelectasis. The entire process was unusual.

The major bronchi showed sloughing of the epithelium. The mucosa was moderately edematous and diffusely infiltrated with lymphocytes, occasional plasma cells and a moderate

number of well preserved neutrophils. The vessels were engorged. The mucus glands appeared normal. In the smaller bronchi there was a similar process with the lumen partly occupied by exudate, but there were conspicuous peribronchial accumulations of lymphocytes and plasma cells. These accumulations in some sites presented the picture of hypertrophied peribronchial lymphoid apparatus, in other sites, however, they were more typically inflammatory. Not all bronchi were involved, as could be seen in the aerated anterior margin of the left upper lobe. Nor was the process uniform as regards the extent of mucosal and peribronchial changes. For instance in the left upper lobe one section showed peribronchial change with relatively little mucosal inflammation. The contents of the bronchial tree were usually purulent with very little mucus mixed with it. Sections from the right lower lobe showed a general decrease in the size of the alveoli. This process occurred either associated with thickening of the alveolar wall or in its absence. The alveoli which had thickened walls contained rafts of mononuclear cells, some in epithelium-like alignment. Some of these cells had phagocytic properties, having engulfed nuclear remains or blood pigment. The thickening of alveolar walls was accompanied by edema and a variable amount of lymphocyte and plasma cell accumulation (figs 7, 8 and 9).

There were a few changes in isolated foci in which organizing fibrinopurulent plugs occupied alveolar spaces and a few sites of intra-alveolar fluid and granulocytes indicating bronchopneumonia, old and recent. This was a minor feature. A single focus of necrosis was visible in the lung parenchyma at a place where bronchopneumonia as well as interstitial pneumonitis was present. There was no visible vascular lesion to account for this, however. The inter sinusoidal cords of the spleen contained an increased number of cells, among which were many granulocytes. There was some vacuolization of the centrilobular liver cells, slightly decreased cortical lipid of the adrenals and slight parenchymatous degeneration of the tubules of the kidneys.

Section through a temporal horn of the cerebrum including the hippocampus showed a small focus of perivascular edema and granulocyte infiltration. The ganglion cells appeared well preserved. This suggested that the inflammatory process was very recent here.

Section of the basal ganglions showed an outer portion of the lentiform nucleus (putamen), caudate nucleus, claustrum and

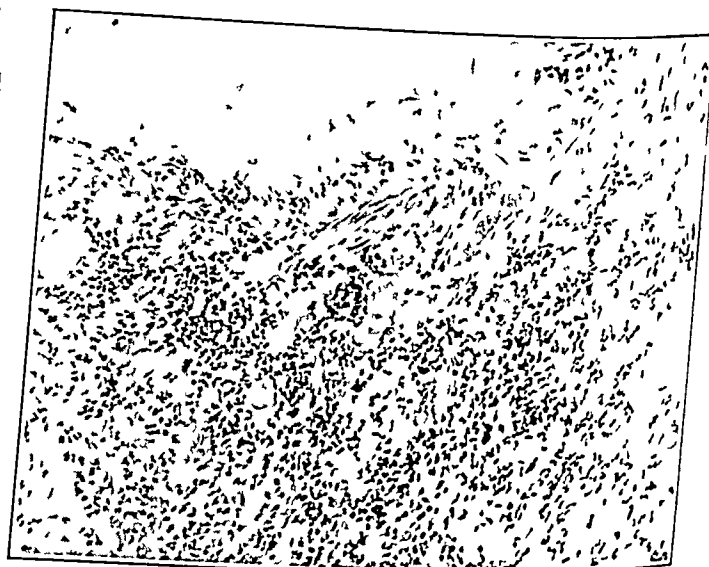


Fig. 8—Alveolar collapse with interstitial round cell infiltration.

cortex of the insula and demonstrated only slight pial edema with a rare lymphocyte and neutrophil in the pia both on the cortical surface and in the reflections along the major vessels.

Section of the cerebellum showing cerebellar folia and emboliform and dentate nuclei revealed no parenchymal change. The meninges were edematous and contained a few granulocytes, lymphocytes and plasma cells.

Section of the hypothalamus which contained a portion of pituitary stalk, demonstrated no noteworthy changes other than a moderate number of lymphocytes about some of the larger vessels.

Sections of the cord from the cervical and lumbar regions may be described together. The changes were minimal con-

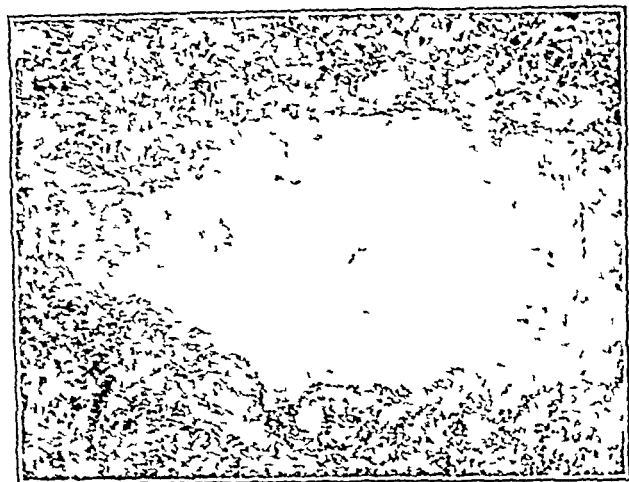


Fig 9—Extensive interstitial round cell infiltration and well defined atelectasis as seen under low power

sisting of pial edema with slight infiltration with lymphocytes and neutrophils. Levels of the eighth and tenth thoracic vertebrae presented an entirely different picture. Here there was extensive perivascular necrosis, edema and neutrophil infiltration with deposition of fibrin. Some vessels were occluded by fibrin thrombi. The process was so extensive as fairly to constitute small abscesses. The change involved white as well as gray matter and could be traced in 1 instance to a peripheral nerve root where the necrosis occurred also about the central vessel. There was some meningitis characterized by accumulation of neutrophils. There was no doubt, however, that this was secondary to the changes within the cord.

PATHOLOGIC DIAGNOSIS

- 1 Bronchitis, bronchiolitis, peribronchitis and peribronchiolitis
- 2 Interstitial pneumonitis, etiology unknown
- 3 Atelectasis, secondary to bronchiolitis and peribronchiolitis
- 4 Bronchopneumonia, old and recent
- 5 Encephalitis local, acute secondary to foregoing
- 6 Purulent myelitis involving lower thoracic segments, etiology unknown
- 7 Meningitis acute, slight secondary to foregoing

COMMENT

A disease which, because of its prolonged period of hospitalization, gives rise to a great loss of man days becomes of tremendous military importance when it is prevalent. The rapidly mounting incidence of atypical pneumonia at this post led to the preparation of this brief review of 200 unselected cases. The symptoms and physical signs have been dealt with hurriedly because this phase of the disease has been well described in the current literature. Special emphasis has been given to the physiopathologic changes of atypical pneumonia (roentgenography, studies with iodized oil and the one postmortem examination being used as aids). No final conclusions can be drawn from a single case. Deaths from this disease are rare. The fatal case presented all the clinical features that were noted in the other cases in this series as well as similar radiographic changes. The studies with iodized oil and the microscopic anatomy of the lungs served to confirm the

roentgenologic belief that atelectasis rather than true pneumonia was the underlying pathologic condition and accounted for the mottled type of density seen in the x-ray film. The primary process was believed to be a peribronchitis, peribronchiolitis, bronchitis and bronchiolitis with swelling of the bronchial epithelium and exudation into the bronchi and bronchioles with resultant occlusion and absorption of air.

The similarity between the lesions of atypical pneumonia and those of pulmonary tuberculosis has led in some instances to incorrect diagnoses which have brought about unfortunate results. Not only have artificial pneumothoraces been induced but patients have been discharged from the Army with the erroneous diagnosis of pulmonary tuberculosis. At a time when the need for manpower is so critical, errors such as this are to be strictly avoided. Serial roentgenograms and repeated examination of sputum are indicated in cases in which there is doubt concerning the diagnosis.

The differentiation from bacterial pneumonia, whether of lobar or of lobular type, should in the majority of instances cause no difficulty. Among the severely ill patients this trouble may be encountered as it was on 2 occasions in our series. It is a good policy to give the sulfonamides when there is doubt.

While spread of the disease process from one lobe to another or from one lung to the other was noted occasionally, there were no true relapses. As far as it was possible to ascertain, there were no readmissions of any of these patients with a second attack of the disease, although our observations were limited by the relatively short training period.

SUMMARY

1 A study of 200 unselected cases of atypical pneumonia occurring during an epidemic of this disease at Fort Eustis, Virginia, was made.

2 The disease is a self-limited type of pulmonary infection with mild and infrequent complications.

3 The epidemiologic aspects of the disease and its high noneffective rate are important to the military service.

4 The pathologic condition underlying the bizarre roentgenographic changes is that of bronchitis, bronchiolitis, peribronchitis and peribronchiolitis with associated atelectasis caused by mechanical obstruction of the bronchi and bronchioles and does not represent a true pneumonia.

5 Eleven per cent of cases present apical lesions which may be confused with pulmonary tuberculosis unless progress film studies are made.

6 Treatment with sulfathiazole and sulfanilamide is without effect on the clinical course of the disease.

7 A fatal case with complication of the central nervous system was examined post mortem.

No Mechanism to Oxidize Urate—Man and the ape are unique in the precise steps of purine metabolism and occupy an intermediary position between reptiles and certain mammals in so far as the metabolism of nitrogenous products is concerned. The amino-nitrogen and pyrimidin-nitrogen waste is excreted as urea while the purine nitrogen is excreted as urate because no enzyme is present to oxidize urate to allantoin. If man were endowed with a mechanism which enabled him to oxidize urate, gout would not be possible or else it would manifest itself as a different clinical and chemical disturbance.—Talbot John H. Gout New York Oxford University Press 1943

SULFADIAZINE PROPHYLAXIS IN AN
EPIDEMIC OF SCARLET FEVERLIEUT ROBERT F WATSON (MC), USNR
LIEUT COMDR FRANCIS F SCHWENIKER
(MC), USNRCOMDR J E FEHNERSTON (MC),
USN, RET

AND

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Infectious diseases often appear in epidemic proportions under wartime conditions when it becomes necessary to gather large bodies of troops into crowded quarters. Such conditions are particularly favorable to the spread of the air borne infectious diseases of the respiratory tract. While experimental work with aerosols apparently offers promising prospects for controlling droplet infections, effective techniques have not as yet been perfected for employing these substances on a large scale. Several recent reports¹ have appeared, on the other hand, showing that small doses of sulfanilamide, given over prolonged periods, will prevent rheu-

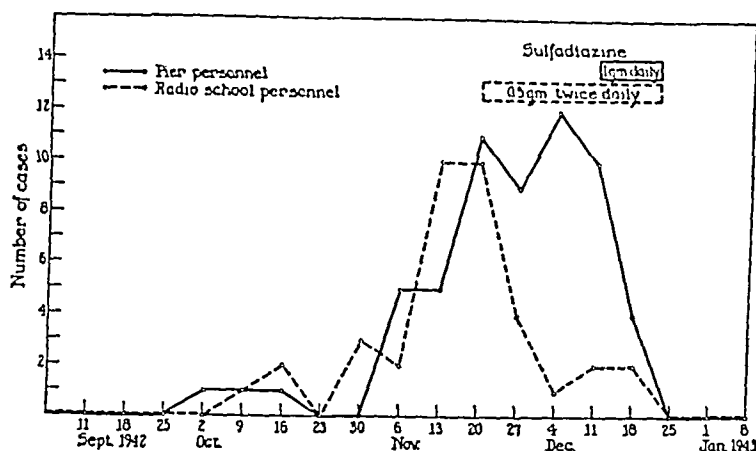


Chart 1—Weekly case rate of scarlet fever in the radio school and pier personnel before and after administration of sulfadiazine

matic subjects from having hemolytic streptococcus infections of the respiratory tract and thereby save them from recurrences of rheumatic fever. In addition, reports have appeared indicating that the sulfonamide compounds have been used effectively to protect scarlet fever contacts² and prevent meningococcal,³ gonococcal and chancroidal infections.⁴ It therefore seemed probable that the sulfonamide compounds might be similarly

From the United States Navy Research Unit at the Hospital of the Rockefeller Institute for Medical Research and the Hospital of the Rockefeller Institute for Medical Research

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U S Navy. The opinions and views set forth in this article are those of the writers and are not to be considered as reflecting the policies of the Navy Department.

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(Footnotes continued in next column)

used to control epidemics of hemolytic streptococcus infections among normal men. This communication is a report on the use of sulfadiazine in controlling an outbreak of scarlet fever at a United States naval station.

EPIDEMIOLOGIC SITUATION

The personnel at this station was housed on a large pier and during the period of investigation numbered several thousand. It was divided into two groups: (1) students in a radio school and (2) transients. The former slept and messed on the pier but spent their days in classes held in a building a few blocks away. The radio school students were further divided into four classes, each of which lived on the pier four months; a new class started its schooling the middle of each month. The transient group, termed the pier personnel, was about four times the size that of the radio school. These men, coming from many places, remained at this station from a few hours to several weeks while awaiting assignment to duty elsewhere. The weekly turnover among this group was approximately equal to two thirds of the capacity of the pier. The two groups were lodged together under the same roof, slept in double decker beds and messed in the same hall.

METHODS OF STUDY

All patients with scarlet fever or suspected scarlet fever were admitted either to the U S Naval Hospital, Brooklyn, or to the Hospital of the Rockefeller Institute for medical care. Only unquestionable cases of scarlet fever are considered in this paper. Nose and throat cultures were taken on all patients admitted to the Hospital of the Rockefeller Institute, and through the courtesy of Lieut Comdr A F Coburn throat cultures were obtained from most of the patients admitted to the Brooklyn institution. All were submitted to similar bacteriologic analysis at the Hospital of the Rockefeller Institute.

Throat culture surveys were also made at intervals during the study to determine the carrier rate for hemolytic streptococci at the station. In making these cultures, particular care was taken to swab both tonsillar areas and the posterior pharyngeal wall. The swabs were then immediately wiped on fresh 5 per cent sheep blood agar plates. These plates were brought to the laboratory, streaked properly and incubated aerobically for twenty-four to thirty hours at 37 C. Representatives of all suspected colonies were transferred to fresh blood agar plates or to broth for further identification. The hemolytic streptococci were grouped and typed by the precipitin methods described by Lancefield.⁵

Determinations of blood sulfadiazine concentrations were made with fresh oxalated samples of venous blood according to the method of Bratton and Marshall.⁶

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DESCRIPTION OF EPIDEMIC AND RESULTS
OF STUDIES

The first case of scarlet fever to appear at this station in the fall of 1942 occurred on September 28. During October only a few additional cases were reported, the number were about equally distributed between the radio school and the pier personnel. During the first two weeks in November, however, the incidence of scarlet fever increased sharply in both groups, as indicated in chart 1. By November 20 the number of cases in the radio school had reached a level of 10 a week, with a slightly higher incidence among the pier personnel.

The hemolytic streptococci from all of the patients admitted to the hospital in the early part of November were identified as group A type 19. With a single type causing all the cases it was apparent that the existing conditions were favorable for developing and perpetuat-

ing an epidemic. It soon became evident also that the incidence of scarlet fever in the radio school, which consisted of the more permanent population, was proportionately higher than that among the pier personnel. With these facts in mind it seemed possible that if the disease could be controlled in the radio school the incidence among the pier personnel might also decrease, since this population was mostly transient.

On November 20, therefore, as a prophylactic measure, the entire personnel of the radio school was started on 0.5 Gm of sulfadiazine twice a day. The drug was given at 8 a. m. and 4 p. m. and was continued for a period of thirty-two days, through December 22. The results were striking (chart 1). During the first week after sulfadiazine was started the incidence dropped to 4 cases a week, and during the next three weeks only 5 new cases of scarlet fever appeared among this group.

For three weeks after sulfadiazine was begun in the radio school, the incidence of scarlet fever among the pier personnel, on the other hand, remained high. For this reason the pier personnel was started, December 11,

on prophylactic doses of sulfadiazine 1 Gm daily, given at 8 o'clock each morning, because it was not possible to divide the daily dose as was being done at the radio school. The drug was continued for 12 days through December 22, during the first seven days the population at the station was stabilized as far as conditions would permit. The effects, as shown in chart 1, were even more striking than had been observed in the radio school.

A total of 95 cases of scarlet fever occurred at this station between September 28 and December 18. Satisfactory throat cultures were obtained from 72 patients, of which 71 were positive for hemolytic streptococci group A type 19 and 1 for type 5. From December 18 through January 8, the end of the period of observation, no new cases of scarlet fever appeared, although sulfadiazine was discontinued in both groups on December 22.

TABLE 1—Throat Culture Surveys of the Radio School and Pier Personnel

Sulfadiazine prophylaxis *	Radio School Personnel						Pier Personnel			
	Before 11/17/42		During 12/3/42		During 12/13/42		Before 12/9/42		After 12/20/42	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
	20	20	0	0	20	20	20	20	20	20
Date of survey	20	20	32	10	40	19.9	44	21.7	30	17.2
Number cultured										
Gross carrier rate										
Group carrier rate										
Group A	40	19.7	20	11.2	21	10.5	18	8.9	10	7.4
Group B	0	0	0	0	1	0.5	4	2.0	1	0.5
Group C	5	2.5	3	1.5	0	0	6	2.9	9	4.4
Group F	0	0	0	0	6	2.9	3	1.5	4	2.0
Group G	7	3.4	4	1.9	7	3.5	13	6.1	6	2.9
Group A carrier rate by type										
Type 1	0	0	0	0	0	0	3	1.5	0	0
Type 5	1	0.5	0	0	0	0	1	0.5	0	0
Type 6	13	6.4	8	3.9	4	2.0	2	1.0	5	2.5
Type 12	1	0.5	1	0.5	1	0.5	1	0.5	0	0
Type 13	0	0	0	0	1	0.5	0	0	0	0
Type 19	20	9.5	10	7.3	12	6.0	4	2.0	6	2.9
Type 23	1	0.5	0	0	0	0	0	0	0	0
Provisional type 32	0	0	1	0.5	0	0	0	0	0	0
Provisional type 43	0	0	0	0	0	0	1	0.5	0	0
Provisional type 46	1	0.5	0	0	0	0	0	0	0	0
Undetermined	3	1.5	0	0	3	1.5	6	2.9	4	2.0

* The radio school received sulfadiazine 0.5 Gm twice a day from November 20 through December 22. The pier personnel received sulfadiazine 1 Gm daily from December 11 through December 22.

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For three weeks after sulfadiazine was begun in the radio school, the incidence of scarlet fever among the pier personnel, on the other hand, remained high. For this reason the pier personnel was started, December 11,

This complete absence of scarlet fever following the withdrawal of sulfadiazine was unexpected, particularly when the results of the throat culture surveys are considered. A summary of these surveys, made on both the radio school and pier personnel, is given in table 1. It is evident from this table that, although both the group A and type 19 carrier rates decreased in the radio school during the period of sulfadiazine prophylaxis, the rates were still rather high when the drug was discontinued, furthermore, surveys on the pier personnel before and after sulfadiazine medication revealed no significant drop in either the group A or the type 19 carrier rate.

A factor which may have played a significant part in delaying the recurrence of scarlet fever following the withdrawal of sulfadiazine was the intervening Christmas and New Years holidays. At this time, because many of the men were given short periods of leave, a number of the carriers and susceptible persons were temporarily removed from the epidemic area. A favorable effect of holiday periods on epidemics of strepto-

coccic respiratory infections has been noted previously by Thomson and Glazebrook.⁷

From table 1 it is apparent that carriers of type 6 hemolytic streptococci were also prevalent. With a carrier rate of almost 10 per cent in the radio school, it seems improbable that this strain failed to induce

while the number with nonrespiratory complaints remained essentially the same. The average number of daily sick calls made for respiratory and nonrespiratory complaints at the radio school and pier, both before and during sulfadiazine administration, are shown in table 2. The smaller number of sick calls for respiratory complaints among the pier personnel during the three weeks before this group was started on sulfadiazine may have been due to a decrease in infectious contacts from the radio school personnel.

Sulfanilamide has been employed almost exclusively by the investigators reporting on the use of sulfonamide compounds for the prevention of rheumatic fever. Only Hansen, Platon and Dwan¹ report giving several of their patients sulfadiazine for short periods, but they make no mention of the blood concentrations of the drug. In those instances in which sulfanilamide has been employed, the dose has varied between 0.6 Gm and 3 Gm daily and the great majority of the patients were under 16 years of age. In the present study the blood concentration of sulfadiazine was determined on 50 men from the radio school. The blood was taken about six hours after the morning dose on the twelfth day after the drug was begun. The distribution of the blood levels of the free drug is shown in chart 3. The

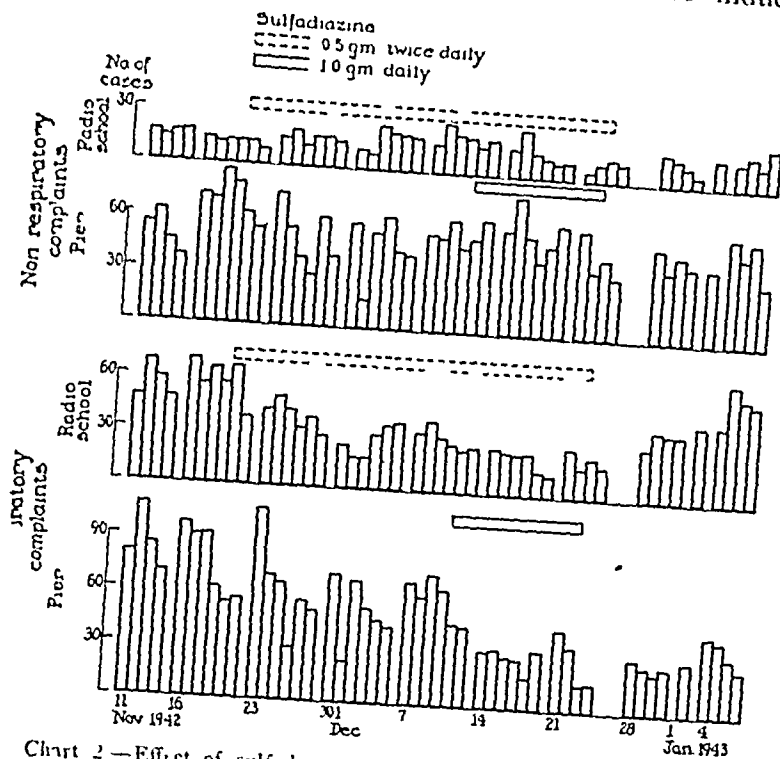


Chart 2—Effect of sulfadiazine administration on daily sick calls

TABLE 2—Average Daily Sick Calls Before and During Sulfadiazine Prophylaxis

Periods	Radio School Personnel		Pier Personnel	
	Nonrespiratory Complaints	Respiratory Complaints	Nonrespiratory Complaints	Respiratory Complaints
Before sulfadiazine prophylaxis	14.5	59.5	50.2	61.6
During sulfadiazine prophylaxis	16.0	29.0	48.6	29.1

respiratory infections. Despite the fact that laboratory tests⁸ showed the type 6 strain to be as potent a producer of erythrogenic toxin as the type 19, none of the cases of scarlet fever cultured during the epidemic were due to this strain. Just what role it may have played in causing pharyngitis and tonsillitis was not ascertained.

When the striking effects of sulfadiazine in lowering the incidence of scarlet fever were observed, it was of considerable interest to determine its influence on the number of daily sick calls. Since the final diagnosis is not recorded at sick call, these data were compiled only on the basis of complaints. In chart 2 the complaints for both the pier and the radio school personnel have been divided into respiratory and nonrespiratory categories and the number of each charted daily with

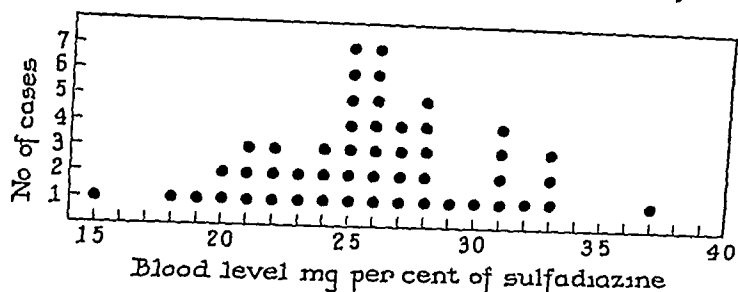


Chart 3—Concentration of free sulfadiazine in the blood of 50 men from the radio school

the omission of Sundays and holidays. It is clear from this chart that for both groups the number of men reporting to sick call with respiratory complaints decreased definitely during the period of prophylaxis,

blood concentrations varied between 15 mg and 37 mg per hundred cubic centimeters with an average and median of 26 mg per hundred cubic centimeter.

Toxic reactions following the use of sulfanilamide in prophylactic doses in rheumatic subjects have been reported to vary from a few and mild by some workers to as high as 37 per cent in one report.⁹ In the present study, toxic reactions ascribable to sulfadiazine were very few. Only 3 men had rashes due to the drug, a fourth person who had previously suffered from urticaria developed an urticarial rash while taking sulfadiazine, this rash disappeared when the drug was discontinued but reappeared several days later in the absence of sulfadiazine. No gastrointestinal disturbances were reported by the men taking sulfadiazine and, while no systematic observations were made concerning blood changes or renal disturbances, no symptoms referable to such complications were reported.

COMMENT

This study indicates that sulfadiazine in doses of 1 Gm daily can effectively control an outbreak of scarlet fever. The conditions prevailing at the station were such that the entire personnel could be divided into two groups, one of which served as a control for the other during the period of prophylaxis.

⁷ Thomson, Scott, and Glazebrook, A. J. Infectious Diseases in a Semiclosed Community, *J. Hyg.* 41: 570-615 (Dec.) 1941.

⁸ The Division of Laboratories and Research of the New York State Department of Health, Albany, cooperated in testing the toxigenic activities of these strains.

⁹ Stowell, D. D., and Button, W. H., Jr. Observations on the Prophylactic Use of Sulfanilamide on Rheumatic Patients, with Report of One Death, *J. A. M. A.* 117: 2164-2166 (Dec. 20) 1941.

The results are even more striking when the epidemiologic situation is considered. About one fourth of the men remaining at the station for four months apparently acted as a focus from which a transient group, four times as large, was being infected. These conditions in certain respects resembled those which Webster¹⁰ and Greenwood and his associates¹¹ have shown to be most favorable for the perpetuation of epidemics among experimental animals and which Green¹² and Thomson and Glazebrook¹³ have described in British naval training schools, where they have studied epidemics of streptococcic respiratory infections.

There can be little question that sulfadiazine in small doses was effective in controlling the epidemic in both groups. The radio school personnel was started on treatment first, with a resulting sharp decrease in case rate, while simultaneously the incidence among the pier personnel remained high for the next three weeks. The pier group was then started on sulfadiazine, and both groups were continued on this drug for twelve days. This brought about a complete remission of scarlet fever in both which persisted until the end of the period of observation sixteen days after sulfadiazine was discontinued. These results accord with those reported by others concerning the efficacy of sulfanilamide in preventing streptococcic infections of the respiratory tract in rheumatic subjects.

The number of respiratory complaints at the daily sick call were also much reduced in both groups in the period during which sulfadiazine was given. This was not surprising, as many of these complaints were probably due to infections with group A hemolytic streptococci as well as to other sulfonamide susceptible micro-organisms.

The remission in scarlet fever, despite the persisting high carrier rate of type 19 streptococci, for at least sixteen days after withdrawal of the sulfadiazine was not expected. This may be explained in part by the intervening holidays, when many men were given leave, which probably caused a decrease in the number of both carriers and susceptible persons. On the other hand, it was not surprising to find a high carrier rate persisting after the use of the drug. Kuttner and Reyersbach¹ have shown that children receiving small doses of sulfanilamide may become carriers of group A hemolytic streptococci without showing any evidence of infection; we have found that even in full therapeutic doses sulfadiazine often fails to rid patients of these micro-organisms.

In the relatively small prophylactic doses used, sulfadiazine elicited a minimum of toxic symptoms, while extensive investigations of its effect on the bone marrow and kidneys of these subjects were not practical, no manifestations were encountered that would indicate any disturbance of these organs. It is now generally agreed that sulfadiazine is the least toxic member of the sulfonamide group. This report confirms that opinion, as the proportion of toxic reactions occurring in this study is less than that reported by any of the workers employing sulfanilamide prophylaxis in rheumatic children.

Besides the danger of immediate toxic reactions in employing sulfonamide compounds in prophylactic doses, one must bear in mind the possibility of producing drug fast strains as a future hazard and also the possibility of so sensitizing large groups of persons to the sulfonamide compounds that they might subsequently be unable to take these drugs for therapeutic reasons. The first possibility is largely speculative, the second has not been encountered in rheumatic subjects who have taken small doses of sulfanilamide over long periods.

The successful demonstration of chemoprophylaxis on a large scale to control an epidemic of scarlet fever raises the question as to when it should be employed. It probably should reinforce rather than replace other hygienic measures. The relative benefits, however, must be balanced against the disadvantages in considering any therapeutic measure. The disadvantages discussed would seem at present to be comparatively slight, especially when sulfadiazine is used. It must be recognized, moreover, that the minimum effective prophylactic dose has not yet been determined. The relative benefits will vary under different circumstances and hence must be judged in the light of all available data concerning the particular epidemiologic situation. The attitude might be assumed that all situations favorable to the development of streptococcic infections of the upper respiratory tract demand the immediate application of the most effective prophylaxis, because a certain number of such cases lead to rheumatic fever and nephritis. At the present time it does not seem practical to apply chemoprophylaxis on a large scale under endemic conditions in which a normal population is involved. The application of the modern techniques for grouping and typing streptococci are of considerable help in deciding whether or not conditions are favorable for the development of an epidemic. For example, at this station, through which men from all sections of the country were funneled rapidly, a certain number of cases due to many different types of streptococci were to be expected and would hardly constitute an indication for large scale chemoprophylaxis. When, in contrast, all cases were found to be due to a single type of strongly invasive capacity, the danger of rapid spread was great and the most effective prophylactic measures were indicated. If in addition the normal functions of an institution or community are seriously threatened by an epidemic, current arguments against such a method of control carry relatively little weight. Apparently the sulfonamide compounds in small doses, and especially sulfadiazine, offer very effective means for controlling streptococcic infections of the respiratory tract without disrupting essential military activities.

SUMMARY AND CONCLUSIONS

1. An epidemic of scarlet fever due to group A type 19 hemolytic streptococci occurred at a United States naval station.

2. Sulfadiazine in prophylactic doses of 1 Gm daily effectively controlled this epidemic and caused a pronounced reduction in the number of daily sick calls due to other respiratory complaints.

3. Among several thousand men treated only 3 had rashes due to sulfadiazine, and no major toxic reactions were observed.

4. Sufficient evidence has been obtained to justify the use of this drug in controlling epidemics of streptococcic infections of the respiratory tract.

10 Webster, Leslie T. *Experimental Epidemiology Medicine* 11: 321-344 (Sept.) 1932.

11 Greenwood, Major Hill A. B., Topley W. W. C., and Wilson J. *Experimental Epidemiology Special Report Series No. 209 Medical Research Council* 1936.

12 Green C. A. *Acute Rheumatism in the Recruit M. Press* 205: 523-526 (June 25) 1941.

CONGENITAL LARYNGEAL STRIDOR

LACK OF RELATION TO THYMIC DISEASES

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There exists a widespread tendency to place the blame for a respiratory abnormality of any magnitude in infancy on the thymus gland, particularly if there is x-ray evidence of thymic enlargement. In the absence of x-ray evidence it is often assumed, as pointed out by Wasson,¹ that the roentgenogram did not accurately portray the situation, and the thymus still may be believed to be the cause of the symptoms. It is not our purpose to review or to evaluate current opinion on thymic enlargement or so-called status thymicolymphaticus. We have been impressed, however, by the apparent confusion of congenital laryngeal stridor with thymic disease as indicated by the fact that in the past three years almost all infants in whom we have established the diagnosis of congenital laryngeal stridor had been referred to us with the diagnosis of enlarged thymus.

This paper thus has been prompted by an experience similar to that reported by Kennedy and New² and by Bowman and Jackson.³ The former authors reported a group of 30 cases of chronic stridor in childhood collected over a ten year period at the Mayo Clinic. Stridor was the chief complaint in only 15 of these cases, but 9 of these 15 had been diagnosed previously as thymic enlargement and in 8 of the 9 roentgen therapy had been given without benefit. Bowman and Jackson reported a similar group of 30 cases of stridor in all of which roentgenograms of the thymus had been made. Enlargement of the thymus was reported in 21 of these cases and in 19 roentgen therapy had been given. In 5 the symptoms seemed to be improved, another 5 showed temporary improvement and in 9 there was no change.

Congenital laryngeal stridor, the most frequently encountered form of chronic stridor in infancy, has been recognized as an entity for many years. Rilliet and Barthez⁴ in 1853 described a clinical picture resembling congenital laryngeal stridor, although credit is usually given to Lees,⁵ who in 1883 reported the examination of the larynx of a year old child. One month after being examined the child died of diphtheria. Both clinical and postmortem features were presented. Although congenital laryngeal stridor is not often encountered, it is worthy of attention, since, as pointed out by Thomson⁶ in 1892, it is apt to cause anxiety owing to its being mistaken for some more serious disease.

Thomson and Turner⁷ presented a classic description of congenital laryngeal stridor in 1900 when they stated that

The infant who appears normal in other respects is noticed shortly after birth to have noisy breathing. The noise consists of a croaking sound accompanying inspiration, which rises to a high pitched crow when a longer or more vigorous breath is taken, expiration may be accompanied by a short croak when the stridor is loud, but at other times it is noiseless. Even in the more severe cases there are brief intervals during which there is no sound audible, but with this exception the stridor goes on constantly while the child is awake and some times when he is asleep. Any emotional excitement or physical cause of deeper breathing, such as exposure to cold air or the exertion of sucking, is apt to intensify the sound. The child's power of crying is unaffected. The breathing, although noisy, is not accompanied by the slightest distress and there is no cyanosis. There is, however, marked inspiratory indrawing of the thoracic and abdominal walls except in the mildest cases. The stridor increases in loudness during the first few months and after remaining about the same for a few more months gradually lessens and disappears during the course of the second year. Long after it ceases to occur habitually, however, it is occasionally brought on again by emotional causes.

The larynx is fully developed at birth and increases in size to puberty, with no sex difference noted in infancy.⁸ The structures about the upper aperture are soft and readily collapsible. The epiglottis, cartilages of Wrisberg and apexes of the arytenoid cartilages are composed of yielding, elastic cartilage. The rest of the larynx is of brittle hyaline cartilage. Calcification due to the deposits of lime salts takes place much earlier in hyaline than in the yellow elastic or white fibro cartilage. While perhaps not of importance in the infant's larynx, these factors do point to a fundamental difference in consistency.

Thomson and Turner⁷ give an excellent description of the abnormality responsible for congenital laryngeal stridor and from experiments conducted with the larynxes of stillborn infants showed that three component changes occurred: (1) The sides of the larynx were sucked together so as to form a narrow mesial slit, (2) the epiglottis was drawn backward and downward so as to form a slit, (3) the arytenoid cartilages met in the midline while the margins of the anterior portion of the aperture remained unaffected. Although they stated that the change found in congenital laryngeal stridor was merely an exaggeration of the normal infantile type of larynx, they felt that the primary element of etiology was a disturbance of respiratory movements due to some backwardness of cortical control and that the recurring sucking in of the upper aperture of the soft larynx was induced by the ill coordinated and spasmodic nature of the breathing. No other writer has agreed with this opinion, and not one of our cases has shown lack of cortical control.

Sutherland and Lack⁹ in 1897 presented 18 cases of stridor in which 6 had been examined with a laryngeal mirror. They described the epiglottis as rolling back on itself, the arytenoepiglottic folds being approximated and flaccid, flopping to and fro on respiration and the laryngeal aperture being reduced to a mere slit. With

From the Department of Pediatrics and Communicable Diseases, University of Michigan Medical School.

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2 Kennedy, R. L. S., and New, E. B. Chronic Stridor in Childhood, *J. A. M. A.* **96**: 1286 (April 18) 1931.

3 Bowman, J. L., and Jackson, C. L. Congenital Stridor in Infancy, *J. Pediatr.* **15**: 476 (Oct.) 1939.

4 Reardon, F. J. Congenital Laryngeal Stridor, *Am. J. M. Sc.* **134**: 242, 1907. Bagg, Claire. Contribution to the Etiology of Congenital Stridor, *Monatschr. f. Kinderh.* **45**: 102, 1929.

5 Hill, F. T. Congenital Laryngeal Stridor, *Laryngoscope* **40**: 44 (Jan.) 1930. Lees, D. B. Larynx from an Infant Which Had Been the Subject of a Peculiar Form of Obstructed Inspiration, *Tr. Path. Soc. London* **34**: 19, 1883. Ruhrah, John. David Bridge Lees, 1846-1915, A Note on the History of Crowing Respiration, *Am. J. Dis. Child* **50**: 1231 (Nov.) 1935.

6 Thomson, J. On Infantile Respiratory Spasm, *Edinburgh M. J.* **38**: 205 1892.

7 Thomson, J., and Turner, A. L. On the Causation of the Congenital Stridor in Infants, *Brit. M. J.* **2**: 1561 1900.

8 Heatley, C. A. The Larynx in Infancy. A Study of Laryngeal Stridor, *Arch. Otolaryng.* **29**: 90 (Jan.) 1939.

9 Sutherland, G. A., and Lack, H. L. Congenital Laryngeal Obstruction, *Lancet* **2**: 653 (Sept. 11) 1897.

the advent of direct laryngoscopy, the pathologic physiology was directly observed. McKenzie¹⁰ reported direct laryngoscopic observations made by D. R. Peterson in which the latter saw "with each inspiration the soft parts of the cricoid, including the arytenoids and interarytenoid folds disappear so to speak into the interior of the larynx, being drawn downward and forward and to such an extent in pronounced cases that the upper border of the cricoid could be seen as a transverse ridge through the stretched mucous membrane." The sides of the epiglottis were also observed to be sucked in, and when he held one side up with forceps the noise stopped at once.

Hill⁵ in 1930 stated that since the structures were of a different histologic structure, predisposing to flaccidity, and were of a different embryologic origin, highly specialized they might be subject to sufficient variation if not malformation to produce the condition of congenital laryngeal stridor. In other words, the situation was thought to be an exaggeration of the infantile type of larynx, differing from normal only in degree, and that the stridor was probably due to the vibrations of the flabby epiglottis and unsupported arytenoepiglottic folds being sucked inward on inspiration. The pathogenesis described by the latter authors seems fulfilled in our cases.

REPORT OF CASES

Case 1 which was under observation for three years, exemplifies the confusion of this condition with thymic enlargement. It also illustrates the frequency with which infections of the upper respiratory tract occur in these patients.

CASE 1—J. O. aged 1 month was seen because of choking and dyspnea which had been present since the age of 5 days. X-ray examinations of the chest purported to show an enlarged thymus; he was given two courses of roentgen therapy within six weeks without relief from symptoms and a full supracardiac X-ray shadow persisted. Transmitted throat sounds were audible on auscultation of the chest and there was striking retraction of the lower portion of the sternum on inspiration. At the age of 4 months he was subjected to direct laryngoscopy at which time it was noted that a redundant mucous membrane over the left arytenoid cartilage dropped over the glottis on inspiration. The vocal cords were normal. Since the symptoms persisted laryngoscopy was repeated one month later. The same picture was noted and in addition there was some backward curling of the epiglottis with inspiration. The symptoms persisted in varying degree intensified by infections of the upper respiratory tract and at the age of 16 months laryngoscopy was again done. The flaccid state of the arytenoids persisted with rotation over the posterior portion of the glottis with each inspiration. The epiglottis was likewise still flaccid. The patient did not return again until the age of 2 years 9 months at which time he had a chronic infection of the upper respiratory tract but no stridor. Direct examination of the larynx still showed the arytenoids to be covered with an excessive mucous membrane. When seen at the age of 3 years he had a mild pharyngitis but was otherwise well apparently having completely outgrown the stridor.

CASE 2—M. M. was noted at birth to have noisy respiration and a slight cough. At the age of 3 weeks a pulmonary infection developed from which he recovered without incident but re-examination at the age of 7 weeks showed a slight cough, noisy respiration and with each inspiration retraction of the suprasternal notch and of the lower portion of the sternum. He was seen again at the age of 6 months at which time the

stridor seemed to be improving but was still quite pronounced when the patient was placed flat on his back or when he cried vigorously. Direct laryngoscopy at this time showed a tiny soft epiglottis which had a tendency to fold over the glottis on inspiration. The vocal cords moved normally.

CASE 3—W. B. was seen at the age of 7 weeks with a history of persistent crowing respiration first noted on the second day of life. At that time he had been placed in an oxygen tent because of slight cyanosis and since an X-ray examination of the chest showed a supposedly enlarged thymus he received two X-ray treatments, but without benefit. The stridor had persisted and he had not taken his feedings well. When examined at the age of 7 weeks a loud crowing sound accompanied by retraction of both the suprasternal notch and the lower sternum was noted with each inspiration. He was moderately undernourished but hyperactive. Direct laryngoscopy revealed a small epiglottis which was occasionally drawn downward and collapsed during inspiration. During three weeks of observation there was no essential change in his condition.

CASE 4—E. H. had had noisy and difficult breathing since birth. The noise, heard during inspiration was most pronounced when she was flat on her back. She also had some difficulty in taking feedings. The infant had received two X-ray treatments for questionable thymic enlargement, one at 1 week and the other at 4 weeks, both without benefit. When she was examined at 2 months a loud inspiratory wheeze or stridor was noted along with retraction of the lower portion of the sternum. These symptoms were somewhat relieved by protruding or extending the chin. The jaw was questionably shortened. Direct laryngoscopy revealed a limber epiglottis which on inspiration folded together and was drawn into the glottis, causing definite obstruction.

CASE 5—R. S. had had difficulty with respiration since birth and had had three X-ray treatments within the first ten days of life since a roentgenogram of the chest had been interpreted to show an enlarged thymus. However the stridor persisted and gradually became worse. When seen at the age of 2 months a well defined inspiratory stridor was noted which was considerably relieved by placing the patient face downward. Definite retraction of the sternum accompanied each inspiration. Direct laryngoscopy revealed a small short curled epiglottis which was retracted toward the larynx with each inspiration. When the epiglottis was engaged with the laryngoscope the vocal cords were seen to have a normal range of motion with no abnormality. When the epiglottis was held forward the crowing and stridor ceased.

CASE 6—S. B. was sent to the hospital at the age of 4 months with a diagnosis of enlarged thymus. She had had a low pitched inspiratory wheeze since the age of 3 weeks. Direct laryngoscopy at 4 months revealed an excessively flexible epiglottis with medial contraction of the arytenoids on inspiration. Both vocal cords were visualized and noted to have normal structure and function.

CASE 7—M. W. was noted to have a stridor at the age of 10 days. This had persisted and the patient presented a mild feeding problem. X-ray examinations of the chest at the age of 6 weeks were negative for enlargement of the thymus. When seen at the University Hospital at the age of 3 months inspiratory stridor was present and laryngoscopy revealed that the right arytenoid was collapsed anteriorly and with each inspiration the left arytenoid would also be pulled anteriorly. Vocal cords and epiglottis were normal.

CASE 8—R. D. began at the age of 10 days to have stridor and difficulty in respiration. When seen at the age of 1 month the crowing inspiratory sounds were obvious. There was no retraction of the sternum but a suggestive slight cyanosis was noted. Direct laryngoscopy revealed no significant evidence of acute infection. The epiglottis was normal in curvature but lacked sufficient cartilaginous support, so that with each inspiration it was retracted into the vestibule.

¹⁰ McKenzie, D. Congenital Laryngeal Stridor with Dysphagia. *J. Laryng. & Otol.* 40: 255 (May) 1925.

CASE 9—A W was noted to have a suggestive obstruction to respiration during the first three days of life. This subsided somewhat, but she had some difficulty in eating. At the age of 1 week direct laryngoscopy revealed that the epiglottis was slightly increased in size and had a minimal horseshoe appearance. During normal respiration no signs of abnormality were present but when the child cried there was a moderate inspiratory sudden swing of the epiglottis over the glottic chink. The larynx was otherwise normal.

CASE 10—A W C, aged 2 months, had had episodes of difficult breathing and a peculiar grunt since birth. This had frequently been noted just after the child had gone to sleep. The difficulty seemed to be inspiratory with a slight retraction of the lower part of the sternum and occasionally an expiratory rattle. A noisy gurgling respiration was noted but there was no difference between inspiration and expiration or any retraction. The laryngologist thought the epiglottis was shorter than normal but he could see no abnormal flaccidity. Although this case is not clear, the symptoms were largely those of laryngeal stridor and were attributed to moderate relaxation of the supraglottic structures.

CASES IN WHICH LARYNGOSCOPY WAS NOT DONE

CASE 11—A U had a crowing inspiratory sound first noticed at the age of 2 weeks. He had had several minor choking spells, but during his fifth week three severe episodes of choking occurred. He was then referred with a diagnosis of laryngismus stridulus. Physical examination revealed the stridor and a questionable short mandible. It was thought that the choking spells were due to eating too fast. X-ray examinations of the chest showed questionable moderate enlargement of the thymus but no significant degree of tracheal compression.

CASE 12—A W L was seen at the age of 7 weeks chiefly because of a lumbar meningocle with associated paralysis of legs and loss of sphincter control but in addition he had so had wheezing respiratory sounds, noticed since the mother had first seen him at the age of 10 days. This wheeze was not noticed at night or when he was placed on his stomach. Examination revealed the typical inspiratory sounds of congenital laryngeal stridor.

COMMENT

In the study of a patient with chronic stridor a careful history and complete physical examination are essential. Study for thymic disease may be made by fluoroscopy and by films of the chest and neck according to the method of Pancoast and Pendergass.¹¹ It might be considered axiomatic that any stridor in infancy should be investigated by direct laryngoscopy.⁸ According to Tucker¹² the indications for direct investigation of the infant larynx are (1) symptoms of difficulty in phonation, including aphonia and croupy cough, and (2) symptoms of difficulty in breathing, including stridor, dyspnea and wheezing, with evidence of laryngeal obstruction as manifested by indrawing of the suprasternal notch and the tip of the sternum.

Although congenital laryngeal stridor is the most common cause of stridor in early infancy, other conditions may be encountered. However, no attempt will be made to discuss in detail these various conditions, which must be considered in the differential diagnosis of chronic stridor in infancy.¹³ Various congenital anomalies, such as a small glottic lumen, congenital web

below the glottis and papillomas have been observed, while congenital malformation of the heart associated with rapid respiration and cyanosis has been mistaken for thymic disease. Micrognathia or macroglossia may cause obstruction. Spasm of the laryngeal muscles in tetany may be sufficient to cause noisy respiration. It may be emphasized that simple enlargement of the thymus is rarely a cause of respiratory difficulty. Thymoma or other mediastinal tumor, hypertrophic laryngitis and tuberculous bronchial nodes may produce such symptoms. Adenoid hypertrophy may produce a snoring respiratory sound and persistent cough due to the nasopharyngeal secretion entering the larynx. Perilaryngeal disease, such as retropharyngeal abscess, peritonsillar abscess and cervical abscess may easily produce stridor. A foreign body should always be considered especially with the history of an explosive type of cough, while diphtheria and laryngotracheobronchitis may have to be considered in older infants showing signs of acute infection.

Since the symptoms of congenital laryngeal stridor usually disappear spontaneously during the second year, no active treatment is necessary. However, the infant is usually more comfortable and less bothered by respiratory embarrassment if kept on the side or on the face. Patients with congenital laryngeal stridor seem unusually susceptible to respiratory infections and require special care during them. In severe cases tracheotomy may be required. Since infants with congenital laryngeal stridor have some dysphagia, the volume of the formula offered should probably be reduced as much as possible. Iglauer¹⁴ has reported a case in which epiglottidectomy was done with relief from symptoms.

SUMMARY

Congenital laryngeal stridor, the most common form of stridor in infancy, must be differentiated from other congenital abnormalities which interfere with respiration, such as a small glottic lumen, congenital web below the glottis, micrognathia, macroglossia, laryngeal papilloma and cysts. Laryngeal spasm, perilaryngeal abscess, mediastinal tumor, foreign body and at times acute infections are important considerations. However, congenital laryngeal stridor has been most frequently confused with thymic disease, but simple thymic enlargement is rarely responsible for respiratory embarrassment in infancy. The pathology in congenital laryngeal stridor lies in an exaggeration of the infantile type of larynx with undue relaxation of the supraglottic structures. An accurate diagnosis can be made by direct laryngoscopy. The roentgen ray is a valuable aid in the study of these patients but roentgen therapy is without avail. Since this condition is usually outgrown, active therapy is seldom required.

¹⁴ Iglauer, Samuel. Epiglottidectomy for the Relief of Congenital Laryngeal Stridor. *Laryngoscope* 32: 56 (Jan.) 1922.

¹¹ Pancoast, H. K. and Pendergass, E. D. The Modern Roentgenologic Aspects of the Thymus in Infancy. *Am. J. Dis. Child.* 42: 192 (July) 1931.

¹² Tucker, Gabriel. The Infant Larynx. Direct Laryngoscopic Observations. *J. A. M. A.* 99: 23 (Dec. 3) 1932.

¹³ The classification of conditions that need to be considered is reported by Neffson, A. H., and Wishik, S. M. Acute Infectious Croup. *J. Pediat.* 5: 633 (Oct.), 617 (Nov.), 776 (Dec.) 1934.

Podagra—Gout, gicht (German), gota (Spanish), goute (French) and gotta (Italian), respectively, have been adapted from the Latin etymon gutta, which implies a drop or coagulation.

Gout was known to the ancients as podagra, a Greek derivation from pous, foot, and agra, attack. The condition is not surprising since gouty arthritis appears first in the feet in the majority of afflicted persons.—Talbot, Julia H. Gout, New York, Oxford University Press, 1943.

Clinical Notes, Suggestions and New Instruments

THE TREATMENT OF EPIDEMIC KERATOCONJUNCTIVITIS WITH SODIUM SULFATHIAZOLE DESOXYEPHEDRINE

H. S. CRADLE, M.D., CHICAGO AND C. H. HARRISON, M.D., WILKESBARRE, ILL.

In the stress of these war times every man hour is of the hour of victory. The first cause is beyond medical control, but we can do something about the second. Epidemic keratoconjunctivitis has taken an enormous toll of man-hours during the past year for the average loss of working time incurred in each case is from fourteen to eighteen days. Consequently any measure that can reduce such wastage is worth trying, even though it may not be uniformly successful. On that basis we are reporting the use of a new therapeutic measure that in our hands has proved worth while. It is realized that the number of cases is small that the results are only those of clinical observation and that the accurate serologic proof is missing.

Two years ago Turnbull of Los Angeles developed a stabilized solution of sodium sulfathiazole and a vasoconstrictor for the treatment of upper respiratory infections; this solution was later modified for use in ophthalmology. Our interest in the application of the ophthalmic solution in the treatment of epidemic keratoconjunctivitis was a result of a personal communication with Dr. George R. Hazel of the Department of Clinical Research, Abbott Laboratories, who supplied the preparation to us. The solution contains 1 per cent sodium sulfathiazole stabilized by 0.5 per cent of sodium sulfite to which has been added 0.1 per cent of desoxyephedrine. It is stable, nonirritating and buffered to a pH of 9.0. The toxicity is low, the lethal dose for mice being approximately 100 mg. per kilogram of body weight. In ophthalmic practice the solution is used as eye drops. It has been administered by H. S. Gradle as two drops in each eye three to five times in twenty-four hours, by G. H. Harrison as one drop in the affected eye every waking hour. In all cases the treatment was continued for a reasonable period of several weeks after the acute phase had subsided. It produces a mild smarting sensation that disappears within a minute or two.

The cases were observed in four distinct and separate series:

1. Those seen in private practice by Dr. H. S. Gradle.
2. Those seen at the Illinois Eye and Ear Infirmary by Dr. H. S. Gradle and members of the staff.
3. Those seen in industrial practice by Dr. G. H. Harrison.
4. Those seen in private practice by Dr. G. H. Harrison.

The total number was an even 50 of which 43 have been followed upward of four weeks. As diagnostic criteria the following findings were considered:

1. Acute conjunctivitis with conjunctival and periorbital edema and/or pseudomembranes and/or occasional petechial hemorrhages of the conjunctival surface.
2. Preauricular or submaxillary glandular swelling and/or tenderness.
3. Presence of monocytes in conjunctival scrapings and absence of causative pyogenic organisms.
4. Characteristic corneal involvement.
5. Little or no conjunctival secretion and that of a purely serous type.

At least three of the aforementioned factors were considered necessary for a positive diagnosis. The advance or recession of the pathologic process during the course of treatment was based purely on clinical observation. Unless specific indications were present no other medication was used except sodium sulfathiazole desoxyephedrine.

We have the definite impression that there are three clinical phases to epidemic keratoconjunctivitis. The first is the stage

of active conjunctivitis with concurrent symptoms. In the second stage there are no conjunctival subjective symptoms but the conjunctiva is still injected and highly edematous and during this stage the corneal infiltrates are most apt to appear. In the third stage the conjunctiva is pale but the corneal involvement persists. Stages 1 and 2 merge into each other without any sharp dividing line. It is probable that during stage 2 infectivity disappears but that is now the subject of investigation with controls by G. H. Harrison. It is our definite clinical impression that under the use of sodium sulfathiazole desoxyephedrine the time of stage 1, which untreated runs from fourteen to eighteen days, is reduced to three to seven days. With other forms of treatment in our experience stage 1 runs its full course. Owing to the lack of controls we are not able to say whether stage 2 and stage 3 are materially influenced by the solution although we have the impression that corneal infiltrates are fewer and thinner than in cases treated by other methods.

CONCLUSIONS

In sodium sulfathiazole desoxyephedrine we have a new medication that is harmless to the ocular tissues. It appears to be of great value in epidemic keratoconjunctivitis and reduces the time of the acute conjunctival aspect to three to seven days. It does not seem to prevent the appearance of corneal infiltrates but we have the impression that when infiltrates do appear they are less numerous and less severe than in untreated cases. The subjective discomforts of epidemic keratoconjunctivitis disappear under this treatment with amazing rapidity.

55 East Washington Street

FAMILIAL SYRINGOMYELIA

COLONEL CHARLES R. MUELLER
MEDICAL CORPS ARMY OF THE UNITED STATES AND
MAJOR SAMUEL J. SUGAR
MEDICAL CORPS ARMY OF THE UNITED STATES

Recently we had an opportunity to study four brothers in a family each disabled by a disorder of the lower extremities characterized by (1) exaggerated callus under the great toe, insidious in appearance, (2) progressive ulceration at the site of the callus eventuating in amputation at various levels and (3) anesthesia of varying extent in the part involved.

The condition reported herewith is variously known as familial neurotrophic osseous atrophy,¹ status dysraphicus-mielodysplasia,² and syringomyelia.³ No definite causative agent has been disclosed. In the cases under discussion the familial background is striking. Four male siblings and three male relatives have similar if not the same disease.

FAMILY HISTORY

All the members of the family investigated were born in Scotland. The father of the four men who now have the disease died at the age of 52 of paralysis following sleeping sickness. He is not known to have had any disorder of the feet. The mother at 51 is living and well. Her brother and one nephew had amputations of the leg because of gangrene of the foot. Another nephew was discharged from the British army because of chronic ulcer of the right great toe. A daughter is living and well without symptoms of disease of the extremities.

The brothers described here were all of fair complexion with light brown hair, brown eyes and of medium stature ranging in height from 5 feet 4 inches to 5 feet 8 inches.

From the Medical Service, Lovell General Hospital, Fort Devens, Massachusetts.

1. Smith, E. M. *Familial Neurotrophic Osseous Atrophy*. J. A. M. A. 102: 593 (Feb. 24) 1934. Kramer, D. W. *Manual of Peripheral Vascular Disorders*. Philadelphia: Blakiston Company, 1940.

2. Mulvey, B. E., and Riely, L. A. *Familial Syringomyelia and Status Dysraphicus*. Ann. Int. Med. 16: 966-994 (May) 1942.

3. Fuchs, A. *Ueber den klinischen Nachweis konzentraler Detekt bei Lungen in den unteren Rückenmarkabschnitten (Mielodysplasia)*. Wien. med. Wchnschr. 9: 21-22, 2262, 1909.

4. Schleinger, H. *Die Syringomyelie*. Monograph. ed. 2. Leipzig: Deuticke, 1902.

REPORT OF CASES

CASE 1—J M, a man aged 28, was inducted into the U S Army in February 1941. After a long hike the soldier sought medical care because of a blister under the right great toe. He had noticed a hard callus on the plantar surface of this toe for more than four years. At infrequent intervals the callus

would become ulcerated and drain. There was no associated pain, and the ulcer would heal slowly and spontaneously. With local moist heat and rest, the condition improved so that the patient was able to return to duty. However, the blister soon reappeared, became infected and refused to heal completely, so that prolonged hospitalization became necessary. There was no history of migratory phlebitis or intermittent claudication. The general physical examination except for the foot was essentially negative or within normal limits. Both feet were cool and moist. There was no abnormal pitting on elevating or redness on lowering the feet. The pulsations of the dorsalis pedis and posterior tibial arteries were

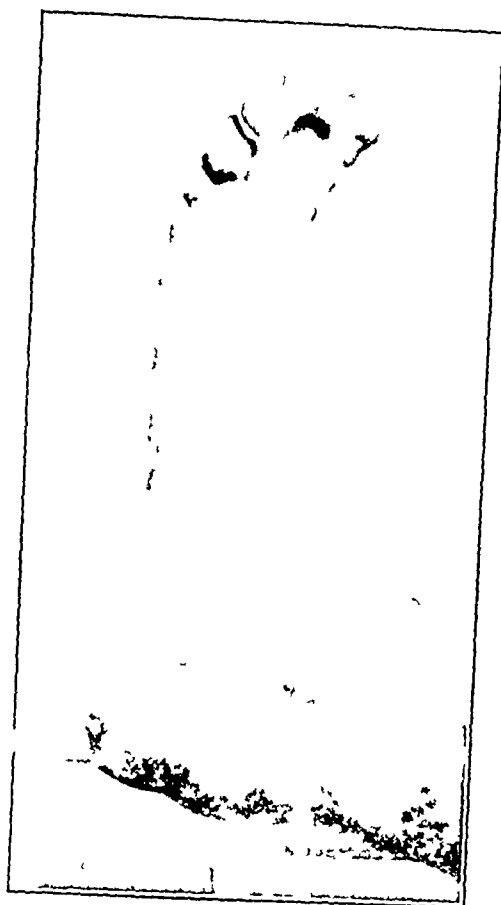


Fig. 1 (case 1)—Ulcer of right great toe developing at site of callus.

easily palpable and of good volume. On the plantar surface of the right great toe near the medial border a small crater shaped ulcer 1 by 2 cm in diameter could be seen (fig 1). This was a dark purple and was surrounded by heavy callus. Roentgenograms of both feet did not reveal any abnormality of the bone. Neurologic examination revealed equal and active achilles and patellar reflexes. Vibration and position sense were intact. There was a definite sensory dissociation confined only to the toes of both feet, light touch was present but pain and temperature sensibility were absent. Circulatory function tests with the oscillometer and intradermal histamine revealed normal circulation and good capillary response. Repeated blood counts, urinalyses, spinal fluid examinations, blood chemistry analyses and Kahn tests all gave negative results or results within normal limits. Roentgenograms of the skull, chest, entire spine and feet were negative. A tuberculin test with 1:10,000 dilution was positive.

His course in the hospital was marked by an extension of the area of sensory dissociation to include both legs as far as the knees. The ulcer stubbornly refused to heal, the callus surrounding it gradually increased in size and the patient was discharged from the U S Army because of physical disability.

CASE 2—G M, the eldest brother, at the age of 21 noticed a hard callus under the right great toe. This became ulcerated, drained and refused to heal. The toe became swollen, discolored and gangrenous, so that amputation became necessary. This was followed by gangrene of the second right toe, which brought about the amputation of that digit. A few years later the patient accidentally stepped on a nail. Chronic osteomyelitis of the right foot developed and amputation of the anterior portion of the right foot was performed. A slough developed on the lateral portion of the amputation stump. This stubbornly refused to heal and recently amputation of the remaining portion of the right foot became necessary.

CASE 3—A M, the youngest brother, at the age of 19 complained of a painful corn on the right little toe. This became swollen, but roentgenograms showed no destruction of the bone. A draining sinus developed in this toe and a segment of bone discharged spontaneously. The sinus then healed, leaving a flail toe. Subsequent roentgenograms revealed that only a small portion of the proximal phalanx remained (fig 2). Meanwhile, a callus had developed on the plantar surface of the right great toe. Occasionally a blister would form in this callus but no ulceration followed. Examination revealed sensory dissociation involving only the right little toe. Dorsalis pedis and posterior tibial arteries were normal. Vibration and position sense were intact. He was inducted into the Army and in a few months had to be hospitalized because of a persistent ulcer of the right great toe.

CASE 4—A M, the fourth brother, at the age of 16 had a slight injury to the left leg when he vaulted a 5 foot fence. The ankle became swollen but not painful and refused to subside over a period of six months. He was studied thoroughly at a hospital in Boston. "There was diminished sensation of the peroneal nerves of left and right" and the condition was diagnosed as syringomyelia. The ankle grew larger without pain, complete and detailed studies failed to reveal a definite causative agent and amputation below the left knee finally became necessary. Following a fall on the stump, an ulcer formed which was very sluggish in healing but eventually disappeared, so that the patient was able to walk with an artificial limb. At this time blood serologic tests, spinal fluid and neurologic examinations of the mother were all negative.

COMMENT

The clinical picture of intractable callus forming under the large toe, tending to erode and ulcerate and to be associated with progressive anesthesia of the affected extremity, is uncommon. When known to affect other male members of the family

tree the diagnosis of syringomyelia or one of its synonyms is always more than likely. The only diseases to be differentiated are syphilis, tuberculosis, osteomyelitis and leprosy. The first three are ruled out on clinical and laboratory evidence. One of us (C R M), who has had clinical experience with leprosy, felt that these cases did not fall into this category.

CONCLUSIONS

1 Four members of a family group present a common disability characterized by callus formation with subsequent ulceration and anesthesia of the great toe.

2 The demonstration of sensory dissociation in three brothers points to syringomyelia as the most likely diagnosis.

3 The disease is further characterized by a tendency to occur only in the males and by a chronic progressive course resisting all forms of treatment.



Fig. 2 (case 3)—Only a small portion of proximal phalanx of right fifth toe remains. This was preceded by a draining sinus and spontaneous discharge of bone.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
HOWARD A. CARTER, Secretary

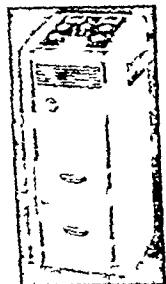
MODEL J GALVANIC GENERATOR ACCEPTABLE

Manufacturer: H. G. Fischer & Co., 2325-2345 Wabasha Avenue, Chicago

The Model J Galvanic Generator is designed primarily for muscle stimulation. It generates five current forms designated by the firm as (1) straight galvanic, (2) galvanic surge, (3) slow sinusoidal, (4) rapid alternating 240 cycle per second and (5) rapid alternating in surges. Four of the currents are for muscle stimulation. Current 2 galvanic surge and current 3 slow sinusoidal are designed for muscles deprived of their nerve supply. Currents 4 and 5 are to be used for stimulation of a muscle with nerve supply intact. Current 1 is employed for ion transfer and the usual direct current applications.

Experiments were made on the denervated and normal tibialis anterior muscles of dogs and monkeys. In addition these currents were tested on several patients in the physical therapy clinic of a medical institution as well as on a group of normal subjects. The tests undertaken showed that:

CURRENT 1—Straight galvanic can be used for any therapeutic procedure requiring a source of direct current. It is suggested that the current be designated direct current.



Fischer Model J
Galvanic Generator

CURRENT 2—This galvanic surge current will produce muscle contractions of the denervated muscle. Contractions secured with this current are either anodal closing contractions or cathodal closing contractions. The current does not alternate from positive to negative with each electrical cycle. Each surge has the same polarity. Some clinicians might favor this type of current for a paralyzed muscle showing a polar reversal. It might also be used where the polar reactions of the direct current are desirable in addition to the muscular contractions. It is suggested that this current be designated 'surging uninterrupted direct current with constant polarity'.

CURRENT 3—This slow sinusoidal current was found to provide adequate muscular contractions of denervated muscles. It is the best of the five currents for the stimulation of the paralyzed muscle. The current form was not checked to determine whether it conformed strictly to the sine law, and in view of former studies it probably does not. However, there is no evidence that it should do so. It is suggested that this current be designated a 'surging uninterrupted direct current with alternate polarity'.

CURRENT 4—This rapid alternating 240 cycles per second current causes a completely fused and sustained tetanus of the skeletal muscle with an intact nerve supply. It can be used for those therapeutic procedures requiring the so called 'tardic stimulation'. It is suggested that this current be designated a 'tetanizing current'.

CURRENT 5—This current rapid alternating in surges, was found to be effective in stimulating the skeletal muscle with an intact nerve supply. All five currents can be utilized as outlined. Three of the five currents on this generator can be classified as absolutely essential, namely Nos. 1, 3, and 5. Current 2 might be considered essential by some clinicians, however, there is no evidence available that such is the case. The Council considers it justifiable to include such a current on theoretical considerations and in deference to those clinicians who might desire to use such a current. Current 4 might well be included although it is not an essential current.

While these currents are effective as outlined, they are not to be considered as ideal by any means. Until ideal currents are developed, this generator should serve a useful purpose.

The Council voted to accept the Model J Galvanic Generator for inclusion in its list of accepted devices.

Council on Pharmacy and Chemistry

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT
AUSTIN E. SMITH, M.D., Secretary

DIETHYLSTILBESTROL

The Council first accepted preparations of diethylstilbestrol in 1942 with the stipulation that in view of the data on toxicity, the acceptance be limited to one year at which time the question would be reconsidered (THE JOURNAL, June 20, 1942, p. 632). The period having elapsed, the Council reconsidered this matter. It was reported that the literature for the past year contained no report on diethylstilbestrol which would affect the continued acceptance of diethylstilbestrol. The drug's toxicity has not become any more apparent, the clinical assurance which comes from more prolonged use increases confidence in the material, and its efficacy is about what it was judged to be when the first preparations were accepted.

The Council voted therefore to extend the period of acceptance of brands of diethylstilbestrol to the end of 1945 (the regular three year period of acceptance) unless in the meantime information becomes available which would necessitate reconsideration of this decision.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

DIETHYLSTILBESTROL (See Supplement to New and Nonofficial Remedies 1942, p. 26)

The following dosage forms have been accepted:

ELI LILLY & COMPANY, INDIANAPOLIS

Ampoules Diethylstilbestrol (in cottonseed oil) 0.5 mg per cc 1 cc

Ampoules Diethylstilbestrol (in cottonseed oil) 1 mg per cc 1 cc

Ampoules Diethylstilbestrol (in cottonseed oil) 5 mg per cc 1 cc

Suppositories Diethylstilbestrol 0.5 mg and 1 mg

Tablets Diethylstilbestrol 0.1 mg, 0.25 mg, 0.5 mg, 1 mg and 5 mg

POISON OAK EXTRACT (See New and Nonofficial Remedies 1942, p. 21)

The following dosage form has been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

Poison Oak Extract with Sterile Diluent 1 cc vial marketed in a package also containing three 0.9 cc vials of sterile diluent consisting of a sterile isotonic salt solution containing procaine hydrochloride 0.5 per cent and chlorobutanol 0.4 per cent.

Fresh leaves of *Rhus diversiloba* dried at temperatures not exceeding 60°C and sieved to remove stems and leaf midribs are macerated with absolute ethyl alcohol using 20 cc of alcohol for each gram of dried leaves. The extract is filtered through paper then diluted to five times its original volume by adding absolute ethyl alcohol.

NICOTINIC ACID AMIDE (See New and Nonofficial Remedies 1942, p. 562)

The following dosage forms have been accepted:

THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO

Tablets Nicotinamide 50 mg

Sterile Solution Nicotinamide 50 mg per cc 15 cc vials. Chlorobutanol 0.5 per cent added as a preservative.

NICOTINIC ACID (See New and Nonofficial Remedies 1942, p. 561)

The following dosage form has been accepted:

THE LAKESIDE LABORATORIES, INC., MILWAUKEE

Ampule Solution Nicotinic Acid 1% W/V, 10 mg per cc 10 cc

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SATURDAY JULY 10 1943

CATARRHAL AND HUMAN SERUM
JAUNDICE

The etiology of the disease or diseases commonly called catarrhal jaundice, infective jaundice or infective hepatitis is not at all well understood. While frequently epidemic, it is not clear how it is spread. There is no evidence that water, milk, food or rodents serve as spreaders. The facts at hand point to droplet infection and close personal contact as the means of spreading. As yet a definite etiologic agent has not been found. This is true also in the case of the jaundice that may follow the injection of human blood, plasma or serum, either when used alone, as in transfusion and in treatment with convalescent serum or as until recently in certain yellow fever vaccines.¹ All the forms of human serum jaundice so far recognized are discussed in full detail in a recent special memorandum by medical officers of the British Ministry of Health.² It appears highly probable that further cases of human serum jaundice are bound to occur from the use of pooled convalescent human serum, especially measles as well as mumps and other forms, and especially after transfusion.³ How human blood products may acquire transmissible icterogenic properties clearly requires investigation. As yet it has not been determined whether there was a history of jaundice in any donor to pooled plasma or serum that caused jaundice.

Findlay and Martin⁴ have produced jaundice in 3 human volunteers by instilling into the nares nasal washings in salt solution from as many patients in the preicteric or early icteric stages of jaundice following injections of yellow fever vaccines. In the 3 vol-

unteers the symptoms, which were altogether like those of spontaneous infectious jaundice, came on after twenty-eight, thirty and fifty days. The volunteers had been immunized eight months previously with a yellow fever vaccine that did not cause jaundice. It seems safe to say without going into details that fault cannot be found with the way this experiment was carried out and that the attacks of jaundice in the volunteers were not due to chance infection but to the introduction of an infective icterogenic agent from the nasopharynx of patients with mild forms of jaundice following yellow fever immunization. Findlay and Martin mention that Voegt⁵ produced infectious jaundice in human volunteers by the oral administration of duodenal washings and by the subcutaneous and intramuscular injections of serum and blood from patients with the disease. Thus far suitable experiments with human material in a variety of animals have failed to produce infectious jaundice. Whether the infectious agency brought to light by the experiments of Voegt and of Findlay and Martin is responsible for the jaundice in yellow fever inoculation and similar conditions, as well as of the ordinary catarrhal jaundice, will have to be determined, if possible, by future research. The experiments do indicate the presence in the donors of the materials inoculated of an icterogenic agent or agents, perhaps of virus nature.

The length of time between the injection of icterogenic yellow fever vaccine and the appearance of the jaundice, namely from sixty to one hundred days or longer, has been cited as evidence that this form of jaundice is different from catarrhal jaundice, in which the incubation period is usually stated to be much shorter. It is rather doubtful whether the true incubation periods in these cases have been determined exactly enough to be reliable. In catarrhal jaundice it is extremely difficult to fix the date on which infection occurs. In both forms of jaundice the incubation period appears to be subject to wide variation. In the cases of jaundice following convalescent serum and transfusion of human blood or plasma the incubation has been prolonged up to one hundred days and more. The apparent absence of secondary cases in postinoculation jaundice has been advanced as another reason for regarding the two forms of jaundice as different. But it appears that secondary cases may occur. Findlay and Martin refer to an instance of probable transmission of infectious jaundice from inoculated British war personnel to un inoculated African war personnel. Then there is the instance described by Probert⁶ and two

¹ The Outbreak of Jaundice in the Army, J A M A 120 51 (Sept 5) 1942

² Homologous Serum Jaundice. Memorandum prepared by medical officers of the Ministry of Health. Lancet 1 83 (Jan 16) 1943

³ Beeson, P. B. Jaundice Occurring One to Four Months After Transfusion of Blood or Plasma, J A M A 121 1332 (April 24) 1943

⁴ Findlay, G. M., and Martin, N. H. Jaundice Following Yellow Fever Immunization. Transmission by Intranasal Instillation, Lancet 1 678 (May 29) 1943

⁵ Voegt, H. München med Wchnschr 89 76 1942 cited by Findlay and Martin

⁶ Probert, S. A. Hepatitis After Prophylactic Serum. Brit M J 2 677 (Sept 24) 1938

children came down with jaundice two months after they had been in close contact with 7 children in whom jaundice developed after the injection of convalescent measles serum. From the foregoing it is clear that there must be, in addition to attempts to solve the problems of the etiologic relationship between catarrhal and homologous serum jaundice, attempts to explain how human blood plasma or serum may acquire transmissible heterogenic properties in order that human blood products may be made safer for therapeutic use.

INTRAVENOUS ALIMENTATION WITH AMINO ACIDS

Among the important problems in the reduction of postoperative mortality after major surgical procedures is the persisting high incidence of pulmonary complications. Walters and his associates demonstrated that pulmonary complications occur with greater frequency in elderly malnourished patients than in others. At the University Hospitals of Cleveland, according to Studley, the mortality rate associated with gastric resection paralleled closely the magnitude of the loss of weight in patients with chronic peptic ulcer. Abbott and Mellors¹ now note that patients with moderate anemia on admission to the hospital, when given 1,000 to 2,000 cc. of whole blood prior to operation often did much better than patients who had normal blood values on admission and who did not receive transfusions. Apparently, a decrease in the plasma volume associated with chronic dehydration can mask anemia and hypoproteinemia.

An unselected group of 14 patients with carcinoma of the gastrointestinal tract or pyloric stenosis due to ulcer were studied. The authors demonstrated that severe dehydration may exist in patients who have shown a moderate loss of weight and a diminished intake of food and fluid even though vomiting has not occurred or has been minimal. Normal hematocrit values, red blood cell contents, hemoconcentrations and plasma protein concentrations may be obtained when dehydration is accompanied by malnutrition. Patients who have diminished total circulating plasma proteins are likely to have in addition, a deficit in tissue proteins in the liver and other organs. This is in keeping with the fact that a negative nitrogen balance exists. The authors therefore emphasize that any replacement therapy should aim at restoring the entire protein deficit of the body and of supplying adequate calories so that the body will not need to derive energy from the breakdown of its own tissues.

Whipple, Hartzell Winfield and Ervin have called attention to the role of hypoproteinemia in patients with wound disruption. Ravdin and his associates noted wound disruption in 70 per cent of dogs operated on in the presence of hypoproteinemia. Ravdin stressed that attempts to restore a normal fluid and electrolyte balance in the presence of hypoproteinemia, without at the same time increasing the colloid osmotic pressure by adding to the plasma, too frequently result only in adding to the extravascular fluid reservoirs. The amino acids are the structural units of tissue proteins, their availability therefore is of primary importance. It would appear more logical to associate wound disruption with the presence and the extent of negative nitrogen balance rather than solely with the concentration of plasma protein. Thus the wound of the patient on whom cholecystogastrostomy was performed for carcinoma of the head of the pancreas disrupted when the concentration of protein was above 6 Gm. per hundred cubic centimeters and the catabolic process was probably at its maximum. Later, severe persistent decubitus ulcers and the severe lesion of the mouth healed rapidly when the plasma protein concentration was around 5 Gm. per hundred cubic centimeters and the body was receiving adequate calories and protein so that a relatively normal anabolic process existed. This rapid healing has also been noted in treating similar patients with repeated transfusions of plasma.

Patients with malnutrition require from 50 to 80 Gm. of nutritionally adequate protein daily and sufficient total calories to protect this. This can be accomplished by parenteral administration of dextrose in adequate amounts so that proteins will not be metabolized solely for body energy but rather be spared so that the constituted amino acids may enter into the synthesis of other tissue proteins. Since it is not practical to administer 1,000 cc. of plasma daily (containing approximately 70 Gm. of protein) a preparation containing amino acids more or less in the proportion in which they occur in a biologically complete protein would seem to be a likely substitute. Such a product has been employed at the University Hospitals of Cleveland without any apparent ill effects. Patients have been maintained in positive nitrogen balance when their sole source of nitrogen has been 15 per cent amino acids given intravenously. The only difficulty experienced was associated with administration of adequate amounts of dextrose. Thrombosis of veins frequently occurs after twenty-four to seventy-two hours of administration of 10 per cent dextrose. This difficulty can be avoided by the employment of the Tocantins method of intrasternal injection. Oral feedings or the method of

1. Abbott W. E. and Mellors R. C. Total Circulating Plasma Proteins in Surgical Patients with Dehydration and Malnutrition. Indications for Intravenous Alimentation with Amino Acids. *Arch. Surg.* 46: 277 (Feb.) 1945.

oral-jejunal tube feedings advocated by Stengel and Ravdin would be the most physiologic and desirable methods when possible.

Estimations of plasma chloride concentrations are likely to give one a false sense of security. A low plasma chloride level determination does not per se give one an idea as to how much isotonic solution of sodium chloride can be administered safely. The only reliable index of the amount which could be tolerated safely is that of the total circulating plasma proteins. If the total circulating plasma proteins frequently fall to a level of clinical importance, it was from 6 to 50 per cent below normal in the reported series.

The authors concluded that amino acids can be employed parenterally as the only source of nitrogen to maintain positive nitrogen balance. When adequate amounts are given along with sufficient calories, an increase in the total circulating plasma proteins can be obtained.

ELECTRICALLY TRANSCRIBED RADIO HEALTH PROGRAMS

On page 755 of this issue of *THE JOURNAL* appears an announcement of electrically transcribed radio broadcasts for use by county or state medical societies or by approved local groups in their communities. On approval of the local medical society, these transcriptions will be lent to radio stations, health departments, voluntary health agencies, parent-teacher organizations or other community groups. The completion of two series of electrical transcriptions with additional series planned, rounds out the radio service of the American Medical Association to the profession and the public.

The Association has just concluded its tenth annual series of radio network presentations over the network of the National Broadcasting Company. The last eight have been in dramatic form. *Doctors at War* has been of special interest and value to the war effort. A script library of more than eight hundred titles for local use is maintained by the Bureau of Health Education and has been extensively used by the local medical societies and local groups approved by them. Many local and state medical societies have contributed excellent scripts to this library, as have health departments and voluntary agencies.

The electrical transcriptions now made available are an effort to continue the service of the medical profession to the public in the field of health education. With depleted ranks of local medical societies, radio broadcasting becomes more difficult even as it grows in importance with wartime health problems facing the people. These radio transcriptions should be widely used in the health education program of the medical profession.

PENICILLIN FAST BACTERIA

According to Schmidt and his associates¹ of Christ Hospital, Cincinnati, penicillin resistant strains of bacteria are developed as a result of unsuccessful penicillin therapy in experimental animals. Four groups of 10 white mice were injected intraperitoneally by the Cincinnati investigators using 10⁻⁴ cc doses of a twelve to fourteen hour broth culture of type I or type III pneumococcus. In the control or untreated group there was a 100 per cent type III mortality within twenty-eight hours. There was a 100 per cent survival in the parallel group given repeated 2,000 Oxford units (10 mg) of penicillin by stomach tube. There was only a 50 per cent survival with half this adequate therapeutic dose (5 mg) and but a 10 per cent survival following a quarter dose (2.5 mg).

Pooled cultures were made from the heart bloods of mice which died from these inadequate doses and injected intraperitoneally into a normal (untreated) mouse. Subcultures from the necropsy blood of this mouse were used to infect 40 new mice. These received the same treatment as the first 40. Thus far the procedure has been repeated for six consecutive groups. By the sixth group passage the pneumococci had acquired sufficient penicillin resistance to be practically unaffected by the originally adequate therapeutic dose, 90 per cent of those given 2,000 Oxford units of penicillin dying within fifty-eight hours. A similar, though less pronounced, penicillin resistance was acquired by type I pneumococci.

To test the permanence of this acquired resistance, the resulting penicillin fast strains were passed daily through normal mice. After the thirtieth serial passage the recovered cultures were still penicillin resistant. The acquired resistance is therefore a fairly stable heredity character in penicillin adapted pneumococci.

Susceptibility of the adapted strains was also tested with sulfapyridine. Infections with penicillin resistant pneumococci responded to sulfapyridine therapy as well as infections with the initial penicillin susceptible parent cultures. This proof that acquired penicillin resistance does not alter sulfonamide sensitivity is the converse of a phenomenon previously reported.² Other investigators have found that the development of sulfonamide resistance does not alter penicillin sensitivity.

Schmidt believes that his data explain the reported clinical failure of penicillin therapy in subacute bacterial endocarditis caused by *Streptococcus viridans*,³ a disease invariably requiring long term treatment. Whether or not the penicillin fast pneumococci can be resensitized to penicillin by the Tsuchiya technique⁴ has not yet been determined.

- 1 Schmidt, L. H. and Sesler, C. L. *Proc Soc Exper Biol Med* 52: 355 (April) 1943.
- 2 Powell, H. M., and Janisson, W. A. *Proc Soc Exper Biol Med* 49: 387, 1942.
- 3 Richards, A. N. *Penicillin*, J. A. M. A 122: 235 (May 22) 1941.
- 4 Resensitization of Sulfonamide Fast Bacteria editorial J. A. M. A 121: 680 (Feb 27) 1943.

Current Comment

THE FACTS ON PROCUREMENT OF PHYSICIANS FROM NEW YORK STATE

A criticism¹ which appears as a Supplementary Report of the Council, Part VIII written by the Chairman of the War Participation Committee of the Medical Society of the State of New York, on April 30, 1943, states

The latest information obtainable from the State Procurement and Assignment Committee is as follows

Number of physicians from New York in service on Feb 1 1943	9 000
Additional listed since February 1	800 to 900
Total	9 800 to 9 900
New York quota for 1942	8 000
New York quota for 1943	2,100
Total	10 100

It is evident therefore that New York has not only met its 1942 quota but is on the way to meeting its 1943 quota

The official records of the Procurement and Assignment Service are derived from the Adjutant General of the U S Army the Surgeon General of the U S Navy and the Surgeon General of the United States Public Health Service Careful tabulations are made from the official lists after the individual physicians' names have been verified against known records On Jan 31 1943 there were 7,460 physicians on duty with the armed forces from the state of New York, while on March 31, 1943 there were 7 676 physicians on duty from that state During the months of February and March 1 035 were called to duty from the entire country Each name credited by the Procurement and Assignment Service represents a physician who left a civilian practice and reported for duty with the armed forces The discrepancy between the figures cited is doubtless due to the difference between the number of physicians who signified their willingness to serve their country in the armed services and the number actually commissioned and on duty

THE NURSE TRAINING PROGRAM

Under Medicine and the War in this issue of THE JOURNAL appears a statement by Surg Gen Thomas Parran relative to the new training program for nurses initiated by the passage of the Bolton Act Under this act nurses' training schools which wish to participate in the program may develop speed-up plans for training nurses—one requiring twenty-four months and the other thirty months During their training the girls will receive tuition, stipends, maintenance fees distinctive insignia and uniforms They will be members of a U S Cadet Nurse Corps Thus they will be provided with a profession, the only obligation they assume is an agreement to make their services available to the government or for essential civilian nursing duties for the duration of the war Girls who were enrolled ninety days before the end of the war will be permitted to complete their training Unanimous action of the Congress in passing the Bolton Act was a recognition of the fact

that the shortage of nurses has reached the danger point Since a high school training is required for entrance on this course, only some 600,000 girls who graduate from high school each year are eligible and more than 10 per cent of all these graduates must enroll in nurse training to reach the goal that has been set for 1943 No one knows better than do the physicians of this country the importance of good nursing service in the care of the sick Every physician can aid the war effort by urging on every high school graduate who comes to his attention the desirability of participation in the nurse training program

MIXED SALIVARY GLAND TUMORS

In a recent review of his extensive observation on mixed tumors of the salivary glands, McFarland¹ points out that the long delay in what is regarded as recurrence of these tumors after removal may lead to the belief in the meantime that treatment has been successful 'when no good at all has resulted' By 'no good at all' he obviously means so far as permanent cure is concerned because the delay in recurrence cannot but be of benefit to the patient, even if he has not been cured In view of the apparent recurrence of mixed tumors even twenty, thirty or forty years after operation, McFarland asks 'Is any patient, once the victim of such a tumor, ever cured?' One answer to this question would be that certainly at least some patients remain practically cured until they die Here it should be noted, as explained by McFarland, that not every case of a second tumor is a recurrence due to incomplete removal of the first tumor The probability that new, independent tumors may appear in the same region sooner or later after removal of a tumor can never be excluded In view of the accepted rarity of metastasis in these tumors, it is of interest to note that recently Mulligan² reviewed 21 cases in which autopsies revealed metastases in the lungs, the liver and other places McFarland states that after a special study of the results of radiotherapy of mixed salivary gland tumors he did not find a single case in which any real benefit had been obtained from x-rays or radium, and consequently he expresses the belief that it seems useless to attempt to control or modify the growth of these tumors or to postpone recurrence by the use of these agents This statement and others somewhat similar apply to radiotherapy as practiced in the past Details of the treatment are not given, possibly in many cases it may have been wholly inadequate Forms of carcinoma regarded as radioresistant have been found to yield to new methods of radiotherapy, and the possibility that new and improved methods of radiotherapy of mixed salivary tumors at least in certain cases, may prove to be of value should not be overlooked These tumors are a challenge to surgery and to radiation neither one of which can be regarded as having reached the limits of its usefulness

¹ McFarland Joseph The Malignant Mixed Tumors of Salivary Glands Surg. Gynec. & Obst. 76 23 (Jan) 1943

² Mulligan R. M. Metastasis of Mixed Tumors of the Salivary Glands Arch. Path. 35 357 (March) 1943

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

ARMY

FEMALE DIETITIANS AND PHYSICAL THERAPY AIDES IN MEDICAL DEPARTMENT OF ARMY

Under an act approved on Dec. 22, 1912 the Congress authorized for the duration of the war and for six months thereafter the employment in the Medical Department of the Army of such female dietetic and physical therapy personnel as are considered necessary by the Secretary of War. Regulations have recently been issued under which such appointments will be made (8 Federal Register 7525 June 8, 1943). According to these regulations the director of dietitians or of physical therapy aides will hold the rank of major, a chief dietitian or chief physical therapy aide the rank of captain, a head dietitian or head physical therapy aide the rank of first lieutenant and a dietitian or physical therapy aide the rank of second lieutenant.

Original appointments will be made in the grade of dietitian or physical therapy aide except original appointments made in theaters of operation outside the United States, in which case appointments will be made in such grades as the Surgeon General may deem appropriate. The director of dietitians and the director of physical therapy aides will be designated as such by the Secretary of War for a period of four years, unless sooner terminated. Application for appointment should be made to the Surgeon General who will furnish the necessary blank forms. The same regulations as to marital status will apply to dietitians and physical therapy aides as apply to Reserve nurses, and the same physical standards will be required as are required for appointment in the Army Nurse Corps. Appointments will not be made after the applicant has reached her forty-fifth birthday.

An applicant to be eligible for appointment as a dietitian must have a bachelor's degree from an approved college with either a major in foods and nutrition or in institutional management. In addition she must have completed a training course for dietitians approved by the Surgeon General. Two years of experience in a hospital approved by the Surgeon General may be substituted for the training course but only in case the experience includes diet therapy, planning adequate menus, supervising employees in food preparation and service, controlling food costs, and ordering food supplies and equipment. One year of such experience must have been within the past ten years.

The minimum requirement for appointment as a physical therapy aide will be completion of two years in an approved college with major emphasis on physical education or biologic science, or graduation from an accredited course of nursing, and in addition the applicant must have completed a training course in physical therapy approved by the Surgeon General.

Female dietitians and physical therapy aides employed by the Medical Department of the Army in the continental United States prior to March 31, 1943 may be appointed in the Medical Department of the Army if they meet the physical requirements, are recommended by the commanding officer of the hospital as being suited to the military service and have had training and experience acceptable to the Surgeon General. Similar provision is made for the appointment of female persons employed by the Medical Department in a civilian status as dietitians or physical therapy aides in overseas hospitals prior to March 31, 1943.

An applicant otherwise qualified will be authorized to appear at her own expense at the nearest army station having adequate facilities for completing a final type physical examination. The first assignment of a dietitian or physical therapy aide will

ordinarily be made to a station in the United States, other than appointments made overseas to afford an opportunity to become familiar with military and medical department procedures. When available quarters in kind for dietitians and physical therapy aides will be furnished, with due consideration for their relative rank and standard items of bedroom furniture will be furnished. Dietitians and physical therapy aides will be subsisted under the provisions of existing regulations for the operation of messes for duty and patient personnel in an officer status.

DR. BERENS NAMED CIVILIAN CONSULTANT TO OFFICE OF THE AIR SURGEON

Dr. Conrad Berens of New York has been named civilian consultant in ophthalmology to the Office of the Air Surgeon, the War Department announced on June 26. A graduate of the University of Pennsylvania, Dr. Berens is chairman of the American Board of Ophthalmology, chairman of the Section on Ophthalmology of the American Medical Association, director of the New York Eye and Ear Infirmary and professor of ophthalmology at New York University and the author of a textbook on ophthalmology. Beginning in 1939, Dr. Berens served on the committee to select and train civilian pilots. He served as a major in the last war with medical research and examining units. Starting at the School of Aviation Medicine at Mitchel Field, New York, his work necessitated assignment to England and France.

FALSE RUMOR CONCERNING ENLISTMENT OF ARMY SPECIALIZED TRAINING PROGRAM TRAINEES

The Headquarters of the Sixth Service Command, Chicago, has requested that steps be taken to counteract all stories that enlisted men assigned to the Army Specialized Training Program will be required to remain in the Army longer than those not in the program.

Reported rumors from various service commands have stated that A. S. T. P. trainees are compelled to remain in the Army from five to ten years after the present emergency. This rumor is completely false in that the term of enlistment is in no way changed by assignment to the A. S. T. P. All A. S. T. P. men are in the Army under the same conditions as any other enlisted man, that is, the government has inducted him for the duration of the emergency and six months thereafter.

CAPTAIN DISKIN RECEIVES AWARD

Capt. Herman E. Diskin of the Army Medical Department has been awarded the Legion of Merit for exceptionally meritorious service in combat on Guadalcanal. The award was made by Lieut. Gen. Millard F. Harmon, commander of the army in the South Pacific, on May 11. Captain Diskin, according to the Kalamazoo (Mich.) Gazette, together with a non-commissioned officer, made a reconnaissance through an enemy-held territory to establish a route of evacuation to casualties of an infantry regiment, which route was a prime factor in the swift evacuation of casualties during a subsequent advance of the regiment. Captain Diskin, who graduated from Wayne University College of Medicine, resides in Detroit and is stationed at Fort Custer, Michigan from November 1940 to January 1942.

NAVY

MALARIAL CONTROL

The Office of Malaria Control in War Areas reports that Anopheles mosquito breeding places at Miami Beach Fla. where most of the hotels and large apartment houses are taken over by the Army, have been reduced to an all time low.

Comdr O J Brown and Comdr J S Barr, MC U S N, were assigned to represent the Bureau of Medicine and Surgery in a conference with representatives of the Surgeon General of the Army and the U S Public Health Service on malarial control.

An engineer from the Office of Malaria Control in War Areas will direct airplane dusting operations to control Anopheles quadrimaculatus breeding in the Potomac River adjacent to war establishments below Washington. An entomologist from this office will coordinate inspection services which will be carried on by the health departments of Virginia Maryland and the District of Columbia in order to check the effectiveness of the dusting operations.

SURGICAL SUPPLIES AND VICTORY KITS

The Medical and Surgical Relief Committee of America 420 Lexington Avenue New York City recently presented the U S S *Alabama* and the U S S *Mobil* with surgical supplies to help equip battle dressing stations and through the cooperation of Victory Kits Inc 276 victory kits were sent to the U S S *Iowa* and the U S S *Mobil* for distribution to rescued seamen and members of the crew needing them.

CIRCULATING LIBRARY OF MOTION PICTURES

The circulating library of motion pictures referred to in THE JOURNAL, June 5 1943, page 381 is not intended for civilian use except under special authorized instances. The Bureau of Medicine and Surgery of the Navy in Washington D C has already received a number of requests for these films which cannot be granted. The director of the division of publications of the Bureau of Medicine and Surgery has suggested that civilian individuals and agencies do not request navy medical films.

NAVY DISCONTINUES HOSPITAL FUND DEDUCTION

President Roosevelt has approved the bill H R 2534 which abolished on July 1 the 20 cent a month deduction from pay of naval personnel for support of naval hospitals. The full responsibility for supporting the hospitals is placed on the government appropriations, as is the case with army hospitals.

NAVY PERSONALS

Capt Paul W Wilson MC U S N, recently gave a series of lectures at the Mayo Foundation Rochester Minn on tropical diseases.

Lieut (jg) Harriet J Davis W-1(S) U S N R has reported for duty to the Bureau of Medicine and Surgery and has been assigned to the naval dispensary in Washington.

CIVILIAN DEFENSE

EMERGENCY MEDICAL SERVICE FOR WAR PLANTS

The majority of American war plants are unprepared to provide emergency medical attention for victims of air raid explosion or other wartime plant disaster surveys by the Office of Civilian Defense and the U S Public Health Service disclose. James M Landis director of Civilian Defense said on June 30 that reports indicate only about one out of five of the larger war plants has made arrangement for hospitalization of war disaster victims and that among smaller plants the proportion is even less. 'No one expects industrial plants to provide facilities themselves to care for victims of large scale disasters,' Mr Landis said but these facilities can be made available in almost every community and war plants should set up before the need for them arises definite plans and arrangements for providing emergency medical attention for their personnel.

In a study conducted by the U S Public Health Service in 1940 it was found that in plants of more than 100 employees only 20.3 per cent of the workers had access to a full time plant physician 27.6 per cent to a part time plant physician while 52.1 per cent had none. In plants of less than 100 employees 94 per cent of the workers had no plant physician service.

Industrial plants are seldom able to provide hospital care for victims of large scale disasters unless they utilize the facilities of the community,' Mr Landis said but all can provide a staff trained and equipped to give efficient first aid to the victims of disasters. As preparation for an emergency all war plants should make definite arrangements for providing expert medical service for injured personnel by utilizing community medical resources organized under chiefs of Emergency Medical Service of the Office of Civilian Defense. In almost every community in the United States community medical facilities have been mobilized for war purposes by the Civilian Defense Emergency Medical Service. These facilities will serve the whole community including its war plants but their effective utilization by industry demands careful advance planning.

Hospital and private ambulances will rarely be adequate to care for the large number of persons who may be injured in a major disaster. In most communities the Emergency Medical Service has made a survey of available ambulances and has arranged to supplement them with converted panel trucks station wagons and other vehicles in the event of emergency. Industrial plants should provide means of converting some of their own vehicles into ambulances and should plan their disaster operations with the chief of the local Emergency Medical Service so that necessary ambulances can be assigned to them when they are needed or their own vehicles used elsewhere in case of an emergency that does not involve their own plant.

To care for emergency casualties hospitals must prepare for them in advance by providing a supply of temporary beds to be set up in corridors and elsewhere and making other advance arrangements. Industrial plants should know under a pre-arranged plan worked out with the chief of the Emergency Medical Service what hospitals are to be used for casualties from the plant and how many can be sent to each thus assuring prompt and adequate attention for those who must be hospitalized. None of these arrangements can be made swiftly after a disaster has struck.

Proper identification of casualties is another thing which must be planned in advance. Official Civilian Defense identification tags and casualty record books are available from the local chief of the Emergency Medical Service. Casualty stations in which injured may receive preliminary treatment before being discharged or sent to hospitals should be established both inside and outside the plant.

Another major problem which must be dealt with in advance of any catastrophe is that of admittance of doctors and other members of the Emergency Medical Service to plants. Industrial plants must depend on community facilities for emergency service but, unless arrangements have been made in advance, doctors ambulance drivers and other workers dispatched by the chief of the Emergency Medical Service or other authorities will be unable to secure entrance into the plants. With the assistance of War Department service commands Mr Landis said personnel of Civilian Defense Emergency Medical Service are being investigated and certified with proper credentials so that they may be admitted to war plants in emergency.

MISCELLANEOUS

NEW PROGRAM TO PROVIDE TRAINING
FOR NURSES

THOMAS PARRAN

Surgeon General, U S Public Health Service

The Bolton Act, approved on June 15, provides "for the training of nurses for the armed forces, governmental and civilian hospitals, health agencies and war industries, through grants to institutions providing such training, and for other purposes" (Public Law 74). The provisions of this war emergency law should aid in alleviating the serious nursing shortage throughout the country.

The act was drafted with the full cooperation of nurse training institutions, hospitals, the nursing profession and governmental agencies. Need for the measure was emphasized by the Health and Medical Committee, Federal Security Agency, of which Dr. Ivan Abel of Louisville, Ky., is chairman. Representatives of many hospitals and leading hospital associations also have urged that some such program be established by the government. The bill was passed by both houses of the Congress without a dissenting vote, and an appropriation sufficient to inaugurate the program has been approved. I hope for the participation of all eligible schools and immediate intensive recruitment of large class sizes.

A decentralized plan of operation has been established by the U S Public Health Service, the agency designated by Congress to administer the act. Training institutions will submit plans meeting the several requirements of the act, and funds will be paid to institutions when plans are approved. Subject only to meeting minimum requirements, full responsibility for carrying out the nurse training program remains as it present, with the training school.

An advisory committee of not less than five members is provided by the act to assist the Surgeon General of the U S Public Health Service in formulating rules and regulations to carry out the purposes of the act. The Federal Security Administrator has named nine persons representing "the nursing profession, hospitals and accredited nurses training institutions."

Members of the Advisory Committee are Dr. Oliver C. Carmichael, president of Vanderbilt University, Nashville, Tenn.; James A. Hamilton, director, New Haven Hospital, New Haven, Conn.; Miss Marion Howell, dean, Frances Payne Bolton School of Nursing, Western Reserve University, Cleveland; Sister Helen Jarrell, dean, Loyola University School of Nursing, St. Bernard's Unit, Chicago; Dr. Hyrum Leo Marshall, professor of public health, University of Utah, Salt Lake City; Rev. Fr. Alphonse M. Schwitalla, dean, St. Louis University School of Medicine, St. Louis; Miss Isabel M. Stewart, director, Division of Nursing Education, Teachers College, Columbia University, New York; Miss Margaret Tracy, director, School of Nursing, University of California, Berkeley; Miss Anna D. Wolf, director, School of Nursing, Johns Hopkins Hospital, Baltimore.

The first meeting of the committee was held in Washington on June 25 and 26 (*THE JOURNAL*, July 3, p. 683). Regulations growing out of decisions reached at this meeting will be published promptly.

Student nurses who receive training under the Bolton Act will be members of what the Advisory Committee voted to designate "U S Cadet Nurse Corps." These students will be provided with tuition, stipends, maintenance, fees, distinctive insignia and uniform, including a street uniform. Graduate nurses taking refresher and postgraduate courses provided by the new act as an extension of the "Training for Nurses" (National Defense) Act now in effect will not wear street uniforms.

The law sets forth rather fully the requirements which must be submitted for approval by the institution wishing to participate in the program. The institution has the choice of two speed-up plans for training, one requiring twenty-four months, the other thirty months.

Stipends to students under both plans will be not less than the following monthly rates: \$15 for the first nine months of study,

\$20 for the following fifteen to twenty-one months of combined study and practice, depending on the curriculum of such institution and \$30 for the period following the period of combined study and practice and prior to graduation. The government institutions pay for stipends given students during the first two periods of the course, for maintenance during the first nine months, for uniforms and insignia, and for reasonable tuition and fees throughout the courses of study and training. Institutions pay stipends during the final period of training and provide maintenance after the first nine months.

During the terminal period of training the institution will either afford student nurses under the plan an opportunity to complete their course of training until graduation, paying them a monthly stipend of not less than \$30, or transfer the student for training to some other institution if such training may be credited toward graduation. In the latter case the institution to which the student nurse is transferred agrees to pay her a monthly stipend of not less than \$30 until graduation.

Funds to institutions will be paid quarterly in advance in the amounts estimated in order to enable institutions to carry out the provisions delegated to them by the act. Subsequent allotments can be increased or decreased, depending on how accurate the initial estimates have proved to be.

In return for training in the profession of nursing without cost to themselves, student nurses who enroll as members of the U S Cadet Nurse Corps agree to make their services available to the government or for essential civilian nursing duties for the duration of the war. Any student nurse who has enrolled since Jan. 1, 1941 in a school of nursing participating in the federal plan is eligible to join the corps.

Students who enrolled in the corps ninety days prior to the end of the war will be permitted to complete their training. Thus, members of the corps need not fear that their training will terminate before the course is completed.

The shortage of nurses has reached the danger point. Civilian hospitals are carrying peak loads. Some of them have closed units because they are unable to secure sufficient numbers of nurses. In industrial boom areas, nurses are needed for hospitals, war plants and public health services. Health agencies in all areas report a critical shortage of nurses.

To reach the 1943 goal of 65,000 new student nurses, which is actually somewhat short of the real need, more than 10 per cent of the approximately 600,000 girls graduating from high school each year must be secured.

In the new training program student nurses will be provided with a lifetime profession and at the same time have the satisfaction of gaining recognition for rendering a national war service.

SURGICAL MISSION TO RUSSIA

At the close of the Hunterian Oration before the Royal College of Surgeons of England on May 26 the President, Sir Alfred Webb-Johnson, admitted two new honorary fellows: Col. Elliott C. Cutler, Moseley professor of surgery at Harvard University and chief surgical consultant to the United States Army, and Dr. W. G. Penfield, professor of neurology and neurosurgery at McGill University, Montreal. These two surgeons, with Col. Loyal Davis of the U S Army, will be taking part in the forthcoming Anglo-American Surgical Mission to Russia. The British section, which is proceeding under the joint auspices of the British Council and the Medical Research Council, will consist of Surg. Rear Adm. G. Gordon Taylor, Major Gen. D. C. Monro, professor of military surgery at the R. A. M. College, Milbank, Mr. E. Rock Carling and Mr. R. Watson-Jones. The aims of the mission are to study the results of war surgery in Russia and to explore the possibility of extending medical relationships between the two countries. During the visit to the Soviet Union Surg. Rear Adm. Gordon Taylor, the senior vice president of the Royal College of Surgeons, will admit to the honorary fellowship two Russian surgeons: Dr. Nikolai N. Burdenko, director of the Operative Surgery Institute, Moscow University, and surgeon in chief to the Red Army, and Dr. Sergei S. Yudin of the Sklifassovski Hospital for Traumatic Diseases, Moscow.

SOVIET PATRIOTS RESTORING PUBLIC HEALTH SERVICES

GREGORY SHAKHON

I conversed recently with Nadzhdia Demidova, just back from Krasnodar, whither she was delegated by the Council of People's Commissars, Russian Soviet Federated Soviet Republic, to supervise the registration of public health service in liberated territory. She spent three months there.

Thanks to the united effort of local public health workers," Demidova said, and extensive cooperation of the local inhabitants, we succeeded in a comparatively short time in eliminating to a considerable extent the consequences of terrific destruction and damage caused by forces of occupation to Soviet public health institutions.

According to data cited by Demidova, as a result of three months' effort the following work was accomplished by the end of April in Krasnodar where the majority of the medical institutions were depleted, blown up, burned or converted into stables by Germans. One hundred and fifty-four rural eighteen urban and five children's hospitals received new or restored premises. All rural dispensaries on liberated territory were reopened. Demidova, a veteran worker of the health commissariat, recounted vast damage caused to public health institutions. A new well equipped hospital in the village of Uspenskaya was converted by the Germans into a stable after they robbed it of all equipment. The Gestapo with its terrible torture chambers established headquarters in the Armavir Maternity Home.

Demidova reported a number of facts illustrating the courage and fortitude of Soviet patriots and medical workers who saved much of the property of health institutions and many buildings. The brave personnel of City Hospital No. 2 in Armavir averted destruction of new buildings of the hospital with its 200 patients which Germans retreating under the onslaught of the Red Army were preparing to blow up. Informed of methods of the Hitlerites, many directors of hospitals, sanatoriums, children's creches and mother and child health centers took measures to forestall them and save public property. They gave hospital linen, drugs, surgical instruments, cattle and auxiliary farms to their workers for safekeeping. As the Germans were expelled, all property was returned to the institutions despite the fact that receipts had not been given. This, according to Demidova, was done by Dr. Catherine Fedoseyeva, the wife of a colonel of the Russian Army who fought courageously during the first world war. Dr. Fedoseyeva succeeded the chief physician who left with Red Army units. Despite her 73 years, this aged woman doctor at the cost of heroic effort took every precaution to save scores of sick children undergoing treatment in a sanatorium. They were children of local functionaries who joined the Red Army. Learning that the Germans were planning the slaughter of innocent children, the doctor resorted to a ruse. She destroyed the record cards, isolated the children in a special ward and when the Gestapo agents called they were told that this was the ward for infectious diseases.

When the Germans entered, Dr. Fedoseyeva called on some members of her staff to help preserve supplies of linen, instruments, drugs and cattle. Thus she saved fifteen cows.

The people of the village of Labinskaya tell with pride about the chief doctor of the local hospital, Maria Dyakova, who risking her life saved 250 Soviet citizens doomed by Germans to death. Numerous examples, said Demidova, can be cited of equal courage among Soviet health workers in Krasnodar.

After the German retreat these patriots set to work with redoubled energy to restore the health services. They were short of linen, instruments, furniture and equipment for hospitals and children's institutions. Active groups left in town organized a collection of these articles from the population. Simultaneously hygiene inspectors made rounds of all homes

to see if there were any sick. A number of cities—Armavir, Krasnodar, Kropotkin, Maikop, Labinskaya—were infected with typhus and other diseases. Provision of hospital accommodations for all sick, energetic work of antiepidemic squads sent to the center for reopening of dispensaries, polyclinics of hygiene and antiepidemic centers, bath houses and laundries, combined with a number of prophylactic measures brought desired results. Already in April there were no epidemics, which had been widespread during the German occupation.

MEDICAL AND SURGICAL RELIEF COMMITTEE

The St. Paul chapter of the Medical and Surgical Relief Committee of America recently shipped by diplomatic pouch to the Soviet Red Cross 8,000 sulaguanidine and 9,000 sulthazole tablets.

Five emergency medical kits for ambulances, a complete operating set, an x-ray unit and a fluoroscope were recently shipped by the Medical and Surgical Relief Committee of America to the French Red Cross for distribution to French hospitals in the North African area.

The committee has been requested to send to China a portable x-ray set complete with generators and photoroentgenographic unit to combat tuberculosis among the Chinese soldiers. There is no special hospital for tuberculous soldiers in all of China, according to Col. Wesley K. C. May of the New Life Movement in China.

The headquarters of the Medical and Surgical Relief Committee of America are at 420 Lexington Avenue, New York City. Among the many volunteers and contributors recently listed by the committee are the Doctors Aid Corps, Atlanta, Ga., and the Woman's Auxiliary to the Georgia Medical Association, to the Hennepin County Medical Society, Minneapolis, to the North Carolina State Medical Association, to the New Hampshire State Medical Society, to the Medical Society of the State of New York and to the West Virginia Medical Association.

THE "BLITZ" ON GUY'S HOSPITAL

Abstract of an article by P. H. F. Bishop, Deputy Superintendent, Guy's Hospital, London, published in Guy's Hospital Gazette, March 20, 1945.

On Sept. 15, 1940, early in the battle of London, a bomb crashed through the dome of Hunt's House. The great staircase beneath was demolished. The only casualty was a medical officer who concussed and bleeding from a badly lacerated scalp, had to be lowered from a fourth floor window down a fireman's ladder. Sixty patients were rescued from the first and second floor wards by the fire escape. From that day on, for many months, access to about two hundred and fifty beds was denied us and for more than a year after the staircase had been partially restored every patient and all the paraphernalia of the wards had to be carried up and down until one of the lifts could be repaired.

Guy's passed through the night of the great fire not wholly unscathed. Though it was left standing, the flames could not be prevented from setting fire to the residential college and to the high voltage x-ray department at the top of the already bomb-shattered Hunt's House. Moreover, of three or the few high explosives that fell in London that night, one did irreparable damage to the surgical block, another by bursting in a subway reproduced many of the curious phenomena resulting from blast in a confined space, and the third smashed scores of windows in that glass house, the dental department. Fortunately, once again there were only minor casualties. All the patients had to be evacuated by ambulance to the country, and finally all of the staff but twenty and some of the more valuable and portable pieces of equipment were removed to places of comparative safety. Thus for the first time in its history, Guy's closed its gates to the sick for a few brief hours. Next morning, however, the dauntless outpatient could be seen pick-

ing his way through the debris to consult his doctor. The night had brought excitement, danger and damage but also miraculous escape, and in the aftermath came in expression of friendship in need, for the high voltage x-ray plant was replaced from across the Atlantic and installed in the Guy's U. S. Army hospital at Seel.

On the third historic night of April 16 a canister of incendiaries emptied its bombs over the hospital. Everything that could be moved was taken out of the burning building. Portraits of eminent ancestors were torn from the walls of the fine eighteenth century mahogany staircase, chairs and tables carried from the governors' committee room, personal belongings rescued from the superintendent's house, files and records taken from the counting house and x-ray equipment was gently disentangled from the surgical radiology department until at last there was nothing more to be done.

Guy's admitted many air raid casualties. Except for a few scattered makeshift wards, such as the hall of the message department, the unbombed wing or in L-shaped ward in the surgical block, and later the basement of the new York psychiatric clinic, the use of which was made necessary by the demolition of the staircase of Hunt's House, all patients both civilian sick and air raid casualties were accommodated in one block. In this same building casualties were received, resuscitation was undertaken and in its emergency underground theaters operations were performed.

Cases are received by a student "ambulance teller," who checks the number of stretchers and blankets brought in from each ambulance and enters into his record the Guy's serial number of each casualty and the site of the incident which the ambulance has attended. He issues to each casualty an M. P. C. 47 envelop in which all the case reports are collected and finally dispatched to the Ministry of Pensions Records Office. On this envelop the Guy's serial number has previously been inscribed. His colleague replaces from stock to each ambulance attendant the number of stretchers and blankets brought in with the casualties. In the reception hall the casualty is inspected by the reception officer and his staff of house officers, students, sisters and nurses and is at the same time interrogated by the almoner with regard to name, address and next of kin. Routine antitetanus serum is given at this stage, but otherwise the patient is disturbed as little as possible except to insure that hemorrhage is controlled and fractures immobilized. Relatives or police are directed to the almoner's office. Relatives and friends are offered a "shakedown" for the night until the "all clear" sounds.

The casualty passes quickly to the resuscitation ward, where he is given reassurance, warmth, morphine if necessary and a cup of tea and a cigaret unless an abdominal injury is suspected. At regular intervals the pulse rate and blood pressure are recorded. In more serious cases, unless these become steady and the color improves in about half an hour, a transfusion is given—of blood if the loss of it is evident or surmised, otherwise of plasma. In the early days too many patients were transfused and too much blood was given. More than 2 pints seldom diminishes the operative risks further. Within half an hour or so of the admission of a batch of casualties the surgical officer in command with one or two ward clerks to take notes proceeds quietly on a round of assessment. Patients are disturbed as little and as infrequently as possible and an atmosphere of bustle is discouraged. Clothes are loosened only to give access for adequate examination of injured parts. Fitness for operation is judged on improved color, steady pulse and a systolic blood pressure maintained at about 100 mm for half an hour. Resuscitation is required in the majority of cases only for two to six hours before operation is embarked upon. The surgical officer in command arranges and writes up on the blackboard an order of operations. He seldom operates himself.

Of casualties admitted, from 40 to 50 per cent come to operation. The average time required for each operation is about an hour, which includes undressing the patient under the anesthetic and washing off the ingrained dust of collapsed buildings. In eight hours 30 to 40 cases can be dealt with by four surgical teams. To work longer than this without relief is to lose efficiency. To delay operations beyond this time is to run

increasing risks of sepsis. Thus more than 75 casualties should not be admitted by a hospital disposing of four surgical teams.

The quality of the anesthetic will in some cases determine life or death of the patient. General anesthesia is the rule. Induced by small doses of pentothal sodium, it is maintained by gas, oxygen and minimal quantities of ether. With a low blood pressure spinal anesthesia is dangerous, and local anesthetics are not suitable for gross wounds and multiple injuries.

Soft tissue wounds are treated certainly within twelve hours, mostly within eight. Careful excision followed by packing is preferred to primary suture, which is rarely performed. Distal limb wounds are immobilized in plaster, but shoulder and hip spicas are found too time consuming. Multiple wounds from glass injuries, of which there were a surprisingly large number, are usually dealt with by multiple operators.

Experience underlined two important general principles: speed in operating, often achieved by two surgeons working simultaneously on 1 case, and minimal blood loss with immediate replacement by drip transfusion in the theater or on returning to the ward.

By noon on the following day about two thirds of the night's casualties were evacuated to base hospitals. Cases retained included postoperative abdominal and chest injuries, certain cases of fractured ribs and blast injuries, all severe head injuries, cases in plaster with a precarious peripheral circulation, fractures in extension with blood supply or adequate immobilization in doubt (these cases were often transferred to a Balkan beam, and it was found that, on the whole, fractured femurs did not take kindly to an early second move), and amputations and gross multiple injuries in poor condition.

Less interference in the reception hall, fewer transfusions, less blood, bed rest, dimmed lights, warmth, reassurance, a cup of tea and a cigaret became the rule for the patients. Less bustle, less rigid assignment of duties, less issuing of orders, more reliance on "blitz" matured common sense and individual initiative became the practice for the staff. We worked as a team, not as a platoon.

PUBLIC HEALTH UNDER HITLER

NPD, Germany, April 1, states that apart from military and economic problems a host of medical and above all hygienic questions have been raised as the result of the occupation of the vast eastern territories by the German armed force. Whether the soldier penetrates into a region in order to conquer it or whether he wins a battle there and passes through it, he will always come in close contact with the life of the soil, with its plants, animals and human beings. He cannot avoid this contact even during the most violent fighting, but even less when he is deploying in the terrain preparatory to battle or occupying it after a victorious fight. According to the nature of the subsoil, the soldier enters a "health area" or a "disease area."

According to Transocean, France, of March 23, in order to neutralize the effect of the Anglo-American blockade on the health of the French people a number of factories have been opened with the approval of the government. These are, in the first instance, manufacturing vitamins for children and aged people. Vitamin A, for instance, is manufactured on a large scale at Marseilles from fish liver. The distribution of vitamin is in the hands of the Secours national.

A private informant of *Svenska Dagbladet* of March 24 reports that epidemics are again raging in the Baltic countries. Starving wild dogs come to the Baltic countries from occupied Russia and spread disease, often attacking people. Typhus, which was never properly mastered in many Ostland districts, is again raging violently. Delousing must be strictly observed by travelers, and before crossing Germany's frontier a repeat medical examination is required.

According to the press in Riga, foot and mouth disease is raging around Riga, presumably spread by infected hay imported from the Ukraine.

ORGANIZATION SECTION

OFFICIAL NOTES

ELECTRICALLY TRANSCRIBED RADIO HEALTH PROGRAMS

The Bureau of Health Education announces the first two series of electrically transcribed radio health programs for use of state and county medical societies as authorized by the Board of Trustees of the American Medical Association.

Two sets of transcriptions are ready for local use. They are as follows:

(a) "American Medicine Serves the World at War." This is a series of six programs with the following titles and broadcasters, each broadcast being in interview form, the physician being interviewed by Harriet Hester:

- Health and Sanitation Problems in Newly Established Wartime Communities by H. H. Shoulders, M.D.
- The Treatment of War Casualties by Rear Admiral Harold W. Smith
- Surgical Procedures in Wartime by Edward J. McCormick, M.D.
- Medicine and Public Health in Hawaii at War by Forrest J. Pinkerton, M.D.
- Civilian Medical Care in Time of War by Edward H. Cary, M.D.
- Public Health Programs in Wartime by Warren F. Draper, M.D.

(b) "Before the Doctor Comes," a series of sixteen radio broadcasts in which Drs. Austin E. Smith, Edwin P. Jordan, and W. W. Bauer are interviewed by Harriet Hester or June Merrill on the following topics:

- 1 The Child With Snuffles—The Child With a Sore Throat
- 2 The Child With a Cough
- 3 The Child With Fever
- 4 The Child With Itch
- 5 The Use and Misuse of Prescription
- 6 Dangerous Drugs in the Home
- 7 The Child With Headache
- 8 The Child With Tummy Ache
- 9 The Child With Ear Ache
- 10 What to Do About Cuts and Scratches
- 11 What to Do About Bad Bump
- 12 The Child With Irritable Child

- 13 Growing Pains—Nervous Habits
- 14 What to Do About Bleeding
- 15 What to Do About Foreign Bodies in the Nose, Ear, Throats or Eyes
- 16 Immunization

The electrically transcribed programs can be borrowed by the county medical societies or state medical societies in *complete sets only* if they will make the necessary arrangements with the local radio station. The series "American Medicine Serves the World at War" requires no local participation, since each broadcast is a complete interview recording. The series "Before the Doctor Comes" can be used without local participation in ten minutes of radio time or with local participation in fifteen minutes; in the latter instance full instructions accompany each set of records. There will be no charge for any local use or the records, but groups not of the medical profession must be authorized by the local medical society to use the transcriptions. The only cost to local groups will be a nominal charge ranging from 50 cents to \$1.50 depending on distance from Chicago for return express charges. It is necessary for a successful carrying through of transcription loan projects that loan sets be returned promptly.

Reservations for use of these transcriptions may be filed with the Bureau of Health Education at once specifying date desired. Ten sets of each series are available and will be lent in the order in which reservations are received.

W. W. BAUER

SUMMER HEALTH HINTS

The next three programs for the series of broadcasts over WLS on Thursdays at 2:45 p. m. under the title "Summer Health Hints" will be as follows:

- July 15 Poison Oak or Ivy
- July 22 Keeping Cool
- July 29 Light Summer Meals

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status—H. R. 2935 has passed the House and Senate making appropriations for the Federal Bureau of Investigation, the Federal Security Agency, and related independent agencies for the fiscal year ending June 30, 1944. In the Senate the proviso was eliminated prohibiting the use of any appropriation for the Children's Bureau for the promulgation or carrying out of any instruction, order, or regulation relating to the care of obstetric cases which discriminates between persons licensed under state law to practice obstetrics. The bill then went to conference and the conferees agreed to reinsert the proviso with the following addition: *Provided further* that the foregoing proviso shall not be so construed as to prevent any patient from having the services of any practitioner of her own choice paid for out of this fund so long as state laws are complied with. Thereafter the House of Representatives by a vote of 212 to 152 acquiesced in the recommendation of the conference committee. The Senate likewise agreed to the recommendation of the conference committee. The bill therefore needs only the approval of the President to become a law and will contain the two provisos recommended by the conference committee. H. R. 2996 has passed the House and Senate and awaits the approval of the President making appropriations for the military establishment for the fiscal year ending June 30, 1944. As passed by the House this bill provided

that no appropriation contained in it "shall be available for any expense incident to educating persons in medicine (including veterinary) or dentistry whose instruction in degree-granting colleges or universities as students in such professions cannot be completed in two years or who are not enlisted in the Army of the United States." In the Senate this proviso was deleted from the bill and the House thereafter concurred in the action taken by the Senate. S. 1130 has passed the Senate providing for the care of children of mothers employed in war areas.

STATE MEDICAL LEGISLATION

Illinois

Bill Passed—H. 802 passed the Senate June 30. It proposes to amend the medical practice act by providing that the entry of a decree by any court of competent jurisdiction establishing the insanity of any person holding a license to practice medicine shall operate as a suspension of such license until such time as a committee of physicians shall find that the licensee has been restored to sanity.

Bill Enacted—S. 167 was approved June 23. It provides for the creation of a state board of health to take over the duties of the department of public health.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Nutrition Clinic Study—The National Research Council recently sponsored the visit of a group of scientists to the Nutrition Clinic at the Hillman Hospital Birmingham, to study the work of Dr. Tom D. Spies with a view to determining the possibility of extending corn meal to meet special nutritional needs of the South. The visit was said to be financed by private contributions and the research council. Among the group were Dr. Russell M. Wilder, Washington, D. C., Dr. William H. Schrell Jr., Bethesda, Md., Robert I. Griggs, Ph.D., Elmer M. Nelson and Frank I. Gunderson, Ph.D., Washington, Charles G. King, Ph.D., and Robert R. Williams, Ph.D., New York, and Dr. James S. McLester, Birmingham.

CALIFORNIA

Investigation of Encephalitis—The Weekly Bulletin of the California State Department of Public Health reported that a number of cases of encephalitis in several counties were investigated during April. The ages of the patients ranged from 2½ months to 49 years. Laboratory reports indicated that 1 case was of the severe St. Louis type of encephalitis.

Women's Court Created for Sex Offenders—The San Francisco City Separate Women's Court has been established in the Health Center Building 135 Polk Street, San Francisco, to meet the problem of the professional prostitute streetwalker and other sexually promiscuous women who are arrested by the police department. Prior to the opening of the Separate Women's Court these women were housed in the women's section of the San Francisco City Prison. During their confinement first offenders were placed with habitues and frequently with other criminals, thus affording an excellent opportunity for promoting the maladjustment of the first offender. The objective of the new court is to assist in the segregation of the various cases referred by the police department on the basis of a previous history of sex offenses. First offenders are separated from habitues and criminal cases. The objectives in the Separate Women's Court are to render an entirely individualized case study plan. Every effort is made to provide means for adequate referral of those first offenders who present a potentiality of recidivation and readjustment. Detailed case study work is done by three social service workers assigned to the court. Assembled data are referred to the presiding judge with recommendations for disposition of the case so as best to serve the interests of society and the individual. Persons who present no potentiality are subjected to prolonged confinement in accordance with the provisions of the law dealing with prostitution. Individual quarters are provided for each case under custody of the Separate Women's Court and the cases are held under observational quarantine by the health department for seventy-two hours. During the quarantine medical examination is provided by the health department and a complete social case history is secured by the social workers. If the woman is found to be infected she is referred to the health department quarantine treatment clinic and held under custody of the sheriff's department. If not infected the woman is released from quarantine and a disposition made by the judge of the Separate Women's Court. The personnel of the Separate Women's Court consists of a judge, a medical coordinator, a deputy district attorney, a woman physician, a registered nurse, three social workers, four police officers, one court reporter, one court clerk, a bailiff and two general clerk stenographers. Dr. Richard A. Koch, San Francisco, chief of the division of venereal diseases of the department of health, is medical coordinator. Judge Clarence Morris is the presiding judge in the court.

IDAHO

Personal—Dr. Alan L. Hart, Boise, consultant in tuberculosis for the state department of public health and the Idaho Tuberculosis Association, has been granted a leave of absence by the state department to accept a temporary assignment as a genologist at the induction center for the armed forces in Idaho. —Dr. Charles Sanford Allen, Boise, was recently named medical superintendent of the Nampa State School, succeeding Dr. Charles R. Lowe, Nampa. —Dr.

Paul R. Ensign has resigned as director of the city and county health unit in Boise to accept a position as pediatric consultant of the division of maternal and child health of the Georgia Department of Public Health.

ILLINOIS

New Director of Maternal and Child Hygiene—Dr. Hugo V. Hullerman, deputy commissioner of health and director of maternal child health of the Peoria City Department of Health (THE JOURNAL, July 11, 1942, p. 892), has been appointed chief of the division of maternal and child hygiene of the Illinois Department of Public Health. He succeeds Dr. Fred L. Adair, who was recently called to Washington, D. C., to become chief of the division of medical needs of the civilian food requirements branch of the Food Distribution Administration of the U. S. Department of Agriculture. Dr. Adair had served as chief of the state division since March 1, 1942 (THE JOURNAL, March 14, 1942, p. 907). Dr. Hullerman had been chief of the state division of local health administration when he joined the Peoria department of health.

Chicago

Courses on Electrocardiography—The cardiovascular department of Michael Reese Hospital announces a course on electrocardiography to be held August 16-28 under the direction of Dr. Louis N. Katz, director of cardiovascular research. Designed for the general practitioner, emphasis will be placed on chest leads and on the importance of the electrocardiogram in coronary sclerosis and myocardial infarction. Additional information may be obtained from the Michael Reese Hospital.

Dr. Victor Johnson Joins American Medical Association—Dr. Victor Johnson, associate professor of physiology and dean of students in the division of biological sciences, University of Chicago, on July 1 became secretary of the Council on Medical Education and Hospitals of the American Medical Association. Dr. Basil C. H. Harvey, who retired in September 1940 after thirty-eight years as a member of the faculty of the university, will return to active duty as acting dean. He had been dean of students in the division from its establishment in 1931 and dean of medical students since 1932. Dr. Johnson graduated at the University of Chicago School of Medicine in 1939 and has been a member of the physiology department since 1929. He is co-author with Anton J. Carlson, Ph.D., of "Machinery of the Body."

LOUISIANA

State Medical Election—Dr. Valentine H. Fuchs, New Orleans, was chosen president-elect of the Louisiana State Medical Society at its meeting on May 3 and Dr. Charles C. De Gravelles, New Iberia, was installed as president. Dr. Paul T. Talbot, New Orleans, is secretary-treasurer. The next annual session will be held at New Orleans, April 24-27, 1944.

Personal—Dr. Richard O. C. Green, Alexandria, formerly director of the Rapides Parish Health Unit, has been named to a similar position with the Webster Parish Health Unit succeeding Dr. Edmond G. Klamke, Minden. —Dr. George W. Games, Tallulah, was presented with a certificate of fifty years in the Masonic Lodge by the Grand Lodge of Louisiana and a pin for fifty years' service.

MICHIGAN

Recommend Increase in Dues to State Society—At a special meeting of the Saginaw County Medical Society recently a resolution was adopted recommending that the dues of the state medical society be increased up to a maximum of \$10 a year. It was stated that the increase would be sufficient to provide additional facilities and services requisite to the well-being of the medical profession of Michigan which cannot be supplied on the present inadequate dues. The state dues are now \$12 a year.

Health Program for Imported Jamaicans—The county health department in cooperation with the Saginaw County Medical Society and the state department of health have initiated a concentrated program to prevent the spread of contagious diseases suspected among the Jamaicans who are imported to work in the sugar beet fields, new projects reported June 11. Under a four point program the group will be given x-ray examinations and blood tests in an effort to check tuberculosis and venereal diseases, and stool specimens will be analyzed to detect typhoid and dysentery. It is pointed out that the housing situation is satisfactory because of the new housing at Prairie Farm. A large number of persons, however, are living in houses which are absolutely below standard, it is stated.

MINNESOTA

State Medical Election—Dr Elmer M Jones St Paul was elected president of the Minnesota State Medical Association at its annual meeting, May 17, and Dr Richard R Crammer Minneapolis and Melvin S Nelson Granite Falls vice presidents. Dr William H Condit, Minneapolis is treasurer and Dr Benjamin B Souster St Paul secretary. The annual meeting in 1944 will be held in Rochester at a time to be designated by the council.

Personal—Reginald C Sherwood PhD St Paul food chemist has been appointed by Dr Russell M Wilder as his assistant chief in the civilian food requirements branch of the food distribution administration at the Department of Agriculture in Washington D C, according to the *Journal-Lancet*. —Dr Henry Hutchinson on Moose Lake assistant superintendent of Moose Lake State Hospital for the last five years has been appointed superintendent of the Hastings State Hospital Hastings.

NEW JERSEY

Bank Names Room in Honor of Physician—On May 25 The McBride Room in the Paterson Savings Institution was dedicated to Dr Andrew F McBride Sr chairman of the board of the bank. A feature of the occasion was the unveiling of an oil portrait of Dr McBride painted by James McBev. The new room not only is to be used by the personnel of the bank but will be available for public meetings or a civic cultural and patriotic nature according to the state medical journal. Among the speakers were the Rt Rev Mgr L A McBride brother of the physician C Kenneth Fuller president of the bank Dr Francis H Todd and Dr McBride. The physician is a past president of the Passaic County Medical Society trustee of the Medical Society of New Jersey and in 1929 was president. He is also a member of the House of Delegates of the American Medical Association.

NEW YORK

Symposium on Wartime Nutrition—A group of health agencies sponsored a symposium on wartime nutrition at the Hotel Statler Buffalo June 24. Among the speakers were Drs Edgar C Beck Buffalo on The Normal Diet Donovan J McCune New York The Basic Principles of Diet in the Treatment of Disease Fred L Adair Washington D C The Use and Abuse of Vitamins in Therapy William W Bauer director Bureau of Health Education American Medical Association Chicago Food and the Future.

New York City

Exhibit on Occupational Therapy—Occupational Therapy Its Function and Purpose is the theme of an exhibit at the Museum of Modern Art. The exhibition which opened on June 1 and will continue throughout the summer is sponsored by the American Occupational Therapy Association.

Dr Rhoads on Leave as Director of Memorial Hospital—Dr Cornelius P Rhoads director of Memorial Hospital for the Treatment of Cancer and Allied Diseases has been given a leave of absence to become chief of the Medical Division of the Chemical Warfare Service of the U S Army. Science reports. He will have the rank of colonel. Dr Fred W Stewart pathologist at the hospital has been named acting director and Dr Howard C Taylor Jr assistant.

Workmen's Compensation Investigation—Dr Theodore R Freedman Brooklyn has been restrained from treating workmen's compensation claimants pending the outcome of an indictment for larceny in connection with padding bills for treating these patients according to the New York Times. The action was taken after the physician had admitted he padded his bills bribed state employees exaggerated treatment and participated in the splitting or refunding of fees also solicitation of business and corrupt practices with a licensed representative to whom he paid substantial kickbacks. Dr Freedman was awaiting trial in General Sessions on the larceny indictment the Times stated.

OKLAHOMA

State Medical Election—Dr Charles R Rountree Oklahoma City was chosen president-elect of the Oklahoma State Medical Association at its annual meeting May 11 and Dr James Stevenson Tulsa was inducted into the presidency. Dr James G Edwards Okmulgee is vice president and Dr Lewis J Moorman Oklahoma City secretary. The next annual session will be held at Tulsa in 1944.

Dr John Cowan Named Venereal Disease Officer—Dr John A Cowan health officer of Sioux City Iowa has been appointed venereal disease officer for the Oklahoma State Department of Public Health succeeding Eugene A Gilgissed assistant surgeon U S Public Health Service, who has held the position for four years on loan from the public health service. Dr Gilgiss is being transferred to Austin Texas.

OREGON

Changes in Bureau of Industrial Health—Thomas F Mancuso assistant surgeon U S Public Health Service reserve who has been on assignment to the Michigan Department of Health has been named to succeed Harold T Castberg passed assistant surgeon U S Public Health Service who has been organizing the Oregon state industrial hygiene division. Dr Castberg has been assigned to the California Bureau of Industrial Health, of which he formerly served as acting chief.

SOUTH CAROLINA

Special Society Election—Dr Vivian P Patterson Pryor Hospital Chester was chosen president-elect of the South Carolina Hospital Association at its annual meeting in Columbia on May 26. Other officers include Mr Jacques B Norman Spartanburg president Miss Katharine O Altman R N Lancaster Mrs Lula B Lamar R N Aiken and Mr George W Holman Rock Hill vice presidents and Mr R L Dougherty Columbia secretary-treasurer.

Committee to Investigate Medical Education and Services—Gov Olin D Johnston Columbia recently appointed Senator O T Wallace Charleston to a seven man committee created by the general assembly to investigate medical education and medical services in South Carolina. Two other members of the committee which was given a thousand dollars for expenses were named by the senate two by the house of representatives and two by the president of the South Carolina Medical Association. The committee has been directed to submit its report on or before January 1.

UTAH

Activities at University of Utah—Recent appointments at the University of Utah School of Medicine Salt Lake City include that of Dr Fuller B Bailey as acting professor of internal medicine. The executive committee of the recently appointed school staff now include Dr Bailey and Drs Philip B Price professor of surgery A Louis Dippel professor of obstetrics and gynecology and John A Anderson professor of pediatrics. According to an announcement the medical school which was recently augmented to include four years instruction is now operating in a satisfactory manner. The main portion of the teaching in the clinical years is being done at the Salt Lake County General Hospital which before the teaching program began had about 250 beds. Additional space has now been taken in the infirmary building and the capacity will soon be increased an additional 100 beds. The pediatrics department will be moved from the present hospital and will occupy the first floor of the infirmary building providing a pediatric division of about 60 beds. Medicine will be moved to the second and third floors of the west wing of the infirmary providing for about 80 straight medical beds and leaving room for considerable expansion for surgery and gynecology in the present hospital building. A clinical amphitheater is about to be constructed and money has been approved to enlarge materially the laboratories and the surgical operating rooms and accessory rooms. Quarters have been provided for student laboratories and for a students lounge or rest room where they may study. In addition an adequate library and reading room will be installed in the hospital. An admission center with a casualty ward is being developed on the first floor wing of the hospital near the ambulance entrance making the admitting station more convenient than has heretofore been the case. The administrative portion of the hospital will be placed entirely in the center section of the main floor. A new isolation hospital is to be constructed with federal funds. Clinical pathologic conferences are held once a week for one hour on Friday afternoons and in addition once every two weeks a clinical pathologic conference is held for physicians of the community at which they are requested to present pathologic material and case histories for discussion. The fourth year which is not yet operative contemplates eighteen weeks of election. There is a department of industrial health. Teaching and tropical medicine will be available and the medical school has been approved for medical teaching under the specialized training programs of the army and navy.

VIRGINIA

Physician Fined for Income Tax Evasion—*Southern Medicine and Surgery* reports that Dr. James W. Tipton of Danville was fined \$20,000 by Judge Robert N. Pollard in Federal District Court, May 27, on six charges of income tax evasion. The physician was said to have pleaded nolo contendere to an indictment listing six charges of evading income taxes from 1936 through 1941, during which period Lester L. Lurr, special agent of the internal revenue department, testified he filed improper returns and paid \$1,373.92 when his total liability to the government was \$22,490.99. The medical journal reported that the defense presented no oral argument but requested that a prison sentence be not imposed. Maximum penalty for each of the six counts is \$10,000 fine and five years' imprisonment. Under the law, in addition to the \$20,000 fine, the physician must pay back income taxes amounting to \$27,373.15, plus penalty and interest, which will bring his tax liability to well over \$52,000, it was stated.

Past Presidents' Night—The Richmond Academy of Medicine designated its meeting of May 25 as past presidents' night. There have been fifty-four presidents of the academy since 1890. Dr. Arthur S. Brinkley is now president and other living past presidents all of Richmond, are:

Dr. Stuart McGuire	Dr. Wyndham B. Blanton
Dr. William I. Mercer	Dr. William H. Higgins
Dr. Ramon D. Gurem	Dr. James Morrison Hutchison
Dr. Charles R. Robins	Dr. Robert Linley Gayle Jr.
Dr. John Shelton Horsley	Dr. Carrington Williams
Dr. Alexander G. Brown Jr.	Dr. Frederick P. Fletcher
Dr. William Lowndes Peple	Dr. Rosner W. Miller
Dr. Thomas W. Murrell	Dr. Marvin Pierce Rucker
Dr. James K. Hall	Dr. Austin I. Dodson
Dr. Frederick M. Hodges	Dr. John Powell Williams
Dr. Claude C. Coleman	Dr. William Branch Porter
Dr. Stuart N. Michaux	Dr. Beverly R. Tucker
Dr. James H. Smith	

Five of this group were not present at the special meeting: Dr. McGuire, Dr. Blanton, Dr. Hutchison, Dr. Tucker and Dr. Williams, who is in North Africa.

WEST VIRGINIA

Committee to Study By-Laws—Dr. Robert J. Wilkinson, Huntington, president of the West Virginia State Medical Association, has appointed a special committee to submit a report to the council on the revision of the constitution and by-laws. The committee is composed of Drs. James Howard Anderson, Hemphill, chairman, Frank C. Hodges, Huntington, and James L. Wade, Parkersburg.

Honorary Life Members—At the recent meeting of the West Virginia State Medical Association the following physicians were made honorary life members: Drs. Wessie P. King and George Snyder, Weston, Albert L. Amick, Charleston, John H. Hansford, Pratt, William A. McMillan, Charleston, William C. Camp, Spencer, J. Riley McCollum, St. Marvs, Edwin W. Crooks, Roy Benson Miller, Lonzo O. Rose and Albert L. Wright, all of Parkersburg, Jesse S. Maloy, Shinnston, and Martin F. Wright, Burlington.

GENERAL

Bibliography on Blood and Plasma Storage and Transfusion—The General Electric Company, 5 Lawrence Street, Bloomfield, N. J., has made available a complete bibliography of articles and publications dealing with the storage and transfusion of blood and plasma. The company announces that it will mail copies of this material to any physician who is especially interested in the subject.

Specialty Board Examinations—The American Board of Internal Medicine will hold regional oral examinations in New Orleans, August 10-11. Oral examinations in the subspecialties will be included. Requests for admission should be filed with Dr. William A. Werrell, assistant secretary-treasurer, American Board of Internal Medicine, 1301 University Avenue, Madison, Wis.—The American Board of Otolaryngology will hold its next examination in Chicago, October 6-9, at the Palmer House and the Illinois Research Hospital. Dr. Dean M. Lierle, University Hospitals, Iowa City, is the secretary-treasurer of the board.

Grants for Infantile Paralysis Study—Twenty-eight grants totaling \$354,370 have been made by the National Foundation for Infantile Paralysis to universities, hospitals, laboratories and other organizations in eleven states to continue the fight against the disease. Sixteen grants, totaling \$216,020,

were made for virus and after-effects research. Four of these are on long-term projects being conducted at Yale University, New Haven, Conn., Johns Hopkins University, Baltimore, the University of Michigan, Ann Arbor and the University of Wisconsin, Madison. Twelve grants, totaling \$138,350, were made for various educational programs including the training of technicians in the Kenny method of treatment. Some of these grants include projects for educational work for physicians and the public. The sum of \$2,500 was appropriated for the preparation of a complete bibliography on poliomyelitis. The compilation is being done for the foundation with the aid of the library of the American Medical Association and the John Crerar Library, both in Chicago. The money will be disbursed in California, Connecticut, Georgia, Illinois, Iowa, Maryland, Massachusetts, Michigan, New York, Pennsylvania and Wisconsin.

Special Society Elections—Dr. Frank W. Konzelmann, Wilmington, Del., was chosen president-elect of the American Society of Clinical Pathologists at its annual meeting in Chicago in June and Dr. Walter S. Thomas, Rochester, N. Y., was inducted into the presidency. Dr. Josiah J. Moore, Chicago, is vice president. The Board of Registry of Medical Technologists consists of Drs. Lall G. Montgomery, Muncie, Ind., Israel Davidsohn, Chicago, and Ralph G. Stillman, New York. During the meeting the society presented the following awards: The Ward Burdick Award (*THE JOURNAL*, May 22, p. 245) was given to Dr. Max M. Strumia, Bryn Mawr, Pa., for his work on blood plasma, the gold medal for excellence in scientific exhibit to Dr. Davidsohn for his exhibit on blood groups, the silver medal for excellence in scientific exhibit to Drs. Samuel A. Goldberg, Newark, N. J., Solon N. Blackberg, Chicago, and Percy de Stanley, Union, N. J., for their exhibit on the pathology of arthritis, and the bronze medal for excellence in scientific exhibit to Dr. Sylvester E. Gould, Elouse, Mich., for his exhibit on pathology of trichinosis.—Dr. Herman C. Pitts, Providence, R. I., was recently reelected president of the American Society for the Control of Cancer at its annual meeting in New York. Other officers reelected include Dr. John J. Morton Jr., Rochester, N. Y., and Dr. Frank E. Adair, New York, vice presidents, Dr. Cornelius P. Rhoads, New York, secretary, and James H. Ripley, treasurer.—Dr. E. Arthur Whitney, Elwyn, Pa., was chosen president-elect of the American Association on Mental Deficiency at its annual meeting, May 16, and Dr. Charles Stanley Raymond, Wrentham, Mass., was installed as president. Dr. Neil A. Dayton, Mansfield Depot, Conn., is the secretary.

Wartime Trends in Tuberculosis—There is no evidence from insurance figures that the increased employment of women in industry since the outbreak of the war has adversely affected their tuberculosis death rate, according to the *Statistical Bulletin* of the Metropolitan Life Insurance Company. Longer hours of work, crowded living conditions in war production centers and curtailed food supplies have thus far not interrupted the longtime downward trend of the disease, it was stated. In 1942 the tuberculosis death rate among Metropolitan industrial policyholders was 5 per cent lower than the average for the prewar period 1939-1941. Moreover, during the first four months of the current year, a period of peak industrial activity, the mortality was 5.5 per cent less than for the similar period of 1942. It is an arresting fact that each month's death rate for tuberculosis except one, has registered a lower death rate for tuberculosis than the corresponding month in the prewar period. The bulletin stated that for the general population complete data for 1942 are not yet available, but preliminary figures indicate a similar downward trend. Figures released by the insurance company indicate that white women experienced the largest relative decrease in mortality during 1942, slightly more than 10 per cent from the average rate during the 1939-1941 period. Their death rate from tuberculosis in 1942 was 23.1 per hundred thousand. White males showed a decline of under 2 per cent with a rate of 41.4 per hundred thousand. The bulletin states that at the time of the first world war the tuberculosis mortality among the policyholders was about five times the current figure. The mortality from tuberculosis in 1942 for Negroes had fallen 5 per cent for women and 7 per cent for men as compared with the prewar average. The improvement is gratifying since it has been achieved in the face of increased industrial employment among the Negroes but, on the other hand, the bulletin points out, one must remember the high standard of living that increased employment and income have brought to many of these people.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 29 1943

British Medical Association Representatives Reject Government Proposals for a State Medical Service for All

A representative committee was appointed by the British Medical Association to enter into noncommittal discussions with the minister of health on the Beveridge scheme for a complete state medical service for all persons. The committee was appointed at his request. Discussions have been proceeding for two months and the committee which undertook to report from time to time to the profession has presented its first report. The Ministry of Health put forward tentative proposals for a comprehensive medical service based on central and local administration and the employment of doctors as salaried officers, mainly whole time by a new type of local authority. The representative committee came to the conclusion that further discussion on the basis of the proposals made by the Ministry of Health would be unfruitful. It therefore met the minister of health and told him that though not empowered to commit the medical profession, it believed that the proposals would be contrary to the public interest and unacceptable to the great majority of the medical profession. It therefore asked for its withdrawal.

In reply the minister of health stated that the only government commitment on the subject of a comprehensive health service was that which was outlined by the government in the House of Commons. The government was not committed to any particular form of medical service. His proposals were put forward only as a basis of discussion and he agreed to a reexamination of the whole position. He would proceed to express his conclusions in a paper which would then be open for consideration by the public and the medical profession before final decision by Parliament. The representative committee of the British Medical Association accepted these assurances and decided to continue noncommittal discussions with the minister.

At a mass meeting of the Metropolitan Counties Branch of the British Medical Association the deputy secretary, Dr Charles Hill delivered an address which revealed the objections of the representative committee to the scheme. The minister of health proposed to set up at the center a medical service council three fourths of the members to be nominated by the profession and the remainder by the minister. Locally there would be a grouping of most local authorities for health purposes by means of joint boards. There might be medical membership of these boards but it would probably be small. General practice would be based on health centers where clinical work would be done. Believing that competition for patients under the roof of the center would be undesirable the minister proposed that in the main general practice should be on a salaried basis. Those now in general practice could enter the service as whole time or part time officers. In the latter case they could continue private practice among those who, though entitled to the state service preferred to consult a doctor privately. But new entrants would have no choice. After an initial period as house officer an entrant would receive £2,000 a year for three years. Then he would normally become a principal at a salary of \$3,250 rising by annual increments of \$150 over eighteen years to \$6,000. Expenses including travel would be paid in addition.

Dr Hill asked: Why such hurry? Why was the government pressing forward with such energy one section of the Beveridge proposals? Was it anxious to do something and

found a profession of 50,000 men and women easy to handle? A free profession was to be transmuted into a branch of local government service. Whatever might be thought of the methods of remuneration as a profession they could not accept this. Some of them knew from their experience that the caliber of members of local authorities would not justify the handing over to them of personal domiciliary and other medical practice. The committee had suggested that the only effective way of dealing with the whole problem was to remove it from the ambit of the present discussions and to place it before a royal commission (a commission appointed by the government to investigate certain questions. It takes evidence on them and then formulates conclusions).

New Life Saving Devices at Sea Drinking Water from Sea Water

A satisfactory method of producing drinkable water from sea water has been the subject of experiment for some time. The Ministry of War announces that distillation has proved to be the best method and that all lifeboats and ocean going merchant ships are to be equipped with stills. Three types have been produced by the Department of Scientific and Industrial Research which has been making experiments on behalf of the Ministry of War Transport. One already in production produces half a gallon of fresh water per hour. Thus on a fourteen day voyage the still, working ten hours daily, would produce 70 gallons twice the amount necessary for a lifeboat intended for 40 persons. The still can be worked with either solid fuel or paraffin but it is intended to rely primarily on coal briquettes, which are readily stored in odd corners of the lifeboat supplemented by any wood or waste material in the boat or recovered from the sea. The other two types consume paraffin and are expected to have a higher output in relation to fuel consumption. Their development is continuing, with the intention of offering the shipping industry a choice.

The stills are also to be used for boiling water to make hot drinks, and their heated surfaces will dry wet clothes. The fresh water already carried in tanks in lifeboats will be maintained. In addition the ministry is producing a new type of device made of cotton fabric for catching rain. In a demonstration given in a ship on the Thames it was shown that the stills are simple to work. The ministry is also producing improved life saving waistcoats fitted with rope gear to facilitate rescue portable ladders to enable men in the water to climb into lifeboats, new lifeboat ration biscuits with an increased fat content and side seat extensions to provide facilities for lying down.

Fitness Center for Miners

Since the outbreak of war much attention has been given to the treatment and the after-treatment of injuries which has become more specialized and is carried out at organized centers. The latest example is the opening at Gleneagles in Scotland of the fitness center for miners. It is an indication of the importance attached by the government to the waste of physique and the need for a scientific system of rehabilitation after injury or illness. The experiment is being watched not only by people interested in coal mining but by those concerned with the replacement in industry of men discharged from the forces. The problem of rehabilitation has been studied by the Department of Health for Scotland in conjunction with the Miners Commission.

It has been shown that the average period of disability after fracture—which form a large part of the disabling injuries of miners—can be halved and the number permanently disabled reduced by methodical treatment. There was a gap to be filled between the time the patient leaves the hospital and when he is fit to return to work. The idea is to create the will to get

well and the desire to resume work. For this it has been found advisable to get rid of the atmosphere of the hospital ward. Hence there are no nurses in the rehabilitation center and no hours of idleness. The patients are examined carefully and graded according to the activity of which they are capable. Whatever grade they are allotted to they do a full day's work, their remedial exercises being adapted to their various needs. Into this treatment physical therapy, occupational therapy and physical and vocational training and massage enter. Entertainment is considered important and is provided by a cinema and in other ways, including talent supplied from among the patients themselves. The average duration of the fitness treatment is about six weeks. Those who have passed through the center are loud in their praises of it.

AUSTRALIA

(From Our Regular Correspondent)

May 27, 1943

The Australian War Pharmacopeia

Although Australia today is reasonably well supplied with most essential drugs for medical purposes, it is of the utmost importance that every effort should be made to conserve present supplies. This has been partially achieved by widespread appeals to medical practitioners to avoid prescribing medicines unless medicinal treatment is especially indicated, and emphasis has been placed on the necessity for introducing uniformity into prescription writing.

In pursuance of these principles the Medical Equipment Control Committee has recently published an Australian War Pharmacopeia which, it is hoped, will supersede all other standing pharmacopeias throughout the commonwealth during the war period. The selection of medicines included in this work covers most ordinary therapeutic requirements, but nonessential drugs have been eliminated and those which are in short supply or are more urgently needed in different phases of the national war effort have been limited as far as possible or been replaced by alternative drugs. The pharmacopeia has been distributed throughout the commonwealth, and the cooperation of Australian pharmacists has been sought. It has already been adopted by several large hospitals in the various states. The voluntary acceptance of this work by the medical profession will constitute an important contribution to the conservation of drugs in wartime Australia.

The Tuberculosis Problem in Australia

It is not known whether there has been any increase in tuberculosis in Australia during the present war period. Medical practitioners are not forced to notify cases unless the patient reacts to the Mantoux test and is found to have visible tubercle bacilli in the sputum. The medical profession of this country has for years emphasized the importance of early diagnosis and treatment of tuberculosis and the need for financial provision for the immediate dependents of the tuberculous and for a commonwealth organized rehabilitation project. The adoption by the commonwealth early in the war of routine x-ray examination of entrants for the Australian Imperial Forces and Royal Australian Air Force has constituted a forward step toward the achievement of these measures. But at present there are only a few centers where microradiography for the diagnosis of tuberculosis is undertaken for civilians, and no systematic survey has been attempted.

The economic aspect of the problem has been somewhat alleviated under wartime conditions. In peacetime a man was dependent on his employer and often dared not say that he was tuberculous. If he was forced to enter a sanatorium there was no adequate financial support provided for his family, and there were so many men available that he experienced great difficulty in finding work on reentering civil life. Now the manpower

authorities deal with such cases, and they are placed back in gainful occupations. The village settlement scheme for rehabilitation, which has been successful in other countries, has not been tried out in Australia.

Agar Production in Australia and New Zealand

During the past two years the possibilities of agar agar production in Australia and New Zealand have been explored. Here in Australia agar is being produced from a red seaweed, *Gracilaria confervoides*, which is easily harvested and is available in quantity. The results so far achieved have been promising. The agar produced has a higher ash and lower nitrogen content than the Japanese variety and a somewhat lower gelling power but has provided suitable mediums for the growth of most bacteria.

In New Zealand two species of Gelidiaceae offer commercial possibilities owing to their relative abundance, easy identification and good yield. Last year the Council for Scientific and Industrial Research carried out small scale experiments with one of these, *Pterocladia lucida*, with satisfactory results. Further investigations are now in progress.

Pyoderma Ulcerosum Tropicalum—A New Clinical Entity

Under the term pyoderma ulcerosum tropicalum Capt O. Alpins (A. A. M. C.) describes an infectious skin disease which incapacitated a large number of men serving in certain tropical areas in the Northern Territory of Australia. He considers it to be a new clinical entity. The condition is epidemic in the wet season (December to May) when the vegetation is moist and flourishing, the incidence falling considerably with the onset of drier conditions. Regarded as predisposing factors are lowered resistance from previous illness, malnutrition (especially lack of vitamins), fatigue and absence of suitable protective clothing. The infection can generally be traced to scratches from vegetation or barbed wire, and probably to the scratching of mosquito bite and "prickly heat." The incubation period varies from six to twelve hours. The lesions are mainly situated on the extensor surfaces, such as the knees, the upper parts of the legs, the forearms and the backs of the hands. They are characterized by the development of primary discrete vesicles with associated areas of inflammation. The vesicles have a whitish appearance but contain straw colored fluid. Soon they break, forming a superficial circular ulcer the edges of which are thickened in varying degrees and surrounded by a painful cellulitis. When left alone the ulcer becomes covered by a firm yellowish crust, under which the ulcer deepens and extends, until eventually the crust breaks, exposing a deep ulcer, varying from 1 to several inches in diameter. The condition was experimentally transmitted by autoinoculation, by the inoculation of vesicle and ulcer material intradermally and by the swabbing of material into an abrasion on 5 subjects who were free from any previous skin complaint. In early cases (one week) a pure growth of group A hemolytic streptococci was obtained and in later cases a mixed growth of group A hemolytic streptococci and *Staphylococcus aureus*. Swabbings from the experimental inoculations yielded a hemolytic streptococcus with a few columns of *Staphylococcus aureus*. Alpins concludes that the organism responsible is a hemolytic streptococcus, a *Staphylococcus aureus* infection being superimposed.

A Drug Plant Survey

The Council for Scientific and Industrial Research is at present carrying out an extensive survey in coastal Queensland areas for the purpose of locating indigenous or naturalized plants which may be sources of certain drugs such as caffeine, ephedrine, cocaine and quinine substitute, and of substances such as derris. Analyses of the material collected are being carried out by the Department of Pharmacy and Physiology of the Universities of Sydney and Melbourne respectively.

Deaths

Karl Landsteiner, New York, renowned for his research on human blood groups and the chemistry of immunity, Nobel Prize winner in 1930, died in the Hospital of the Rockefeller Institute for Medical Research, New York, June 26, of heart disease, aged 75.

Dr Landsteiner was born in Vienna, Austria, June 14, 1868, and graduated in medicine at the University of Vienna in 1891. He studied chemistry for a while with Emil Fischer but soon devoted himself to pathologic research and teaching. In 1898 he was appointed assistant in the Pathologic-Anatomic Institute of the University of Vienna. In 1908 he became professor at the Wilhelms Hospital in Vienna, serving there in 1909 as lecturer on pathologic anatomy and in 1911 as professor extraordinary. The disturbances in Vienna after World War I led Dr Landsteiner to go to the Netherlands, where he worked at the R. K. Ziekenhuis at The Hague as professor until 1922, when he was invited to join the staff of the Rockefeller Institute for Medical Research, New York. In 1939 he was one of a group who were retired under a mandatory rule. However, he diligently continued his work in the laboratory made available by the institute, and it was here that he became ill Thursday, June 24.

In 1930 Dr Landsteiner was awarded the Nobel Prize in medicine for his discovery of isoagglutination and the human blood groups. This discovery has had a profound influence on therapeutic blood transfusion by obviating its hazards. It also made it possible to determine parentage in certain cases and to trace the source of blood stains. His first statement about human isoagglutination appeared in a footnote to an article in 1900 about the agglutinating and other actions of blood serum and lymph. He also demonstrated the mechanism of paroxysmal hemoglobinuria in which blood is broken down when a foot or an arm is chilled. With Popper, Dr Landsteiner in 1909 first transmitted infantile paralysis to the monkey; this was followed by the experimental work of others which brought to light all we now know of the nature of the causative agent of this disease. Another outstanding achievement was his study through many years of fundamental problems in immunity, particularly the chemistry of the specificity of immune reactions. A revision of his book *The Specificity of Serological Reactions*, a classic in its field, was published not long ago. He also introduced a method of darkfield demonstration of the micro-organisms of syphilis. Only recently he showed that drug allergy partakes of the nature of typical immune reactions. He also took an active part in the work that led to the discovery of the Rh factor which has been found to play an essential role in erythroblastosis fetalis.

Besides the Nobel Prize, Dr Landsteiner received many honors, notably the annual prize of the Hans Aronson Foundation of Berlin in 1926, the Paul Ehrlich gold medal in 1930, the gold medal of the Dutch Red Cross Society in 1933 and the Cameron Prize of the University of Edinburgh in 1938. Honorary degrees were conferred on him by the University of Chicago, Cambridge University, Harvard University and the University of Brussels. He was made a Chevalier of the French Legion of Honor. He was a member of or held honorary fellowship in the National Academy of Sciences, the American Philosophical Society, the Royal Swedish Academy of Science, the Danish Academy of Science, Deutsche Akademie der Naturforscher, the Swedish Medical Society, the Harvard Society, the Royal Society of London, Societe Belge de Biologie, Pathological Society of Great Britain and Ireland, Vienna Medical Society, New York Academy of Medicine, American Society of Naturalists, Royal Society of Medicine, Pathological Society of Philadelphia, Reale Accademia delle Scienze (Italy) and the Medical Chirurgical Society of Edinburgh. In 1929 he was president of the American Association of Immunologists.

Dr Landsteiner married Helene Wlasto in 1916. Both became American citizens and their son, Dr Ernst Landsteiner, is a graduate of the Harvard Medical School and now a surgical resident at the Peter Bent Brigham Hospital in Boston.

Dr Landsteiner's death closes a brilliant career. He was a shy and modest man. The worldwide acclaim and recognition were deserving tributes to his patient devotion to pure research. The practical application of his results lie left to others.

Harry Gaylord Dorman, Cambridge, Mass., Columbia University College of Physicians and Surgeons, New York, 1900, an Associate Fellow of the American Medical Association, specialist certified by the American Board of Obstetrics and Gynecology, Inc., fellow of the American College of Surgeons, formerly professor of pediatrics, professor of obstetrics and gynecology, and dean at the American University of Beirut

School of Medicine, Syria, for many years pediatrician, gynecologist and obstetrician to the American University Hospital at Beirut, attending surgeon to the Johanner Hospital, Beirut, from 1916 to 1918 and consulting surgeon to the Turkish Military Hospital from 1916 to 1918, head of the Red Cross Relief Expedition to Adana, Turkey, in 1908, author of a textbook of General Pathology, 1906, aged 67, died April 22 of coronary thrombosis.

Emory John Brady, Colorado Springs, Colo., Detroit College of Medicine, 1901, past president of the El Paso County Medical Society, member of the American Psychiatric Association and the Central Neuropsychiatric Association, past vice president of the American Association of Private Psychiatric Hospitals, served for two terms as a member of the House of Representatives and one term in the Senate, at one time on the staffs of the Michigan Asylum for the Insane, Kalamazoo Mich., Woodcroft Hospital, Pueblo, assistant superintendent of the Newberry (Mich.) State Hospital and superintendent of the Myron Stratton Home, owner and superintendent of the Colorado Springs Psychopathic Hospital, a director of the Colorado Springs National Bank, a member and formerly director of the Colorado Springs Rotary Club, aged 68, died April 19 of bronchopneumonia.

Montague Sydney Woolf, San Francisco, L.R.C.P. of London and M.R.C.S. of England, 1914, associate clinical professor of surgery at the University of California Medical School, specialist certified by the American Board of Surgery, member of the American Proctologic Society, fellow of the American College of Surgeons, visiting surgeon to the University of California Hospital and Laguna Honda Home on the staffs of the Childrens and St. Mary's hospitals, served in the Royal Army Medical Corps during World War I, author of *Principles of Surgery for Nurses*, consulting surgeon to the Southern Pacific Railroad, aged 59, died April 20 of bacterial endocarditis.

Julius Napoleon Hill, Murphy, N. C., University of Louisville (Ky.) Medical Department, 1909, member of the Medical Society of the State of North Carolina, president of the Cherokee County Medical Society for several terms, served as a medical officer in the U. S. Army during World War I, for many years Cherokee County physician, a trustee of the Murphy city schools and the Western North Carolina Teachers College, Cullowhee, on the courtesy staff of the Petrie Hospital, aged 57, died April 27 in the Veterans Administration Facility, Atlanta, of chronic myocarditis and arterial hypertension.

Edward Henry French, Quincy, Mass., Dartmouth Medical School, Hanover, N. H., 1882, member of the New Hampshire Medical Society and the American Psychiatric Association, assistant superintendent of the New Hampshire State Hospital, Concord, from 1883 to 1896, superintendent of the Medfield State Hospital from 1896 to 1917, in 1935 was presented with a gold medal by the New Hampshire Medical Society in recognition of his fifty years of membership in the society, aged 86, died May 4 in the Baker Memorial Massachusetts General Hospital, Boston, of coronary thrombosis.

Harry Lowenburgh Sr., Philadelphia, Medico-Chirurgical College of Philadelphia, 1901, specialist certified by the American Board of Pediatrics, Inc., veteran of the Spanish-American War, served as a captain in the medical corps of the U. S. Army during World War I, formerly lecturer in pediatrics at his alma mater, chief in pediatrics at Mount Sinai and Philadelphia General hospitals, consulting chief to the Jewish Hospital, formerly medical director of the Northeastern Hebrew Orphans Home, aged 64, died April 8 of heart disease.

Dewitt Peake Bailey, Binghamton, N. Y., University of the City of New York Medical Department, New York, 1889, aged 76, died April 30 in the Binghamton City Hospital of pneumonia.

Harry William Bauer, Palmyra, N. J., Medico-Chirurgical College of Philadelphia, 1901, member of the Medical Society of New Jersey, aged 58, died April 19 in the Cooper Hospital, Camden, of cerebral hemorrhage.

Cesar George Caben, Los Angeles, University of Southern California College of Medicine, Los Angeles, 1909, member of the California Medical Association, chief consulting surgeon to the French Hospital, served as a major in the French army during World War I, a member of the French Legion of Honor, aged 58, died April 29 of heart disease.

Roy Munro Collie, Schenectady, N. Y., Albany (N. Y.) Medical College, 1906, a member of the board of trustees of the Schenectady Savings Bank, aged 59, on the staff of the Ellis Hospital, where he died April 24 of hypertensive heart disease.

Gaines Stanley Dobbins Jr, Cumberland, Ky., University of Louisville School of Medicine, 1938, member of the Kentucky State Medical Association, examining physician for the Selective Service System, member of the staff of the Lynch (Ky.) Hospital, aged 32, died April 30.

Raymond Goulden Edmans, Troy, N. Y., Albany (N. Y.) Medical College, 1898, formerly coroner of Rensselaer County and deputy health commissioner, medical examiner for the Metropolitan Life Insurance Company for many years and served as chief examiner for several other insurance companies, aged 71, on the staff of the Troy Hospital, where he died April 22, of heart disease.

Clarence P. Gammon, Tacoma, Wash., Rush Medical College, Chicago, 1899, member of the Washington State Medical Association, formerly a member of the state board of health, veteran of the Spanish American War and World War I, member of the staff of St. Joseph's Hospital, served as surgeon for the Union Pacific Railroad for many years, aged 70, died April 24, of coronary disease.

William Vincent Guttery, Middletown, Ill., St. Louis Medical College, 1881, an Affiliate Fellow of the American Medical Association, aged 92, died April 20, of chronic myocarditis.

John Frank Hogan, Birmingham, Ala., Birmingham Medical College, 1903, member of the Medical Association of the State of Alabama, formerly on the staff of the Davis Infirmary, aged 60, died April 30, of traumatic abscess of liver.

Willard Carlisle Johnson, Detroit, Harvard Medical School, Boston, 1927, member of the Medical Society of the State of New York, aged 47, died April 23, of coronary occlusion.

Robert Rives Jones, Winston-Salem, N. C., Medical College of Virginia, Richmond, 1923, member of the Medical Society of the State of North Carolina, formerly a member of the city health department, aged 45, served on the staffs of the Kate Bitting Reynolds Memorial Hospital, North Carolina Baptist Hospital and the City Memorial Hospital, where he died April 13, of cerebral hemorrhage.

George Warton Kaan, Sharon, Mass., Harvard Medical School, Boston, 1890, member of the Massachusetts Medical Society, served as treasurer of the Norfolk District Medical Society, professor of clinical gynecology emeritus at the Tufts College Medical School, Boston, formerly on the staffs of the Free Hospital for Women, Adams Nervine Asylum and the New England Deaconess Hospital, Boston, a founder and for many years on the staff of the Boston Dispensary for Women, aged 88, died April 14, in Stoughton of prostatic hypertrophy.

Harry Delman Kelly, Council Bluffs, Iowa, John A. Creighton Medical College, Omaha, 1903, member of the Iowa State Medical Society, member of the staff of the Mercy Hospital, aged 60, died April 20, in the Doctors' Hospital, Omaha, of bronchopneumonia.

George W. Kennedy, Beulaville, N. C., University College of Medicine, Richmond, 1898, for many years a member of the school board, aged 64, died April 7, of angina pectoris.

John W. Laird, Mount Pleasant, Iowa, Hahnemann Medical College and Hospital, Chicago, 1900, member of the Iowa State Medical Society, past president of the Henry County Medical Society, served during World War I, health officer of Mount Pleasant, aged 71, died April 26, of coronary thrombosis.

Erford Haskell Lamb, Cornelia, Ga., Atlanta College of Physicians and Surgeons, 1911, member of the Medical Association of Georgia, aged 65, died April 23, of influenza and myocarditis.

Smith J. Mann, Livermore, Calif., Willamette University Medical Department, Salem, Ore., 1907, member of the American College of Chest Physicians, served during World War I, manager of the Veterans Administration Facility, aged 60, died April 27, of coronary thrombosis.

Charles Lewis Marks, Montgomery, Ala., University of Virginia Department of Medicine, Charlottesville, 1904, member of the Medical Association of the State of Alabama, aged 61, died April 30, of heart disease.

Thomas Alexander Norment, Lumberton, N. C., North Carolina Medical College, Davidson, 1894, aged 72, died April 10, in the Thompson Memorial Hospital of arteriosclerosis.

Paul Wilmer Oakes, Cleveland, Western Reserve University School of Medicine, Cleveland, 1938, member of the Ohio State Medical Association, examining physician for draft

board number 3, served on the staffs of the Lakewood (Ohio) Hospital, Evangelical Deaconess Hospital and the Fairview Park Hospital, where he died April 21, of nephritis, aged 30.

Samuel Orr Price, Taylor, Miss., Memphis (Tenn.) Hospital Medical College, 1912, member of the Mississippi State Medical Association, aged 59, died April 15, of heart disease.

Herman F. Prill, Augusta, Wis., Milwaukee Medical College, 1902, member of the State Medical Society of Wisconsin, aged 68, died April 11, in the Luther Hospital, Eau Claire, of arteriosclerotic heart disease.

John Joseph Randall, Wynantskill, N. Y., Albany (N. Y.) Medical College, 1917, member of the American College of Chest Physicians, served as a captain in the medical corps of the U. S. Army during World War I, medical director and superintendent of the Pawling Sanatorium, formerly medical director of the Sunny Acres, Cleveland Tuberculosis Sanatorium, Warrensville, Ohio, on the consulting staff of the Samaritan Hospital and medical director of the chest clinic, Troy, aged 51, died April 29, of carcinoma.

Adolph Reich, New York, University of the City of New York Medical Department, New York, 1891, formerly clinical professor of gynecology at the New York Polyclinic Medical School and Hospital, aged 78, died April 27, of lymphosarcoma.

Robert Macfeely Shea, Denver, University of Colorado School of Medicine, Denver, 1913, member of the Colorado State Medical Society, fellow of the American College of Surgeons, a lieutenant in the U. S. Navy during World War I, for many years district surgeon for the Union Pacific Railroad, member of the staffs of St. Luke's, Children's, St. Anthony's, St. Joseph's and Presbyterian hospitals, medical director of the Mercy Hospital, where he died March 21, of myocarditis, aged 60.

Laban Aaron Steeves, Salem, Ore., University of Oregon Medical School, Portland, 1921, served in the medical corps of the U. S. Navy during World War I, aged 49, died March 30, of heart disease and hypertension.

George Washington Thume, Lincoln, Neb., Kansas City (Mo.) Medical College, 1898, served as a first lieutenant in the medical corps of the U. S. Army during World War I, aged 66, died April 10, of thyroid disease, diabetes mellitus and heart disease.

Charles C. Vinsant, Maryville, Tenn., University of Tennessee Medical Department, Nashville, 1907, on the staff of the Fort Craig Hospital, aged 66, died April 22, of hypernephroma of the left kidney.

DeFriste Vogt, Cleveland, Hospital College of Medicine, Louisville, Ky., 1884, aged 80, died April 26, of heart disease.

John Leaman Winters, Blue Ball, Pa., Jefferson Medical College of Philadelphia, 1890, member of the Medical Society of the State of Pennsylvania, aged 74, died April 14, of arteriosclerosis.

DIED IN MILITARY SERVICE

Samuel Albert Barkoff, New Orleans, Louisiana State University School of Medicine, New Orleans, 1938, member of the Louisiana State Medical Society, began active duty as a first lieutenant in the medical reserve corps of the U. S. Army in June 1941 and later became a captain, aged 28, died April 17, in Tampa, Fla., of injuries received in an airplane accident.

Morris Lawrence Dressler, Belmont, Mass., Tufts College Medical School, Boston, 1921, member of the Massachusetts Medical Society, formerly served as city physician of Cambridge and as trustee of the Cambridge City Hospital, served during World War I and as a major in the National Guard, major in the medical corps, Army of the United States, stationed at Fort Dix, N. J., where he died May 6, of acute gangrenous cholecystitis, aged 44.

Frank Woodward Quin, Surgeon, Lieutenant Commander, U. S. Navy, retired, Little Rock, Ark., Medical Department of Tulane University of Louisiana, New Orleans, 1911, entered the medical corps of the U. S. Navy in 1920 and retired in 1940, served during World War I, called back to active duty in March 1941, attached to the U. S. Marine Corps Receiving Station, aged 64, died March 21, in St. Vincent's Infirmary of cerebral hemorrhage and hypertensive heart disease.

Bureau of Investigation

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D D N J and foods F N J. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consignor, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Ace High Effervescent Preparation—Prenum Color Work, New York and The Pepe Maisano Company, New Haven, Conn. Shipped Aug 30 1940. Composition not definitely reported but mention was made of an added poisonous or deleterious substance (borax). Use of product not stated. Adulterated because of presence of borax which was declared to be unsafe within the meaning of the law. Misbranded because listing of citric acid was false and misleading, since this was not one of the ingredients. Further misbranded because label did not bear the common or usual name of each of the actual ingredients.—[F N J F D C 2550 July 1942]

Apex Special Hair Pomade and Apex Pomento—Apex News and Hair Company, Inc. Atlantic City, N. J. Shipped July 1 1940. Composition: "Pomade consisted of petrolatum with a small proportion of coal tar; composition of Apex Pomento not reported. Both products misbranded because their containers were so made, formed or filled as to be misleading. The Pomade was misbranded further in the false representations that it would be effective for stubborn cases of dandruff thin and falling hair and would be excellent for thin temples. Pomade was misbranded also because label did not list common or usual names of active ingredient.—[D D N J F D C 2526 September 1942]

Chase Formula—Chase Laboratory, Detroit. Shipped Oct. 15 1940. Composition: essentially a fatty oil (about 16 per cent) oleic acid (about 5 per cent) mineral oil (about 2 per cent) alcohol (by volume 17.8 per cent) and a small amount of triethanolamine with water. Misbranded because falsely represented as an effective treatment for athlete's foot, lumbago, poison ivy, body lice, many types of eczema and skin disorders caused by external infections, itching bites and shingles. Further misbranded because active ingredients were not conspicuously listed on the label and quantity or proportion of alcohol present was not correctly declared. Since the statement "denatured alcohol 25%" was incorrect.—[D D N J F D C 2522 September 1942]

Common Sense Liniment—T. H. Jackson and Company, Quincy, Ill. Shipped Aug 8 1940. Composition: essentially linseed oil, pine oil, guaiacal, paraffin oil and a small amount of ammonia. Declared misbranded because label falsely represented that the product would be an effective treatment for ailments or man requiring an external application; that it possessed healing and relieving properties and was efficacious in treating muscular rheumatism, sciatic rheumatism, nervous headache, lame back, ear disorders, old corns, cuts, sores and some other conditions.—[D D N J F D C 2525 September 1942]

Dr. Seiffert's Glucocimine—Glucocimine Company of America, Richmond Hill, N. Y. Shipped between Jan 20 and 30 1941. Composition: essentially powdered plant tissues including potato starch. Adulterated because its strength differed from and its purity or quality fell below that which it purported to be in the labeling, namely, plant insulin substances, vegetable insulin. Glucocimines are extracted by a special process. The resulting preparation is free from carbohydrates. Misbranded because it falsely represented to be a plant insulin which would be an effective treatment for diabetes by mouth, to be positively unsurpassed and to help stimulate the pancreas gland to produce insulin of its own. Further misbranded because label failed to give the common or usual name of each of the active ingredients.—[D D N J F D C 2521 September 1942]

Kresto—Bestov Products, Inc. Long Island City, N. Y. Shipped Dec 5 1940. Composition: a mixture of sugar, cocoa malt and possibly a small amount of skimmed milk. Misbranded because of false label statements: "Health Energy." An extract of the most nutritive foods of nature. It is very rich in vitamins. Kresto aids the digestion of other foods and is a food prepared especially for nourishing the organism with the minimum of digestive effort. Kresto contains in correct proportion all the substances necessary for strengthening the brain, nourishing the bones, increasing the red corpuscles in the blood, building up the tissues, creating strong muscles and normal flesh. Alimentary value 43 calories to each teaspoonful. It

contains carbohydrates, protein, fats and mineral substances. Further misbranded because label failed to give the common or usual name of each ingredient.—[F N J F D C 2547 July 1942]

Leucorrhea Special No. 9—C. F. Breitenbach (Mucine Company) Chicago. Shipped between Jan 22 and Nov 11 1940. Composition: quinine sulfate (0.64 per cent), boric acid (19.95 per cent) and thymol, the whole incorporated in petrolatum. Adulterated because not of the strength and quality indicated and misbranded because of misrepresentation that the nostrum was good for leucorrhea and because labeling did not bear adequate directions for use. Further misbranded because label failed to bear name and place of business of manufacturer, packer or distributor since designation "Ainsworth Specialty Co., Kansas City, Mo." did not make clear this concern's connection with the product and because label did not give the common or usual name of each active ingredient or the quantity of the contents. Also misbranded because label failed to bear adequate directions for use.—[D D N J F D C 456 September 1942]

McClintock's Formula for Diabetes—Robert McClintock, Ann Arbor, Mich. Shipped between March 21 and May 24 1940. Composition: essentially sulfuric acid alcohol (75.05 per cent by volume) and water flavored with cinnamon oil. Misbranded because falsely represented as an efficacious treatment for diabetes and because of label claim "Reg. with U. S. Food and Drug Administration" since it was not so registered.—[D D N J F D C 2520 September 1942] This product was one of the subjects of the Post Office fraud order issued July 14, 1938, debarring McClintock's quackish business from the mails; the details of which appeared in this department of THE JOURNAL Dec 24 1938 page 2409.

Pick Me Up Bath and Hangover Bath—Vandora Ltd., New York. Shipped between Feb 7 and Dec 21 1940. Composition: Pick Me Up Bath—essentially ammonia (16.5 per cent by weight) alcohol (36 per cent by volume), water and green coloring matter. Hangover Bath—same composition except that the ammonia was 15.7 per cent by weight and the alcohol 40 per cent by volume. Misbranded because names of treatments gave false impression and also because labels did not bear common or usual names of active ingredients or declare quantity or proportion of alcohol present.—[D D N J F D C 2528 September 1942]

Prevent All—C. F. Breitenbach (Mucine Company) Chicago. Shipped between Jan 22 and Nov 11 1942. Composition: essentially 4.4 per cent of calomel and 9.3 per cent of zinc oxide, the mixture incorporated in wool wax (lanum). Adulterated because its strength differed from and its quality fell below that which it was represented to possess. Misbranded because composition claim on label "Lanum base 67%—Calomel 33%" was false and misleading as were the representations that this was a combination to prevent all sexual diseases in the male, Gonorrhea, chancres (syphilis), destroys micro-organisms and prevents incubation, endorsed and recommended by leading physicians. Further misbranded because label failed to bear name and place of business of manufacturer, packer or distributor since designation "Ainsworth Specialty Co., Kansas City, Mo." did not make clear this concern's connection with the product and because label did not give the common or usual name of each active ingredient or its quantity.—[D D N J F D C 456 September 1942]

Savol and Savol Cream—Savol Chemical Company, Mercer, Pa. Shipped between Sept 3 and Oct 30 1940. Composition: Savol—essentially creosols, alkali soaps and a small amount of phenol in water. Savol Cream—essentially zinc oxide, barium sulfate, petrolatum and perfume. Bacteriologic examination showed that Savol Cream was not antiseptic. Savol misbranded because falsely represented to be an effective treatment for nasal catarrh, hay fever, bites of animals and irritation of the throat and a preventive of infected sores, abscesses, boils, felon and all complications due to infections. Savol Cream misbranded because falsely labeled to be efficacious as an antiseptic for cuts, bites of animals, all forms of hemorrhoids, skin disorders in general, sore throat, croup, enlarged glands, boils, felon, ulcers and eczema or as an after-treatment of boils, felon, carbuncles and erysipela. Both products misbranded because labels failed to list common or usual names of active ingredients or to give accurate statements of the quantity or content.—[D D N J F D C 2523 September 1942]

Sto Bo Ki—Robert McClintock, Ann Arbor, Mich. Shipped between March 21 and May 24 1940. Composition: essentially sulfuric acid alcohol (77.5 per cent by volume) and water flavored with aromatics. Misbranded because statements: "The digestive remedy." Use it only until ailment ceases were false and misleading since the product was not efficacious as a digestive remedy and its use would not cause cessation of digestive ailments. Also misbranded because label did not give the common or usual name of the active ingredient, sulfuric acid, or the quantity, kind and proportion of alcohol present.—[D D N J F D C 2520 September 1942] This product was one of the subjects of the Post Office fraud order issued July 14 1938, debarring McClintock's quackish business from the mail; the details of which appeared in this department of THE JOURNAL Dec 24 1938 page 2409.

Wait Surgical—Wait Products, Inc. Springfield, Ill. Shipped Aug 21 1940. Composition: essentially water, formaldehyde, small amounts of turpeneol and a yellow green coloring material. Misbranded because falsely represented as an effective antiseptic, disinfectant, fungicide, germicide or parasiticide in the dilutions suggested or as a wet dressing or irrigation in wounds in these dilutions. Further misbranded because represented to penetrate the environment, inhibit disease-producing micro-organisms or be efficacious for sterilizing surgical instruments.—[D D N J F D C 2524 September 1942]

Correspondence

"SYPHILIS AND THE NEGRO"

To the Editor—The article by Dr. Smilie in the June 5 issue of THE JOURNAL concerning syphilis and the Negro, and the editorial comment, serve to give needed emphasis to an important problem. But in characterizing the problem as a purely Negro one there is grave danger of overlooking some important facts concerning the treatment and prevention. Why is the syphilis rate so much higher in the Negro than in the white? To quote Dr. Smilie, 'Among the whites syphilis has become, in the great majority of cases, a disease of the ignorant, the careless, the criminal and the social outcast.' Do not the same conditions apply to syphilis in any group? The Negro is discriminated against economically and educationally, it would be difficult to find conditions more favorable to the development of crime, carelessness and social ostracism than the poverty and ignorance engendered by the wage and educational differentials that are too often the lot of the Negro. In this connection the chart published with your editorial comment (p. 378) is quite significant. It shows educational deficiencies as a cause, second only to syphilis, of rejection of Negro males by Selective Service local boards, whereas this factor did not appear in the first ten causes of rejection in the white group. This is more than a mere coincidence. It would be a serious mistake to attempt to treat this problem by merely dispensing large quantities of antisyphilitic drugs without at the same time attempting to cure some of the serious socioeconomic conditions underlying it.

ROBERT E. FULLILOVE JR., M.D., New Orleans

To the Editor—In the article "Syphilis in the United States Primarily a Negro Problem" (THE JOURNAL, June 5, p. 365) and the emphasis and further presentation of statistical evidence (p. 378) I am impressed not only with the implications of the biometrical conclusions reached but more especially with the apparent lack of appreciation of the underlying medicosocial problems which are universal and which know no racial barriers or identification.

1 A low economic level with its slums, overcrowding, poor nutrition, poor recreational facilities, lack of certain cultural opportunity and educational advantages and other means of sublimative practice would tend to facilitate the spread of infectious disease in general and syphilis in particular.

2 A more practical effective, intensified, educational program which would reach the innermost recesses of the population would not only acquaint them with the scourges of venereal disease but would serve to create eventually a higher sense of values generally.

3 These things are not characteristic of any particular race of people but are broadly applicable to sociologic concepts in which disease, famine, poverty and the other scourges of the human race fall heir principally to the low educational-economic stratum of human society.

4 The large percentage of the Negro population incidentally fall into this group, a selective relative analysis of this group as a whole would reveal little if any difference in racial incidence.

5 The medical profession as a whole could be an effective force in achieving the correction of this basic fault in our society, which is first sociologic and, second, medical.

W. C. SAMPSON, M.D.,
General Hospital No. 2,
Kansas City, Mo.

PREVENTION OF INFANTILE PARALYSIS

To the Editor—In view of the approaching season for possible poliomyelitis epidemics, it seems wise to summarize possible suggestions for limiting the spread of the disease. These suggestions are founded on present day knowledge, viz.

In the presence of the disease in a community

1 Avoid the use of any water that is possibly contaminated with sewage either for drinking, swimming or washing utensils. We know that sewage can carry the virus considerable distances and for an appreciable time.

2 Avoid exhaustion from exertion or chilling. We know that overexertion and chilling during the incubation period tend to augment the oncoming disease.

3 Avoid injury to the mucous membranes of the nose and throat, such as that resulting from a tonsil operation. We know that poliomyelitis exposures in the early post-tonsillectomy period are liable to result in severe—even fatal—infections, usually of the bulbar type.

4 Treat every minor illness as a possible case of poliomyelitis, particularly if there is fever, headache and some spasm of the neck, spine and hamstrings. We know that very mild cases of poliomyelitis without recognizable paralysis are much more numerous than paralytic cases. Suspected patients should be kept quiet in bed for several days, and until passed as well by a competent examiner.

5 Strive for proper sanitary conditions and, in particular, destroy flies and their breeding places. We know that flies can carry the causative virus of poliomyelitis, although it has not yet been proved that they can carry enough to infect human beings.

6 Avoid unnecessary physical contacts with other people, wash hands carefully before eating, and don't put unclean objects in the mouth. We know that many healthy people carry the virus in their intestines and that for some cases, perhaps most, the port of entry of the infection is the mouth.

7 Don't prescribe or take drugs or chemicals that are intended to protect against the disease. As yet we know of none that will do this.

PHILIP M. STIMSON, M.D., New York

COLOR BLINDNESS

To the Editor—The editorial on color blindness and conclusion was read with interest. In this connection may I relate an experience I had during routine physical examination of men applying for positions in a large industrial plant. I found an applicant who was color blind and informed him of his condition, as in the type of work required of the applicant color blindness did not enter into the question of accepting or rejecting him for the position. I casually inquired what work he was doing before coming here and he replied that he was a color matcher in a cloth manufacturing concern. This aroused my curiosity and I asked him to tell me frankly how he was able to get along as a color matcher when he was definitely color blind. He replied 'The boss would bring a paddle which was colored and told me to match it, which I did.' He never asked what color the paddle was. Which shows that over a period if a person is instructed in the right color he is looking at he can in time learn to call the correct color, even if to him it seems like a different color.

E. M. FEIMAN, M.D., Canton, Ohio

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL June 26 page 702

BOARDS OF MEDICAL EXAMINERS

CALIFORNIA Oral Los Angeles Aug 9 Sec. Dr. Frederick A. Scatena 1020 N. Street Sacramento

CONNECTICUT * Written Hartford July 13-14 Reciprocity Hartford July 27 Sec. to the Board Dr. Creighton Barker 253 Church St. New Haven.

DELAWARE Dover July 13-15 Reciprocity Dover July 20 Sec. Medical Council of Delaware Dr. Joseph S. McDaniel 229 S. State St. Dover

DISTRICT OF COLUMBIA * Washington Nov 8-9 Sec. Commission on Licensure Dr. G. C. Ruhland 6150 E. Municipal Bldg. Washington

HAWAII Honolulu July 12-15 Sec. Dr. J. A. Morgan 55 Young Bldg. Honolulu

IDAHO Boise July 13 Dir. Bureau of Occupational Licenses Mrs. Lela D. Painter 355 State Capitol Bldg. Boise

ILLINOIS Chicago Oct 12-14 Superintendent of Registration Department of Registration and Education Mr. Philip M. Harman Springfield

INDIANA Indianapolis Sept 14-16 Sec. Board of Medical Registration & Examination Dr. W. C. Moore 301 State House Indianapolis

IOWA * Iowa City Dec 27-29 Dir. Division of Licensure and Registration Mr. H. W. Grefe Capitol Bldg. Des Moines

KANSAS Topeka Dec 14-15 Sec. Dr. J. F. Hassig 905 N. Seventh St. Kansas City

KENTUCKY Louisville Nov 15-17 Sec. Dr. A. T. McCormack 620 S. Third St. Louisville

MARYLAND Baltimore Dec 14-17 Sec. Dr. J. T. O'Mara, 1215 Cathedral St. Baltimore

MASSACHUSETTS Boston July 13-16 Sec. Board of Registration in Medicine Dr. H. Q. Gallupe 413 F. State House Boston

MISSISSIPPI Jackson September Asst. Sec. State Board of Health Dr. R. A. Whitfield Jackson

MISSOURI Endorsement Jefferson City July 12 Sec. State Board of Health Dr. James Stewart State Capitol Bldg. Jefferson City

MONTANA Helena Oct. 5-6 Sec. Dr. O. G. Klein First Nat'l Bank Bldg. Helena.

NEVADA Reciprocity Carson City Aug 2 Sec. Dr. G. H. Ross 215 N. Carson St. Carson City

NEW HAMPSHIRE Concord Sept. 9-10 Sec., Board of Registration in Medicine Dr. D. G. Smith State House, Concord.

NEW MEXICO * Endorsement Santa Fe Oct. 11-12 Sec. Dr. LeGrand Ward 141 Palace Ave. Santa Fe.

OHIO Endorsement Columbus Oct. 7 Written Columbus Dec. 4 Sec. Dr. H. M. Platter 21 W. Broad St. Columbus

OREGON * Portland July 21-24 Sec. Dr. L. S. Besson 608 Failing Bldg. Portland.

SOUTH DAKOTA * Pierre July 20 Dir. Medical Licensure State Board of Health Dr. Gilbert Cottam Pierre.

TEXAS Galveston Aug 2-4 Sec. Dr. T. J. Crowe 918 20 Texas Bank Bldg. Dallas

VERMONT Burlington Dec 15-17 Sec. Dr. F. J. Lawless Richford.

VIRGINIA Richmond Dec. 14-17 Sec. Dr. J. W. Preston 30½ Franklin Road Roanoke

WASHINGTON * Seattle July 12-14 Dir. Department of Licenses Mr. Thomas A. Swayze Olympia.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

DISTRICT OF COLUMBIA Washington Oct. 18-19 Sec. Dr. G. C. Ruhland 6150 E. Municipal Bldg. Washington

IOWA Des Moines July 13 Dir. Division of Licensure & Registration Mr. H. W. Grefe Capitol Bldg. Des Moines.

MINNESOTA Minneapolis Oct. 5-6 Sec. Dr. J. C. McKinley 126 Willard Hall Univ. of Minnesota Minneapolis

NEBRASKA Lincoln Oct. 5-6 Dir. Bureau of Examining Boards Sec. Dr. Oscar F. Humble 1009 State Capitol Bldg. Lincoln

OREGON Portland Oct. 30 Sec. State Board of Higher Education Mr. C. D. Byrne University of Oregon Eugene

RHODE ISLAND Providence Aug 18 Chief Division of Examiners Mr. Thomas B. Carey 366 State Office Bldg. Providence.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Failure to Notify Appropriate Health Officer of Inflammation in Newborn's Eyes—The plaintiff's eyes were swollen more than normal when he was delivered by the defendant physician April 4 1940. At the physician's direction silver nitrate drops were instilled in the eyes. On April 7 when the physician next saw the child the eyes were still a little swollen and there was some discharge from both eyes, which the physician attributed to the silver nitrate. When he next called April 11 a nurse directed his attention to the fact that there was a continued swelling in and discharge from both eyes and that in the left eye there was something on the ball that appeared like a blister which would not wash off with the boric acid solution 'he had been using' at the physician's direction. After examining the eyes the physician assured the mother that they were perfectly all right and would be O. K. and prescribed a 5 per cent solution of mild protein silver. The physician was notified on the 15th that the swelling in the left eye and the spot in its center were more pronounced. The next day the child was taken to the defendant's office. The left eye was bulging and had a grayish appearance or a dull appearance. The physician suggested a consultation with an eye specialist and an appointment was made for the following day, but before that time the eye ruptured. When it failed to respond to treatment it was removed May 6. Suit for malpractice was subsequently brought against the defendant, it being alleged that the spot in the left eye was a corneal ulcer which by prompt use of available treatment could have been cured. The physician claimed that the condition was due to a congenital weakness and that the eye could not have been saved by any known treatment. From a judgment for the physician the plaintiff appealed to the court of appeals of Ohio Williams County.

An Ohio statute (General Code, Section 1248-2) makes it the duty of a physician attending at a childbirth and knowing within two weeks after birth of inflammation, swelling, redness or unnatural discharge from the eyes of the infant [by statute defined as 'inflammation of the eyes'] within six hours to report such fact as the state board of health might direct to the appropriate local health officer. The local health officer in turn is under a statutory duty (1) to transmit the report to the state board of health (whose duties were subsequently assumed by the state department of health) and to conduct such investigation as the state board shall direct and (2) to conform to such regulations as the board may promulgate (*ibid* section 1248-3). The state board is required by statute to provide if necessary daily inspection and prompt treatment to an infected infant (*ibid* section 1248-4). A regulation of the state board in addition to rules as to how physicians must report, which rules are substantially as specified in the statute provides that, if 'the condition or the case so requires in addition to the written report, an immediate notice or such case shall be given to the health commissioner in the most rapid manner available'.

The plaintiff alleged as a ground of negligence on the part of the physician that the physician failed to report to the local health officer that the plaintiff was suffering from inflammation of the eyes. The trial court withdrew that allegation from the consideration of the jury and its action was urged as error on appeal. The appellate court held that the trial court erred in so doing and as authority for so holding relied on *Medlin v Bloom* 230 Mass 201, 119 N. E. 773, and on *Jones v Stanko* 4dm r 118 Ohio St. 147, 160 N. E. 456.

In the *Medlin* case the attending physician was sued by a child who had lost the sight of both eyes soon after birth. The birth occurred April 14, swelling in the eyes was observed April 22 and the physician was called on the 24th but did not respond to the call until the evening of the 25th. The evening of the 26th he called again and thereafter reported the case to the board of health by mail. The board promptly caused the child to be sent to a hospital for special treatment, but it did not avail. A Massachusetts statute required the attending physician to give immediate notice to the appropriate board of health if one or both eyes of the infant became inflamed, swollen and red and showed an unnatural discharge within two weeks after birth. The trial court in that case refused to instruct the jury that if it found that the physician violated the statute that violation would be evidence of negligence on his part. The appellate court in Massachusetts in that case said:

Upon this record it could not properly have been ruled as matter of law that the delay of the defendant in notifying the board of health of the plaintiff's condition was not evidence of negligence. It was for the jury to determine whether the defendant immediately gave the notice required by the statute. If he failed in this respect such failure was evidence of negligence which could have been found to have resulted as a proximate cause of the plaintiff's blindness.

The *Jones* case involved the failure of a physician to comply with an Ohio statute which required a physician attending a person suffering from smallpox to report the case to the appropriate health officer, who in turn was required to report the matter to the board of health, which was to cause an inspection to be made and a quarantine established. As a result of the defendant physician's failure in that case to make such a report, the plaintiff's decedent died from smallpox contracted from the physician's patient. The trial court in that case refused to instruct the jury that, if it found that the physician failed to comply with the provision of the statute and that such failure was the proximate cause of the death of the decedent, the verdict should be for the plaintiff. The action of the trial court in this regard the appellate court in Ohio in that case held was prejudicial error, and a judgment in favor of the physician was reversed.

In principle, said the court of appeals, the effect of failure to give notice was the same in this case as it was in the *Jones* case. From the undisputed evidence, the condition of the plaintiff's eye and the defendant physician's knowledge of it were such on April 11, if not before, that he should have reported it, and his failure to do so was a violation of the statute. In this respect the situation is more unfavorable to the physician than it was in the *Medlin* case, in which a report was actually made, and the jury question was whether it was made within the time required. If not, the court in that case said it "could have been found to have resulted as a proximate cause of the plaintiff's blindness." What would that court have said had no report ever been made? Can it be said that because this defendant completely ignored the statute he can escape any civil responsibility which may follow from his dereliction of duty? This question is decisively answered in the *Jones* case. The defendant physician here urged that the treatment that the plaintiff might have had had the statutory notice been given would only have resulted in a chance of recovery, which is not enough to sustain a verdict. But, answered the appellate court, there was positive evidence that the plaintiff's affliction was a corneal ulcer which was curable, not might be curable, which tended to prove that he had more than a "chance of recovery" had proper treatment been provided. Whether the condition was a corneal ulcer and could have been cured were matters for the jury to determine.

At the trial the testimony of the specialist to whom the defendant physician referred the plaintiff was received in evidence by a deposition. He was called by the plaintiff and on direct examination his testimony related only to the identity of material from the enucleated eye, part of which had been used in making some slides for microscopic examination by

other medical expert witnesses who testified for the plaintiff. On cross examination, the defendant qualified this specialist as an expert witness over the plaintiff's objection that the procedure was improper cross examination, interrogated him concerning the condition that he found in the eye and concerning his opinion as to what had caused that disease condition and made necessary the removal of the eye. This cross examination was assigned as error by the plaintiff. The Ohio rule on the limits of cross examination, said the appellate court, is stated in the syllabus in *Lugg v Drake*, 1 Ohio St. 286, as follows:

When a witness is produced and examined by a party in an action even though he be interested to testify against the party calling him the other party is not limited, in his cross examination to the subject matter of the examination in chief, but may cross examine him as to all matters pertinent to the issue on the trial, limited, however, by the rule that a party cannot before the time of opening his own case, introduce his distinct grounds of defense or avoidance, by the cross examination of his adversary's witnesses.

The pleadings and evidence in this case, said the appellate court, raised but two questions as determinative of the ultimate issue, the liability of the defendant physician, namely, (1) Was the defendant negligent as charged and (2), if so, did such negligence proximately cause the plaintiff's damage? The only defense was a general denial. On these questions the plaintiff had the burden of proof. The defendant had no "distinct grounds of defense or avoidance." Hence any relevant and material evidence was "pertinent to the issue on trial," and no error was committed by permitting the cross examination objected to.

The measure of a physician's duty to his patient, said the court, is stated in *Gillette v. Tucker*, 67 Ohio St. 106, 65 N. E. 865, as follows:

A surgeon and physician, employed to treat a case professionally, is under an obligation, which the law implies from the employment to exercise the average degree of skill, care, and diligence exercised by members of the same profession, practicing in the same or a similar locality in the light of the present state of medical and surgical science.

Certain instructions tendered by the defendant physician and given to the jury attempted to lay down a measure of a physician's duty to his patient in various ways, but in all of these instructions the element of "diligence" was omitted. The element of diligence, said the appellate court, was particularly important in this case, for it appears that the derelictions of duty with which the defendant physician was charged were mostly those of omission. It is manifest that some unhealthy condition existed in the plaintiff's eye which was not caused by the defendant. The real question is: Did the physician fail to do something that his duty required him to do promptly which had it been done would have resulted in cure of that unhealthy condition and prevented the loss of the eye? Hence "diligence" was the all important element, and its omission from these instructions was misleading to the jury and rendered the instructions prejudicially erroneous. The element of "diligence" was also omitted in other instructions given to the jury which spoke only of treatment but were silent on the failure to treat. Particularly in one of these instructions it told the jury that "If you find that the sole proximate cause of plaintiff's injury was a condition which existed at the time of his birth, you should return a verdict for the defendant." This instruction failed to take into account the possibility that the jury could find that had the defendant employed the care, skill and diligence the law required of him, the "condition which existed at the time of birth" could have been cured.

Because of the errors noted, the judgment in favor of the physician was reversed and the cause was remanded for a new trial.—*Dutsch v. Mayberry* 47 N. E. (2d) 401 (Ohio, 1942)

Society Proceedings

COMING MEETINGS

Utah State Medical Association Salt Lake City Aug. 27-28 Dr. D. L. Edmunds, 610 McIntyre Bldg. Salt Lake City, Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodical published by the American Medical Association are not available for lending, but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn Journal, Montgomery 12 253-288 (March) 1943

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Progress in Pediatrics With Special Consideration of Newer Sulfonamide Drugs Besie Mac Beach—p 259
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American Journal of Clinical Pathology, Baltimore 13 1-60 (Jan) 1943 Partial Index

- Hemolytic Reactions as Result of Immunization Following Repeated Transfusions of Homologous Blood P Vogel N Roenthal and P Levine—p 1
Pathologic Findings in Pelvic Infection W B Dublin and C P Larson—p 12
Effect on Erythrocytes of Single Administration of Promin (Sodium P P Diaminodiphenylsulfone-N N Dioxetose Sulfonate) An Experimental Study G M Higgins—p 25
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- Autopsy Studies in Pneumococcal Pneumonia A W Frisch—p 61
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Hemolytic Transfusion Reactions IV Differential Diagnosis Dangerous Universal Donor or Intragroup Incompatibility? A S Wiener and W C Moloney—p 74
Blood Group Reactions in Cord Bloods of Indians Calcutta India Eileen W Erlanson MacFarlane—p 81
*Leukocytic Index Its Value in Diagnosis and Prognosis L A Turley and J T McClellan—p 87
Standardized Toxicologic Tests for Clinical Laboratories C A Hellwig—p 96
Improved Method for Concentrating Serum and Plasma in Cellophane Casings R E Hoyt and M Levine—p 105
Photoelectric Colorimeter Construction and Use R C Hanselman—p 108

Leukocytic Index—The leukocytic index is established by dividing the number of polymorphonuclear leukocytes (neutrophils) by the number of lymphocytes or by dividing the polymorphonuclear percentage by the lymphocyte percentage. It is not necessary to consider the numbers of any other cells since these two types of cells are by far the most important in resistance to disease, especially to infectious and toxic states. Turley and McClellan compared the leukocytic index with the clinical course in various infectious cases in the University Hospital. An average normal leukocytic index was established by making blood counts on 7 healthy persons with normal hemograms and computing the index. The indexes so obtained were 18 18 14 15 28 and 18. This would make an average normal index approximately 18. The authors present 11 cases in which the neutrophilic-lymphocytic ratio was compared with the clinical course. The cases presented various types of infection. Similar characteristic reactions were observed in all of them. The authors agree that the leukocytic or lymphatic index is a valuable indicator of the condition of the patient. It is a reliable factor in prognosis of infectious diseases and is an aid in determining the optimal time for surgical procedures. A high or rising leukocytic index indicates low resistance and a prognosis the seriousness of which is in proportion to the height of the index. A low or falling leukocytic index shows a high or increasing resistance and a prognosis the favorableness of which is in proportion to the smallness of the index.

American J Digestive Diseases, Fort Wayne, Ind 10 81-120 (March) 1943

- Adenylc Acid in Treatment of Agranulocytosis and Mucous Membrane Lesions Some Biochemical Aspects of Leukopenia S L Ru kin New York—p 81
Considerations on Diagnosis of Large Gastric Ulcers and Implications as to Treatment F Steigmann Chicago—p 88
Prolapsed Gastric Mucosa Roentgenologic Demonstration of Ulcer Crater in Prolapsed Polypoid Mucosa A Melamed and R I Hiller Milwaukee—p 93
Multivitamin Prophylaxis and Therapy in Respiratory Diseases of the Aged L L Kay New York—p 96
Incidence of Intestinal Parasites in Tropical Area of Brazil Figures Based on Examination of Stools of 2500 Patients J R Cancado Belo Horizonte Brazil—p 98
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The Nervous Stomach O S Jones St Louis—p 102
Insulin Reaction and Cerebral Damage That May Occur in Diabetes F D Murphy and J Purtell Milwaukee—p 103
Jejunal Diverticula Consideration of Clinical Symptomatology and Case Report A C van Ravenswaay and G W Winn Boonville Mo—p 108
Gastric Acidity in Pulmonary Tuberculosis A L Kruger Jersey City N J—p 111

Diagnosis of Large Gastric Ulcers—Steigmann analyzes more than 200 cases of large gastric ulcer seen on x-ray study at the Cook County Hospital in the last ten years. The results make him question the value of the signs and symptoms thought by some to be typical of benign or malignant ulcers. Only microscopic examination of the resected lesion can give the exact diagnosis. Sections for such study must be taken from various parts of the large ulcer crater, its walls, floor and margins before a definite opinion can be given. Failure to follow this precaution has resulted in the death of patients from carcinoma several months after the resected lesion was reported benign. The therapeutic implications are clear. Resection of every large gastric ulcer is advisable not only because of the danger of an erroneous diagnosis but also because complications of large ulcers make them really malignant when they are microscopically benign. It is doubtful that there is such a thing as complete healing of a large gastric ulcer on medical treatment. In view of the complications that may arise even when a large ulcer is benign and the possibility that they may be carcinomatous, one should not be content until such a lesion is resected.

American Journal of Diseases of Children, Chicago 65 355-518 (March) 1943

- *Lipid Nephrosis Observations Over Period of Twenty Years H Schwarz J L Kohn and S B Weiner—p 355
Excretion of 17 Keto Steroids by Normal and by Abnormal Children N B Talbot A M Butler R A Berman P M Rodriguez and E A MacLachlan—p 364
Respiratory Metabolism in Infancy and in Childhood XVII Regulation of Body Temperature of Premature Infants R Day with Technical Assistance of J Curtis and Margaret Kelly—p 376
*Effects of Various Urinary Antiseptics on Strains of Escherichia Coli I Sulfathiazole II Urinary Acidity Mandelic Acid Methenamine and Methenamine Mandelate III Relative Value of Sulfathiazole Sulfadiazine Sulfapyridine Sulfacetamide and Sulfanilamide H F Helmholz—p 399
Calcium and Phosphorus Requirements of Premature Infants Helen R Benjamin H H Gordon and Eleanor Marples—p 412
Acute Lymphatic Leukemia in Childhood Dorothy Falkenstein and W M Fowler—p 445
Rate of Secretion of Parotid Glands in Normal Children Measurement of Function of Autonomic Nervous System R S Lourie—p 455

Lipid Nephrosis—Lipid nephrosis as a distinct clinical entity is rather infrequent. In over twenty years in the pediatric service at the Mount Sinai Hospital Schwarz and his co-workers have made such a diagnosis for only 40 children. In that same period they observed over 400 children with typical symptoms of acute or chronic glomerular nephritis. Twenty-two of the 40 patients have died. The surviving children have been seen regularly at least three times during the year 8 or they have been under observation for from seven to twenty years. Four of the older group showed in later phases hypertension, occasional albuminuria and increased Addis counts. The others with 1 exception have at present an increased Addis count and no hypertension. The authors believe that these patients had a glomerular nephritis from the onset. The nephrotic syndrome would then be a phase in the life cycle of the disease. The improvement or some of the patients after an

acute infection, such as measles, is important. The authors cannot give a satisfactory explanation for the mechanism which makes the kidney less permeable to albumin, and induces diuresis. Such improvement is not noted in chronic glomerular nephritis. The microscopic studies on 12 necropsies revealed a histologic picture of the glomeruli different from that seen in chronic glomerular nephritis. A patient first seen with a typical clinical picture of acute glomerular nephritis with gross hematuria manifested within the next year typical symptoms of lipid nephrosis. The patient died of peritonitis. The necropsy showed merger glomerular changes. The authors conclude that most children with the classic clinical picture of lipid nephrosis have a glomerular involvement but perhaps in a different form from that seen in chronic or subacute glomerular nephritis.

Urinary Antiseptics and Escherichia Coli—Helmholz demonstrated great variation in the effect of sulfathiazole on twenty-one strains of *Escherichia coli*. Twenty more strains were tested for the bactericidal action of sulfathiazole. The results indicated a low resistance of all but four strains of *Esch. coli* to sulfathiazole. When the concentration of sulfathiazole was increased from 2 mg. to 200 mg. per hundred cubic centimeters, three of the four resistant strains were killed off. At the highest level, 200 mg. per hundred cubic centimeters, strain 22 still grew actively when it was inoculated in numbers of less than 100 bacilli to 0.5 cc. of urine. The author investigated the bactericidal effect of various concentrations of the drug on four strains, two highly resistant and two only slightly resistant. The most striking deduction to be drawn from these investigations is that the maximal concentration of sulfathiazole at which different strains of *Esch. coli* resist its bactericidal action may vary from 0.1 mg. to more than 200 mg. per hundred cubic centimeters. Although the number of strains resistant to sulfathiazole is small, the resistance of the infecting strain may account for the failure of therapy in any particular case. The second significant feature is that the size of the inoculum of bacteria may determine the bactericidal action. The author reports studies on the resistance to other urinary antiseptics applied to the two resistant strains. He tried out four different procedures: antiseptics resulting from (1) acidity, (2) mandelic acid, (3) methenamine mandelate and (4) methenamine. He found that strains resistant to sulfathiazole were also resistant to urinary acidity and mandelic acid but were more susceptible to methenamine and methenamine mandelate than nonresistant strains. Bactericidal action of sulfanilamide, sulfapyridine, sulfathiazole, sulfadiazine and sulfacetamide on these four strains gave the impression that sulfathiazole and sulfadiazine are more effective against *Esch. coli* than sulfacetamide, sulfapyridine or sulfanilamide. In concentrations of 0.5 mg. per hundred cubic centimeters sulfathiazole is more effective than sulfadiazine.

American Journal of Pathology, Ann Arbor, Mich

19 197-370 (March) 1943 Partial Index

- Calcification and Phosphatase G. Gomori—p. 197
- *Nature of Renal Lesion with Sulfonamides and Its Prevention with Urea S. S. Sobin, L. M. Aronberg and H. C. Rolnick—p. 211
- Erythrophagocytosis and Hemosiderosis in Liver and Spleen in Sickle Cell Disease J. Stasney—p. 225
- In Vivo Neutralization of Pertussis Toxin with Pertussis Antitoxin D. H. Sprunt and D. S. Martin—p. 255
- Effect of Crystallized Bovine Serum Albumin on Tissues of Normal Animals I. Morphologic Changes in Normal Rabbits Induced by Intravenous Injection of Crystallized Bovine Serum Albumin O. T. Bailey and C. v. Z. Hawn—p. 267
- Interstitial Cell Growths of Testicle S. Warren and K. W. Olschhausen—p. 307
- Focal Glomerulitis in Elderly Patients P. Gross and W. Morningstar—p. 333
- Development of Myocardial Necrosis and Absence of Nerve Degeneration in Thiamine Deficiency in Pigs R. H. Folliis Jr., M. H. Miller, M. M. Wintrobe and H. J. Stein—p. 341

Renal Lesion Following Use of Sulfanilamide—Curtis and Sobin found that in vitro solubility of acetylsulfathiazole increased at a given pH in proportion to the specific gravity of the urine. Theoretical considerations and experimental data suggested to Sobin and his associates that the responsible factor in the increase of solubility of these materials in more concentrated urines was probably an increasing amount of urea. Forty-eight adult white male rats were divided into four groups of 12 and treated as follows. Groups 1 and 2 were each given

1 mg. of sodium acetylsulfapyridine per gram of body weight, but in addition group 2 received 5 mg. of urea per gram of body weight. Groups 3 and 4 received 3 mg. of sodium acetylsulfapyridine per gram of body weight and group 4 received in addition 10 mg. of urea per gram of body weight. Untreated rats of the same age were used as controls. The drugs were administered in solution through a stomach tube. The volume of solution of sodium acetylsulfapyridine was calculated on the basis of rat weight, and the urea was added. Animals were treated over periods of seven to fourteen days. The daily water intake and the weight were noted. Serial sections of both kidneys were studied. The authors concluded that 1. Intrarenal foreign material following sulfonamide drug therapy is of two types, precipitated sulfonamide and its acetylated products and cellular debris with calcium and iron deposited around or on this material. 2. Urea simultaneously administered with sodium acetylsulfapyridine will prevent the precipitation of sulfonamides and formation of renal calculi in rats. 3. The action of urea is independent of a diuretic effect and is due to a specific solvent action on the acetylsulfapyridine. 4. The nephrotoxic properties of acetylsulfapyridine are mechanical in nature and result from precipitation of the drug in the renal tract. 5. Calcification and the resultant renal calculus formation in sulfonamide treated animals is dependent on local tissue damage and secondary deposition of calcium and iron on focal, nonviable structures.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill

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- Newer Aspects of Cancer Research Caldwell Lecture, 1941 C. P. Rhoads—p. 289
- Millican Volt Roentgen Therapy for Intrathoracic Cancer Palliative Effects in a Series of 63 Cases W. L. Watson and J. Urban—p. 299
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- Effect of Roentgen Rays on Growing Long Bones of Albino Rats II. Histopathologic Changes Involving Endochondral Growth Centers C. L. Hinkel—p. 321
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- Meliorrhoeostosis Report of Bilateral Case J. W. J. Carpenter, D. R. Baker, S. P. Perry and T. Outland—p. 398
- Hemophilic Arthritis Roentgenographic Studies in 15 Adult Patients with Hemophilia E. J. McDonald and E. L. Lozner—p. 405

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

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- Use of Sulfathiazole in Treatment of Gonococcal Urethritis in the Male P. R. Leberman and R. Alexander—p. 187
- Blood Bismuth Studies Preliminary Report of Syphilitic Patients Treated with Water Soluble Preparation M. H. Delp, Nellie Walker and C. W. Sondern—p. 193
- *Treatment of Syphilis with Clorarsen R. H. Kampmeier and H. B. Henning—p. 208
- Comparison of Sensitivity of Kahn Reaction at 37 C. and 45 C. with Hinton Reaction M. N. Green and H. J. Shaughnessy—p. 218
- Syphilis and Elizabethan Playwrights and Pamphleteers E. L. Zimmerman—p. 226

Treatment of Syphilis with Clorarsen—According to Kampmeier and Henning, clorarsen (3-amino-4-hydroxy phenyl dichlorarsine hydrochloride) has been used experimentally in the treatment of syphilis at Vanderbilt University Hospital for the past twenty months. The drug is closely allied to arsen oxide, to which it is probably converted within the body. A total of 4,348 doses have been given to 251 syphilitic patients. A single therapeutic dose produced dark field negativity within twenty-four hours in 42 of 45 cases of infectious syphilis studied. Healing of acute lesions was prompt. Chancres were healed by the end of the fourth week, all secondary and secondary relapse lesions were healed by the end of the fifth week. Over 50 per cent of the primary and secondary lesions were healed by the end of the second week. The reversal of the Wassermann and Kahn reactions under continuous antisyphilitic treatment with clorarsen and bismuth compounds was 100 per cent in primary syphilis by the seventeenth to the twenty-first week and 91 per cent in secondary syphilis by the twenty-ninth to the twenty-fourth week. The probability of the reversal of

the Kahn reaction in acute syphilis was delayed over that of the Wassermann reaction. Seroreversion in early latency is definitely later than in acute syphilis. Chlorarsen did not cause serious untoward reactions. Nausea, vomiting and diarrhea were the most common reactions. The drug was often used without reaction for patients who had had untoward reactions with other arsenical preparations.

American Review of Tuberculosis, New York

47 231-350 (March) 1943

- Cardiac Symptoms in Persons With Distortion of the Mediastinum Due to Pulmonary Tuberculosis. Report of 38 Cases. D. M. Brumfiel—p. 231
- The Heart in Pulmonary Tuberculosis. Clinicopathologic Study of 100 Autopsied Patients. I. E. Roberts and J. R. Lisa—p. 253
- Air Embolism: Alternate Concept of Its Origin in Pneumothorax. Its Prevention and Treatment. J. G. Bohorofoush—p. 263
- Diaphragmatic Paralysis and Closure of Tuberculous Cavities. R. T. Ellison and C. R. Tuttle—p. 269
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- Value of Cod Liver Oil and Tomato Juice in Prevention of Laryngeal Tuberculosis. M. McConkey—p. 284
- Treatment of Tuberculosis of Oral Cavity by Carbon Dioxide Snow. J. Berberich—p. 291
- Tuberculous Meningitis. Its Clinical Features as Observed in a General Hospital. J. Zaifow and B. Dickstein—p. 296
- Scapoid Scapula in Tuberculosis. E. Bogen and A. Rogers—p. 303
- Case Finding in New York City. H. R. Edwards—p. 308
- Tuberculosis in the Household. Its Occurrence in Marital Partners and Other Members of Household When Primary Case Was Parent or Another Member of Family. R. G. Hahn—p. 316
- Follow Up of Known Tuberculous Patient. A. R. Guest—p. 325
- Epidemiology of Tuberculosis in a Low Income Group. R. E. Miller and B. Henderon—p. 334
- Case Finding. A Five Year Study by the Denver Tuberculosis Society. V. V. Spaulding—p. 341
- Lipid Pneumonia. A. M. Stokes—p. 348

Cardiac Symptoms in Mediastinal Distortion from Pulmonary Tuberculosis.—Brumfiel describes observations on 38 tuberculous patients with distortion of mediastinal structures and cardiac symptoms without a demonstrable cardiovascular disease. Evidence indicates that the distortions may cause cardiac symptoms. He had reported 15 such cases in 1933. Criteria for classifying the patients were (1) cardiac symptoms, (2) demonstrable distortion of the mediastinum by physical signs and roentgenograms (3) a past history free from known heart disease or infections recognized to affect the heart such as acute rheumatic infection or syphilis, and (4) absence of physical signs of cardiovascular disease and absence of other concurrent disease such as syphilis or hyperthyroidism known to affect the cardiovascular system either organically or functionally. As possible causes of mediastinal distortion in the tuberculous the author lists atelectasis of a lobe or of an entire lung fixation and contraction of a thickened pleura following effusion, fibrosis and contraction of the pulmonary parenchyma and therapeutic pneumothorax. Distortions of the mediastinum may be either to the right or to the left. They may involve the entire mediastinum or be limited to the superior portion. The physical signs are variable. A loud systolic murmur is heard frequently over the pulmonary conus in distortion of the superior mediastinum to the left and occasionally over the aorta in right sided deformity. The commonest complaint was dyspnea in excess of that to be expected on a purely pulmonary basis. The symptom complex consisted generally of dyspnea, palpitation and weakness with or without arrhythmia. One remarkable fact is the free interval between the establishment of the deformity and the onset of symptoms. There is no actual proof that distortion of the mediastinum and its contents may cause cardiac symptoms. Yet coincidence does not seem sufficient to explain that 38 such cases should be encountered by a single observer. The inference of a causal relationship seems inescapable. The improvement seen in certain cases after thoracoplasty presents additional evidence.

Heart in Pulmonary Tuberculosis.—Roberts and Lisa report clinical and pathologic observations in 100 cases of active pulmonary tuberculosis. Demonstrable myocardial lesions were present in 69. They consisted of tuberculous myocarditis in 10, acute rheumatic myocarditis in 1, Aschoff body-like lesions in 9, acute interstitial myocarditis in 50 and acute miliary infarctions in 11. Combinations of the lesions were found in 13. Healed

rheumatic valvulitis was found in 5, sclerotic lesions of the mitral and aortic valves in 20, acute valvular endocarditis in 2 and syphilitic aortic valvulitis in 2. There were 3 instances each of tuberculous, chronic adhesive and acute nontuberculous pericarditis. Tuberculous myocarditis was more frequent in adults than in children. Nontuberculous pulmonary infections appeared to be a significant factor in the causation of the interstitial myocarditis. Miliary infarctions occurred predominantly in hypertrophied hearts, in hearts with severe coronary arteriosclerosis and in the later decades of life. The conception of a small heart in tuberculosis was not substantiated. Right ventricular hypertrophy was uncommon. Mensuration of the ventricular wall appeared to be an unreliable criterion for hypertrophy. The microscopic appearance of the myocardial fibers appeared more accurate. Disproportion between pulse rate and height of temperature was suggestive of myocardial disease. Murmurs due to organic valvular lesions were fairly common. Functional murmurs were uncommon. The conception that hypertension and active tuberculosis are incompatible was not borne out. Electrocardiographic tracings frequently revealed significant observations.

Air Embolism in Pneumothorax.—Bohorofoush states that air embolism following pneumothorax has been attributed to air entering the pulmonary vein and passing into the heart and the arterial system. This concept is not substantiated by manifestations in all of the cases. The explanation has been only partially satisfactory. Air is not found constantly in the heart or carotid arteries at necropsy, nor has the method by which air enters the pulmonary vein been adequately clarified. The author reports 2 cases which constitute his experience with this accident in over 10,000 inductions of pneumothorax. Necropsy in the fatal case failed to reveal injury to the lung. Air embolism was characterized by pain in the chest during the induction of air onset of symptoms after the vertical position has been assumed and a latent period of a few seconds between the time of rising and the onset of symptoms. The clinical manifestations are similar to an attack of epilepsy; they consist of convulsions, Cheyne-Stokes respiration and tumultuous heart action. The transmission of air through the pulmonary veins in all cases is doubtful. The air may enter the veins in the thoracic wall and thence reach the cranial cavity through the superior vena cava or the vertebral system of veins. The following suggestions are made for the prevention and treatment of this condition. Never give air unless the manometric readings are satisfactory. Technical difficulties should be corrected after removing the needle from the thoracic wall. At the first indication of unexplained or unusual pain the needle should be removed and the head and trunk lowered. In aspirating fluid the syringe should not be removed from the needle or air introduced until fluid has been aspirated. If air embolism occurs, it is necessary to lower the head and trunk until the superior vena cava is below the level of the heart.

Archives of Neurology and Psychiatry, Chicago

49 489-640 (April) 1943

- Grouping Behavior of Normal Persons and of Persons with Lesions of Brain. Further Analysis. W. C. Halstead and P. H. Settlage—p. 489
- Calcification of Cerebral Cortex Associated with Meningotheliomatous Meningioma. Pathologic Study with Comment on Incomplete Types of Neurocutaneous Syndrome. B. W. Lichtenstein and M. Lev—p. 507
- Neurogenic Hyperthermia and Its Treatment with Soluble Pentobarbital in Monkey. L. E. Beaton, C. Leminger, W. A. McKinley, H. W. Magoun and S. W. Ranson—p. 518
- Myasthenia Gravis. Curare Sensitivity. New Diagnostic Test and Approach to Causation. A. E. Bennett and P. T. Cash—p. 537
- Disturbances in Parotid Secretion in an Unusual Neurologic Syndrome. L. Linn and L. A. Spiegel—p. 548
- Treatment of Postlumbal Puncture Headache with Ergotamine Tartrate. S. A. Guttman—p. 556
- Juvenile Amaurotic Idiocy. Clinicopathologic Study. A. J. Lubin and O. Marburg—p. 559
- Surgical History of Trigeminal Neuralgia. A. M. Meierowsky and F. F. Pipito—p. 574
- Foreign Body Granulomas Produced by Surgical Cotton. F. H. Mayfield and W. M. German—p. 581
- Comparison of Metrazol Convulsive Therapy with Electric Shock in Treatment of Schizophrenia. Evaluation of Results Obtained in Treatment of 100 Schizophrenic Patients with Electric Shock. L. Reznikoff—p. 587
- Neuropsychiatric Sequelae of Partial Exsanguination. J. P. Murphy—p. 594

Bulletin New York Academy of Medicine, New York
19 227-298 (April) 1943

- Present Status of Shock Therapy of Mental Disorders N D C Lewis—p 227
 Selective Use of Electro Shock Therapy as Adjunct to Psychotherapy H Schinsky—p 245
 Certain Abnormalities of Ocular Movements Their Importance in General and Neurologic Diagnosis F B Walsh—p 253
 Management of Patient Who Has Recovered From Acute Coronary Occlusion R I Levy—p 273

Canadian Journal of Public Health, Toronto

31 97-146 (March) 1943

- Bacterial Food Poisoning Part I C L Dolman—p 97
 Sanitation in the Field G M Fraser—p 112
 Education Techniques for Nutrition I B Pett—p 121
 Detection of Tuberculosis in School Teachers in Province of Quebec L Laberge—p 125
 *Shiga Toxoid Leone Farrell with technical assistance of Helen Ferguson—p 130

Shiga Toxoid—Farrell describes a method of preparing and treating with solution of formaldehyde a toxic extract of *Shigella dysenteriae*. A toxin was prepared by autolysis of a "smooth" culture of *Shigella dysenteriae*. Incubation of the toxin at a reaction of from pH 8.5 to pH 8.8 with 1 per cent solution of formaldehyde yielded materials which were nontoxic for mice and rabbits in intravenous doses of 0.5 cc and 5 cc. Mice injected subcutaneously with a total of 0.5 cc of detoxified material ("toxoid") in three equally spaced doses resisted up to 50 minimum lethal doses of toxin intravenously. Mice which had received subcutaneously 15 serum units of antidyenteric serum resisted, about twenty hours later, an intravenous dose of fifty minimum lethal doses of toxin. Rabbits which received three doses of toxoid derived from a total of 0.5 cc of toxin developed from 15 to 15 serum units of antitoxin per cubic centimeter of serum. A "secondary stimulus" of about 0.085 cc given one month after the third dose increased the titer of antitoxin from 15 to 65 serum units per cubic centimeter. Thirteen normal human subjects received from 1 to 9 injections of 0.1 to 0.5 cc of toxoid without undue reaction. Two doses of 0.25 cc evoked the production of antitoxin to a level of from 0.4 serum unit per cubic centimeter to 10 serum units per cubic centimeter in 7 of 8 subjects. After a third dose of 0.25 cc all 8 subjects had a measurable amount of antitoxin. Of 7 subjects presumed on epidemiologic grounds to have had Shiga dysentery, 6 had measurable amounts of specific antitoxin (from 13 to 14 serum units per cubic centimeter) at least one year after recovery. Ten days after an injection of toxoid, these 6 subjects had a definitely increased titer of antitoxin (from 10 to 65 serum units per cubic centimeter). The seventh subject still had no detectable antitoxin (less than 0.3 serum unit per cubic centimeter).

Connecticut State Medical Journal, Hartford

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- On the Threshold of Another Year of War H E Sigerist—p 223
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 Anesthesia for the Aged R J Forastiere—p 243
 Aspiration Biopsy, Technique for Cancer Diagnosis J B Herimann—p 250
 Origins of Red Cross and Neutrality of Wartime Medical Services J F Fulton—p 253

Delaware State Medical Journal, Wilmington

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 Acute Agranulocytosis Due to Sulfadiazine S N Rothstein—p 42

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 Serum Cholesterol, Serum Phosphatase and Bromsulphalein Retention in Experimental Hyperthyroidism V A Drill and C B Shaffer—p 308

Georgia Medical Association Journal, Atlanta

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 "Call the Doctor" J Kraska Jr—p 77
 Cytologic Demonstration of Glycogen in Adipose Tissue During Recovery Feeding I Shanks, Jr—p 80

Illinois Medical Journal, Chicago

83 145-204 (March) 1943

- Clinical Considerations of Shock W H Cole—p 162
 Blast Injuries of Central Nervous System L J Pollock—p 165
 Case of Granulocytopenia with Severe Anemia and Staphylococemia, Where Only Etiological Factor Was Use of Aspirin in 40 60 Grain Doses Daily for Years A Hawkinson and E A Kerr—p 168
 Concerning Accommodation Before and After Head Injury V Wescott—p 170
 Pathological Findings in Eyes Enucleated for Glaucoma Due to Sarcoma of Uvea I Bothman—p 173
 Vision Testing in Illinois Audrey M Hayden—p 175
 Unusual Case of Balanidium Coli Colitis I Radef—p 178
 Simple Foreign Body Removal S D Mesrow and R A Arens—p 179
 Primary Atypical Pneumonia Etiology Unknown E Prilla—p 183
 Hemorrhage from Inferior Epigastric Artery Report of Postoperative Case R Johnson—p 187
 Vulvar Erythema M S Wien—p 189

Journal of Clinical Investigation, Boston

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 *Sulfonamide Fast Pneumococci Clinical Report of 2 Cases of Pneumonia Together with Experimental Studies on Effectiveness of Penicillin and Tyrothricin Against Sulfonamide Resistant Strains W S Tillet Margaret J Cambier and W H Harris Jr—p 249
 Nitrogen Storage Following Intravenous and Oral Administration of Casein Hydrolysate to Infants with Acute Gastrointestinal Disturbance A T Shohl—p 257
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 Antitoxin Response in Man to Tetanus Toxoids J H Mueller L R Seidman and Pauline A Miller—p 325

Prognostic Significance of Pneumococci in Sputum in Pneumonia—Frisch and his associates determined the average number of pneumococci per oil immersion field in Wright stained smears of rusty sputum at twelve hour intervals in 175 cases of pneumococcal pneumonia exclusive of type III. The close relationship between the highest sputum count during the course of the disease and the outcome was shown by the fact that the fatality rate was 2 per cent when the pneumococci did not exceed 10 per field, 9 per cent when 11 to 30 were present, 30 per cent when 31 to 75 organisms were found, and 77 per cent

cent when the number exceeded 75. The fatality rate was uniformly low in patients with less than 30 pneumococci per field and uniformly high in those with sputum counts above 30, regardless of the type of pneumococcus, duration of the disease prior to therapy, leukocyte count and blood culture. The unfavorable prognosis usually attributed to type bacteremia, leukopenia and late pneumonia was due chiefly to the higher incidence of sputum counts over 30 per field in such cases. On the other hand, a comparison of cases whose sputum counts fell within the same range showed that age and extent of consolidation had a definite effect on the outcome since the fatality rate was significantly higher in patients over 54 or in those with consolidation of 2 or more lobes on admission to the hospital. It was concluded that the number of pneumococci in the sputum had the greatest influence on prognosis and that the most important accessory factors were the extent of involvement and the age of the patient. It was also found that modern chemotherapeutic agents (sulfapyridine, sulfathiazole and sulfadiazine) did not appreciably reduce the fatality rate in cases with sputum counts below 30 but were distinctly superior to sulfanilamide and serum in cases with counts above 30. The combination of serum and drugs appeared to be no more effective in the latter group than chemotherapy alone. The utilization of the sputum as a method of prognosis in pneumonia has simplified the statistical approach to this disease. All new drugs submitted for clinical trial could first receive preliminary study in selected patients with initial sputum counts of 20 or less. The efficacy of the drugs could be evaluated in these patients by repeated examination of sputum to determine whether or not they were capable of reducing the number of pneumococci as rapidly as sulfathiazole or sulfadiazine. If the sputum count failed to decrease or actually increased within a specified time, therapeutic agents of proved value could be readily substituted without subjecting the patients to unnecessary hazards. The most promising drugs could then be studied in cases with more than 30 pneumococci per field in the hope that they might effect a significant reduction of the high fatality rate which still obtains with sulfathiazole and sulfadiazine in this group.

Prognostic Significance of Reticulation in Type III Pneumonia—Frisch and his collaborators show that the type III pneumococcus differs from all other pneumococci in its capacity to produce excessive amounts of capsular polysaccharide, as manifested by a fibrin-like reticulum in Wright stained smears of rusty sputum. In 114 cases of type III pneumonia reticulation in the sputum was by far the most important factor in determining the outcome. Thus the fatality rate was 79 per cent when reticulation was present and only 7 per cent when it was absent. Furthermore, fatality in reticulated cases was uniformly high regardless of the number of pneumococci in the sputum, the blood culture, the leukocyte count and the extent of the consolidation but was partially influenced by the factor of age. The unfavorable prognostic significance customarily attached to bacteremia and leukopenia in type III pneumonia was attributable to the fact that reticulation was almost invariably present in such cases. The outcome in the nonreticulated cases as in the other types, was dependent on the number of pneumococci per field in the sputum. Sulfapyridine and sulfathiazole were superior to serum and sulfanilamide in the treatment of type III pneumonia because they prevented the formation of reticulation and reduced the fatality rate in reticulated cases from 100 to 67 per cent.

Effect of Penicillin and Tyrothricin Against Sulfonamide Fast Pneumococci—The observations reported by Tillett and his associates were made on 2 patients with pneumococcal pneumonia and bacteremia. Pneumococci types I and VIII were isolated. These strains caused infections in mice that were totally refractory to sulfadiazine. The clinical course of the patients and the clinical laboratory data (blood cultures and sulfonamide concentrations in blood) also indicated the drug resistant characteristics of the infection. Both patients responded rapidly and successfully to specific therapy. In experimental observations penicillin was found to be highly effective against infections in mice caused by either sulfonamide resistant or susceptible strains. When tyrothricin in single

doses was used for treatment of mice, the protection was not uniformly complete against any one of the strains. No evidence was obtained to indicate that sulfonamide resistance influenced the effect of tyrothricin. It was not possible to demonstrate that the drug resistance of the patients' strains was due to the production of inhibiting substances. By contrast, cultures of an additional strain of type I pneumococcus (MacLeod) were found to yield considerable amounts of inhibitor.

Journal of Immunology, Baltimore

46 113-176 (March) 1943 Partial Index

Toxic Ocular Reaction I. New Property of Schwartzman Toxins C. Abo—p. 113

Influence of Benzene Poisoning on Streptococcal Infections in Rabbits I. Benzene Poisoning and Natural Resistance to Intracutaneous Streptococcal Infection R. J. Schnitzer and I. G. Goddard—p. 133

Effect of Alcoholic Intoxication on Acquired Resistance to Pneumococcal Infection in Rabbits C. C. Lushbaugh—p. 151

Demonstration of Efficacy of Vaccination Against Influenza Type A by Experimental Infection of Human Beings W. Henle, Gertrude Henle and J. Stokes Jr.—p. 163

Vaccination Against Influenza Type A—Henle and his collaborators studied the efficacy of allantoic fluid vaccines in the prevention of experimental human infection with the virus of influenza A. Of 28 control subjects 10 came down with clinical influenza following inhalation of a recently isolated active virus. Only 1 case which had not responded to vaccination occurred among the 44 vaccinated persons, 27 of whom had been immunized four months prior to the exposure. There was good correlation between the preinhalation antibody level and the degree of protection in that most of the clinical cases occurred in the group with the lowest antibody titer as measured both by mouse protection and by inhibition of red cell agglutination technique. Increase in the antibody level decreased the morbidity. The clinical picture of the experimental disease confirmed the observation of earlier investigators. Since a number of individuals harbored pathogenic organisms in the upper respiratory tract all clinical cases were treated with sulfonamides. No complications were encountered. Subclinical infections were numerous as shown by slight elevations of temperature mostly on the second or fourth day after inhalation, leukopenia below 5000 or rises in antibodies two weeks after the exposure. These symptoms were independent of one another, either one alone or any combination of the three could be found. Virus was reisolated only from clinical cases.

Journal Industrial Hygiene & Toxicology, Baltimore

25 35-80 (Feb) 1943

Measurement of Industrial Lead Exposures by Air Analysis J. Buxell—p. 35

Measurement of Industrial Lead Exposure by Determination of Stippling of Erythrocytes L. W. Sanders—p. 38

Measurement of Industrial Lead Exposure by Analyses of Blood and Excreta of Workmen J. Cholak and K. Bambach—p. 47

Industrial Lead Poisoning as Clinical Syndrome W. F. Ashe—p. 55

Health of Lead Exposed Storage Battery Workers W. C. Dreesen—p. 60

Experimental Studies on Lead Absorption and Excretion and Their Relation to Diagnosis and Treatment of Lead Poisoning R. A. Kehoe, J. Cholak, D. M. Hubbard, K. Bambach and R. R. McNary—p. 71

Health of Lead Exposed Storage Battery Workers—A study of 766 storage battery workers by Dreesen disclosed that 177 were affected by early plumbism, 168 of these had abnormal lead absorption and 9 incipient plumbism. Only 4 per cent of the men exposed to less than 0.75 mg. of lead per 10 cubic meters of air showed signs of abnormal absorption, whereas 54 per cent of those exposed to more than 3 mg. had early plumbism. There were no important time trends. Both blood and urinary lead values were higher in the affected workers. These values also increased with increasing atmospheric lead exposure. It appears that the more the blood or urinary lead values of an individual deviate from the range of unexposed persons the greater is the likelihood that such an individual will have other evidence of lead induced bodily changes. Reticulocyte stipple cell and polychromatophilia values correlated generally with atmospheric lead concentrations and blood and urinary lead values. Therefore these hematologic determinations are apparently of value for the periodic appraisal of employees exposed to hazardous concentrations of lead.

Pediatría de las Américas, Mexico, D F**1 129-192 (March 15) 1943 Partial Index**

- Diagnosis of Appendicitis R M del Campo—p 129
 Therapy of Mucosanguinous Colitis by Sulfapyridine R Aguilar—
 p 134
 Allergic Diagnosis of Asthma in Children W Bustamante Espinoza—
 p 148
 Nasal Compression and Precordial Auscultation in Children I Ortiz
 Ramirez—p 165

Sulfapyridine in Colitis—Aguilar reports observations on a group of 28 children with acute and subacute mucosanguinous colitis which had developed in the course of various types of infection of the upper respiratory tract or in the course of otitis media. The pneumococcus was identified by the culture method from the feces of 18 and the streptococcus from the feces of 8 patients. Sulfapyridine was given in daily doses which varied between 0.1 and 0.15 Gm for three consecutive days. The same therapy was practiced in a group of 100 children. The disease was rapidly controlled in all of the cases. No instances of intolerance to the drug were observed.

Revista Médica de Chile, Santiago**70 935-1002 (Dec) 1942 Partial Index**

- Icterus of Neoplastic Origin: Comment on 22 Observations H Mes-
 sandri and H Ducci—p 935
 Physiopathology of Sphincter of Oddi I G Hundobro Foro—p 940
 Critical Evaluation of 121 Cases of Endoscopic Resection of Prostate
 I Diaz Muñoz and A Lira Valencia—p 947
 Studies on Volume of Blood During Pregnancy and in Arterial Hyper-
 tension R Grazmuri Ojeda and A Denegri—p 956
 Clinical Aspects of Manganese Intoxications F Hermosilla Diaz and
 A Roa—p 994
 Obstructive Jaundice Caused by Abdominal Hodgkin's Disease L Rios
 and L Montero O—p 1001

Transurethral Resection of the Prostate—Diaz Muñoz and Lira Valencia present an analysis of 121 cases of transurethral resection of the prostate. In 2 cases resection was done for a congenital defect causing obstruction of the neck of the bladder. A perfect functional result was obtained. The second group included patients with acquired hypertrophy of the neck of the bladder either as the result of inflammation of the posterior urethra or as a sequel to previous intervention on the prostate. In this group there were no fatalities, and the functional results were good in all except 1. The third group comprised 67 patients in whom the hypertrophy involved chiefly the median lobe. These were selected patients, and the results were favorable. In patients of the fourth and fifth groups the lateral lobes were chiefly involved and in those of the sixth there was cancer of the prostate. In this last group transurethral resection is particularly indicated. Hemorrhage may be an immediate as well as a late complication. There were 6 of each in this series. Pulmonary or cerebral embolism did not occur. Various infections occurred, and they continue to constitute a serious problem. Repeated resections were necessary in some cases. X-ray examination of the kidney and pelvis should always precede the operation, since endoscopic resection is contraindicated in the presence of renal or prostatic lithiasis. A comparison of results obtained with this method and with the suprapubic operation revealed that the mortality over a course of four years was 13.2 per cent with prostatectomy and 11.1 per cent in resection. Neither method should be used exclusively, the surgeon must select the method best suited for the individual case. In many cases resection is less dangerous than the prostatectomy.

Semana Médica, Buenos Aires**49 1573-1620 (Dec 31) 1942 Partial Index**

- Extensive Blastomycosis Originating in Soft Palate and Pulmonary
 Tuberculosis S L Arauz, I R Steinberg and M J Carlone
 —p 1576
 Convulsive Treatment by Electric Shock G Bosch J Montanaro and
 E Pichon Riviere—p 1580
 Encephalography in Study of Acute Traumatism and After Concussion
 J A Ghersi—p 1586
 New Conception of Allergy D H Negrete—p 1597
 "Tumor Previo" and Infected Abortion J L Martini—p 1604
 Dupuytren's Contracture J Paolini Landa and R C Farina—p 1607
Electric Shock Treatment—Bosch and his associates show that Viale of Rosario, Argentina, originated the electric shock therapy later developed in Italy by Cerletti and Bini. The authors report 14 cases in which electric shock therapy was

employed. The therapy was also used in combination with the insulin coma (method of summation of Georgi) and alternately with metrazol shock (von Braunmühl's method). Electric shock is a simple and practical method of treatment of all psychopathies. It can be employed by producing either complete crises or incomplete crises according to the authors' method. The latter are produced by applying the current for one twentieth of a second instead of one tenth. By employing the current for a shorter period the authors were able to suppress the apnea and reduce the time of awakening. Contraindications to metrazol therapy, such as myocardial deficiencies, hypertension, febrile diseases, progressive tuberculosis, pregnancy, severe anemia and renal insufficiency, were observed in application of electric shock therapy. No serious accidents occurred. The incomplete crises have not as many contraindications as the complete crises and can be utilized for some patients with organic defects. The method has definite advantages over other methods of shock therapy. The aura is completely suppressed and there is amnesia as regards the crisis. It is more rapid and avoids the necessity of using syringes, needles and poor veins. The method proved particularly effective in stupor, melancholia and catatonia. These patients become much more amenable to other treatments, such as work therapy or psychotherapy. In the less fortunate cases the secondary symptoms disappeared and stimulation of the mental state became evident. Electric shock is also an excellent method of investigation which may advance our knowledge of epilepsy and its treatment.

50 1-64 (Jan 7) 1943 Partial Index

- New Observations on Prophylactic Intraperitoneal Sulfonamide Therapy
 in Obstetric Surgery M L Perez and R Echevarria—p 1
 Parasitism with Fasciola Hepatica in Man: Case D E Zabaleta and
 J O Laurito—p 5
 Malignant Tumors of Kidney G Belchor—p 9
 Local Treatment of Infected War Wounds E Lluerna Lanza—p 15
 Basal Metabolism in Arterial Hypertension C A Casullo—p 27
 Anomalies of Position of Kidney: Incomplete Rotation L D Arrues
 —p 31
 Frumetism and Cancer D J Stockdale—p 34

Malignant Tumors of Kidney—Belchor reviews the clinical course of 94 cases of malignant tumors of the kidney observed at the urologic clinic in Cleveland. In 59 of these the diagnosis was confirmed by microscopic examination of tissue obtained by nephrectomy, biopsy or necropsy. Renal tumors are more frequent in men than in women (235:1). Approximately 25 per cent presented hematuria, pain and palpable tumor, the classic triad of symptoms. Hematuria was the initial symptom in 35 per cent, while it developed later in 18 per cent. Pain in the renal region, particularly along the course of the ureter, was the initial symptom in 28 per cent; in 35 others pain was preceded by other symptoms. An abdominal tumor was the initial symptom in only 5 per cent, but in 42 per cent a renal tumor could be palpated during the physical examination. Weakness and loss of weight were the initial symptoms in 11 per cent. Less frequent initial symptoms are swelling of a testicle, fever, sciatica and swelling of the feet or legs. Hematuria is the most frequent symptom and always calls for a thorough examination of the urinary tract. Cystoscopy and retrograde pyelography are the most reliable diagnostic methods. The tumors in this series originated in the parenchyma in 47 and in the renal pelvis in 12. The percentage of hypernephromas was unusually high. The treatment must take into account the age and general condition of the patient and the stage of advancement of the tumor, particularly the presence of metastases. Early recognition, together with radical resection, are the most important factors in controlling the malignant renal tumors. In view of the many possible variations in the clinical picture, the ease with which these tumors spread to other organs and the technical difficulties in complete extirpation, these methods will not result in a large percentage of permanent cures. In a considerable number of cases the cure would be appreciably prolonged, and there is always a chance that a complete cure will ensue.

Book Notices

The Principles and Practice of War Surgery with Reference to the Biological Method of the Treatment of War Wounds and Fractures By J. Trueta, M.D., Assistant Surgeon (U.S.A.), Wingfield Morris Orthopedic Hospital, Oxford, England. With Introduction by Owen H. Wank, M.D., Minneapolis, Minn. Cloth. Price \$6.50. 1 p. 441 with 144 illustrations. St. Louis: C.V. Mosby Company, 1943.

The entire title must be made a part of the book review to attract attention to the point that Trueta rests his book on those fundamental principles of surgery by means of which the surgeon should obtain his results in the best possible manner and the patient his best recovery. Trueta's book enunciates these principles again very well indeed, but he permits himself as so many writers do, to be drawn aside into discussions of certain technical methods and chemical wound treatment which only serve to confuse the reader and lead him to employ details of treatment which disturb the patient and contribute little if anything to his defense against infection and his recovery.

In this book Trueta presents a program or technic which varies in certain details from the method proposed by Orr in 1923. But he says "It is to Friedrich and more particularly to Winnett Orr who above all others lighted the path I have followed that my gratitude is chiefly due. I have proclaimed this before, but there is no other or more fitting note on which I would wish to introduce this book."

Two recent writers, Ponseti and Puig, surgeons in Barcelona in 1938, have also discussed these methods in a paper in *Orthopedic Medicine* (42:73 [March] 1943). They begin "One of the most important acquisitions in war surgery during our time was developed by the Spanish war experience. Statistics published by Trueta, D'Harcourt, Arguelles and Jimeno-Vidal show the best results obtained to the present time. Various technics were used by the different surgical schools, but a common characteristic was one which could be called 'the nonantiseptic treatment'—this is the complete discard of antiseptics as a treatment of wounds. Merely the strict observation of the basic principles of excision of the wound, immobilization and drainage sufficed to give the best results."

They continue "The Orr method is something more than a treatment for osteomyelitis. It is something more than merely to apply a vaseline pack over a wound and cover it with a plaster cast. It is a general surgical program based on a new and different understanding of the problem of wound infection and is applicable to all fields of surgery. The roots of the Orr method go deep into the biologic fundamentals of the inflammatory process."

With regard to this Trueta says that in 1934 he had treated 40 cases of osteomyelitis with the Winnett Orr technic and it occurred to him that he could employ the method in other more serious kinds of bone and joint infection. It had obviously not come to the attention of Professor Trueta that by 1934 probably a hundred papers had been published on the use of the Orr method in all kinds of acute and chronic infections of bones and joints and that Orr's book had been published by Mosby in St. Louis on *The Treatment of Osteomyelitis and Compound Fractures and Other Infected Wounds by Drainage and Rest*. This covered the entire field which Trueta was only entering at that time.

Trueta's modifications of the immobilization rest and intermittent dressing program consist chiefly according to this book in omitting the primary application of iodine as a clean-up antiseptic agent for skin and wound surfaces, discarding the use of the petrolatum gauze pack in favor of dry gauze and the use of drainage by suction. Otherwise his program seems to be about the same as when he began in 1934-1938. Trueta has never made as extensive use of fixation with skeletal devices in the plaster of paris cast as had already been employed for a number of years to insure correct length and position and immobilization during the postoperative period.

It seems a little strange now that instead of iodine Trueta advocates the use of the sulfonamides both in the wound and constitutionally. Also in the light of his research with regard

to the distribution of infection we should expect him to pay more rather than less attention to the importance of drainage and the protection of the wound against secondary infection. This last point arises because of his concessions in the discussion of primary and secondary wound closure. Any closure of infected wounds involves the risk of covering over or closing pockets of active or potential infection with all the dangers of flare-ups to which the patient is thus necessarily exposed. Trueta is inclined to assume as many others have done, that the surgeon can guess how much and how virulent the infection is that still lies inside a wound cavity or even inside a joint and to permit any surgeon to take for the patient the risk involved in finding out by clinical experiment whether or not the patient can take care of such an infected area after it has been closed by sutures.

Primary adequate drainage with gradual closure of the wound from the bottom would seem on the whole to be a safer procedure under all conditions and circumstances.

Dr. Trueta's clinical experience both in Barcelona and since that time had been so successful before he used sulfonamides and without some of the other variations in the technic which he now employs that one finds it difficult to reconcile these later modifications with his previous experience. Any one who has treated more than a thousand cases of severe gunshot shrapnel and other compound fracture injuries with only six deaths will find it difficult to improve on those results with sulfonamides, mobilization of neighboring joints in postoperative treatment, different kinds of drainage or other forms of wound or constitutional chemical therapy. It would seem better to adhere to such fundamentals as the primary clean-up of wounds, adequate drainage, immobilization in correct length and position and protection of the patient against irritative motion and damage to the wound surface. All of these are adequately and thoroughly recognized and described in Professor Trueta's book. He has done this so well that the variations in this program suggested by the introduction of various other details in technic would seem to be very much out of place. Moreover, the research in Barcelona and later in Oxford by Trueta and his predecessors and associates (see chapter IV) on the importance of immobilization in isolating infection in injured and infected extremities would seem to have rationalized so completely all of our teachings with regard to the value of immobilization in such cases that variation in this respect also would seem to be improper. We know as we never knew before how much depends on immobilization and correct position of all the parts in an infected or inflamed extremity—the muscles, nerves, blood vessels and lymph channels as well as the damaged bone and joint structure. This is essential to protect the patient against wound damage and the spread of infection and to assist him in his own efforts for both defense and recovery.

The remarks of Ponseti and Puig may well conclude this comment also. Rest is one of the basic principles of the Orr method. Since rest is recognized as essential in the treatment of osseous lesions, the Orr method had sometimes been interpreted as applicable only to this sort of lesion. In reality the Orr method is applicable to every sort of infected wound with or without involvement of the bones, although its advantages are most remarkable in the treatment of osteomyelitis inasmuch as good drainage is more difficult to obtain in the osseous tissue. As is well known, Orr places extreme importance on the factor of rest. Thomas's watchword "enforced uninterrupted and prolonged rest" has perhaps never before been so carefully observed in practice as it has by Orr. The plaster immobilization applied by him is much more extensive than we have ever seen before. It has long been known that rest is favorable to the biologic defense process and that it is one of the basic conditions for tissue regeneration.

Trueta's book is a good book. It contains many suggestions of value for the military and civilian surgeon. But the book must be read with one's guard up against many of the innovations as to wound surgery and chemotherapy that threaten as usual to violate or violate methods that should always conform to principles and fundamentals. These can never be forgotten or ignored (like asepsis) even for a moment.

Exploring the Dangerous Trades. The Autobiography of Alice Hamilton, M.D. Cloth. Price, \$3. Pp. 133 with illustrations by Norah Hamilton. Boston: Little, Brown and Company, 1941.

Dr. Hamilton is one of the great pioneers in industrial hygiene. Her autobiography is a readable, diary-like record of her experiences in industrial hygiene intermingled with her thoughts and actions outside her professional field. Deep sincerity and a consuming desire to improve the lot of her fellow human beings are the strong motivating forces of her life as revealed here. Dr. Hamilton is best known in medical circles for her pioneer discoveries in lead poisoning. Her work carried her also into other industries and the investigation of other industrial processes: copper, picric acid and the air hammer, for example, but lead has remained the recurring theme of Dr. Hamilton's professional life. Although she speaks frequently of employers who resisted reform measures, the facts as presented record a degree of cooperation from employers which, on the whole, was better than might have been expected. The book contains many commentaries on the contemporary scene and contemporary persons not medical in nature. Although one may disagree with many of Dr. Hamilton's interpretations of men or events the nonmedical sections are fully as interesting as those dealing strictly with matters of industrial hygiene. One feature of the book which deserves special mention is the illustrations by Norah Hamilton the author's sister. The book has much charm in addition to the factual information it conveys.

The Anatomy of the Nervous System from the Standpoint of Development and Function. By Stephen Walter Ranson, M.D., Ph.D. Seventh edition. Cloth. Price, \$6.50. Pp. 520 with 108 illustrations. Philadelphia & London: W. B. Saunders Company, 1943.

This, the extensively revised seventh edition of one of the most widely read neurologic textbooks, was completed for press a few days before the death of its distinguished author, and the revision stands as a fitting memorial to one of the foremost experimental neurologists of our time. The *Anatomy of the Nervous System* first appeared in 1920 and it has been revised with systematic regularity at intervals of three to four years since its appearance, it is especially gratifying to learn from the publisher's foreword that Dr. Ranson, with his usual foresight, had selected Dr. Sam L. Clark, one of his former pupils, now professor of anatomy at Vanderbilt University, as his successor for future revisions. Few selections could have been more appropriate, and the new editions will be as eagerly sought after as those which have appeared during the past twenty-three years.

The successive editions of Ranson closely reflect Dr. Ranson himself and the development of his interests. He commenced his scientific career with his well known study of the non-medullated fibers of the dorsal nerve roots (1911) and for many years his primary interests remained almost entirely in the sphere of neuroanatomic detail. In 1916 with Billingsley he began to study the vasomotor center. The first edition of his book, issued several years later, is almost wholly anatomic in emphasis with only occasional references to function, but Ranson had been stimulated by the vasomotor center and had begun to see the structural matrix of the nervous system in a more dynamic light. In the twenties he inaugurated studies on the physiology of posture, and thereafter problems of muscle tone began to slip into his textbook. After his appointment as director of the Neurological Institute at Northwestern in 1928 his interests became more and more dynamic, and during the last five years of his life his amazingly productive laboratory concerned itself almost wholly with studies of nervous function. For this reason the seventh edition has a new breath of life. In its pages we see Dr. Ranson with his many loyal student followers branching out in a dozen different directions translating anatomic facts into physiologic language. One finds an excellent but all too brief discussion of hypothalamic function, the cerebellum of Lissac and Dow has come into its own—indeed, Dr. Ranson gives the first adequate discussion of functional localization in the cerebellum to be found in any neuroanatomic textbook (other than that of Lissac). Similarly the extrapyramidal motor projections from the cerebral cortex have begun, but only just begun, to come into their own.

As usual, the book is admirably produced with many new and well selected illustrations. The book continues to be set in a

5 inch page, which, despite the length of line, is legible, but the text could be more compact and virtually as legible if there were less leading between lines and around illustrations, and general appearances could be improved by the choice of a blacker and bolder type face more suited for glazed paper. Cuts which have been old standbys from former editions no longer appear worn, and all evidently have been engraved anew. A minor criticism might be offered of figure 42, the illustration of the dermatomes, in which no attempt has been made to incorporate the exhaustive study of the dermatomes by the late Otfried Foerster. Neurologists throughout the world will welcome this new edition coming at a time when the engines of war are heaping insults on all levels of the cerebrospinal axis as well as on peripheral nerve.

Transurethral Prostatectomy. By Reed M. Nesbit, M.D., F.A.C.S., Associate Professor of Surgery, University of Michigan Medical School, in charge of the Section of Urology, Department of Surgery, Ann Arbor. A Chapter on the Vascular Supply of the Prostate Gland. By Rubin H. Flocks, M.D. Cloth. Price, \$7.50. Pp. 192, with illustrations by William P. Didusch. Springfield, Illinois & Baltimore: Charles C. Thomas, 1943.

This attractive monograph on an important urologic surgical procedure represents an authoritative compilation of all worth while essentials for good transurethral surgery on the obstructing prostate gland. The author makes no claims for originality but carefully explains that the technics and procedures are those employed in his first class university urologic department. As narrated by Dr. Nesbit, the technics may well be used by all urologists and the setup might be adopted by any well regulated urologic department. The initial chapter on arterial distribution within the prostate gland, by Rubin H. Flocks, is complete in anatomic detail and serves as a background for the author's transurethral surgical approach. The original illustrations of William P. Didusch are beautiful and so completely descriptive that any urologist could follow Dr. Nesbit's surgical technics with absolute accuracy. An important detail of surgical procedure is Dr. Nesbit's determination of blood loss at the time of operation. Immediate replacement by transfusion is advised, and the author cautions against waiting for indications by post-operative blood counts. The historical review of the surgical procedure is not only interesting but extremely detailed, and the author has completed the first comprehensive bibliography on all phases of transurethral surgery and its correlated phenomena. A few misspellings and several grammatical errors warrant more detailed proof reading by the author's university editorial assistant. Despite this modest defect, this monograph should be extremely useful to the expert resectionist and should be an accurate guide for those venturesome surgeons who must delve into this highly technical realm of an exact surgical specialty.

Mark Pfeiffer, M.D. By John Weld. Cloth. Price, \$2.75. Pp. 374. New York: Charles Scribner's Sons, 1943.

Here is a novel typical of novels about doctors. It traces the career of a boy who is the son of a railway engineer in a typical small town Illinois family. In the interest of the family prestige the boy determines to become a physician. His ambitions cause him to disregard many of the social, moral and ethical values, so that he drives steadily forward to success as a surgeon. In this drive he passes through medical college in Chicago, an internship in the Cook County Hospital, an assistantship and finally a residency with a character poorly disguised but meant to reflect Harvey Cushing. The book is dedicated to Dr. Loyal Davis and no doubt the author has obtained much of his medical color from conversations with Dr. Davis. One character prominent in the book comes particularly to light, namely, the first wife of Mark Pfeiffer, who represents the rich playgirl type.

Doctors will find the book extraordinarily interesting because it tells about them and their work with the drama of a novel as the setting. There are many excellent reflections on the weakness as well as on the strength of medical practice. Certainly the writing by a professional novelist is well above the average of most works in this field. Compared, however, with Somerset Maugham's "Of Human Bondage," Francis Brown's "The Young Physician" or even some of Cronin's "Deeping's" works, the book runs fifth.

Periodontia: A Study of the Histology, Physiology and Pathology of the Periodontium and the Treatment of Its Diseases. By Henry M. Gold, M.D., Instructor in Oral Pathology, Harvard School of Dental Medicine, Harvard University, Boston. (Cloth, Price \$7.50. Pp. 107, with 110 illustrations. St. Louis: C. V. Mosby Company, 1942.)

Diseases affecting the supporting tissues of human teeth are as old as the history of man. The pathology of periodontal diseases has been investigated only since the early 1920's, when Gottlieb published his observations on human necropsy material. The names of Kronfeld, Orban and others are closely associated with this work. The many advances that have been made in the treatment of periodontium in recent years are well described and carefully enumerated. The illustrations are clear and each is well explained. Each illustration tells a definite and significant story.

Chapter 1 is devoted to examination. Items of special interest are laboratory tests, blood examination, basal metabolism and urinalysis. Chapter 2 considers the diagnosis made after careful examination of the different manifestations of periodontal disease so that a differential diagnosis may be made of well defined types. X-ray examination is valuable as an auxiliary means of diagnosis, using gutta-percha points to determine the depth of pockets. The disease then should be classified as to cause and progression and the method and necessity of home care explained to the patient in addition to the corrective care administered by the dentist.

Chapter 3 deals with etiology and stresses particularly traumatic occlusion, autointoxication and faulty diet. Occlusal trauma is defined as a force in excess of that which can be borne by the tissues of the periodontium without injury. McLean describes three types of masticating derangement: interference with lateral and protrusive movements; performance of the masticating function in an eccentric relationship which he calls convenience relationship and which may develop into a case of malocclusion; and centric interference if the dentures strike on cusp ridges before sliding into centric position with particular damage to the bone from the resulting anteroposterior thrust. McLean believes that cuspal interference causes shorter and more nearly vertical movements of the jaw in the shearing stroke and in extreme cases leads to so-called locked bite. Occlusal derangements if existing for a long time result in tooth wear and periodontal disease. The more the teeth resist wear, the greater the damage to the periodontium. This exemplifies the condensed and precise concentration of etiologic factors found throughout the book. Traumatic occlusion must be carefully considered as a primary cause of periodontal disease as well as dietary and vitamin deficiencies. A bibliography at the end of the chapter contains many valuable references pertaining to all subjects discussed.

Chapter 4 takes up the pathology of periodontal disease, the knowledge of which is essential for scientific diagnosis and proper treatment. It gives a comparative picture of tissues, teeth and supporting structures from youth to old age. Again the subject of malocclusion and its effects is discussed in detail. Where a tooth is subjected to heavy stress the periodontal membrane becomes thicker while a tooth that is out of function has a thinner periodontal membrane. Temporary or permanent damage may thus be caused.

The alveolar bone reacts to occlusal conditions. The physiology of tooth suspension and the alveolar bone is discussed to explain these changes and the possibility of injury to the alveolar bone because of occlusal trauma sometimes causing resorption.

The main cause of gingival irritation is calculus. Other sources are overhanging fillings, faulty crowns and loss of contact. A fine differentiation of the three stages in periodontosis is described and pictured. The amount of discharge from a pocket depends on the degree of destruction of the crevicular epithelium and the amount of cellular infiltration of the sub-epithelial tissues. The depth of the pocket does not designate the amount of purulent discharge. A number of reference books are again named.

Chapter 5, the final chapter, is on treatment. The first recommendation is the employment of careful systematic routine methods correlated with the diagnosis and the pathologic and etiologic factors. Objectives are restoration of gum tissues to

a hard, firm, pink and healthy state, teeth firm and stable in sockets, root of infection and hopeless teeth removed and the masticating mechanism rebuilt, correcting traumatic stresses. Methods of treatment for various conditions are described in detail, supplemented by pictures. It is sometimes necessary to employ orthodontic measures to move teeth to their proper functional position.

It is impossible for a review or summary to do justice to such an important and valuable book. It merits a careful study rather than a casual reading.

Essentials of Gynecology. By Willard R. Cooke, M.D., F.A.C.S., Professor and Head of the Department of Obstetrics and Gynecology, University of Texas (Galveston). (Cloth, Price \$6.50. Pp. 474, with 197 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1943.)

The author states in the preface that his object in this book is to present concisely, from the practical viewpoint and with as much correlation as possible the salient features of the anatomy, pathology, symptomatology and therapy of gynecology. This he does successfully in most instances. However, on some subjects the material included is inadequate to meet the stated requirements.

Despite the fact that the book is intended primarily for general practitioners and medical students, the technique of bimanual examination is not presented, although other steps in the examination are. The section on anatomy, although brief, includes the more important features of pelvic structure and is clearly presented and adequately illustrated. The inclusion of a short chapter on psychologic factors and mode of life as related to gynecologic disease and frequent emphasis of the subject throughout the book is unusual in textbooks on gynecology. On the other hand, the author also attributes many psychoses and neuroses to the more common gynecologic lesions such as cervicitis and pelvic inflammation.

The division of subject material and the grouping of disease entities is unusual and occasionally confusing. For instance, in one chapter on functional disturbances are included normal intercourse, dyspareunia, menstrual disturbances, dysmenorrhea, neuroses and psychoses associated with menstruation, ovarian hyperfunction and hypofunction, sterility, contraception, therapeutic and spontaneous abortion and ectopic pregnancy. Infectious processes are divided into surface and invasive neoplasms into benign and malignant epithelial and stromal, under each heading is discussed the disease process in each of the pelvic organs as contrasted with the more common presentations in which all conditions which may involve any one organ are discussed together. In the sections on preoperative and postoperative care are discussed the preparation of patients for operation and their care during the convalescence. Although the more common gynecologic operations are but briefly outlined, this is of little value to the student or general practitioner since there are no illustrations and the technical details are omitted.

The book is well illustrated both by line drawings and by photographs of pathologic material. Nearly all the illustrations are original, only a few having been reproduced from other published works. The photomicrographs in most instances are clear and show the tissue structure well. The publication of this book represents an excellent effort toward bridging the gap between the standard textbooks of gynecology and the outlines so commonly used by students.

Somatic and Endocrine Studies of Puberal and Adolescent Boys. By William Walter Greulich, Ph.D., and others. Monographs of the Society for Research in Child Development, Volume VII, No. 3 (Serial No. 33). Paper, Price \$1.50. Pp. 55, with illustrations. Washington, D.C.: Society for Research in Child Development, National Research Council, 1942.

This short monograph deals with the physical development of prepuberal and adolescent boys together with examinations of the urinary excretion of estrogens, androgens and gonadotropic hormones and correlation between the physical and laboratory studies. The monograph includes several plates illustrating differences in physical development in boys of the same and different chronologic ages. This study constitutes a useful contribution to the subject.

Queries and Minor Notes

THE ANSWERS HERE MUST HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES. LESS SPECIFICALLY STATED, THE RELIABLE ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

BLOOD GROUPINGS AND PLASMA TRANSFUSION

To the Editor—Persons belonging to type O (Landsteiner) are regarded as "universal" blood donors, and those belonging to type AB are "universal" recipients. In giving blood plasma, should not the reverse be true—with type AB the "universal" plasma donor and type O the "universal" recipient? If a burned patient with type AB loses most of his plasma into his tissues and receives massive plasma transfusions from any or all other group, will the recipient's cells be agglutinated? It is my impression that burned patients receiving large quantities of plasma often die. Might not some of this mortality be the result of recipient red cell agglutination?

Harvard L. Romence, M.D., Springfield, Ill.

ANSWER—The terminology suggested for plasma in the query cannot be accepted because it presupposes that the transfusion of agglutinable blood and plasma containing agglutinins active or the patient's cells may be equally harmful. Fundamentally the issues involved in a discussion of reactions to injections of plasma do not differ from those dealing with reactions following the use of universal group O blood for patients of groups A, B and AB. In both cases the question concerns the role of the action of the isoagglutinins injected. Experience has confirmed the validity of Ottenberg's suggestion made in 1911 that, by and large, the transfusion of universal donor blood to patients of groups A, B or AB can be carried out safely. Although isoagglutinins anti-A and anti-B capable of reacting with the patient's blood cells are administered in such a transfusion, the quantitative relationships are such that the foreign agglutinins are rendered inactive by dilution and specific absorption and inhibition.

In the usual transfusion of universal donor blood or of group O plasma, the comparatively small volume of 250 cc is diluted in the patient's circulation so that in the final mixture the isoagglutinins are specifically inhibited by an excess of the patient's red blood cells. An additional factor of safety is the wide distribution of the A and B agglutinogens in tissue cells and body fluids including plasma. Since there is always an excess of these substances in the body, the injected agglutinins are rendered harmless by fixation.

There is a possibility of some danger in the indiscriminate use of universal donor blood or plasma in a very anemic patient of group A, B or AB is repeatedly transfused. In treating massive hemorrhage it may be safe to give one transfusion of group O blood. While this is being done attempts should be made to find donors of the same group as the patient, and subsequent transfusions should be carried out with homologous blood.

In administering plasma alone there are other considerations which make it unnecessary to perform compatibility tests. In the great majority of the hospitals pooled plasma is employed, so that the average pool is derived from individuals of groups O, A and, to a lesser degree, group B. Accordingly the dilution and the specific inhibition of the activity of the agglutinin make it possible to administer the plasma indiscriminately, i.e. without employing preliminary compatibility tests. Even if one uses plasma not derived from pools, blood grouping and compatibility tests are nevertheless not necessary. In using this material or in the administration of group O blood an additional factor of safety is the slow administration so that the active agglutinins are immediately diluted and specifically inactivated by the patient's red cells, body fluids and other tissue cells.

More specifically, a group AB patient suffering from burns will have a relative excess of red blood cells which can readily absorb the agglutinins in the injected plasma, particularly if administered slowly. The advantages of pooled plasma for a case of this sort are obvious. Should additional precautionary measures be desirable, one may add the Witelsky group A and B inhibiting substances to the plasma. Judging, however, from the low incidence of reactions following the use of plasma, there does not seem to be any real indication at the present time for the use of these substances.

If the fatality incidence of burned patients receiving large quantities of plasma is high, this may be attributed to causes other than the administration of plasma.

RECURRENT ERYSIPELAS LIKE ERUPTIONS

To the Editor—At the age of 21 in 1934 a white man, then a college student, was taken suddenly ill with fever (101 F), malaise and headache. Chilly sensations accompanied this picture. This episode occurred in April of that year and began suddenly in the evening. Early the next morning he awoke, feeling worse, but now he noticed a bright red shiny, well outlined area on the tibial surface of his right leg at the junction of the middle and lower thirds. There was a painful right inguinal adenitis but no evidence of varicosities, lymphangitis or thrombophlebitis. There was no antecedent history of an abrasion or infection of the leg. He suffered a mild trichophytosis, but this was not infected and was of the sudden scaly interdigital type. He was put to bed and ointment of ichthammol was applied. Within thirty-six hours his fever had abated and, although somewhat stiff, he was able to walk. Within three days he was feeling well. At the end of the third day all evidence of active inflammation had disappeared and the inguinal glands were no longer palpable. For about two months the area remained red as long as he stood on it and, when elevated, would become a rusty brown. Telangiectatic vessels were seen for a while and occasionally small petechiae were present. Within four months complete resolution had occurred and he experienced no further difficulties. He finished college, completed medical school and was in the third year of his internship when the exact repetition of the episode occurred. The history was identical, both as to time of the year, time of day onset appearance, distribution of the lesion course and recovery period. This time the lesion was treated with continuous hot wet dressings of magnesium sulfate. He recovered in the usual time and was symptom free until March 1, 1943. At this time a sudden onset of chilly sensations, fever and malaise without evidences of coryza or sore throat made him suspicious of a recurrence of the old trouble. Again the course of symptoms, the appearance of the lesion and its distribution, along with the accompanying adenitis, exactly duplicated previous episodes. This time he was treated with sulfadiazine (2 Gm every four hours for three doses then 1 Gm every four hours) and resolution took place in about thirty-six hours, the same as with the previously treated attacks for which heat and ichthammol were used, each with measurable success. In one instance (the second recurrence) a leukocyte count was performed which showed a total of 14,000. No additional laboratory studies have ever been done. This is to me obviously a localized erysipeloid type of cellulitis, but I have never heard of the recurrence of specific symptoms and the recurrence of the lesion in exactly the same location, with the course of the febrile period of thirty-six hours being unaffected by the therapy used. Please comment on this problem as to a specific name or entity, if known, the probable reasons for recurrence in the same locality without evidence of antecedent infection (except the mild epidermophytosis) and any recommendations for either prophylaxis of probable future attacks or for therapy, should another occur.

M.D., Maryland

ANSWER—Cases of this kind are not uncommon. They occur usually on the face or extremities and are often responsible for localized elephantiasis the result of oft repeated attacks. Most of them, if not all, are due to infection with streptococci and they are referred to as recurrent erysipelas or erysipelas-like eruptions. J. L. McGlasson (Recurrent Erysipelas of the Legs with Dermatitis of the Feet, *Arch. Dermat. & Syph.* 14:69 [Dec.] 1926) called attention to the frequency with which such cases are associated with dermatitis of the feet. Traub and Tolmach (Erysipelas-like Eruption Complicating Dermatomyofasciomyositis, *THE JOURNAL*, June 26, 1937, p. 2187) reported a series of such cases and because of the association with foot infection stated their belief that they are dermatophytids. Sulzberger, Rosenberg and Goetze (Recurrent Erysipelas-like Manifestations of the Legs, *ibid.*, p. 2189) reported some experimental research in such cases and concluded that at least some of them are dermatophytids, eruptions caused by fungi. This conclusion is not accepted by most dermatologists. Goeckerman and Wilhelm (Recurrent Lymphangitis, *California & West Med.* 55:251 [Nov.] 1941) adhere to the general belief that they are of streptococcal origin and report that they found streptococci in the tissues just as in erysipelas but that the process is a deeper one than true erysipelas and therefore should be called lymphangitis.

The rate of recurrence varies widely, some persons having attacks every week or two, others being fortunate enough to have their recurrences at long intervals. Cases are recorded in which there have been thirty attacks during a period of years. Most of them are mild with little or no fever, but the disease may at any time become severe. Delbanco and Callomen (*Handb. d. Haut u. Geschlkr.* 9/1, p. 17, 1929) cite the case of Hertz and Vidal in which after many mild attacks a severe one, even endangering the life of the patient, occurred. Goeckerman and Wilhelm observed a case which at first was confined to the legs, then after some years of recurrence the hands also became involved and then the attacks were accompanied by a wide spread, almost generalized, oozing, crusting, fissuring and scaling dermatitis which cleared up promptly as the local process resolved after each attack.

The infection takes place through atrioms furnished by other disease or trauma, on the feet often through the openings caused by the disease usually ascribed to ringworm infection, on the hands sometimes secondary to other forms of dermatitis, as the case of McGlasson consequent to procaine dermatitis, and on the face usually through small breaks in the skin or mucous membranes of the nose or mouth.

To explain the recurrence limited to a particular site even though plenty of atrioms are present through which other sites

can be infected, it seems necessary to assume that the infection remains latent over long periods flaring up when local resistance is lowered. Goeckerman and Wilhelm explain this as follows: 'A change in the patient's immunity has taken place, confining the activity of germs to a restricted area of the lymphatic bed and from there they act much like a focus of infection in the tonsils or teeth.'

In our observation acute exacerbations are usually brought about by trauma, exposure, overwork, exhaustion or improper hygiene. Others have reported that recurrences seem to be prevented by attention to the prevention of the openings in the skin through which infections may take place. This does not agree with the theory of recurrence but it may be that attention to the local skin condition was accompanied by care to prevent other causes or lowered resistance. Roentgen rays and ultraviolet light are beneficial to true crypts and may be found of value in preventing the recurrences of the lymphangitis under discussion. The same physical measures may be tried in the effort to hasten the resolution of the attacks if others occur but it is doubtful whether any therapy can shorten the record already set.

TECHNIC OF AURAMINE STAIN FOR TUBERCLE BACILLI

To the Editor—Will you please send me the formula and directions for using the auramine stain for tuberculous?

Clifford W. Atherton M.D. Farmington, Ill.

ANSWER—O. W. Richards, E. K. Kline and R. C. Leach (*Am Rev Tuberc* 44:255 [Sept] 1941) of the Spencer Lens Company use a monocular microscope with light rich in ultraviolet rays passed through a blue ultraviolet transmitting filter reflected through the microscope from an aluminum surfaced mirror and finally passed through a yellow contrast filter placed in the eyepiece. Smears should preferably be made with fresh sputum. Procedure: 1. Make direct smears of sputum or of sputum concentrate on glass slides and fix by heat in the usual manner. 2. Stain for two to three minutes with a solution of 0.3 per cent auramine in 3 per cent phenol (carbolic acid) solution at room temperature. 3. Wash with water. 4. Decolorize with a solution of 0.5 per cent concentrated hydrochloric acid and 0.5 per cent sodium chloride in 70 per cent alcohol for one minute pour off and add fresh decolorizer for two additional minutes. 5. Rinse, dry and examine. Almost any concentration of auramine will give the desired result, as little as 0.05 per cent of dye may be used. The concentration of phenol may also be reduced. Satisfactory results have been obtained with 0.5 per cent auramine in 2 per cent phenol. The auramine is dissolved with gentle heat but the stain becomes cloudy on cooling. Cloudy solutions are just as satisfactory as clear ones but they should be shaken just before using. The stain after a number of weeks gradually loses some of its fluorescent properties. Smears of known positive sputums should be used as check on the dye. Emil Bogen (*ibid* p. 267) says that a simple mercury vapor lamp or high powered filament bulb may suffice and uses an ordinary bacteriologic microscope. The thinly smeared sputum slides are stained by any acid fast staining technique except that the carbol-fuchsin is replaced by auramine. One gram of pure auramine powder is placed in a flask one gradually adds 1000 cc of distilled water shaking vigorously until it is completely dissolved and then adds 50 cc of pure liquefied phenol and again shakes the flask. A temporary clouding later settles out, leaving a clear yellow solution which keeps a long time in the dark. The Hermann procedure is followed at Olive View Sanatorium. 1. Fix with heat. 2. Flood with auramine solution and steam five minutes. 3. Wash in running water. 4. Decolorize in 70 per cent alcohol containing 3 per cent hydrochloric acid until the preparation is colorless. 5. Wash in running water. 6. Dip in a 0.1 per cent aqueous solution of potassium permanganate (this solution remains usable for about a week after turning brown). 7. Wash in running water. 8. Dip in Loeffler's alkaline methylene blue solution. 9. Wash in running water. 10. Dry and examine with the fluorescence microscope. The Chicago Branch Laboratory of the Illinois State Health Department (Lind H. E. and Shaughnessy H. J.) *J Lab & Clin Med* 27:531 [Jan] 1942) use (1) a monocular microscope, (2) an 8 mm objective and a 20 X ocular or a 18 mm objective and a 6 X ocular (3) a low voltage high amperage light source such as a Universal microscope lamp of 65 volts and 275 amperes with clear bulb and transformer (numbers 351 and 353 lamps are suitable) (4) a blue ultraviolet transmitting filter in front of the light source (5) an aluminum surfaced mirror in front of the microscope mirror and (6) a yellow filter placed in the ocular (this is a complementary filter necessary to see the acid fast bacteria which fluoresce to appear yellow). The staining solution is composed of 0.1 Gm of auramine O (National Aniline Com-

pany) 3 cc of liquefied phenol and 97 cc of distilled water. The decolorizing solution is 100 cc of 70 per cent alcohol, 0.5 cc of concentrated hydrochloric acid and 0.5 Gm of sodium chloride. There is no counterstain. Smears are made as usual and fixed by heat. Auramine is applied for two minutes, washed and decolorized with acid alcohol for two to four minutes and then redecolorized in a fresh solution of acid alcohol at least two minutes and again washed and dried. Individual staining is preferred. There is no danger of overdecolorizing, but there is trouble when decolorization is insufficient. The acid fast bacilli appear as small bright yellow bacilli against a dark background.

EFFECTS OF BLOOD TRANSFUSION ON BONE MARROW

To the Editor—Does a single blood transfusion have any effect on the bone marrow of the recipient? Do repeated transfusions have any effect on the bone marrow of the recipient? Do repeated small transfusions have any effect on the bone marrow of the recipient? If the production of red cells in the bone marrow as stated is either stimulated or depressed are there any exceptions?

M. D. Connecticut

ANSWER—In animal experiments it has been found that bleedings stimulate erythropoiesis while transfusions depress it and it would appear that the same holds true in man. The reason for this is that the most important factor in erythropoiesis is the oxygen tension of the bone marrow, low tensions having a stimulating effect while high tensions have a depressing effect. For example, Reinhard, Moore, Dubach and Wade (*Effect of Breathing 80 to 100 per Cent Oxygen on the Erythrocyte Equilibrium in Patients with Sickle Cell Anemia*, *abstr THE JOURNAL*, April 10 1943 p. 1245) found that in patients with active sickle cell anemia with pronounced reticulocytosis the breathing of 80 to 100 per cent oxygen caused the reticulocyte count to drop from 20 to 30 per cent to as low as 1 per cent and there was a concomitant drop in the erythrocyte count. When the oxygen was discontinued the reticulocytes reappeared accompanied by a shower of normoblasts and a rise in the red cell count.

A contrasting example is the polycythemia of mountain sickness. An exception to the depressing effect of blood transfusion on the bone marrow is seen in pernicious anemia in which transfusions were often observed in the past to bring about remissions in the disease. This however, should not be attributed to the action of the blood per se but rather to its function as a vehicle by virtue of which blood transfusion may serve also to transfer vitamins, hormones and other factors active in minute amounts. Obviously the vitamin or hormone itself if available would be much more effective than a blood transfusion in such cases and in fact, liver has displaced blood transfusion in the therapy of pernicious anemia except in severe untreated cases in which blood transfusions are still of value to tide the patient over until the liver therapy takes effect (Wiener, A. S. *Blood Groups and Blood Transfusion* ed. 3, Springfield Illinois and Baltimore Charles C. Thomas 1943 pp. 77 and 85).

TRANSVERSE VERSUS VERTICAL ABDOMINAL INCISION

To the Editor—How does the transverse abdominal transection of the rectum (W. Meyer) compare with the usual vertical incisions in frequency of post operative herniation or other complications and sequelae (adhesions, paralytic ileus and so on)?

Isadore I. Rosen, Captain M. C. A. U. S.

ANSWER—Although the transverse abdominal incision has not become popular those who employ it are unanimous as to certain of its advantages. Sectioning of one or both rectus muscles has no serious anatomic or physiologic sequelae. The muscle when healed simply presents an extratendinous intersection. Cleavage lines in the abdominal wall assume a generally transverse direction. It is argued that any incision that parallels the fleshy and aponeurotic fibers will be the one that causes the least structural and physiologic damage. Good examples of such incisions in the lower part of the abdomen are the McBurney and the Pfannenstiel modified by Maylard. The transverse incision in the upper part of the abdomen is least likely to cause injury to the intercostal nerves which supply the abdominal parietes. A vertical incision that passes through or laterally to the rectus muscle will denervate whatever tissue lies medially to that. This frequently results in atrophy of the muscle. Sloan has estimated that the lateral pull of the flat abdominal muscles, the external oblique, the internal oblique and the transversalis is between 30 and 50 pounds. With a vertical incision this energy would be applied to the wound disruption whereas with a transverse incision the muscle pull aids in closing the incision. The nerves cut across in a vertical incision are hyperirritable in the early postoperative period. In a subconscious effort to minimize pain the patient splints his abdomen thus restricting the diaphragmatic excursion which in turn leads to decreased vital capacity, anoxia and pulmonary

atelectasis. Mansfield and Lich employed the transverse incision in both the upper and the lower part of the abdomen for a period of one and one-half years. They did not have a single instance of postoperative hernia or even of weakening of the abdominal wall in spite of the fact that in several of their patients the wound was the seat of a rather severe infection with prolonged healing. Hunter did not have a single wound disruption or postoperative hernia in 570 gynecologic operations in which a lower transverse abdominal incision was employed. While no definite report on the subject is to be found in the literature, the consensus as to the occurrence of postoperative adhesions after these incisions is that it is much less frequent than with the longitudinal incisions. Storn believes that this is due to the fact that the nerve supply of the abdominal wall remains intact. If this is true the occurrence of postoperative ileus should also be a rare complication.

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FULMINATING MENINGOCOCCIC MENINGITIS (WATERHOUSE-FRIDERICHSEN SYNDROME) WITH ADRENAL GLAND HEMORRHAGE

To the Editor—Is there any explanation for the occurrence of hemorrhage into the adrenal glands in cases of Waterhouse-Friderichsen syndrome? Why should these structures, rather than other parts of the body, be the site of hemorrhage?

Lieutenant Colonel, M. C., A. U. S.

ANSWER—The Waterhouse-Friderichsen syndrome by definition (Dorland's American Illustrated Medical Dictionary) refers to the fulminating or apoplectic form of meningococcic cerebrospinal meningitis in which death occurs within a few hours and meningeal symptoms have scarcely had time to develop or, commencing, are cut short by simultaneous meningococcus invasion of the medulla of the adrenal glands with hemorrhages. Meningococci are in the blood stream and hemorrhages occur in many tissues of the body as well as in the adrenal glands. Extensive spontaneous hemorrhages into one or both adrenal glands without adequate explanation occur not infrequently in newborn infants; they are much less frequent in adults. In some of those cases in adults, not associated with meningococcic infection, bacteria have been demonstrated in the capillaries and hemorrhagic tissues of the adrenal glands. The hemorrhages in the adrenal glands in patients with meningococcic or other bacterial septicemia apparently result from the local effects of the bacteria in the tissues. The hemorrhagic destruction of adrenal gland tissues vital to the host is probably much more serious than the coincident hemorrhages in less vital tissues elsewhere in the body. There may be, however, some dispute in ascribing the cause of death to the septicemia or to the extensive hemorrhagic destruction of the adrenal glands. The former probably is the *causa propria* and the latter the *causa proxima*.

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DIETHYLSTILBESTROL FOR SURGICALLY CASTRATED PATIENT

To the Editor—A married woman aged 24 had a bilateral oophorectomy for dermoids in 1939. The uterus was not removed. For the past two years she has been taking oral diethylstilbestrol (15 to 3 mg daily) for control of menopausal symptoms. Every six to ten weeks she has been directed to discontinue therapy for several days to allow uterine bleeding. On resuming treatment she usually experiences nausea with occasional vomiting and diarrhea. Is it necessary to continue periodic uterine bleeding? If so, why, and how frequently? Will a hysterectomy eventually be necessary? Are liver function tests or other procedures to determine toxicity advisable in a case such as this which will require estrogenic therapy for many years?

M. D. California

ANSWER—For a patient surgically castrated, estrogens are primarily intended to relieve the symptoms of the menopause. There is little use in producing cyclic bleeding except when such patients are anxious to have menses for psychologic reasons. The dose of estrogens should be lowered to the minimal amount which will afford relief of the subjective symptoms and there will be little likelihood of inducing uterine bleeding. The bleeding resulting from estrogen administration is not harmful as long as it is not excessive in amount and a hysterectomy is inadvisable. The average dose of diethylstilbestrol is 0.5 to 1 mg daily.

The nausea and other gastrointestinal reactions obtained with diethylstilbestrol therapy are not indications of irritation or damage to tissues such as the liver. These side reactions are now considered to be systemic in origin as the result of rapid absorption into the blood stream. When the absorption is delayed, as with the use of diethylstilbestrol dipropionate or dipalmitate, there is a lowered incidence of side reactions. Decreasing the dose of the estrogen will also lessen the incidence of unpleasant reactions (Freed, S. C., Eism, W. M., and Greenhill, J. P. The Therapeutic Use of Diethylstilbestrol Esters, *THE JOURNAL*, Aug. 22, 1942, p. 1412).

CARE OF PERMANENT ILEOSTOMY

To the Editor—There was a question concerning the care of colostomy and an answer in *Queries and Minor Notes* (*The Journal*, Sept. 14, 1940, p. 953) but I have been unable to find information concerning the care of permanent ileostomy which presents the problems of a movement of continuous and watery drainage and of a constantly raw and irritated skin around the opening. Is it possible to use any type of plug which may be inserted into the opening and which may be removed periodically? Also are there any new types of cups which protect the skin? Is aluminum powder the best thing to protect the skin? Should the diet be the same as with colostomy patients? Are enemas indicated?

F. L. Neely, M.D., New York

ANSWER—A permanent ileostomy should not be treated by using enemas. It should be protected by the use of a cup which has an opening just large enough to let the ileostomy protrude into it so that it can collect the liquid material in a bag which can be evacuated once a day. Such a bag should be united to the skin by a rubber plastic which will hold the bag firmly in place and protect the skin. If the skin edges become irritated, aluminum powder is excellent. If they become raw and excoriated, the patient should lie on his stomach in bed on a split mattress for a couple of days so that the ileostomy may leak directly into a basin. This will allow the skin to become normal again and then it can be treated by aluminum powder and by the kind of cup indicated.

VIABILITY OF SPERMATOOZOA AFTER ENCEPHALITIS

To the Editor—Some time ago a young man had an attack of acute epidemic encephalitis. Recently he had a fresh specimen of semen examined to determine fertility. There were few spermatozoa and those present were nonmotile. Would such a condition be likely to follow an attack of encephalitis? No venereal history or other infection was admitted to account for the condition.

M. D., Illinois

ANSWER—As far as is known at present an attack of acute epidemic encephalitis would not have an effect on the viability of spermatozoa. As long as a few spermatozoa were present, even though nonmotile, the chances are that subsequent examination may reveal motility and greater numbers. If the oligospermia with absent motility persists, the use of gonadotropic substances might be of benefit.

INCIDENCE OF GOITER SINCE INSTITUTION OF IODINE PROPHYLAXIS

To the Editor—Will you please tell me, if possible, where I can get the following information: Where is goiter most prevalent at present in the United States? Has there been a decrease or increase in the incidence of goiter since the discovery of thyroxin by Kendall, Dec. 25, 1914?

P. H. Owens, M.D., Kansas City, Mo.

ANSWER—Good statistics have not been published on the incidence of goiter throughout the country since iodine has been used extensively for prophylaxis. There is no doubt, however, that the incidence of nontoxic goiter has been greatly reduced since iodine has been used for this purpose. It has, of course, dropped since Kendall's discovery of thyroxin in 1914. However, the incidence of toxic goiter has been but little affected by the prophylactic use of iodine.

ODOR ASSOCIATED WITH ADVANCED CANCER

To the Editor—In *Queries and Minor Notes* in *The Journal* May 13, 1943 I read the note from Dr. Morton L. Levin, Albany, N. Y., with regard to odor associated with advanced cancer. In the Jefferson Davis Hospital at Houston, Texas, we have found an additional medicament that will control the odor, especially the odor from advanced carcinoma of the cervix. The treatment is reasonable in cost and easy to apply. The mixture is made up in tablet form. The tablets contain equal parts of dextrose and lactose, boric acid and tartaric acid to make a pill of 29, and an organic iodide (5-7 diiodo-8-hydroxyquinoline). The iodine also helps to control the odor. Two to four tablets placed within the vagina three times a day control the odor well. This acidulated dextrose lactose iodine mixture eliminates the secondary infection which is in most cases the cause of the odor and often greatly relieves the pain.

Karl John Karnaky, M.D., Houston, Texas

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CARCINOMA OF THE PROSTATE

A STUDY OF THE PERCENTAGE OF CASES SUITABLE
FOR THE RADICAL OPERATION

J. A. CAMPBELL COLSTON, M.D.
BALTIMORE

In an editorial¹ published in THE JOURNAL in July 1942 I was quoted—and quoted correctly—as stating that of all cases diagnosed as carcinoma of the prostate in the Brady Urological Institute the radical operation was carried out in approximately 5 per cent. This question was raised in a discussion at a meeting of the New England branch of the American Urological Association, and without any available figures in a desire to be conservative, I gave my impression that about 5 per cent of all cases of carcinoma of the prostate seen in any clinic would be found suitable for the radical operation.

The publication of the aforementioned editorial and particularly my statement, which was given purely as an impression and without the background of any statistical data led me to make a study with as thorough a follow-up as possible to determine the end results of all cases in which the radical operation for carcinoma of the prostate was done in the Brady Urological Institute between Sept 1, 1937 and Sept 1, 1942. In this five year period a diagnosis of carcinoma of the prostate was made in 358 cases, of which 318 were admitted to the hospital. During this period 73 radical operations were performed by members of the visiting and house staffs. Thus the radical operation was carried out in 20.2 per cent of all cases seen and in 22.7 per cent of all hospital admissions with a diagnosis of carcinoma of the prostate (table 1).

These figures were so significant that it was deemed advisable to present them to the medical profession. I realize that this percentage of cases suitable for the radical operation is probably higher than would be seen in other clinics, but it can be explained by the fact that many patients are referred to this clinic with a diagnosis of early carcinoma for the express purpose of undergoing the radical operation.

In a similar series studied over a period of two years at the University of Virginia Hospital Vest and Prince³ made a diagnosis of carcinoma of the prostate in 77 cases. Of these, 7 cases or 9 per cent were

considered suitable for the radical operation with a good prognosis for complete cure.

The criteria for cases suitable for the radical operation have been previously stated and depend largely on careful rectal examination.⁴ The malignant growth should not extend beyond the capsule of the gland, into the membranous urethra or beyond the base of the seminal vesicles and of course metastases must not be demonstrable either on physical or on roentgenologic examination. In addition, the serum acid and basic phosphatase must be within normal limits, since the important researches of Huggins and his collaborators⁵ and the Gutmans⁶ have shown that an elevated acid phosphatase level in the blood serum should be interpreted as indicative of metastases from prostatic carcinoma unless some other definite cause for this elevation can be proved. Furthermore no patient should be subjected to the radical operation unless the general physical condition is satisfactory and the patient should have a fair span of life expectancy. Generally speaking carcinoma of the prostate, especially in older persons is a slowly progressive disease, and in every case in which the criteria for operability are satisfactory the question of life expectancy of the particular person must be carefully considered before operation is advised.

These criteria are not absolute, and in some cases radical operation has been carried out on persons in whom it seemed doubtful from the observations on rectal examination that a complete cure might be expected. George Gilbert Smith⁷ some years ago advocated the radical operation in cases in which it was obvious that the whole malignant growth could not be removed but he felt that even though some of the neoplasm might remain, usually in the region of the tips of the seminal vesicles, the patient's subsequent course was much more satisfactory than with any other method of treatment. The removal of the main mass of malignant disease around the neck of the bladder gave permanent relief of obstructive symptoms and effects and in many cases the portion of the tumor which could not be removed, lying as it did well above the neck of the bladder between it and the rectal wall

4 Young H H. The Radical Cure of Cancer of the Prostate. *Surg. Gynec. & Obst.* 64: 472-482 (Feb 15) 1937. Surgery in Cancer of the Prostate. *J. A. M. A.* 119: 609 (June 20) 1942.

5 Huggins Charles, Stevens R E and Hodges C V. Studies on Prostatic Cancer. II. The Effects of Castration on Advanced Carcinoma of the Prostate Gland. *Arch. Surg.* 43: 209-223 (Aug) 1941. Huggins Charles, Scott W W and Hodges C V. Studies on Prostatic Cancer. III. The Effects of Fetus of Desoxycorticosterone and of Estrogen on Clinical Patients with Metastatic Carcinoma of Prostate. *J. Urol.* 46: 997-1006 (Nov.) 1941.

6 Gutman A B. Serum Acid Phosphatase in Patients with Carcinoma of the Prostate Gland. Present Status. *J. A. M. A.* 120: 1112-1116 (Dec 3) 1942.

7 Smith G G. Total Perineal Prostatectomy for Carcinoma. *J. Urol.* 35: 610-617 (June) 1936. Total Perineal Prostatectomy. Pennsylvania M. J. 44: 1391-1401 (Aug) 1941. Surgery for Cancer of the Prostate. *J. A. M. A.* 118: 1314 (April 21) 1937.

From the Brady Urological Institute of the Johns Hopkins Hospital.
1 Carcinoma of the Prostate editorial. *J. A. M. A.* 119: 930-931 (July 18) 1942.

2 Colston J A C. The Surgical Treatment of Carcinoma of the Prostate. *New England J. Med.* 223: 205-212 (Aug 8) 1940.

3 Vest S A and Prince C L. Personal communication to the author.

might grow very slowly and not cause symptoms from its encroachment on either the bladder or the rectum. The following case illustrates this point very graphically.

REPORT OF CASE

D. D. McM., aged 51, seen in June 1924, complained of burning on urination, frequency and blood in the urine. The general physical examination was essentially normal, except for mild

TABLE 1—Percentage of Cases Suitable for Radical Operation Among All Cases Diagnosed as Carcinoma of the Prostate from Sept. 1, 1937 Through Aug. 31, 1942

	Number of Patients	Number of Radical Operations	Per Cent
Diagnosis carcinoma of prostate	158	73	20.2
Admissions to hospital	118	73	22.7

hypertension. On rectal examination the prostate was slightly broader and undoubtedly firmer than normal, and in the right lobe there was an elevated, stony hard, fixed nodule and the induration extended up toward the base on the right side but apparently not into the seminal vesicle. X-ray examinations of the lumbar vertebrae, sacrum and bones of the pelvis were negative for metastases. Since the growth seemed to be entirely within the capsule of the prostate and had not extended into the membranous urethra or into the seminal vesicles, the case was considered suitable for radical operation. This procedure was carried out on July 2. The postoperative course was uneventful, except for a transient epididymitis. The patient was discharged on August 5, the perineal wound well healed, voiding freely without obstruction, with perfect control, able to retain urine throughout the night without arising and voiding every three hours during the day. He was seen at intervals following the operation and remained in excellent general condition with a perfect functional result. In June 1927, three years after the operation, an indurated area was noted high up between the rectum and the posterior wall of the bladder. In subsequent check-up examinations it was observed that this area grew very slowly and that the induration became gradually more pronounced. At the last examination, carried out in 1931, it was my impression that a definite recurrence was present. At no time had there been any urinary obstruction or other symptoms, and the functional result remained perfect. X-ray examinations showed no evidence of metastases. His general health had been good except for an attack of acute cholecystitis, for which a cholecystectomy was done in January 1928. He died on March 25, 1939 with a clinical diagnosis of coronary thrombosis. A complete autopsy was carried out by Dr. Nathan B. Friedman, then of the University of Chicago, who sent the indurated retrovesical mass to me for examination. Autopsy showed no evidence of metastases. The prostate was absent. Under the bladder the extremities of the vesicles were fused together in a firm mass 5 by 3 cm., most of which was on the right. On section this mass showed a group of thick-walled tubules embedded in scar tissue. One region showed dilated cystic spaces up to 1 cm., each with reddish and yellow contents. Microscopic examination revealed the right seminal vesicle thickened and fibrotic with hyaline and mucoid interstitial changes and vascular sclerosis. The epithelium of the vesicle was relatively normal, although atrophic and desquamated in areas. Throughout the stroma and invading the nerves at the edges were numerous well-differentiated adenocarcinomatous glandular structures.

It is obvious that the upper portion of the right seminal vesicle was not removed at the time of operation. It was probably invaded by the malignant process at the time of operation, but the neoplasm progressed so slowly that it never caused any functional disability by pressure on contiguous structures, located as it was

between the posterior vesical wall and the rectum, well above the neck of the bladder. This patient lived fifteen years completely free from urinary symptoms and with a perfect functional result, even though viable malignant cells were present behind the bladder wall during all this time.

OPERATIVE MORTALITY

During the period from Sept. 1, 1937 to Sept. 1, 1942 seventy-three radical operations were performed and there were four hospital deaths. An analysis of these fatalities shows that 3 patients were over 70, and in all of them evidences of varying degrees of arteriosclerotic cardiovascular disease were found. In 2 of them the cause of death was myocardial failure, and in the third a massive hemorrhage from unrecognized gastric ulcers was considered responsible for death, although here again myocardial disease was a contributing factor. The fourth death occurred from what must be considered a technical error in that, owing to a suspected occlusion of the ureter occurring at operation, it was thought necessary to insert a retained ureteral catheter, which was in all probability the source of a fatal staphylococcal bacteremia which developed.

It is an interesting commentary on the supposed danger of the radical operation that during the five year period fifteen such operations have been carried out by the various resident urologists of the Brady Clinic without a death. This series, comprising as it does only a five year postoperative follow-up, is in no sense intended as a presentation of the percentage of cures following radical operation. It must be remembered that the study was undertaken primarily to determine the percentage of cases considered suitable for the radical operation from the total number of cases seen in the clinic over a five year period in which a diagnosis of carcinoma of the prostate was made. In this connection Lewis⁸ made a study of the five year end results of the radical operation and found that approximately 50 per cent of the patients subjected to this procedure were alive and well without evidence of recurrence or metastasis more than five years after the operation.

In the present series of 69 patients who left the hospital after the operation, 10 have died from recurrence or metastasis, 11 are known to be alive with metastasis

TABLE 2—Mortality and Immediate Results of Radical Operation for Carcinoma of Prostate (1937-1942)

Radical operation	73
Hospital deaths	4 (5.7%)
Died recurrence or metastasis	10
Living, recurrence or metastasis	11
Living no evidence of recurrence or metastasis	43

or recurrence or both, and 48 are living without evidence of recurrence or metastasis in periods ranging from six months to five years after the operation (table 2).

RELATION OF GOOD PREOPERATIVE PROGNOSIS TO THE ULTIMATE RESULT

As has been previously stated, the preoperative prognosis, as far as the curability of the disease is concerned, is based entirely on careful rectal examination, provided

8 Lewis, L. G. Carcinoma of the Prostate. Young's Radical Prostatectomy. J. Urol. 47: 302-305 (March) 1942.

of course that no evidences of metastases are present, either clinically or roentgenologically. It has been the custom in the Brady Urological Institute for the examiner to state his impression, good or poor, from his observations on rectal examination. The sources of error lie in the extent of the disease, which may be impossible to recognize accurately on rectal palpation, and from the individual interpretation of the examiner. However, with these limitations in mind, from the preoperative examination in the 69 operative cases in which the clinical diagnosis was cancer the prognosis was classed good in 43 and poor in 26. Of the 43 patients with a good prognosis 41 are living and well without evidence of recurrence or metastasis, 1 has died from recurrence or metastasis and 1 has died from heart disease.

Of the 26 patients with cancer the extent of which caused the examiner to call the prognosis poor, 8 are living and well without evidence of recurrence or metastasis, 9 are living with evidence of either recurrence or metastasis, 8 have died from either recurrence or metastasis and 1 has died from other causes (table 3).

From a glance at these figures it is obvious that a good clinical preoperative prognosis is an important factor in the ultimate result, but it is equally evident

TABLE 3—Cases Classified as Good or Poor Prognosis for Ultimate Cure. A Comparison of Results

Preoperative Prognosis	Number of Cases	Living and Well No Evidence of Recurrence or Metastasis	Living and Well with Evidence of Recurrence or Metastasis	Dead Recurrence or Metastasis	Dead Other Causes
Good	43	41	0	1	1
Poor	26	8	9	8	1

that patients classified under a fair or poor prognosis must not all be denied the opportunity for complete eradication of the disease which the radical operation affords, because 8 out of 26 patients with a poor prognosis are living and well without evidence of recurrence or metastasis. The excellent temporary results, often of surprisingly long duration, that may be obtained by eradication of the main mass of malignant disease in cases in which it is evident that complete removal of all the neoplasm is impossible have already been stressed.

FUNCTIONAL RESULTS

There has, unfortunately, been an all too prevalent idea among both the general medical profession and some urologists who are not familiar with the operation that total incontinence of urine is an inevitable result of the radical operation. It might be argued that, even though this were so, if a complete cure of the malignant disease could be obtained a life of complete incontinence would be distinctly preferable to death from prostatic cancer, with its certain disability and suffering (table 4).

Incontinence of urine following the radical operation in many instances at least, must be attributed to the sutures which anastomose the stump of the urethra to the neck of the bladder. The distal stump of the urethra contains the muscles of the external sphincter, and it is easy to understand that these structures may be constricted and their continuity severed by sutures tied directly through them. In 1940 Vest⁹ described

his method of completing the anastomosis, which, briefly, depends on the principle of passing the anastomosing sutures out through the structures of the perineum and tying them there. By this method a snug approximation of the stump of the urethra to the neck of the bladder can be obtained, and no knots are tied directly over the muscles of the external sphincter, so that the suture

TABLE 4—Urinary Control Results on Leaving Hospital or at Last Report

Good control	30
Fair control	11
Poor control	8
Total number of cases	49

knot is cushioned by the soft tissues of the perineum. Since the introduction of this principle in the Brady clinic, the functional results have been appreciably improved (table 5).

The patients who survived operation and left the hospital have been classified with regard to urinary function as good, fair and poor. Under the first heading are classed those patients who are able to void freely without difficulty or obstruction or undue frequency and in whom urinary control has been retained to such a degree that no apparatus is necessary either day or night. Under fair are classified those patients who have good control at night but when up and about dribble small amounts of urine at times so that an apparatus is necessary at least part of the time. These patients are able to void freely without obstruction and the functional result is excellent except for the inability at times to control small amounts of urine. Under poor are classified those patients who have little or no control and require some form of apparatus both day and night. A good functional result can almost invariably be expected in the younger age group.

MISTAKES IN DIAGNOSIS

The operative specimen in 5 cases on microscopic examination failed to reveal evidences of malignant disease. In 3 of these cases fibrosclerotic areas which occurred in the posterior capsule were mistaken clinically

TABLE 5—Urinary Control Since 1940 Since When the Modified Suture Technic Has Been Used in All Cases

Control good	30
Control fair	4
Control poor	3
Total number of cases	37

cally for malignant disease. All these patients had varying degrees of urinary obstruction and all recovered from the operation with a good functional result. In 1 case microscopic study showed that a large area of intarction had occurred in the prostate which clinically was considered to be carcinoma. In the fifth case microscopic sections of the operative specimen showed tuberculosis which had been mistaken clinically for malignant disease. This patient had symptoms of urinary obstruction, there were no other evidences of tuberculosis of the urinary tract and, following operation, healing was uneventful with an excellent functional result.

⁹ Vest S. A. Radical Perineal Prostatectomy. Modification of Closure Surg. Gynec. & Obst. 70: 935-937 (May) 1940.

It should be an invariable rule that the clinical diagnosis should be confirmed at the operating table by a frozen section of the suspected area. This procedure is quite simple, and a satisfactory piece can be removed from any portion beneath the posterior capsule with the cautery knife without fear of disseminating malignant cells throughout the wound. The time required to prepare and study the section can be utilized in mobilizing the prostate and exposing it satisfactorily in preparation for the radical operation. If the section proves to be benign, the incision can be rapidly closed, and only a few days hospitalization is necessary, since, of course, the urinary tract is not opened.

The brilliant results which have been obtained by the endocrine control of carcinoma of the prostate, either by orchiectomy,¹⁰ introduced by Huggins, or by the administration of female sex hormone,¹¹ have raised the question in some minds whether the radical operation in early cases of this disease is ever justified.

The regression of bony and even pulmonary metastases¹² and the diminution in the size of the local growth, with relief of urinary symptoms even in extensive neoplastic disease are incontestable, and the results in the Brady Urological Institute in the treatment of these cases have fully confirmed the observations of Huggins. However, the ultimate fate of these patients, who may show a remarkable and prompt response to this method of treatment is as yet unknown, since none of these cases have been followed over a sufficiently long period of time to make certain that the regression of the primary growth and metastases are permanent. Decided improvement persisting over varying periods of time up to a year may be followed by a gradual return of the symptoms and evidences of activity of the disease, which cannot be controlled by further treatment with the female sex hormone.

Randall¹³ has recently reported 5 cases of extensive carcinoma of the prostate in which bilateral orchiectomy was done seven, eight and nine years ago. Four of his patients died forty-three days, eight months, seventeen months and three and one-half years respectively after the operation. One is living six and one-half years after the operation, but x-ray examination shows massive metastases of the dorsolumbar spine, which have apparently been ameliorated by the use of diethylstilbestrol. Evidence has not been adduced to prove, therefore, that complete eradication of carcinoma of the prostate can be obtained by endocrine treatment, but the palliative results which are observed in approximately 80 per cent of the cases, even with extensive metastases, must be received without question. Some writers have contended that, on account of the early involvement of the perineural lymphatics,¹⁴ carcinoma of the prostate can never be completely removed by surgical operation. Carcinoma in other locations

throughout the body also has a tendency to invade lymphatics, so that, if this contention was followed to a logical conclusion, an effort to remove a carcinoma anywhere in the body would not be justifiable.

It is the feeling, therefore, in the Brady Urological Institute that any patient with an early carcinoma of the prostate who fulfils the necessary criteria for the radical operation should have the benefit of this procedure. As far as our present knowledge goes, this operation in certain selected cases offers the only possibility for complete eradication of the disease.¹⁵

COMMENT

A study of the radical operations for carcinoma of the prostate performed in the Brady Urological Institute by various operators during the five year period from Sept 1, 1937 to Sept 1, 1942 has been carried out. This study has been undertaken to determine the percentage of cases suitable for the radical operation out of the total number of cases seen in the clinic in which a diagnosis of carcinoma of the prostate was made. The study, of course, in no way attempts to evaluate the five year percentage of cures, but the subsequent course of the patients subjected to the radical operation has been followed as closely as possible, with special reference to recurrence and metastasis and to the functional result.

There were four hospital deaths in the series of seventy-three operations—a mortality of 5.5 per cent. These fatalities have been summarized and analyzed. The importance of a good preoperative prognosis for complete cure of the disease has been emphasized. Of 43 patients for whom the prognosis was good, 41 are living and well without evidence of recurrence or metastasis. Of 26 patients for whom the prognosis was poor, 8 are living and well at intervals varying from three months to five years.

Intensive follow-up of all patients with early cancer of the prostate subjected to Young's radical operation shows that more than 50 per cent are free from recurrence or metastasis from five to twenty-seven years after leaving the hospital. A study of the postoperative functional results has also been carried out on the 69 patients who comprise this series. In 49 the functional result was excellent, all patients having complete urinary control. The result was classified as fair in 11 cases in which there was occasional slight leakage during the day, and in 8 the result was evaluated as poor, as some form of apparatus was necessary during the day and in some instances during the night. It is important to complete the anastomosis between the neck of the bladder and the stump of the urethra by means of sutures introduced so that there will be no strangulation and subsequent necrosis and scarring of the muscles of the external sphincter. It is evident that sutures tied in such a way as to constrict the sphincter muscles must play a large part in the incidence of postoperative incontinence.

Frozen section biopsy, carried out with the patient prepared for the radical operation, is a simple means of avoiding mistakes in diagnosis.

1201 North Calvert Street

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THE DIAGNOSIS AND TREATMENT OF
EARLY CARCINOMA OF THE
PROSTATEROY B. HENLINE, M.D.
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Cancer of the prostate gland, because of its frequent occurrence and silent onset, occupies a prominent place among the serious maladies affecting men past 50 years of age. In the early stages it gives no warning of its presence. Later, when symptoms occur from extension of the disease beyond the prostate, complete surgical removal of the gland will not eradicate the disease.

By "early carcinoma of the prostate gland" I refer to those cases in which the cancer is entirely confined within the boundaries of the prostate. In such cases, when the remainder of the prostate is free from other pathologic abnormalities, there are no symptoms referable to the gland and the patient is unaware of the presence of prostatic disease. He first becomes aware of the growth only when it has spread to distant parts of the body. In most prostatic disorders the patient's attention is likely to be attracted to the disease by frequency of urination, diminished urinary stream or blood in the urine, but all of these symptoms are singularly absent in early, uncomplicated carcinoma of the prostate. The disclosure of a hard nodule in the prostate, on rectal palpation, is the only sign of uncomplicated early prostatic carcinoma.

ETIOLOGY

It has recently been shown by Huggins and his associates¹ that the stimulus causing the dissemination of prostatic carcinoma is an imbalance between the male and female sex hormones. "The activity of this neoplasm is increased by the injection of androgen and is decreased by significantly lowering the androgen level by excision of the testes or by inactivating the androgens by estrogen injection." The quantity of these two hormones produced within the body may be altered at about the age of 50 years. It is well within the realm of possibility that the varying quantities of androgens and estrogens in the body may produce prostatic cancer. Should this be proved, the indiscriminate and prolonged injection of androgens may prove very dangerous.

There is every evidence to suggest that the work by Huggins on these hormones has opened a new field in the search for the cause of cancer. Much evidence is accumulating to verify his findings on the relationship of androgens to prostatic cancer. Biochemistry may thus point the way in the search for the causes of other types of cancer.

THREE TYPES OF PROSTATIC DISEASE

It is necessary to have a clear conception of the normal prostate gland and to recognize the regions where various pathologic lesions may develop. According to Lowsley² the prostate is composed of five separate lobes, consisting of two lateral lobes and an anterior, a posterior and a median lobe. Usually the anterior, posterior and median lobes atrophy at or near birth and, as far as we know, have no function during life, although

their remnants persist and are frequently demonstrable. There remain only the two lateral lobes, which enlarge at puberty and are vitally connected with the sexual function. These two lobes consist of long, branching, functioning glands in which prostatic fluid is formed. They also contain minute glands which extend just under the mucosa, whose exact function is not known. When we speak of the prostate during middle life we refer to these two lateral lobes.

It is generally believed that all prostatic disease develops in the same area and from the same portions of the gland. This is an erroneous assumption. There are three general areas within the prostate which may be involved in a pathologic process and three main types of prostatic disease. It is usual for each type of pathologic change, at least during its inception, to limit itself to a particular area, but any combination of these distinct entities may coexist.

PROSTATIC INFECTION

The two lateral lobes, usually referred to as the functioning prostatic glands, are the seat of prostatic infections. Bacteria may invade the deep recesses of these tortuous glands in the lateral lobes and produce an acute or chronic prostatitis or a prostatic abscess or they may be the seat of endogenous prostatic calculi. According to recent investigations, the functioning portions of these lateral lobes are rarely the site of origin of either prostatic hyperplasia or cancer.

PROSTATIC HYPERPLASIA (SO-CALLED ADENOMA)

It is generally agreed that hyperplasia of the prostate develops just beneath the urethra. Deming and Wolf³ in a recent study of 210 prostates showed that hyperplasia is first seen as a fibromuscular mass in the muscular wall of the prostatic urethra, which lies close to the urethra. These fibromuscular masses lie parallel to the muscular fibers of the urethra between the ducts of the functioning glands and stimulate epithelial hyperplasia from these ducts. These authors state that this hyperplasia is not an enlargement of existing prostatic glands but although similar in structure, is composed of newly formed glandular elements from the ducts of the prostatic glands. This explains its locality surrounding the prostatic urethra, from which the growth extends to compress the functioning glands of the lateral lobes toward the capsule and hence assumes the position of the lateral lobes on each side of the urethra. This hyperplasia may also develop in the median, subcervical or subtrigonal lobe, where nests of glands are present.

CARCINOMA OF THE PROSTATE

Carcinoma develops as a distinct pathologic process in the prostate and is not related to either prostatic infection or hyperplasia. Carcinoma usually develops in the posterior lobe, an area rarely, if ever, affected by either infection or hyperplasia. According to Moore⁴ and Rich⁵ the frequent finding of compressed or atrophic prostatic glands with early carcinoma suggests that such a cancer may develop from, or in conjunction with, such senile atrophic remnants. Although carcinoma of the prostate is predominantly a lesion of the posterior lobe, it may arise in any portion of the gland. Moore states that carcinoma and hyperplasia of the prostate are two distinct lesions and occur inde-

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Read before the annual fall clinical conference of the Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 5, 1942.

¹ Huggins, Charles Scott, William W. and Hodges, Clarence V. Studies on Prostatic Cancer. *J. Urol.* 46: 997-1006 (Nov.) 1941.

² Lowsley, O. S. The Human Prostate Gland at Birth. *J. A. M. A.* 60: 110-114 (Jan. 11) 1913.

³ Deming, Clyde L. and Wolf, J. S. The Anatomical Origin of Benign Prostatic Enlargement. *J. Urol.* 42: 566-580 (Oct.) 1939.

⁴ Moore, R. A. The Morphology of Small Prostatic Carcinoma. *J. Urol.* 33: 224 (March) 1935.

⁵ Rich, A. R. Frequency of Occurrence of Occult Carcinoma of the Prostate. *J. Urol.* 33: 215 (March) 1934.

pendently, although the two occasionally are found in the same portion of the gland. He further states that, viewed from the point of view of the general problem of invasion and metastases, carcinoma of the prostate exhibits early invasion of the perineural lymphatics within the organ, but metastases and invasion outside the organ is a late manifestation of the disease. This is important clinically, since early complete removal of the entire prostate will eradicate the disease. Complete pathologic examination of adequately removed prostates confirms the fact that diagnosis may be made in certain cases of early carcinoma and the growth completely removed before extension has occurred.

Only when one visualizes the site of origin and mode of progression of infection, hyperplasia and carcinoma of the prostate can one select the proper surgery for their relief. All of these three pathologic processes may develop in the same prostate but, as far as we know, each develops independently.

INCIDENCE OF OCCURRENCE

According to Moore⁴ and to Rich⁵ carcinoma of the prostate develops in approximately 15 per cent of men past 50 years of age. This incidence increases with advancing years. When one considers that one in every seven men past 50 years of age has carcinoma of the prostate, its importance in advancing years becomes apparent. It also becomes obvious that many of these cancers must progress very slowly, otherwise extensive carcinomatosis and death from prostatic malignancy would be an even more frequent finding among elderly men. Such extensions, however, are far too common, and prevention of their occurrence should be our goal. It may be that carcinoma of the prostate actually has become more common, but it is more likely that our awareness of its prevalence, plus improved diagnostic methods and careful search for its presence, accounts for its more frequent recognition.

SITE OF ORIGIN OF CARCINOMA

The most common site of origin of carcinoma of the prostate is the posterior lobe. This lobe is the portion of the gland posterior and posterolateral to the fan shaped ducts which enter the sides of the urethra. The function of this lobe, if any, is unknown, and it remains dormant from birth until senile changes occur. This lobe, together with the functioning prostatic glands, which also undergo atrophic changes at about 50 years of age, forms the false capsule of the prostate, often referred to as the posterior lamella. Most malignant growths occur in this area. On examination of the prostate by rectum, it is this posterior lamella with which the finger comes in contact. The ease with which it may be digitally palpated permits early recognition of any area suggestive of malignancy. Thus the importance of rectal palpation of the prostate during routine examinations becomes apparent.

SYMPTOMS

There are no symptoms of uncomplicated early carcinoma of the prostate. In the absence of other gross prostatic disease, no symptoms are present to call the patient's attention to this malady. Only when extension beyond surgical control has occurred do symptoms develop.

However, it is not uncommon for the prostate to be the site of two or even three distinct pathologic processes. Most other disturbances in the prostate present symptoms referable to this gland and, during examina-

tion, an area suggestive of malignancy may be encountered. Carcinoma may be present in conjunction with prostatic infection, and not infrequently some degree of hyperplasia coexists. The symptoms produced by the infection or hyperplasia cause the patient to seek relief, while the early carcinoma must be suspected from digital palpation alone.

DIAGNOSIS

Detection of the presence of early carcinoma of the prostate devolves on the physician who examines patients periodically for their general health. Without his help, few cases of early carcinoma of the prostate will ever be seen by the urologist. Certainly no general physical examination of a man 50 years of age or over is complete without rectal palpation of the prostate. If routine physical examinations of such patients were undertaken at least once a year, and the prostate palpated each time, many patients with areas suggestive of malignancy would be discovered and further investigation undertaken. For a physician to palpate a suspiciously hard nodule in a prostate and "wait" to see what happens is a violation of the trust placed in him. These are the patients who may be cured of this disease.

Since no symptoms are present in early prostatic malignancy, its presence is first suspected by rectal palpation of the prostate. Although a definite diagnosis cannot thus be made, it is from this group that cases suitable for total prostatectomy must be selected. The statement so often made that when the diagnosis of carcinoma has been made by rectal palpation it is too late for complete surgical removal has been disproved many times. When prostatic malignancy is suspected on rectal examination, perineal exposure of the prostate is warranted in order to confirm the diagnosis.

Carcinoma should be considered likely if an area—no matter how small—which feels definitely harder than the rest of the gland, is found in the prostate. Such an area is often situated to one side of the midline and may feel like a foreign body just inside the capsule of the prostate or between the rectum and the gland. The characteristic rounded feel of the prostate is abruptly broken by the hard area, which, as Smith⁶ points out, gives the impression of a "square edge." These nodules may be multiple.

Carcinoma may be confused with fibrosis. The age of the patient may tend to relieve one's suspicion of malignancy. Fibrosis frequently is somewhat less hard than malignancy. One may also confuse early malignancy with prostatic calculi. The latter may be located so near the capsule that differentiation by palpation may be impossible. An x-ray examination will aid in making the diagnosis of calculi.

When a suggestive nodule is palpated in the prostate, I advise a perineal exposure to take a direct biopsy of the nodule. A frozen section is made and, if the diagnosis of carcinoma is confirmed, a complete prostatectomy, including removal of the seminal vesicles, is carried out at once. The perineal exposure of the prostate to secure an adequate specimen of the involved area seems to me to offer much more conclusive evidence of the disease than can be obtained by a punch biopsy. A needle passed through the perineum may fail to engage the involved area and a negative report still leaves the surgeon in doubt. A needle biopsy often obtains a tu-

⁶ Smith, George Gilbert. Total Perineal Prostatectomy of Carcinoma of the Prostate. *J. Urol.* 35: 610 (June) 1936.

scattered cells which necessarily makes the diagnosis uncertain. A direct biopsy of the prostate permits one to ascertain the pattern of the diseased area and thus assures a correct diagnosis.

If an adequate biopsy is obtained through a perineal exposure and the frozen section fails to reveal a malignant growth, the perineum is closed and the patient may be discharged in three to four days. The urethra has not been opened and urination is not disturbed. Two such errors in diagnosis have been made by me within the past three years, but neither patient suffered any ill effects from this procedure. Both had local areas of fibrosis which could not be differentiated from a malignant condition by rectal palpation.

TREATMENT

"Complete prostatectomy" refers to the removal of the entire prostate with its capsule and the entire prostatic urethra. This procedure can be done only by the perineal approach, and such complete removal is necessary to eradicate the disease. The line of cleavage which permits hyperplasia of the prostate to be enucleated suprapubically leaves behind the entire posterior lamella, from which most malignant growths arise. Transurethral resection also removes the hyperplasia, but the so-called capsule, which is the posterior lamella of tissue must of necessity be left behind. Thus, if carcinoma is not found in the tissue removed either by suprapubic prostatectomy or by transurethral resection, there still is no assurance that carcinoma of the prostate is not present. Several such patients have sought relief after each of these operations because of carcinoma of the prostate in the portion of the gland left behind.

Some changes in the technic of Youngs' perineal surgery have improved our results in recent years. The perineal approach to the prostate has been simplified by Belt,⁸ who follows the cleavage plane present between the longitudinal muscle fibers of the rectum and the external sphincter ani muscle, thus almost completely eliminating hemorrhage. It is our custom to remove the capsule of the prostate in almost every case in which perineal prostatectomy is indicated. By doing this we have removed all possibility of the subsequent development of prostatic cancer and may occasionally remove a very early or occult malignancy before a diagnosis is possible. It is not my practice to perform perineal prostatectomy except when specific indications for this approach exist. The distal urethra is completely severed from the apex of the prostate. The prostate is then excised from the vesical neck and the urethra sutured to the bladder neck over a Foley catheter placed through the urethra. The seminal vesicles are removed in carcinoma of the prostate, but in other instances they are cut, tied and left behind. No remnants of prostate are left behind to be the site of future pathologic changes. Bleeding is controlled by sutures in the bladder neck, and only a Penrose drain is left in the perineum for twelve to eighteen hours. Most perineal wounds drain no urine and many heal by first intervention. The catheter is removed about the twelfth postoperative day. I know of the development of no strictures at the vesical orifice following this procedure. Urinary control is rarely a problem

with these patients, but it is not uncommon for a patient to pass a few drops of urine when coughing or on sudden exertion for a few days to weeks. Rectal fistula should be avoided by proper perineal dissection.

REPORT OF CASES

During the past two and one-half years I have had 8 private patients on whom a perineal exposure was undertaken for the diagnosis of early carcinoma of the prostate. One additional patient was subjected to a complete perineal prostatectomy because of definite prostatic infection with fibrosis which did not respond to any palliative treatment, in this patient an early unrecognized carcinoma was discovered by the pathologist. Of these 9 patients, 2 had localized areas of fibrosis and the prostate was exposed by perineum, a biopsy taken and the wound closed with no ill effects. The remaining 7 patients had early carcinoma of the prostate. None of them had evidence of extension outside the prostate or into either seminal vesicle. The following are brief summaries of their histories and pathologic reports.

CASE 1—C T, aged 59 admitted on March 19, 1940, complained of some dysuria and nocturia. Previous examination revealed a hard nodular prostate on the left side and some enlargement on the right. Perineal exposure of the prostate was done on March 20. Frozen section showed adenocarcinoma. A total perineal prostatectomy was done. The temperature was 100.2 F the following day and normal thereafter. The catheter was removed on the twelfth postoperative day. There was no perineal urine at any time. The wound healed and complete urinary control was immediate. The patient was out of bed and ready for discharge but remained in the hospital until the twenty-first postoperative day at his request. The pathologic examination was made by Dr Foote. A frozen section revealed adenocarcinoma of the prostate. The prostate weighed 20 Gm. Scattered nodules consisted of granulomatous tissue and hyperplasia. There was no involvement of the perineural sheaths or seminal vesicles. At present the urine is normal; there are no symptoms. Rectal palpation gives no evidence of recurrence.

CASE 2—Dr C G, aged 68 admitted on Sept 29, 1940, complained of occasional nocturia, but his local physician had discovered a hard nodule in his prostate. Perineal exposure of the prostate was done on October 2. Frozen section showed typical adenocarcinoma. Total prostatectomy was done. The temperature rose to 101 F after operation, gradually returning to normal in five days. The catheter became plugged on the sixth postoperative day and was changed. It was removed on the fifteenth postoperative day but some perineal urinary leakage required its reinsertion. It was finally removed on the twenty-third postoperative day, with the wound healed. The patient was ready for discharge but remained in the hospital until the thirty-first postoperative day. Urinary control was complete when he was discharged. Pathologic examination was made by Dr Foote. A frozen section revealed typical adenocarcinoma of the prostate. Routine examination revealed adenomatoid hyperplasia. "Only here and there are there areas where there is a slight metaplasia and piling up of epithelium. It is probable that the biopsy removed the entire malignant growth." The diagnosis was small and early carcinoma of the prostate. At present there are no symptoms; the urine is normal; there is no evidence of recurrence (figs 1 and 2).

CASE 3—W B, aged 62 admitted on March 23, 1941 did not complain of any symptoms but routine examination revealed a hard nodule in his prostate. His father had died of carcinoma of the prostate. Perineal exposure of the prostate was done on March 26. Frozen section showed carcinoma of the prostate. A total prostatectomy was done. The temperature rose to 102.2 F the following day and returned to normal on the third day. The catheter was removed on the twelfth day with a slight amount of urine draining through the perineum when voiding. There was no perineal urine after the twentieth day,

⁷ Young H H and Davis D M. Practice of Urology. Philadelphia W B Saunders Company 1926 vol 1 chapter 7.

⁸ Belt Elmer Ebert Carl E and Surber Alva C Jr. A New Anatomic Approach in Perineal Prostatectomy. J Urol 41: 482 (April) 1939.

and control of urine was good. He was discharged on the twenty-third day. Pathologic examination was made by Dr Foote. It revealed adenocarcinoma of the prostate, retention cyst of the prostate, fibrosis of the seminal vesicles and no extension beyond the prostate. At present there are no symptoms, urine is normal and there is no evidence of recurrence.



Fig. 1—Frozen section from case 2 showing typical carcinoma of the prostate.

CASE 4—H W, aged 60, admitted on Oct 26, 1941, did not complain of any symptoms, but routine examination had revealed a hard nodule in the prostate. Perineal exposure of the prostate was done on October 29. Frozen section showed adenocarcinoma of the prostate. Total prostatectomy was done. The temperature rose to 100 F the following day and then remained normal. The catheter was removed on the tenth day. The wound healed and urinary control was complete. The patient was discharged on the twelfth postoperative day. The pathologic examination was made by Dr Foote and Dr Cannon. The prostate weighed 347 Gm. Adenocarcinoma was limited to the posterior lobe. There was no invasion of the capsule or of fat tissue around the prostate and no lymphatic invasion. The seminal vesicles were normal. At present there are no symptoms. Urine is normal. There is no evidence of recurrence (fig 3).

CASE 5—Dr A M, aged 69, admitted on Dec 26, 1941, complained of frequency and pronounced discomfort in the prostatic region after urinating. He had had a transurethral

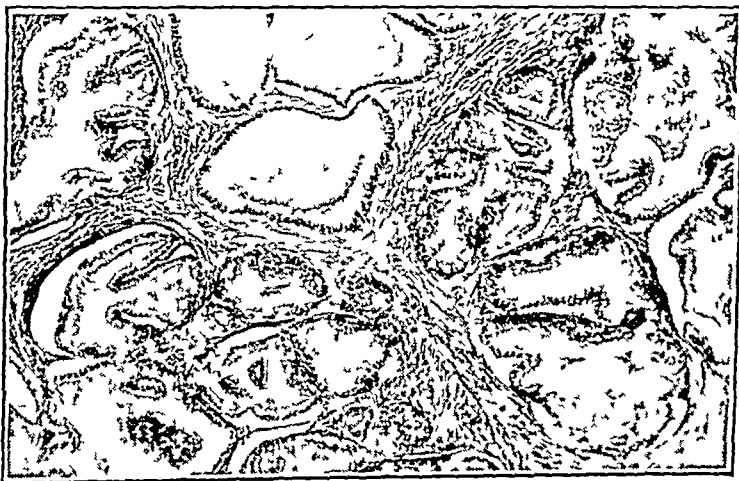


Fig. 2—Section of excised prostate in case 2 showing only hyperplasia with no evidence of carcinoma.

resection three months previously, with no relief, and requested complete prostatectomy. A total perineal prostatectomy was done on December 29 for fibrosis and infection in the prostate, which had not responded to other treatment. The temperature rose to 99 F on the day after operation and then remained normal. The catheter was removed on the tenth postoperative day, followed by some urinary drainage through the perineum. The catheter was reinserted and removed on the seventeenth

postoperative day, with the wound healed and control complete. Pain persisted, requiring morphine. The patient remained in the hospital until the thirty-third postoperative day, at his request. Pathologic examination by Dr Mider revealed fibrosis with infection. One small area contained an unsuspected malignant growth. At present, perineal discomfort persists, the urine is usually clear with normal control but owing to recurring pyelonephritis it occasionally contains gross infection, there is no evidence of local recurrence (fig 4).

CASE 6—C S, aged 58, admitted on Aug 6, 1942, did not complain of any symptoms, but routine examination revealed a hard nodule in the prostate. Perineal exposure of the prostate was done on August 10. Frozen section showed adenocarcinoma. A total prostatectomy was done. The temperature rose to 101 F and returned to normal on the third postoperative day. The catheter was removed on the ninth postoperative day with the wound healed, and control was good except when he was coughing or on sudden exertion. He was ready for discharge on the eleventh postoperative day but remained in the hospital for other investigation until the sixteenth day. Pathologic examination by Dr Mider revealed adenocarcinoma of the prostate. There was no infiltration of the capsule and no carcinoma around the nerves or blood vessels. The seminal vesicles were normal. At present there are no symptoms and the urine is clear (figs 5 and 6).

CASE 7—J R, aged 59, admitted on Sept 15, 1942, did not complain of any symptoms, but a hard nodule was palpated in

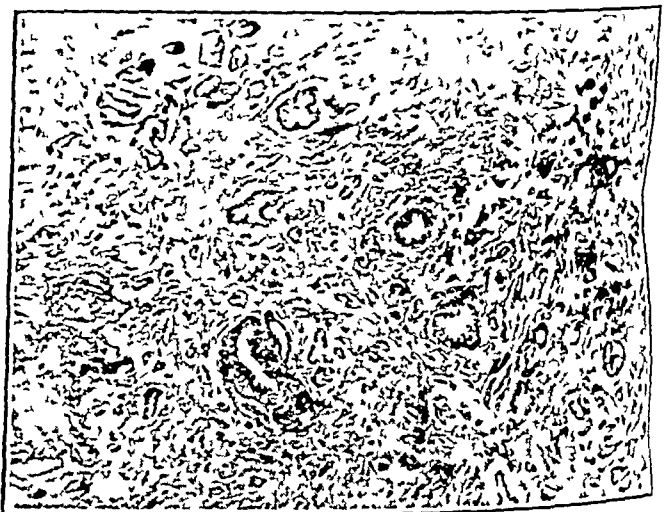


Fig. 3—Carcinoma of the prostate from case 4 showing the typical small irregular acini closely grouped together. The epithelium of the longer acini is high and irregular. Capsule and seminal vesicle showed no invasion of malignant growth.

his prostate. Perineal exposure of the prostate was done on September 16. A frozen section revealed adenocarcinoma. A total prostatectomy was done. The temperature rose to 100 F for one day and then became normal. The patient is still in the hospital, but no urine passes through the perineum. Pathologic examination revealed a wildly growing adenocarcinoma of the prostate with normal seminal vesicles, perineural invasion was present within the gland, but there was no extension outside the capsule.

COMMENT

I am presenting these 7 cases with the full realization that the time which has elapsed since operation is much too short to justify evaluation of the end results. However, evidence is presented to indicate that total prostatectomy may be done with little shock to the patient and with good functional results. From the pathologic reports of the specimens removed there is evidence that the carcinoma was completely removed in each case. In 1 instance (case 2) the report that "the biopsy probably removed the entire malignant growth" makes the likelihood of metastases beyond the prostate unlikely. In no instance were the perineural sheaths, lymphatic vessels or seminal vesicles involved.

It appears likely that carcinoma of the prostate may remain relatively dormant for many months without spreading beyond the confines of the prostate. Three of these patients (2, 4 and 6) had been told that they had a hard nodule in the prostate at least six months before surgical intervention. This confirms Moore's statement that invasion of the vesicles and distant lymphatics is a late manifestation. However, it should not be inferred that one should "wait" to see what happens to a hard nodule in the prostate, since such delay may destroy the patient's chance of being cured.

The problem of exposure of the prostate may seem difficult. Careful dissection is necessary to avoid accidents but we experience less difficulty in teaching our residents to do good perineal surgery than many other procedures. Even if the procedure appears difficult, this should only stimulate us to greater proficiency if this operation offers the patient a prolonged life expectancy.

More patients with early carcinoma of the prostate have been seen in recent years. Doctors have learned to recognize early prostatic cancer, yet the percentage of operable cases is still pitifully small. When one suspects malignant growth one should advise biopsy through a perineal exposure. If one's own urologist

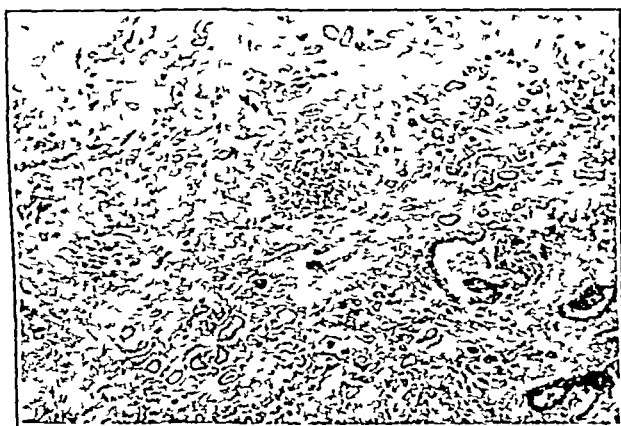


Fig 4—From case 5 showing the area of carcinoma. The acini are small and irregular and the cells small and hyperchromatic. Areas of chronic prostatitis also are seen.

has failed to equip himself to do this procedure, one should find another who can. A negative punch biopsy is worse than nothing, since it gives one a sense of false security. There will never be a more grateful patient than the one who realizes that his physician has been aware of an early manifestation of cancer and has sought intelligent investigation and treatment to eradicate it before it was too late.

CONCLUSIONS

1 It is necessary to have a clear conception of the region in the prostate from which carcinoma usually develops in order to treat these patients properly.

(a) Infection and calculi develop in the functioning prostatic glands.

(b) Hyperplasia develops near the prostatic urethra (not from the functioning glands) and compresses the functioning glands toward the capsule.

(c) These compressed atrophic gland remnants, together with the dormant glands of the posterior lobe, form the posterior lamella from which about 75 per cent of carcinoma develops. Any combination of these three distinct pathologic entities may be present in the same prostate.

2 Cancer of the prostate has been found in approximately 1 out of every 7 men past 50 years of age.

3 There are no symptoms of early cancer of the prostate, and no symptoms are present unless the prostate is the seat of another pathologic process.

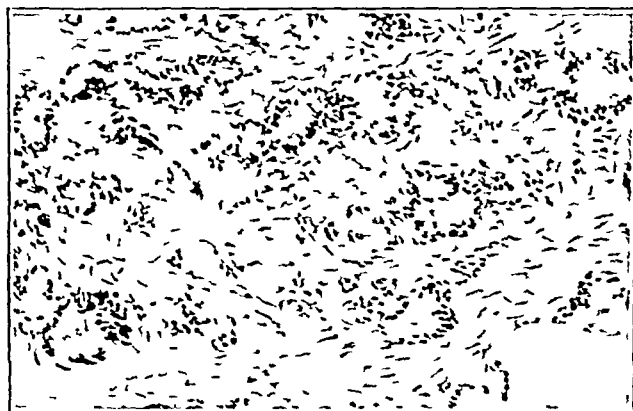


Fig 5—From case 6 showing high power magnification of area of carcinoma.

4 Early carcinoma of the prostate may be suspected by rectal palpation of a hard nodule near the presenting surface of the prostate. Diagnosis is preferably made by biopsy and frozen section taken through a perineal exposure of the prostate.

5 Total perineal prostatectomy is a rational procedure and offers the only hope of completely eradicating this disease. The shock from this procedure should be no greater and often is less than from other forms of surgery on the prostate. Following proper surgical technique the functional results should equal those of any other type of prostatic surgery.

6 Pathologic examination of the specimens removed in these 7 cases failed to reveal any extension of the cancer into the perineural sheaths, lymph vessels or seminal vesicles. Many such lesions must be slow to metastasize.

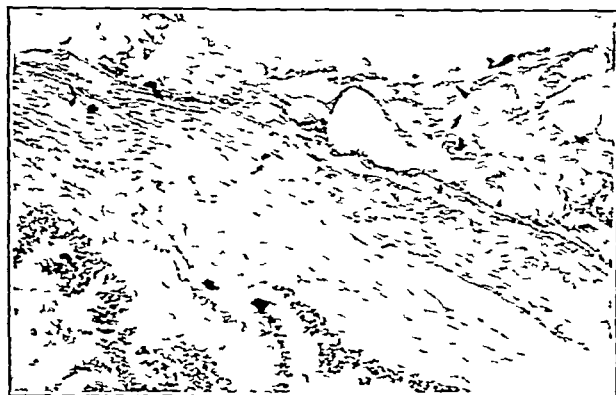


Fig 6—From case 6 showing the seminal vesicle with no evidence of invasion by carcinoma.

7 A careful digital palpation of the prostate should be a part of the physical examination of every man past 50 years of age. The finding of early lesions in the prostate suggestive of malignancy rests with the physician, and the urologist should prepare himself to investigate and treat these patients intelligently.

901 Lexington Avenue.

THE TREATMENT OF BENIGN
PROSTATIC HYPERPLASIA

IN RELATION TO PROSTATIC CARCINOMA

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Amidst the lively controversy concerning the surgical treatment of benign prostatic hyperplasia it is imperative for the general practitioner as well as the urologist to keep the purpose of the operation clearly in mind. Stated simply, surgical treatment is undertaken in an effort to relieve the symptoms of urinary obstruction, so that micturition can again be normal. The restoration of normal micturition is the common goal of suprapubic, perineal and transurethral prostatectomy. In an attempt to reach this common goal, each operation is designed to remove the same hyperplastic prostatic tissue. A realization of the pathologic changes which occur in prostatic hyperplasia will aid in elucidating this fact.

Benign prostatic hyperplasia consists in the growth of a single adenoma or multiple adenomas. By the process of growth these adenomas compress the surrounding normal prostatic tissue, thus forming the so-called surgical capsule of the prostate gland. Complete removal of the adenomas and exposure of the entire surgical capsule of the gland is the goal of any operation for benign prostatic enlargement, regardless of whether the approach is by suprapubic, perineal or transurethral means. Thus each operation is designed to achieve the same end, and the only possible source of controversy is the method of approach to the enlarged prostate gland; we do not propose to discuss this problem. It is sufficient to state that each surgeon must decide which operation in his hands is attended with the lowest mortality and morbidity rates and the best functional results.

Knowledge of what each operation fails to accomplish is of equal importance. In none of the operations is the entire prostate gland removed. In all the operations prostatic tissue persists in the form of the surgical capsule of the gland. The potentiality for the development of recurrent benign hyperplasia and prostatic carcinoma remains present to an equal degree regardless of whether suprapubic, perineal or transurethral prostatectomy has been performed.

REPORT OF CASES

The late development of carcinoma of the prostate gland after suprapubic prostatectomy was recently brought to our attention by the following case.

CASE 1—A man aged 56 first came to the clinic in 1916 complaining of symptoms of urinary obstruction of five years' duration. The obstruction finally had resulted in complete urinary retention. The patient appeared to be in good health, and results of physical examination were negative except for those of rectal palpation, which revealed benign prostatic enlargement graded 3 (on the basis of 1 to 4). Results of routine laboratory studies were within normal limits, a plain roentgenogram of the urinary tract disclosed no abnormality. The amount of the residual urine was 150 cc.

Suprapubic prostatectomy was performed and the tissue removed weighed 70 Gm (fig 1). Microscopic examination of the tissue revealed adenofibromatous hyperplasia. Convalescence was entirely uneventful, and the patient was dismissed from the hospital on the ninth postoperative day.

In 1924, eight years after the prostatectomy, the patient returned to the clinic because of asymptomatic pyuria; he had no symptoms referable to the urinary tract. Results of physical examination again were essentially negative, rectal palpation disclosed the prostate gland to be smooth and firm. Urinalysis revealed pyuria of grade 2, and a plain roentgenogram of the urinary tract disclosed no abnormality. Cystoscopy showed areal cystitis and pronounced relaxation of the internal vesical sphincter muscle. The prostatic bed appeared clear, and no adenomas were visible. Vesical lavage was advised and the patient was dismissed.

In 1933, seventeen years after the prostatectomy of 1916, the patient returned to the clinic complaining of initial hematuria of two years' duration, associated with urgency of micturition and dysuria. To rectal palpation the prostate gland was enlarged to grade 2, and a hard nodule was palpable in the region of the right seminal vesicle. Cystoscopy disclosed definite enlargement of the right lobe of the prostate gland and lesser enlargement of the left lobe. In the right lobe were two nodules which were suggestive of either small adenomas or carcinoma. Considerable granulation tissue was noted in the floor of the urethra, and a specimen of tissue, removed for biopsy from the prostatic region through the cystoscope,



Fig 1—Adenomatous tissue removed by suprapubic enucleation, case 1.

was reported as being inflammatory tissue. Local application of the cautery to the prostatic urethra and vesical lavage were advised, and the patient was dismissed.

The patient returned to the clinic for the last time, nineteen years after prostatectomy, complaining of hematuria and symptoms of moderate obstruction. Cystoscopy disclosed a typical carcinomatous nodule under the mucosa of the urethra. Carcinoma was found in both lateral and median lobes.

prostate gland. Thirteen Gm of tissue was removed by trans-urethral resection, and microscopic examination disclosed adenocarcinoma of grade 3 (fig 2). The patient remained well for several years but hematuria became severe and constant and the patient died of carcinoma of the prostate gland in 1938, twenty-two years after prostatectomy.



Fig 2—Section of tissue removed from the prostate gland of the same patient from whom the adenomatous tissue shown in figure 1 had been enucleated nineteen years previously. This section shows unquestionable adenocarcinoma (hematoxylin and eosin $\times 100$).

There are several features of interest in this case. A large amount of benign, hyperplastic prostatic tissue had been removed by suprapubic prostatectomy and the patient was known to be well, save for slight asymptomatic pyuria, eight years later. Urologic examination at that time, including cystoscopy, did not reveal any evidence of prostatic carcinoma. Seventeen years after prostatectomy the patient returned for treatment, and at this time carcinoma of the prostate gland undoubtedly was present, in all probability the carcinoma had been present for the preceding two years. Rectal palpation disclosed a hard nodule in the prostate gland, in contrast to the results of previous rectal palpations. In addition cystoscopy revealed changes suggestive of carcinoma. Positive evidence of the presence of carcinoma was obtained at the time of the patient's last admission, nineteen years after prostatectomy.

The number of years which this patient lived, even though he was afflicted with a high grade carcinoma of the prostate gland, also is of interest. In spite of the fact that the patient received no specific measures for the cure of carcinoma of the prostate gland, such as radical prostatectomy, and received no treatment directed toward alleviation of the condition, such as orchiectomy or the administration of estrogen, he lived comfortably for seven years before he finally succumbed to carcinoma of the prostate gland. This case clearly illustrates the fact that in the evaluation of any type

of therapy directed toward a given disease, it is imperative to consider the natural course of the disease.

The following case, illustrating the development of carcinoma of the prostate gland many years after perineal prostatectomy, also is of interest.

CASE 2—A dentist aged 65 first came to the clinic in 1909 complaining of symptoms of urinary obstruction of six years' duration. For three years previous to his admission he had been unable to void and had had to resort to catheterization. Six weeks before admission he experienced chills and fever and noted pain and swelling of the perineum and scrotum. By rectal palpation the prostate gland was found to be firm and to extend beyond the reach of the examiner's finger. A diagnosis of 'prostatic abscess' was made and perineal drainage was carried out. The patient responded satisfactorily. Three weeks later perineal prostatectomy was performed (fig 3). Microscopic examination of the tissue removed disclosed benign adenofibromatous hyperplasia. Convalescence was uneventful, but the patient experienced urinary incontinence for six months. Urinary continence was regained, however, and two years after perineal prostatectomy the patient wrote to us stating that he had no urinary symptoms and was enjoying perfect health.

The patient returned for the last time in 1919, ten years after prostatectomy. He stated that he had been perfectly well until the previous year, when he noted the onset of urinary frequency, dysuria and incontinence. Seven months before this last admission a mass had appeared in the right groin. By rectal palpation the prostate gland was found to be enlarged to grade 3 and unquestionably malignant. A lymph node removed from the groin for biopsy was reported by the pathol-

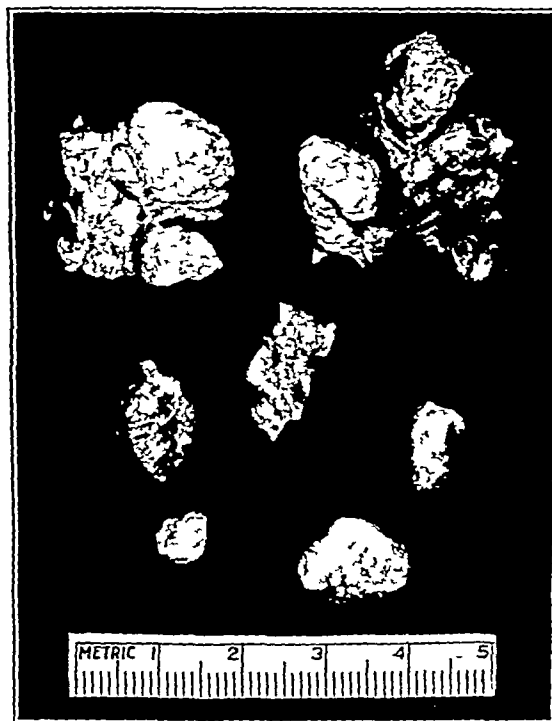


Fig 3—Tissue enucleated from the prostate gland by the perineal route in case 2.

ogists as being involved by metastatic adenocarcinoma. A permanent suprapubic cystostomy catheter was inserted but the patient failed gradually and died of carcinoma of the prostate gland in 1921, twelve years after the perineal prostatectomy.

The foregoing two reports illustrate the fact that prostatic carcinoma can appear many years after suprapubic or perineal prostatectomy. In an entirely analo-

gous manner, transurethral prostatic resection does not preclude the future development of carcinoma of the prostate gland. The following case clearly illustrates this point.

CASE 3—A man aged 64 first came to the clinic in 1934 complaining of symptoms of gradually progressive urinary obstruction of four years' duration. This condition finally had resulted in complete retention of urine. Physical examination revealed the bladder to be distended to the level of the umbilicus. By rectal palpation the prostate gland was noted to be enlarged to grade 2, resilient and smooth. The blood urea was 60 mg per hundred cubic centimeters of blood and a plain roentgenogram of the urinary tract disclosed nothing abnormal save hypertrophic changes of the lumbar portion of the spinal column. Transurethral prostatic resection was carried out in two stages and a total of 54 Gm of tissue was removed. Microscopic examination of this tissue revealed adenofibromatous hyperplasia of the prostate gland. Convalescence was uneventful, and the patient was able to void easily at the time of dismissal.

The patient returned in 1940, six years after transurethral resection, and stated that he had been perfectly well until the preceding two months, at which time he had noted symptoms of progressive urinary obstruction and finally complete retention. By rectal palpation the prostate gland was found to be enlarged to grade 3, but its tissue apparently was benign. The value for blood urea was 86 mg per hundred cubic centimeters of blood and a plain roentgenogram of the urinary tract disclosed hypertrophic changes of the lumbar portion of the spinal column. Transurethral prostatic resection was performed, and 45 Gm of tissue was removed. Microscopic examination of this tissue revealed adenocarcinoma of grade 4.

It is apparent, therefore, that prostatectomy performed either by suprapubic perineal or transurethral methods confers no immunity on the patient so treated against the subsequent development of prostatic carcinoma. Regardless of the type of operation performed, the potentiality for carcinoma remains present to an equal degree. A cursory examination of our records disclosed 5 other cases in which suprapubic prostatectomy had been performed at the Mayo Clinic and microscopic examination had revealed benign adenofibromatous hyperplasia. In each instance the patient returned at a later date, and a diagnosis of carcinoma of the prostate gland, verified by microscopic examination, was made. The interval between the time of prostatectomy and the time at which a diagnosis of carcinoma of the prostate gland was made varied from ten to eighteen years, the average was thirteen years. The carcinoma usually was of a high grade of malignancy, and the 3 patients who could be traced lived for an average period of eight months after the diagnosis of carcinoma had been made.

In addition, we have examined the records of 8 patients who had had suprapubic prostatectomy performed elsewhere many years previous to their admission to the clinic. To the best of our knowledge the prostatectomy had been performed for benign prostatic hyperplasia. The operation had been performed, on an average, sixteen years previous to the admission of the patients to the clinic. In each case tissue removed at the Mayo Clinic by transurethral prostatic resection disclosed carcinoma. With one exception the carcinoma was of a high grade of malignancy, that is, of grade 3 to 4. One patient died while he was in the hospital, the rest survived for an average period of thirteen months.

One of the advantages frequently ascribed to suprapubic and perineal prostatectomy is that they permit complete removal of a small carcinoma which has apparently remained localized within an adenoma. In

such cases, usually, the presence of a carcinoma is not considered before operation, and only microscopic examination discloses its presence. It is claimed that enucleation of an adenoma of this type will effect a cure. Although such a happy outcome remains exceedingly rare, we report the following case as a commentary on such a claim.

CASE 4—A man aged 57 came to the clinic in 1928 because of acute urinary retention of two days' duration which required decompression. Results of physical examination were negative excepting that rectal palpation disclosed benign enlargement of the prostate gland of grade 3. Cystoscopy revealed benign trilobar prostatic hyperplasia, and two stage suprapubic prostatectomy was performed, 30 Gm of tissue being removed. The pathologist reported that a small zone of carcinoma of grade 2 was located within the adenoma. No specific measures were directed toward treatment of the carcinoma, and the patient made an uneventful convalescence. He has returned to the clinic on numerous occasions since operation, and examination has failed to disclose any evidence of carcinoma. At the time of this report, fourteen years after prostatectomy, the patient is enjoying perfect health.

Despite what might be inferred, the cure achieved in the foregoing case does not attest any special advantage of the suprapubic method of prostatectomy. Prostatectomy performed by either the transurethral or the perineal route would have removed the same tissue and effected a similar cure. Just such a happy outcome is illustrated in the following case.

CASE 5—A man aged 66 came to the clinic in 1934 complaining of symptoms of progressive urinary obstruction of four years' duration. One episode of complete retention had occurred two weeks before his admission. Rectal palpation disclosed benign enlargement of the prostate gland of grade 2. Transurethral prostatic resection was performed, and 105 Gm of tissue was removed. According to the pathologist the tissue removed represented adenofibromatous hyperplasia of the prostate gland, one small zone of adenocarcinoma of grade 2 was discovered. Convalescence was uneventful, and the patient was able to void easily.

The patient returned in 1937 and stated that he had experienced no urinary symptoms until the preceding day, when he noticed gross hematuria that had rapidly disappeared. By rectal palpation the tissue of the prostate gland was considered to be benign, and cystoscopy disclosed numerous varicosities in the posterior urethra and several inflammatory cysts.

The patient returned the next year because of symptoms of mild urinary obstruction for which his home physician had advised operation. The prostate gland was considered to be benign on the basis of rectal palpation, cystoscopy likewise failed to reveal any evidence of prostatic malignancy. Enlargement of the lateral lobes was present, and 32 Gm of tissue was removed by transurethral resection. The tissue was examined carefully by the pathologist, but he was unable to find carcinoma.

The patient returned for the last time in 1941, seven years after the first resection. The purpose of his last admission was removal of his remaining teeth, as suggested by his home physician. He said he had not had any urinary symptoms, and the prostate gland was considered to be benign on the basis of rectal examination. To the date of the writing of this paper, eight years after resection, there has been no evidence of carcinoma of the prostate gland.

Although a small carcinoma may be localized within an adenoma, it is usually impossible, unfortunately, to cure the patient of carcinoma by enucleation or resection of the adenoma. Because of the early spread of carcinoma of the prostate gland through the perineural lymphatic vessels, regardless of the size or location of the primary lesion, the possibility of complete eradication of the neoplasm is not great. The following case illustrates this point clearly.

CASE 6—A man aged 65 first came to the clinic in 1932 complaining of repeated attacks of complete urinary retention requiring catheterization. Rectal examination disclosed a smooth benign enlargement of the prostate gland of moderate size. Cystoscopy revealed enlargement of both lateral lobes, without evidence of malignancy. Primary suprapubic prostatectomy was performed, and 36 Gm of tissue was removed. The pathologists' report was adenofibromatous hyperplasia with one microscopic area of beginning adenocarcinoma.¹

The patient returned two years later because of symptoms of urinary obstruction and pain in the sacrum. Physical examination revealed that the patient had lost weight and strength. The prostate gland, as palpated rectally, was enlarged, hard and fixed. A hard, fixed mass was palpable in the right inguinal region and was interpreted as being a metastatic malignant process. Transurethral prostatic resection was performed, and 8 Gm of tissue was removed; microscopic examination revealed adenocarcinoma of the prostate gland of grade 3.

COMMENT AND CONCLUSIONS

In conversations with physicians who are not urologists we have been impressed by their misconceptions concerning the three commonly performed operations for benign prostatic hyperplasia. Perhaps the most widespread misconception is that the performance of suprapubic or simple perineal prostatectomy precludes the subsequent development of carcinoma of the prostate gland or recurrent prostatic hyperplasia. This belief is entirely fallacious, and we have presented instances in which carcinoma of the prostate gland has occurred many years after such operations. This misconception can be corrected by the simple statement that normal prostatic tissue, in the form of the surgical capsule, remains regardless of whether suprapubic, perineal or transurethral prostatectomy has been carried out. Thus, the possibility of the development of recurrent hyperplasia or prostatic carcinoma is present to an equal degree irrespective of which one of these operations has been performed. The only operation devised to remove all prostatic tissue is radical perineal prostatectomy in which the entire prostate gland, a portion of the urethra, a cuff of the bladder, both seminal vesicles and about 5 cm of each vas deferens are removed. This operation, however, is employed exclusively in cases of prostatic carcinoma, and even by its most ardent advocates it is applied, with hope of cure, in only approximately 3 per cent of cases of prostatic cancer.

The surgical treatment of benign prostatic enlargement can be summarized by the statement that in each case it is necessary to remove a certain definite amount of hyperplastic tissue; this tissue can be removed through a suprapubic or perineal wound or through the urethra, and each surgeon must decide which method of approach is most suitable in his own hands.

One of the advantages frequently ascribed to suprapubic or simple perineal prostatectomy is the removal of an undetected carcinoma located within an adenoma. We have described such a case (case 4), but unfortunately the happy outcome in this case is extremely infrequent. Furthermore, although it is true that this apparent cure was achieved by suprapubic prostatectomy, it is undeniable that a similar cure would have been attained by the performance of either perineal or transurethral prostatectomy. More frequently than not, however, in spite of the fact that the carcinoma may be microscopic in size (case 6), the lesion has spread to the perineural lymphatic vessels, and in such a case cure by any of the three methods described herein is impossible.

THE USE OF CONCENTRATED RED CELLS AS A SUBSTITUTE FOR WHOLE BLOOD

IN THE TRANSFUSION THERAPY OF ANEMIA

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It is well known that plasma is preferable to whole blood in combating the hemoconcentration of surgical shock. However, the use of the cellular portion of the blood in the transfusion therapy of anemia has not been widely discussed in this country. The present production of large amounts of plasma for war purposes leaves as a by-product the cellular portion of the blood. That it is practical to give this concentrated cellular portion without dilution in the form of multiple transfusions has been demonstrated by MacQuaide and Mollison¹ and Williams and Davie² in England. This method appears to have several advantages over the use of whole blood in the transfusion therapy of anemia. A larger amount of red cells can be given in the same total quantity, thus reducing the time and effort necessary to achieve the desired result. Patients with reduced cardiac reserve as well as anemia may be given transfusions of concentrated cells with less chance of producing failure of the left ventricle. If the concentrated red cells now available are used when indicated in place of whole blood, more plasma will be available for the treatment of shock.

My purpose in this report is to call attention to the use of concentrated cell transfusions as a substitute for whole blood in the treatment of anemia and to present some of the striking results obtained.

PROCEDURE

The material used was obtained from the Cutter Laboratories in Berkeley, Calif., where plasma is derived from blood collected by the Red Cross Blood Donor Service in a large West Coast area. The citrated whole blood is centrifuged at 2,400 revolutions a minute for twenty minutes and 250 cc of the supernatant plasma withdrawn by suction. The remaining 250 cc, consisting of red cells covered with a patchy layer of leukocytes and platelets, is transported to us in the original container the day after withdrawal from the donor. Each flask contains sufficient plasma to make the material liquid, and an even suspension of erythrocytes can be produced by gentle shaking.

Owing to the difficulty of transporting the material to Stanford Hospital at frequent intervals, only group O cells are used. The blood group is checked and the major cross match done before each transfusion. Samples for these and other determinations are withdrawn from the flask by sterile serologic pipets. The blood is stored at 4 to 6 C and is given without warming shortly after removal from the refrigerator.

The hematocrit value of 30 specimens varied from 84 to 95 per cent. Fifty per cent of these showed evidence of varying amounts of free hemoglobin in the

¹ From the Department of Medicine, Stanford University School of Medicine.

The San Francisco Unit of the American Women's Voluntary Services dependably and efficiently transported the blood from Berkeley to San Francisco.

² MacQuaide D. H. G. and Mollison P. L. Treatment of Anemia by Transfusion of Concentrated Suspensions of Red Cells. *Brit. M. J.* 555 (Oct. 26) 1940.

³ Williams G. E. O. and Davie T. B. Preparation and Use of Concentrated Red Cell Suspensions in Treatment of Anemia. *Brit. M. J.* 2: 641 (Nov. 8) 1941.

supernatant plasma. My associates and I confirmed the finding of others¹ that this does not necessarily indicate an increase in cell fragility as measured by susceptibility to hypotonic saline solution and probably represents spontaneous dehemoglobinization described by Kolmer.¹

The transfusions are administered with an ordinary recipient set consisting of a 300 cc cylinder connected to a Kaufman luer syringe by 4 feet of rubber tubing. The only filtering device is a double thickness of sterile gauze stretched over a funnel placed in the top of the cylinder. An 18 gage needle is used for all transfusions, and the rate of flow is controlled by gravity. If the reservoir is placed 3 feet above the antecubital space, 250 cc of the concentrated cells can be administered in forty minutes. A small amount of saline solution is used to start the intravenous infusion, but an appreciable dilution is not necessary to obtain a steady uninterrupted flow. In most procedures the cells from 2 or 3 pints of blood are given and the contents of the second or third flask added when the reservoir is nearly empty.

The patients receiving the transfusions were in both the clinic and the private services of the hospital. In all,

TABLE 1—Clinical Diagnosis in Group of Cases

Cause or Type of Anemia	Number of Cases
Acute blood loss	4
Chronic blood loss	3
Leukemia	4
Hodgkin's disease	1
Bright's disease with uremia	9
Aplastic anemia	1
Postoperative anemia associated with chronic infection and blood loss	3
Primary anemia	3
Unexplained anemia associated with pregnancy	1
Hemolytic anemia	1
Total	30

the cells from 92 pints of blood have been given to 30 patients in forty-four procedures. The clinical diagnoses of the group of patients are presented in table 1.

RESULTS

Hematocrit readings⁴ were made before the procedure was carried out and on the following day. Two hundred and fifty cc of concentrated cells produced an average rise of 2.9 per cent in the hematocrit value. The change in the hematocrit reading was proportional to the amount of blood given, so that 750 cc of concentrated red cells produced a rise of 8.5 to 9 per cent and a dramatic change in the appearance of the patient. Four cases are presented to illustrate the efficiency and efficacy of the method.

CASE 1—A white man aged 34 with a diagnosis of chronic nephritis, followed in the nephritis clinic for ten years, has been in a state of chronic uremia with associated anemia for five years. Mild cardiac failure developed with pulmonary edema in October 1942, but the patient made a good response to rest and digitalis. After returning to work he continued to have dyspnea on mild exertion and at times exhibited a gallop rhythm. It was thought that improvement in the oxygen carrying capacity of his blood might decrease cardiac work and

relieve his symptoms. As usual, his anemia (hematocrit reading 26) had shown no response to liver and iron therapy. He was admitted to the ward on Jan. 13, 1943, where a 450 cc transfusion of concentrated red cells was given without difficulty or ill effect. The next day he received a second transfusion of an equal amount, following which his temperature rose to 38.3 C (101 F) rectally without the sensation of discomfort. There was no rise in blood pressure (190 systolic, 110 diastolic) following transfusion, and vital capacity (3,200 cc) was not diminished. The hematocrit reading was 40.5 when he was discharged the following morning. Four weeks later it was 35.5. In spite of the striking improvement in the anemia and general appearance, he did not experience great subjective change, although the dyspnea on exertion did diminish.

All 9 patients with uremia and anemia received 400 to 500 cc of concentrated cells at one time. None of these patients were in congestive failure but 4 had symptoms and signs which indicated that failure was imminent. One patient, a man aged 38 in the final stages of uremia, developed transitory pulmonary edema and orthopnea following a transfusion of 500 cc of concentrated cells. This was anticipated, since he had experienced bouts of paroxysmal dyspnea for several nights preceding entry. It is noteworthy that a patient in such a precarious condition could take enough blood to increase his hematocrit reading from 24 to 30 and hemoglobin from 44 to 63 per cent (Sahli) in a single procedure. Most of the 9 patients with anemia secondary to uremia experienced little improvement in general symptoms, but all were in fairly advanced stages with the blood creatinine level varying from 6 to 12 mg per hundred cubic centimeters. The cosmetic effect in diminishing the pallor was the most striking effect observed.

CASE 2—A woman aged 34 was brought to the hospital on Jan. 22, 1942 during the eighth month of pregnancy because of extreme pallor. She had noted easy fatigue and dyspnea for only one week, although a history of blood loss or jaundice could not be obtained. She was very obese and there was considerable air hunger. The scleras were clear and the skin and mucous membrane pale. The size of the abdomen was consistent with an eight months pregnancy, and the fetal heart could be heard. The hemoglobin level was 20 per cent (Sahli) on entry. Her blood was Rh positive. Following one transfusion of whole blood the hemoglobin was 25 per cent (Sahli) and the erythrocytes numbered 1,490,000 per cubic millimeter. The hematocrit reading was 11.5 and by the Wintrobe standards all the cells were small (mean corpuscular volume 76.7 cubic microns) but well filled with hemoglobin (mean corpuscular hemoglobin 28.7 micromicrograms) (mean corpuscular hemoglobin concentration 37.5 per cent). The reticulocyte count varied from 2.3 to 3.3 per cent. The icteric index was 3 and the resistance of the erythrocytes to hypotonic saline solution was normal. Leukocyte counts were within normal range, platelets numbered 105,000 per cubic millimeter. Stool examinations were negative for occult blood.

The transfusion of whole blood given shortly after entry relieved the air hunger somewhat. The second hospital day she was given 450 cc of concentrated red cells, which raised the hematocrit reading to 20, and the hemoglobin to 40 per cent (Sahli). The patient continued to show a low reticulocyte percentage considering the degree of anemia, and five days later the hematocrit was still 20. She was given a second transfusion of 500 cc of concentrated cells, following which the hematocrit reading was 26.5. Sternal puncture showed erythroblastic hyperplasia. Following this she continued to improve on iron therapy. Two weeks later the hematocrit was 75 per cent (Sahli), and the erythrocyte count 3,740,000 per cubic millimeter. She was discharged improved to return for delivery. The cause of her anemia remains in doubt.

3 Kolmer, J. A., and Howard, M. Studies on the Preservation of Human Blood, *Am. J. M. Sc.* 200:311 (Sept.) 1940. Crosbie, A., and Scarborough, H. Studies on Stored Blood, *Edinburgh M. J.* 49:40 (Jan.) 1942.

4 Hematocrit determinations were done by the Wintrobe method.

This case illustrates several advantages of using concentrated cell transfusions. It was necessary to increase the oxygen carrying capacity of the patient's blood as quickly as possible, since premature labor could have begun at any time. There was considerable technical difficulty in finding superficial veins for intravenous infusion and it was a great advantage to reduce the number of procedures by half in order to achieve the same results as would have been obtained with whole blood transfusions.

CASE 3—A man aged 35 had been discharged from the hospital four weeks previously with a diagnosis of monoblastic leukemia and secondary anemia. During his hospital stay he had received a total of seven transfusions of whole blood, which raised the hemoglobin level from 26 per cent (Sahli) to 82 per cent at the time of discharge. He was readmitted on Jan 25, 1942 because of bleeding from the mouth following the incision of a peritonsillar abscess. He appeared acutely ill. The skin was pale and covered with petechiae. The tonsils were large, infected and covered with clots. The edge of the spleen was palpable. Examination of the blood showed a severe anemia and thrombopenia and many monoblasts in the circulating blood. He received one transfusion of 500 cc of bank blood and one of 600 cc of fresh citrated blood but continued to bleed from the mouth. Three days after admission the hematocrit reading was 18. He was given 750 cc of concentrated cells, which he took without discomfort or reaction. The following day he received an equal amount without incident. The capillary bleeding time fell from fifteen minutes to three and a half minutes and there was a cessation of oozing from the tonsillar incision. There was a questionable rise in platelets from 2,000 to 10,000 on repeated counts, and the hematocrit level rose to 36. The tonsillar lesion responded well to local x-ray therapy. During the next two weeks in the hospital he received transfusions of 450 cc and 650 cc of concentrated cells. He was discharged at the end of the third week considerably improved with a hemoglobin level of 90 per cent (Sahli) and an erythrocyte count of 4,400,000 per cubic millimeter. Crops of petechiae continued to appear, however.

By use of the concentrated cell transfusions this patient received enough blood in twenty-four hours to double the volume of circulating red cells and bring his hemoglobin from a low level (35 per cent) to one approaching normal (70 per cent). Two of the patients with leukemia showed bleeding tendencies, which seemed to be as well controlled by transfusions of concentrated cells as by whole blood. There were no reactions to multiple transfusions in this particular group.

CASE 4—A white man aged 29, a welder, was admitted to the hospital on Feb 10, 1943 following the sudden onset of weakness eighteen hours before and passage of several tarry stools. He gave a history of epigastric distress after meals for the past several months. There was pallor of the skin and mucous membranes and the forehead was slightly moist but the extremities were not cold. The blood pressure was 120 systolic and 62 diastolic. The pulse rate was 138 a minute and he was moderately restless. There was an old fracture deformity of the left arm. Physical examination was not otherwise remarkable. The hematocrit reading was 18 and the hemoglobin was 40 per cent (Sahli). On entry he was given 500 cc of concentrated red cells. The following day the hematocrit reading was 23 and the hemoglobin was 50 per cent. He then received a second transfusion of 500 cc of concentrated cells. On the fifth hospital day the hematocrit reading was 31 and the hemoglobin was 62 per cent (Sahli). The plasma proteins were 5.7 Gm per hundred cubic centimeters. He improved rapidly on a soft diet and his hemoglobin level climbed steadily. Stools became negative to the guaiac test

for occult blood. A gastrointestinal series on the twelfth hospital day showed deformity of the duodenal cap, but an ulcer crater could not be demonstrated.

The treatment of anemia of acute blood loss with transfusions of concentrated cells presents a more complex problem than refractory anemias, since the loss of plasma proteins is not replaced. Investigation of the effect of acute blood loss in normal human subjects shows a steady fall of plasma proteins during an initial period of three hours following hemorrhage due to replacement of the plasma lost by protein poor fluid. Thereafter an increase in plasma volume is not accompanied by a further drop in protein. It is concluded as a result that the plasma volume is determined by the amount of circulating protein and that the normal mechanism for adding plasma to the circulation acts slowly over two or three days. Many patients suffering from severe gastrointestinal hemorrhage from a bleeding ulcer or ruptured varix are likely to have low plasma proteins at the time of onset.⁵ Protein replacement may be slower than in normal subjects because of poor reserves and restricted diet. In view of these findings it is evident that transfusions of concentrated cells should not be used as a substitute for whole blood in the treatment of acute blood loss without regard to the level of plasma proteins or plasma volume. Three of the 4 patients with anemia from blood loss in this series benefited a great deal from the transfusions, the fourth, an elderly man, died of other complications.

REACTIONS TO TRANSFUSION

A total of seven febrile reactions occurred following the forty-four procedures. Of these, four consisted of a rise in temperature of less than 2 degrees C (3.6 degrees F) and were accompanied by slight chilly sensations but no real discomfort. The others consisted of more prolonged febrile reactions beginning the day after a transfusion with the highest temperature recorded at 39.8 C (103.6 F) rectally. There were no subjective sensations except a feeling of warmth and headache, and the temperature was down to normal in twenty-four hours. One patient with a diagnosis of aleukemic leukemia had exhibited a similar reaction following a previous transfusion of whole blood. In only 1 instance did a severe chill occur followed by a high fever. This patient has experienced many similar reactions during the previous three years following transfusions with all types of blood for therapy of an aplastic anemia. All febrile reactions followed transfusions of 500 to 700 cc of concentrated cells. There is no evidence that free hemoglobin in the plasma was a factor in producing the febrile reactions. It appears from these figures that reactions to transfusion in this comparatively small group of cases did not represent a greater problem than with ordinary methods.

Fourteen of the 30 patients had blood of group O the remainder of A or B. Since small amounts of group O plasma were given hemolytic reactions from the introduction of incompatible isoagglutinins were not anticipated and none occurred. Seven hundred and

5 Ebert R V, Stead E A Jr and Gibson J G II. Report of Normal Subjects to Acute Blood Loss. *Arch. Int. Med.* 68: 573 (Sept.) 1941.

6 Rigg H E, Reinhold J G, Bole R S and Score P C. Qualitative Circulatory Deficiencies Observed in Peptic Ulcer. *Am. J. Digest Dis.* 8: 283 (Oct.) 1941. Post Joseph and Patek V J Jr. Serum Proteins in Cirrhosis of Liver. *Arch. Int. Med.* 69: 67 (Jan.) 1942.

fifty cc of concentrated cells, the largest amount given at one time, consists at most of 15 per cent plasma, or less than half the amount given with an ordinary transfusion of whole blood. The color of the plasma compared before and after transfusion in the hematocrit tube showed a slight but detectable increase in bilirubinemia in 5 instances. The icteric index was never greater than 8 units, however, and the increase was not accompanied by a febrile reaction. The patient with chronic hemolytic anemia showed a decided increase in bilirubinemia, as was anticipated.

Hemolytic reactions due to the development of an anti Rh agglutinin after repeated transfusions have been reported.⁷ The severity of such an intra group reaction might be increased if a large amount of Rh positive cells were given to an Rh negative recipient who had been sensitized by previous transfusions. While not done in this series, special techniques of detecting anti Rh and other atypical agglutinins are doubtless advisable before large amounts of concentrated cells are given to patients in whom isommunization may be a factor.

TABLE 2—Hemolysis of Erythrocytes of Citrated Blood Stored at 4 to 6 C After the Removal of Most of the Plasma

Days of Storage	Specimen	Initial Hemolysis	Definite Hemolysis	Hemolysis Complete
0	Control	0.16	0.41	0.26
1	No 1	0.16	0.11	0.23
1	No 2	0.11	0.42	0.23
3	No 1	0.56	0.18	0.26
3	No 2	0.60	0.48	0.30
5	No 1	0.80	0.48	0.32
5	No 2	0.80	0.60	0.34
7	No 3	0.80	0.54	0.28
7	No 4	0.80	0.70	0.32

EFFECTS OF STORAGE ON CONCENTRATED CELLS

All but two of the transfusions reported in this series were given within three days after the blood was withdrawn from the donor. Transfusions of 500 cc of concentrated red cells on the fourth and fifth day resulted in the anticipated rise in hematocrit value, although there is evidence that the rise was more transitory. One transfusion of 500 cc of concentrated cells, not included in this series, was given on the seventh day of storage. The resulting rise in hematocrit level persisted only forty-eight hours. The return of the hematocrit reading to the pretransfusion level was accompanied by an increase in the icteric index to 15 units. A second transfusion of cells stored for three days produced a rise in the hematocrit level that persisted without fall for seven days. Belk and Barnes⁸ have observed that the survival time of erythrocytes in citrated whole blood diminished with increasing rapidity after three days' storage. It is conceivable that erythrocytes of citrated blood will undergo even more rapid deterioration if the bulk of the plasma has been removed.

Preliminary observations as to the effect of storage on the susceptibility of erythrocytes to hemolysis with

hypotonic saline solution have been made. Results of observations made by the method of Daland and Worthley⁹ are presented in table 2.

Decrease in resistance to hemolysis in hypotonic saline solution during the first week of storage of citrated whole blood has been observed by Kolmer and Howard³ and Crosbie and Scarborough,² but the change was not as pronounced at the end of the first week as we observed it in cells stored without plasma. While our observations are not complete, they indicate that concentrated cell suspensions should be given within three days after withdrawal and separation from the plasma in order to obtain the most lasting results.

COMMENT

The use of the cellular portion of whole blood in the transfusion therapy of anemia is particularly important at the present time. A large amount of this material is being discarded because of lack of widespread recognition of its usefulness. It can be distributed easily and given at low cost to patients who might not otherwise receive transfusions. Concentrated red cells have a decided advantage over whole blood in the transfusion treatment of anemia, since fewer procedures are required to obtain the desired result and the hospital stay can be significantly shortened. There is no indication that the plasma content of whole blood is beneficial to these patients; it may be a decided disadvantage in the presence of reduced cardiac reserve. Our results so far indicate that concentrated cell transfusions are as efficacious as whole blood in controlling the bleeding tendencies of thrombocytopenia secondary to leukemia.

Of greater importance than these considerations is the use of concentrated cell transfusions in the place of whole blood as a means of saving plasma for war purposes. Whole blood given when only cells are needed represents the waste of so much plasma. No accurate figures are available for this institution, but it is estimated that at least one half of all transfusions given aim to correct anemia only. Physicians and hospitals using blood banks can save significant amounts of plasma by requesting only the cellular portion of the blood when that is all that is needed by the patient.

SUMMARY

Five per cent plasma with the cellular portion of blood for transfusions is sufficient to allow an even, uninterrupted flow with the ordinary recipient set and requires only a somewhat greater force of gravity. Single and multiple transfusions of type O cells have been given with good therapeutic results. The incidence of reactions does not appear to constitute a greater problem in the use of this type of blood. Blood from which most of the plasma has been removed is ideally suited for the transfusion therapy of patients with anemias refractory to other therapy and patients with anemia and reduced cardiac reserve. It is not so clearly indicated in the therapy of acute blood loss, since plasma proteins are not replaced.

Transfusions of concentrated cells might well be used when the cellular portion of the blood is all that is needed by the patient. If physicians and hospitals using blood banks will cooperate in requesting concentrated cells for transfusions, a large amount of plasma can be saved for war purposes.

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7 Wiener, A. S., and Peters, H. R. Hemolytic Reactions Following Transfusion of Blood of the Homologous Group, with Three Cases in Which the Same Agglutinin Was Responsible, *Ann Int Med* **13**: 2306 (June) 1940. Landsteiner, Karl, Levine, P., and Jones, M. L. On the Development of Isoagglutinins Following Transfusion, *Proc Soc Exper Biol & Med* **25**: 672 (May) 1928.
8 Belk, W. P., and Barnes, B. C. The Survival Time After Transfusion of Erythrocytes of Citrated Human Blood Stored at 4 to 6 Centigrade, *Am J M Sc* **201**: 838 (June) 1941.

9 Daland, Geneva A., and Worthley, Katherine. The Resistance of Red Blood Cells to Hemolysis in Hypotonic Solutions of Sodium Chloride, *J Lab & Clin Med* **20**: 1122 (Aug) 1935.

RESULTS OF SURGICAL TREATMENT
OF VARICOSE VEINSGERALD H. PRAATT, M.D.
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The exceedingly high incidence of vascular diseases among those living to the age of 40 has made the study of therapeutic methods to care for these vascular lesions of interest to all. A thorough survey recently completed of 537 employees of a large department store who had worked for fifteen years or more, and all of whom were over 40, showed the surprising x-ray evidence of arteriosclerosis of 46 per cent. In this group only 12 per cent had subnormal oscillometric readings, therefore the arteriosclerosis was subclinical and unless x-ray films had been taken the person would not have been aware of the condition. Men and women differed both in incidence and in degree of arterial changes. While there was x-ray calcification in 44 per cent of the men, only 18 per cent of the women showed roentgenographic changes. In the group with advanced changes (plaques and the like) there were 30 per cent of the men but no women. It may be that further study will show that, like the graying of hair and wrinkles, arterial changes are metabolic and not pathologic unless some accident causes occlusion.

In the same study it was found that 40 per cent of the men and 70 per cent of the women had varicose veins which were pathologic and were causing symptoms. The sex difference was most interesting. The higher rate among the women could not be based on the pregnancy factor alone, as when those who had had pregnancies were eliminated the incidence was still 60 per cent, or nearly twice as great as among the men. It would appear, then, that the male deteriorates on the arterial side and the female on the venous. Efforts to determine the cause for the sex difference in the incidence of varicose veins have not been conclusive, but it does appear that a structural difference in the pelvis and perhaps the congestion of the menstrual cycle play a part, with pregnancy and its complications being the precipitating cause.¹ Despite the causes, it is apparent that 2 out of 3 women who continue actively at work eventually will develop varicose veins and be candidates for the complications of varicose veins, namely phlebitis or ulceration. In a total war men are subjected to strains that most of them are ill prepared to withstand. The long periods of standing, fights through jungles and against icy winds and adaptation to the peculiar positions necessary to man tanks, cramped cockpits or fox holes will all be registered as precipitating factors in the development of future vascular lesions.

Civilians will be more affected than usual. Older persons will take their places at tedious standing positions, operating unusual pedal apparatus and in general utilizing parts of the body not acclimated for the strain. One can expect a great increase in these lesions with this new precipitating factor, and, from the requests for information from the various camps, the armed services are already experiencing these problems. The treatment of a condition which affects such a large group is therefore a timely subject.

When the valves in the superficial veins have become incompetent, surgical treatment is the only type that can

be helpful. In our clinic 4 out of 5 patients have these valve incompetences and therefore resection of the saphenous vein is required. In private practice, in which neglect is not so uncommon, two thirds of the cases still come to operation.

In the selection of the patient for operation certain tests are important. These are:

1. Determination of arterial supply. The history will be important, as claudication, temperature and color changes in the skin, a history of frequent infections or diabetes mellitus are significant. Palpation of the major arteries, determination of the oscillometric readings and at times x-ray examination will be helpful in determining which of the patients have an arterial disease. The simple question "How far can you walk?" will be effective if arch and other ambulatory difficulties are eliminated.

2. Determination of deep vein patency. A history of phlebitis or "milk leg" is important. A test can be done readily by taking careful circumferential measurements at set points in the thigh, calf and ankle, then applying Ace type bandages and tourniquets with the veins empty, permitting the patient to walk for ten minutes and then remeasuring. In the normal person there will be a decrease in the circumference. Increase in size or pain is an indication of deep vein closure. An improved modification in the measurements in this test can be made by noting the displacement in a tank of water before and after walking.

3. The adequacy of the saphenous-femoral valve. This is readily demonstrated by elevating the patient's leg and emptying the veins, applying the tourniquet high in the groin and, with the patient standing, removing the tourniquet and noting whether the veins fill from above or below. A rapid filling from above indicates valve failure.

4. Testing for the incompetent communicating branches. An Ace bandage is applied from the toes to the groin and a tourniquet placed on the thigh above this area. As the bandage is removed, a sudden protrusion of a collection of veins shows the point of incompetence. A second Ace bandage, which may be wrapped from above down, exposes only a small area at a time and is helpful. All those "blow outs" or valve incompetences then are scheduled for operative resection.

Our study reveals that 80 per cent of those registered at the clinic have incompetent valves and require operative treatment. It must be remembered that this clinic is located in downtown New York in a section where people of a low economic status live and where self neglect is not unusual.

OPERATIVE TECHNIC

Experience has illustrated the importance of certain technical points in the operation. Only local anesthesia should be used, and simple infiltration from a single needle puncture (thus reducing danger to infection) is entirely satisfactory. Approximately 80 to 100 cc. of 1 per cent procaine hydrochloride is the average amount. The location of the saphenous vein at the femoral junction can be determined by the "one by one rule." 1 inch lateral and 1 inch below the spine of the pubis. The spine of the pubis is palpable even in obese persons. A transverse incision is chosen because it is in the line of skin cleavage and therefore heals more readily. Blunt dissection will expose the vein which on the average is

From the Surgical Vascular Service, New York Post Graduate Medical School and Hospital of Columbia University.
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2. Pratt, C. H. Test for Incompetent Communicating Branches in Surgical Treatment of Varicose Veins. *J. A. M. A.* 117: 100 (July 12) 1941.

11 mm in diameter. Elevation of the saphenous vein with a tape assists in the demonstration and resection of each of the branches entering the bulb. The inferior epigastric and circumflex iliac branches may be so high on the bulb that retraction above the inguinal ligament

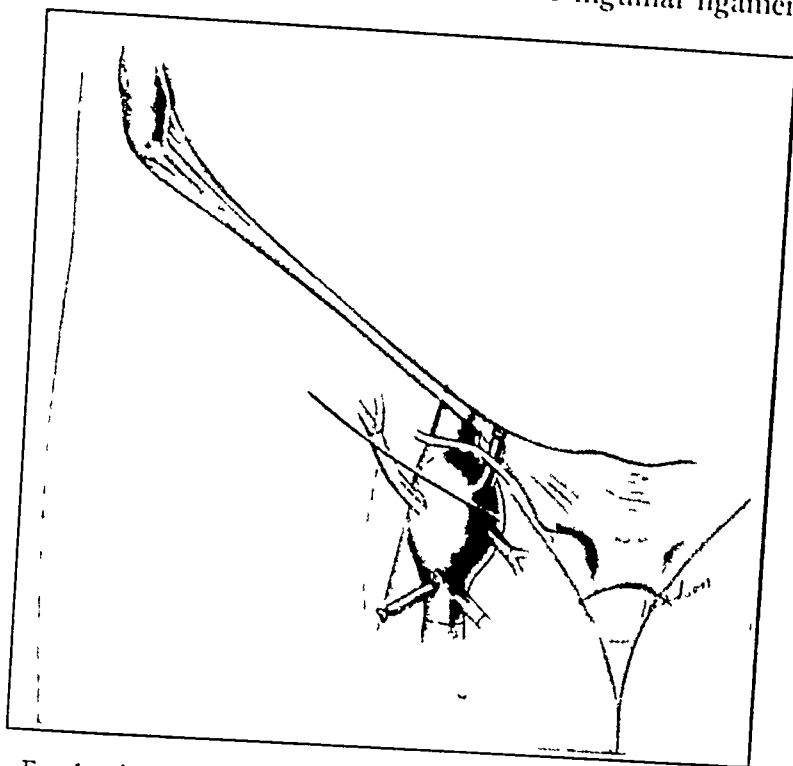


Fig 1—Anatomy of the area of the saphenous femoral valve junction of saphenous vein and the femoral vein 1 inch lateral and 1 inch below the spine of the pubis, the superficial pudendal artery shown crossing the bulb is a good guide to the junction point. The branches of the saphenous vein illustrated are the superficial circumflex iliac, the superficial inferior epigastric, the superficial pudendal, the superficial medial and the lateral femoral cutaneous. Note that high retraction is necessary to expose all branches.

frequently is necessary to expose them. The anatomic junction of the saphenous vein with the femoral is difficult to demonstrate because of the dilated bulb present when the saphenous femoral valve is incompetent. The superficial pudendal artery (fig 1) crossing the bulb is a good guide to this point. After resection of these and the other branches (external pudendal, medial and

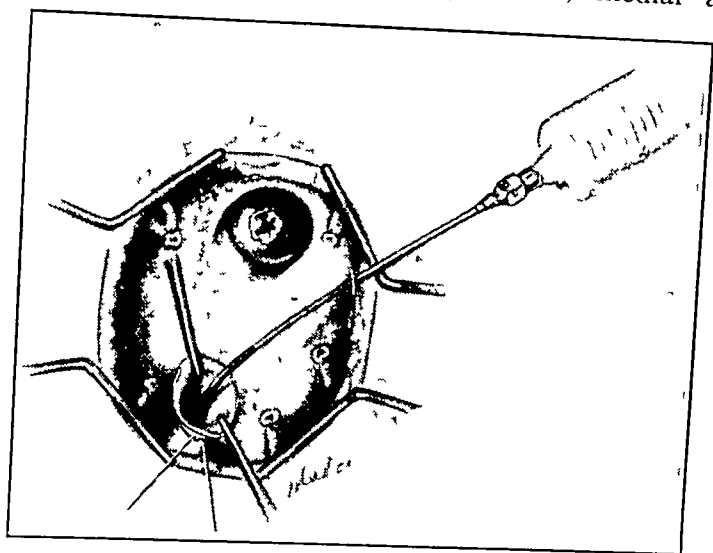


Fig 2—Dissection in the saphenous fossa, branches resected, femoral end ligated, distal end of saphenous opened, catheter inserted, solution introduced retrogradely as the catheter is withdrawn.

lateral femoral cutaneous veins), the saphenous vein should be divided 3 to 4 inches below the bulb, dissected up to the femoral junction and ligated flush with the femoral vein by a transfixion suture. The distal end is then opened and the saphenous vein sclerosed by the retrograde insertion of a solution through a ureteral

type catheter. This method permits even distribution of the solution throughout the course of the vein, and larger amounts can be introduced than are usually employed (fig 2).

Animal experiments demonstrate that even at a distance of $2\frac{1}{2}$ inches from the injection point intimal sclerosis is minimal. This testifies for the good results obtained by spacing the maximum sclerotic effect along the entire vein tree by the catheter method. If there are no contraindications (arterial disease, open ulcer), approximately 20 to 40 cc of 3.5 per cent sodium ricinoleate may be introduced. The size of the vein is a good guide to the amount of solution to be utilized, as in the larger veins the increased blood content reduces the strength of the sclerosing solution. In small veins a relatively smaller amount of sclerosing

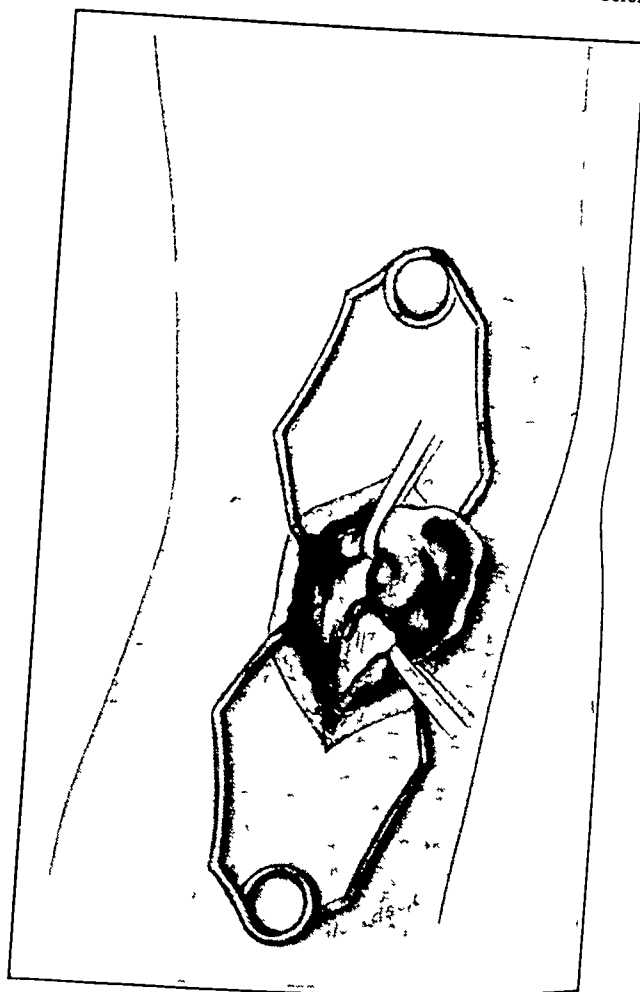


Fig 3—Resection of communicating branch ('blowout'). Note perforating branch which must be resected together with the saphenous.

solution is indicated. The distal end of the saphenous vein is then resected, transfixed and ligated. While the saphenous vein and its branches are being exposed in the groin, an assistant dissects the secondary point together with a section of the saphenous and the communicating branch (fig 3). These are resected at the time the solution is introduced. The wounds are closed without drainage and are sealed, pressure pads are placed along the course of the saphenous vein and an Ace type bandage is applied from the toes to the groin. Our experience has demonstrated the value of steel wire suture material, and it is used exclusively. The patient walks around the room at once and thereafter for fifteen to twenty minutes out of every hour. At the end of an

3 Pratt G. H. Segmental Sclerosis of Saphenous Vein for Varicose Veins, Ulcers and Diminished Arterial Supply, J. A. M. A. 113 (Sept. 2) 1939.

4 Pratt G. H. Nine Years Clinical Experience with Steel Wire Suture Material, Surg. Gynec. & Obst. 74: 845 (April) 1942.

hour the supporting bandages are removed and the legs are inspected for collections of excess sclerosing solution, as shown by discolorations. Extra pressure pads are applied at these points and the bandage is reapplied. The latter part of the technic is important in preventing sloughs and since its adoption has reduced sloughs to 0.5 per cent.

RESULTS

My associates and I have reexamined and obtained follow-up results on 357 patients who have been operated on during the last six years with the technic described. There were 224 women and 133 men. The average age was 45 for the men and 41 for the women. Of these patients 96 per cent had the operation on the two legs at the same time and the operations on the remainder of the group were equally divided between the right and the left leg. Of the women 26.1 per cent and of the men 20.7 per cent had open ulcers at the time of operation. Of the women who gave an etiologic history (46.8 per cent of the total) 59.2 per cent considered pregnancy as the cause. The other causes are given in table 1.

The indications for the operation were

- 1 Incompetent saphenous remoral valves
- 2 Incompetent communicating branch valves
- 3 Varicose veins after phlebitis, when the phlebitis was inactive and the thrombosed vein had recanalized leaving the collateral dilated veins as pathologic varices

All of these patients were carefully examined and an estimate of the success of the procedure was made. The results necessarily are influenced by the personal factor of the examiner, but in these cases this influence was minimized by examination by several men at the same time. To have some criterion as to the results, the following standards were required:

- A Excellent, or 4 plus, results were those in which the patient was symptom free with no veins apparent and was given less than four subsequent injections.
- B Good results, or 3 plus, were those in which the patient was symptom free, without recurrence, and was given less than eleven subsequent injections.
- C Poor results, or 2 plus, were those in which there

TABLE 1—Saphenous Vein Resection and Sclerosis

	Men	Women
Average age	45 years	41 years
Ratio of men to women 1 : 2		
Cause (from history)	Per Cent	
Hereditary	15	
Phlebitis		
Males	25	
Females	30	
Occupation	10	
Pregnancy	60	
Associated vascular disease	36	

Thirty-one per cent of the men and 23 per cent of the women had some concurrent disease such as hypertension, diabetes, arteriosclerosis and cardiac lesion.

were some symptoms, some veins were apparent even after subsequent injections or obvious technical errors, such as failure to resect secondary blowouts, were apparent. D The failures, 1 plus, were those in which the patient had symptoms—varicose veins were present or ulcers had reopened (table 2).

The average number of secondary ligations necessary was 2.3. The average percentage of the men who needed secondary injections was 23.4 and of the women 25.5.

The number of results reported as good or excellent is relatively high and is due partly to the fact that in some of the cases there has not been sufficient time for recurrences to develop. It is my hope that eventually 75 per cent of those operated on will fall in the good or excellent result class. Of the other 25 per cent, approximately one eighth will be failures due to technical error in resecting branches in the groin and one fourth to failure to resect the communicating branches accurately,

TABLE 2—Results of Vein Resection

	Male	Female
4 plus Symptom free no recurrence less than 3 injections	53.6%	50.6%
3 plus Symptom free less than 10 injections	30.9%	30.6%
4 plus and 3 plus	89.5%	93.2%
2 plus Only fair some local recurrences	6%	4.9%
1 plus Poor results recurrence or ulcers reopened	4.5%	1.9%

and the rest to the development of a new incompetent communicating branch.

It is important to emphasize that varicose veins as a result of phlebitis are a different type of vein, the treatment must be varied and the results cannot be as satisfactory as in the simple varicosities. While it is not in my province to discuss phlebitis at this time, it is well to emphasize that in my opinion varicosities after phlebitis should not be operated on until there is evidence of subsidence of the inflammation and complete recanalization of the phlebotic veins. Contraindications to the procedure are:

- 1 Active and continuing phlebitis. All other clinics have not made this a contraindication. I have seen two fatalities after ligation in the presence of phlebitis. I feel certain that ligation does not prevent pulmonary embolism, as I have observed pulmonary embolisms many times after ligation.
- 2 The closure of the deep veins. Under no condition should superficial or collateral veins be resected or sclerosed if the deep veins are not open.
- 3 The presence of an acute infection in the leg, such as cellulitis.

Arterial disease is no longer considered a contraindication to operation on varicose veins, as I have seen sufficient clinical improvement and reduction in claudication time to advocate the procedure therapeutically. When one considers that the arterial and venous systems in the capillaries are continuous, it is apparent that any increase in the back pressure, i.e. varicose veins, will be transmitted back to the arterial side of the capillary bed with greater peripheral resistance to the arterial flow. Reduction of this peripheral resistance by elimination of the stagnant veins thus will aid the arterial flow. The same discussion applies to patients with heart disease and congestive failure. Certain patients with heart disease definitely improve after removal of this large pool of blood in the venous system—at times as dramatically as after phlebotomy.

SUMMARY

1 With an increase in life expectancy many patients with vascular diseases will require therapy. This is true of both arterial and venous lesions, but to a greater extent of the latter.

2 Total war with the severe demands on both military and civilian populations will be an active precipitating cause for an increase in venous problems.

3 If the major valves connecting the superficial and deep vein systems are incompetent, surgical therapy is necessary (60 to 80 per cent)

4 The technic effective in treating these patients is simple and safe if certain criteria rule in the selection of patients

5 The results after a six year follow-up of patients so treated are good in a high percentage

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RADIATION THERAPY OF ACUTE SUBDELTOID BURSITIS

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Since Codman's¹ original description of subdeltoid bursitis in 1906, many articles on this subject have appeared in the literature. All aspects of the condition and numerous methods of treatment have been repeatedly presented.

A number of investigators have shown that irradiation is the treatment of choice in certain types of cases. However, these reports have appeared chiefly in the radiologic literature, with comparatively few in general publications. Therefore we wish to verify and draw attention to the merits of roentgen treatment of the painful shoulder.

A great many articles are available³ presenting detailed reviews of the etiology, pathology, symptomatology and the like, so that only brief mention of these need be made here. The condition has been designated by a variety of names: subdeltoid bursitis, calcarea peritendinitis, periarthritis of the shoulder, calcifications of the supraspinatus tendon or simply painful shoulder. By common usage it is most often called subdeltoid bursitis.

There is no definite cause, although overuse and unaccustomed use of the arm are frequently factors. This was well shown by Bosworth,⁴ who found a definitely higher incidence among typists than among clerks employed by the same company.

Sandstrom⁵ and others have shown that the calcium usually present lies in the tendinous and peritendinous tissues and demonstrated that this calcium is deposited in preexisting degenerative tissue. Microscopically the bursa itself is not involved except for the posterior wall, which lies in contact with the supraspinatus tendon. Grossly the bursa is usually found to be bluish and tensely distended with a thick whitish material which is described as looking like tooth paste.

A division into acute and chronic groups is essential in attempting to evaluate any type of treatment. A sub-

acute division is also often mentioned, however, the subacute and chronic cases tend to merge and are here considered as a single group.

Acute subdeltoid bursitis presents a very typical clinical picture. There is a rather sudden onset of severe pain in the shoulder, usually with no history of significant trauma. Exquisite point tenderness may be elicited over the area of the subdeltoid bursa, with pain radiating down the arm, limitation of motion, and muscle spasm. The patient is apprehensive about any attempts to move the arm, and there is no doubt that he has severe pain.

Roentgenograms should be made to rule out bone and joint disease. In typical cases the diagnosis of bursitis frequently will be verified by the demonstration of a deposit of calcium just lateral to the greater tubercle of the humerus. So that this deposit is not obscured by overlying bone, it may be necessary to make roentgenograms with the humerus in both internal and external rotation, fluoroscopy is often of value in determining the optimum position for demonstrating the calcium.

Chronic cases present similar but much less pronounced symptoms. The duration is several weeks, months or longer. The onset is usually insidious, although an occasional acute case may become chronic because of inadequate treatment. There is usually decided limitation of motion or an actual "freezing" of the shoulder.

Numerous methods of treatment have been enthusiastically advocated, each usually reflecting the principal interest of the proponent. The most frequently cited methods appear to be irrigation,⁶ incision,⁷ excision,⁸ physical therapy⁹ and manipulation. Any of these methods may produce relief of symptoms and a cure. Rest alone will be beneficial, often resulting in complete absorption of the calcareous deposits.¹⁰ Therefore statistics based on cure or improvement do not offer an adequate basis for evaluating the efficacy of the various types of therapy. The treatment of choice should be that one offering the shortest period of disability.

With these criteria in mind we have reviewed a series of cases treated with radiation. The first report of such a series was presented by Lattman¹¹ in 1936, and in his series 15 of 20 patients treated were relieved of pain within forty-eight hours. This was closely followed by the work of de Lorimier,¹² who achieved similar results. Since then Pendergrass and Hodes,¹³ Chapman,¹⁴ Klemes and Klemes,¹⁵ Baird,¹⁶ Sandstrom⁵ and others have verified these claims.

The physical factors employed are 200 kilovolts (constant potential), 18 milliamperes, 0.5 mm of copper plus 1.0 mm of aluminum filter (1.18 mm of copper half value layer), 50 cm target skin distance and a 10 by 15 cm port directed toward the anterolateral aspect of

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13 Pendergrass, E. P., and Hodes, P. J. Roentgen Irradiation in Treatment of Inflammations, Am. J. Roentgenol. 45:74 (Jan.) 1941.

14 Baird, L. W. Roentgen Irradiation of Calcareous Deposits in the Shoulder, Radiology 37:316 (Sept.) 1941.

the involved shoulder. A single treatment with a dose of 300 roentgens is usually sufficient although this may be repeated in from seven to ten days if there has been definite but incomplete relief.

The typical response in an acute case is a frequent but not inevitable aggravation of symptoms for eight to twenty-four hours. It is well, therefore, to provide adequate analgesics and place the arm in a sling during this period. This short period of aggravation is followed by rapid relief of pain and limitation of motion, so that in most instances the patient is able to resume his normal activities in from twenty-four to forty-eight hours after treatment. Residual tenderness usually disappears in a few days, and the calcium deposits will be absent in many instances if roentgenograms are repeated in a few weeks. The results are often quite startling both to the patient and to the referring physician.

Such were the results obtained in 11 out of 14 cases. Each of the 11 patients was able to resume normal activity within forty-eight hours. It is this rapid resumption of normal function that demonstrates the striking effect of roentgen treatment, and it is our belief that with no other form of therapy can so many patients be returned to normal activity so quickly.

If there has been no improvement at the end of forty-eight hours, operative treatment should be considered, and excision of the bursa was done in 2 such cases in this series. The third, a compensation case, was referred to a psychiatrist by the orthopedist and was lost for follow-up.

It should be noted that essentially similar results have been achieved in many more cases. However, these could not be included in this report because definite details of time of disability could not be ascertained in some and the original disability was not of sufficient significance in others.

A typical case is that of a typist who has had each shoulder involved at separate times. The first, in 1932, was on the left side, and at that time she was treated with diathermy and heat applications. She was completely disabled for a full month, three weeks of which time she was a hospital patient. Two years ago an acute subdeltoid bursitis suddenly developed on the right side and she was promptly given irradiation. The usual twenty-four hour aggravation was followed by rapid relief, and she resumed her work during the second twenty-four hours. In both instances calcium deposits were demonstrable, and there was a permanent cure with absorption of calcium. The variation in length of disability, however, was remarkable.

The impressive feature of roentgen treatment, then, and one of utmost importance to the patient, is the short period of disability as compared with any other method of treatment. In every successful case it was possible to resume normal activity within forty-eight hours. Time saved for doctors and hospital personnel is also of some importance.

For these reasons we believe that the treatment of choice for acute subdeltoid bursitis is irradiation. If within forty-eight hours there is no improvement, such treatment may be considered a failure and more radical procedures contemplated. Thus the patient is given the advantage of what is often the simplest and quickest relief obtainable, while if he is one of the small minority who will not be benefited he has lost comparatively little.

Unfortunately a similar response cannot be claimed for chronic bursitis. Approximately 30 per cent of the patients are improved in varying degrees, but only an

occasional patient is cured by this method. If definite symptomatic relief is not apparent within ten days after treatment, we feel that the treatment must be considered a failure. If partial but incomplete relief is reported, then further treatments are justified.

It should be noted, however, that these shoulders respond poorly to any type of therapy, and it seems reasonable to submit such a patient to a trial of radiation therapy before instituting more radical measures. Several such cases in our series have shown improvement to such an extent that the operation or manipulation planned was not necessary.

CONCLUSIONS

1 The length of the patient's disability should be the chief criterion for evaluating therapy of acute subdeltoid bursitis.

2 Roentgen therapy of acute bursitis results in a high percentage of cases in which the economic disability of the patient is reduced to less than forty-eight hours. Therefore roentgen therapy is the treatment of choice in this condition.

3 A trial of roentgen therapy is justified for the chronic type of subdeltoid bursitis.

ENDOMETRIAL TUBERCULOSIS AS A CAUSE OF STERILITY

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AND

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PETAH-TIQUA, PALESTINE

Genital tuberculosis in the female is a disease mainly of the procreative period. Kelly¹ was unable to find more than 21 cases of genital tuberculosis in patients under 15 years. Hegar,² however, found it more frequently during childhood, although he admits that it appears mainly between the ages of 16 and 25. These authors also emphasize the fact that genital tuberculosis during childhood often remains unrecognized because of its atypical symptoms.

The frequency of genital tuberculosis decreases from the tubes toward the pelvic outlet. The tubes are affected most frequently (85 to 90 per cent). The reports concerning the general incidence of female genital tuberculosis and the incidence of tuberculosis of the different organs (namely the ovaries, myometrium, endometrium, and cervix) vary considerably.

In evaluating the results of the various statistical examinations one has to distinguish between women whose genitals are the only obviously affected system and a second group who show additional specific changes somewhere else.

In the latter group the diagnosis of genital tuberculosis is more likely to be made because one is more prone to think of a specific process of the genital organs in this group.

It must be remembered that the diagnosis of genital tuberculosis is difficult except when a tumor is present. Such instances, as is well known, are rather rare. The majority of women with genital tuberculosis show very few clinical symptoms and the condition is usually not

Prof. Dr. Klopstock and Dr. Bregman made the bacteriologic examinations.

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¹ Cited by Norris, C. C. *Gynecological and Obstetrical Tuberculosis*. New York: D. Appleton & Co., 1921, p. 356.

² *München med. Wchnschr.* 1899, p. 217.

discovered at all or is discovered only by chance during operation or postmortem examination

Several methods have been proposed for facilitating the detection of genital tuberculosis. Daniel and Sotman³ inject a solution of dyes into the Douglas pouch and test its excretion into the urine. In the case of

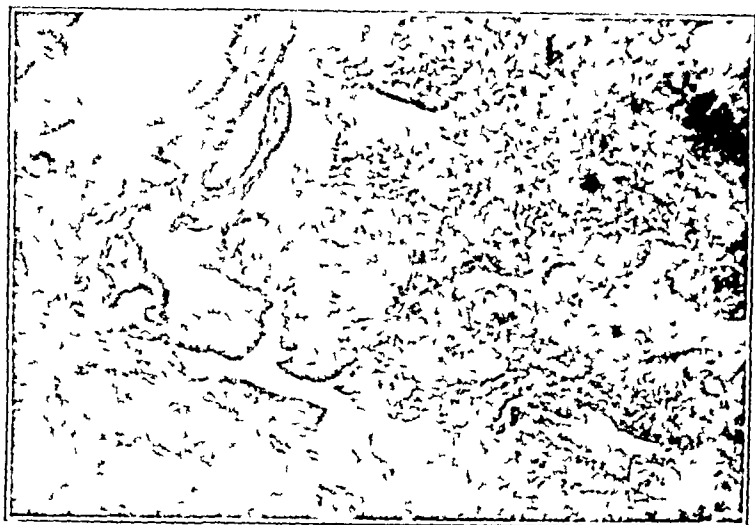


Fig. 1—Giant cell tubercles in the stroma of the uterine mucosa and on the margin of glands

adnexal tuberculosis this excretion is said to be diminished

Wilson⁴ maintains that in adnexal tuberculosis the Aschheim-Zondek test is positive. By others salpingography (Portes and his co-workers⁵) and pneumoperitoneum (Winz-Dyrost⁶) have been recommended. We have had no personal experience with these methods.

Heynemann⁷ is correct in saying that the diagnosis of genital tuberculosis of women has not profited by the recent progress in the field of tuberculosis and is, as formerly, almost always left to chance.

A hypoplastic uterus is an important clinical sign suggesting genital tuberculosis. Heynemann states that it is a predisposing factor for the localization of tuberculosis in the uterus. Sellheim⁸ suggests that the atrophy is secondary to tuberculosis; at any rate it is important



Fig. 2—Penetration of tuberculous granulations into glands

that in the presence of a hypoplastic uterus the possibility of genital tuberculosis should be suspected.

Since sterility frequently coincides with a hypoplastic uterus, one should suppose that genital tuberculosis might be found more often in these cases. Obvious as

this idea seems to be, it is striking how little attention is paid to it in the literature.

What is stressed is the well known fact that a latent tuberculosis of the salpinx is quite frequently discovered only during an operation for sterility. It is further known that the inflammatory adnexal tumors which occur after salpingography probably are, in the majority of cases, specific hydrosalpinx or pyosalpinx originating from a latent tuberculous adnexitis. It is therefore not only useless but even dangerous to attempt to diagnose latent tuberculosis of the salpinx by salpingography. We ourselves know of 5 cases of inflammatory adnexal tumors which flared up after salpingography and later on turned out to be of tuberculous origin.

We report here results which confirm to an unexpected extent the coincidence between sterility and genital tuberculosis.

During the last two years we have done endometrial biopsies by means of strip curettage in cases of sterility in order to investigate the development of the cycle in the uterus mucosa and to prove or disprove the existence of normal ovulation. As a result we have found a considerable number of cases of tuberculosis which had not given rise to any other sign or symptom.

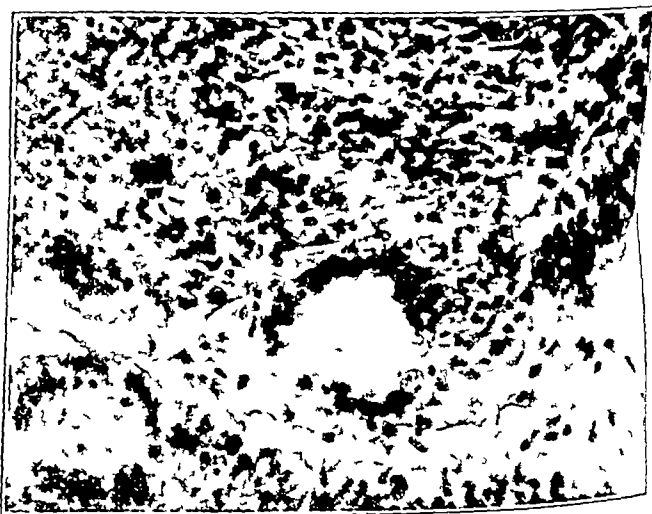


Fig. 3—Greater magnification of figure 1, showing giant cell tubercles on the margin of a gland

METHOD

On the whole, 208 endometrial biopsies have been carried out by us in cases of sterility. As a rule the curettage was done one to two days prior to the expected menstruation. The material obtained was fixed in 10 per cent solution of formaldehyde embedded in paraffin and stained with hematoxylin and eosin. On a number of patients showing microscopic tuberculous changes a second curettage was carried out and the material obtained was inoculated into guinea pigs as well as transferred on a suitable medium for culture.

Furthermore, it was possible to examine clinically and roentgenologically almost all of the women showing endometrial tuberculosis for other evidence of tuberculosis. In many cases the urine of the women was sent for culture. In a number of cases it was possible to examine bacteriologically the urine and sperm of the husbands.

RESULTS

There were 20 cases in which tuberculous endometritis was found microscopically.

The main tuberculous changes were epithelioid cells, tubercles with giant cells in varying numbers and caseation.

3 Cited by Caffier, P. Zentralbl. f. Gynak. 59: 2833 (Nov. 30) 1935.

4 Halban, Joseph, and Sert, Ludwig. Biologie und Pathologie des Weibes, Berlin-Vienna, Urban & Schwarzenberg, 1926, vol. 5, p. 341, part 1.

times conglomerate tubercles. We did not find caseous changes. Frequently tuberculous granulations had penetrated into the lumens of the glands. Secondary nonspecific inflammatory changes were a rule in quite a number of cases (figs 1, 2 and 3).

It is noteworthy that the uppermost layers of the mucous membrane were sometimes studded with numerous tubercles (fig 4).

It is remarkable that in spite of the tuberculous changes present the different stages of secretion and proliferation were fully developed in a high percentage of the cases (fig 5).

In some cases premenstrual hyperplasia was developed. In a few instances tubercles were found in an inactive atrophic endometrium (fig 6).

On 4 women we performed a second curettage and examined the material by means of animal experiment and culture. All four cultures and three experiments on animals proved positive for tuberculosis. The fourth animal died prematurely.

In 18 of the 20 positive cases an examination of the lungs could be made, including x-ray examination. There was no evidence of active tuberculosis of the lungs in any of the cases.



Fig 4.—Numerous tubercles in the upper layers of the uterine mucosa.

The sedimentation rate of erythrocytes was normal in 10 women examined. In only 3 cases was pleurisy mentioned in the history.

The age of the women was from 19 to 42.

Gynecologic examination did not reveal in any of the cases even the most trifling evidence of genital tuberculosis. Only 1 woman was primarily amenorrheic, a second one had not menstruated for six months and a third one menstruated every three or four months. Four were hypomenorrheic and 2 suffered from menorrhagia. In the remaining 12 cases no irregularities of the cycle or of menstruation could be ascertained. Sterility was the only complaint which caused these women to seek medical advice.

COMMENT

Tuberculous endometritis is only seldom thought of. As a rule it is found only by chance either at the occasion of a curettage made for other reasons or after microscopic examination of a uterus removed at operation or autopsy.

Dominguez⁶ found among his clinical material of 5,516 cases only 5 cases of tuberculous endometritis.

Dominguez C M. Ann brasil de gynec. S. 93 (Aug) 1939.

Diehlhelm and Ramsey⁷ ascertained among the 3,647 microscopic examinations on the female genital tract 30 cases of genital tuberculosis. In only 1 case was the tuberculosis restricted to the endometrium.

Even among women with active tuberculosis of the lungs tuberculous endometritis does not seem to be of



Fig 5.—Giant cell tubercles in the stroma of a fully developed premenstrual hyperplasia.

frequent occurrence. Lackner and his co-workers⁷ found among a group of 125 women with active tuberculosis of the lungs treated in the tuberculosis section of the Cook County Hospital only 2 cases of endometritis by means of curettage.

The high number of cases of tuberculous endometritis found by us in sterile, otherwise healthy, women points to a more than accidental connection between latent tuberculosis of the female genital tract and sterility.

On the basis of our results we have every reason to believe that many women with no obvious cause for their sterility suffer from latent genital tuberculosis. We have found tuberculous endometritis in about 10 per cent of our cases. But it is quite possible that in more than 10 per cent a latent genital tuberculosis was present and could have been proved if we had at our



Fig 6.—Tubercle in an atrophic uterine mucosa.

disposal other diagnostic methods than strip curettage. Certainly through a complete evacuation of the mucosa more cases of tuberculosis would be made evident than by the use of the strip curettage only. As proof of this,

⁶ Diehlhelm M W and Ramsey T L. Am J Obst. & Gynec. 30: 420-424 (Sept.) 1935.

⁷ Lackner J E, Schiller Walter and Taylor A S. Am J Obst. & Gynec. 40: 429 (Sept.) 1940.

we mention a case which showed normal mucosa in the first curettage but undoubted tuberculosis in the second curettage

Furthermore, attention must be drawn to the opinion prevalent among pathologists and clinicians that the tubes are much more frequently affected than is the endometrium and that all women suffering from tuberculous endometritis suffer from endosalpingitis, whereas the latter need not always be associated with an endometritis. If this opinion is correct a still higher incidence of genital tuberculosis must be assumed in our series.

Lackner found in a series of 113 autopsies on women suffering from tuberculosis of the lungs 58 per cent tuberculous adnexitis and only 17 per cent endometritis. If this percentage is applied to our patients, we should have to assume a percentage of 30 per cent of tuberculous adnexitis.

We are justified, therefore, in stating that genital tuberculosis plays a much greater part as a cause of sterility than has been supposed up to now.

It still remains undecided whether the endometritis or the salpingitis accompanying it is the cause of the sterility. At any rate, it is not always a question of the patency of the tubes. Tuberculous endometritis is quite compatible with patent tubes, for insufflation tests in 5 of the 20 cases which were now positive had formerly been positive.

The path of infection of the uterine mucosa is uncertain. Hematogenic or lymphatic origin and intracanalicular extension from the tubes have to be considered. In favor of the latter is the fact that tuberculous salpingitis is more frequent than endometritis. Against the hematogenic origin stands the fact that tuberculosis of the ovaries is comparatively rare. If the hematogenic origin of infection were the usual one, the ovary, the tubes and the endometrium would probably be equally affected. It is improbable that there exists a primary tuberculous endometritis. As far as is known, endometritis is nearly always a secondary lesion.

The possibility of exogenic infection through a tuberculous partner by sperm containing tubercle bacilli seems to be negligible. The few specimens of sperm examined by us for tuberculosis by means of culture gave negative results. Other authors came to the same conclusion.

The problem of therapy seems difficult at present. A radical operation, as proposed by several authors, appears as a rule unjustified. The fibrotic form of tuberculous endometritis is to be interpreted as a sign of self healing. Radical surgery, therefore, should be reserved only for caseous processes. The experience with x-ray and radium irradiation is too small to allow a final conclusion.

SUMMARY

In a series of 208 sterile women examined by strip curettage 20 cases of tuberculous endometritis were found.

In those cases in which curettage could be repeated, the diagnosis was confirmed by inoculations into animals or by culture.

In none of these cases had tuberculosis previously been suspected.

Subsequent clinical and roentgenologic examinations failed to disclose any sign of active tuberculosis elsewhere.

ADDENDUM—Since the paper was written 9 more cases of tuberculous endometritis have been found by us.

Clinical Notes, Suggestions and
New Instruments

MYOCARDIAL ABSCESS

NATHAN FLAXMAN, M.D., CHICAGO

Abscess of the myocardium in itself is not important, but it can serve to emphasize the significance of the underlying infection. The literature on the subject is scant. Most of the reports in the older literature consist of a gross description of the heart without any information on the clinical course, bacteriology or underlying cause. Attention has not been given to the clinical conditions which make up the causes of myocardial abscesses.

Such an abscess is considered relatively rare, in most instances as a metastatic manifestation of overwhelming sepsis and of more theoretical than of clinical significance.¹ Saphir stated that reports of abscesses in the myocardium are unusual, yet there seems to be no question that they occur quite often. As a matter of fact, he added, in every instance of pyemia abscesses may be expected in the myocardium.

Since the introduction and widespread use of the sulfonamide compounds many successful results have been obtained in diseases for which the mortality was exceedingly high. Because the sulfonamide compounds have changed our entire outlook

TABLE 1—Causes in Twenty-Nine Cases of
Myocardial Abscess

Bacterial endocarditis	8
Acute osteomyelitis	4
Cellulitis	4
Acute tonsillitis	3
Pneumonia	3
Carcinoma of uterus	1
Otitis media	1
Endophthalmitis	1
Laryngopharyngitis	1
Summit vesiculitis	1
Puerperal sepsis	1

toward many kinds of infection, it seems well to emphasize what diseases may cause myocardial abscesses. The myocardium, considering the character of its work, is the basic structure of a very durable organ, probably the toughest in the body. Various terms are used to designate how the infecting organism is conveyed to the heart muscle, such as septicemia, bacteremia, pyemia, staphylococcemia and metastatic abscesses. The localization of abscesses in the lungs and kidneys is quite common in such conditions with a wide hematogenous spread. Abscess formation in the myocardium is less common and perhaps indicates a more virulent organism or a wider spread or both.

In the autopsy material at the Cook County Hospital, 29 (0.2 per cent) cases of myocardial abscesses were noted in 14,160 autopsies during the period from 1929 to 1942. At the Boston City Hospital 31 cases were noted,¹ while at the Michael Reese Hospital there were 32 (0.56 per cent) among 5,626 autopsies.² This report is based on a study of the 29 cases that came to autopsy at the Cook County Hospital.

BACTERIOSCOPY

Only one report¹ has bacterioscopic data available in 26 of its 31 cases. Staphylococcus aureus was responsible in 20, Streptococcus pneumoniae in 2, Streptococcus viridans in 2, Streptococcus pyogenes in 1, and the meningococcus in 1. In my cases the bacteria responsible were isolated in 28 of the 29 cases. Staph aureus or albus in 23, Streptococcus hemolyticus in 2, the pneumococcus in 2, and Strep viridans in 1. The organism mainly responsible is Staph aureus. It is a deadly organism once it enters the blood stream. This bacterium, of course,

From the Cook County Hospital (service of Dr. Harry J. Flaxman), the Department of Medicine, Loyola University School of Medicine.
1 Weiss, Soma and Wilkins. R. W. Myocardial Abscesses. J. Clin. Pathol. 1937.
2 Saphir, Otto. Myocarditis. A General Review with an Autopsy. 240 Cases. Arch. Path. 32: 1000 (Dec.) 1941.
3 Saphir, Otto. Myocarditis. Arch. Path. 33: 23 (Jan.) 1941.

low virulence and wide distribution, is usually a secondary invader, as it leads a saprophytic existence on the skin and mucous membranes of the body. Regardless of its apparent innocuity, it is exceedingly dangerous. The most insignificant point of infection may allow the staphylococcus to invade the blood stream, resulting in a very serious or fatal outcome owing to the formation of abscesses in one or many organs of the body.

In addition to foci of necrosis, which are apparently the result of lodgment of small bacterial emboli in minute vessels or capillaries.

During this period 252 cases of bacterial endocarditis (34 acute and 218 subacute) were observed among the total number of cases in which necropsy was performed. These 8 cases referred to represent only 3 per cent of all the cases of bacterial endocarditis that came to autopsy. From the stand-

TABLE 2—Data on Eight Cases of Myocardial Abscess Due to Bacterial Endocarditis

Case	Sex	Age	Race	Duration	Previous Heart Disease	Clinical Diagnosis	Autopsy	Heart Weight Gm	Bacteria
1	♂	43	White	1 week	None	Malignant endocarditis	Mitral and aortic	475	Negative
2	♂	9	Negro	1 month	Rheumatic	Subacute	Mitral	200	Staph aureus
3	♂	17	White	2 weeks	Rheumatic	Subacute	All 4 valves	750	Staph albus
4	♀	27	White	4 days	Rheumatic	Malignant	Mitral	350	Staph albus
5	♀	63	White	1 day	None	Cerebral hemorrhage	Aortic and mitral	500	Staph albus
6	♀	50	White	2 days	None	Menigitis	Mitral	360	Str viridans
7	♀	5	Negro	1 day	None	Menigitis	Aortic	350	Staph albus
8	♀	15 days	White	10 days	None	Septicemia	Mitral	275	Staph aureus

TABLE 3—Data on Seven Cases of Myocardial Abscess Due to Acute Osteomyelitis

Case	Sex	Age Yrs	Race	Duration of Symptoms	History	Clinical Diagnosis	Autopsy	Heart Weight Gm	Bacteria	Comment
1	♀	12	White	3 days	Pain in ankle	Rheumatic arthritis	Left tibia	35	Staph albus	X ray negative
2	♀	15	White	9 days	Hurt knee	Rheumatic fever	Left femur	250	Staph albus	X ray negative
3	♀	9	White	3 weeks	Limping	Osteomyelitis of hip	Left hip	150	Staph albus	X ray showed hip dislocated upward
4	♂	2 mo	White	2 days	Swollen face	Cellulitis	Left mandible	30	Staph albus	X ray negative
5	♂	12	White	4 days	Pain in thigh	Poliomyelitis	Right femur	260	Staph albus	X ray negative
6	♂	5	White	6 days	Pain in thigh	Osteomyelitis	Right femur	145	Staph albus	X ray negative
7	♂	36	White	14 days	Septicemia	Osteomyelitis	Right femur	260	Staph albus	Osteomyelitis for past 14 years all extremities

TABLE 4—Data on Fourteen Cases of Myocardial Abscess Due to Miscellaneous Infections

Case	Sex	Age Yrs	Race	Duration	History	Clinical Diagnosis	Autopsy	Heart Weight Gm	Bacteria	Comment
1	♀	51	White	1 month	Inflamed leg	Cellulitis	Same	245	Staph albus	Suppurative pericarditis
2	♀	1 mo	White	1 day	Inflamed arm	Cellulitis	Same	25	Staph albus	Suppurative pericarditis
3	♀	19		5 days	Purple on eyelid	Cellulitis	Same	330	Staph albus	Cavernous sinus thrombosis
4	♂	23	Negro	1 week	Inflamed neck	Cellulitis	Same	270	Staph albus	Cervical vein thrombosis
5	♂	43	White	3 weeks	Pneumonia	Lung abscess	Encapsulated empyema	310	Pneumococcus	Purulent pericarditis
6	♂	47	White	1 week	Pneumonia	Pneumonia	Same	400	Staph albus	None
7	♂	6	White	2 days	Fever and convulsion	Septicemia	Acute tonsillitis	133	Str hemolyticus	None
8	♂	9	White	2 days	Convulsion	Poliomyelitis	Acute tonsillitis and retro tonsillar abscess	124	Staph albus	None
9	♀	23	White	3 months	Vaginal bleeding	Cancer of cervix	Same	250	Staph albus	X ray and radium therapy
10	♂	7 mos	White	1 month	Otitis media	Same	Suppurative meningitis	45	Pneumococcus	None
11	♀	46	Negro	2 days	Iritis	Endophthalmitis	Brain abscesses	260	Str viridans	None
12	♂	46	White	1 week	Abdominal pain	Peritonitis	Seminal vesiculitis	560	Staph albus	None
13	♀	20	White	1 week	Puerperal fever	Same	Same	360	Staph albus	None
14	♀	14	Negro	2 weeks	Lye poison ing	Mediastinitis	Peri-esophageal abscess	265	Staph albus	None

CAUSATIVE FACTORS

The causes of abscesses in the myocardium have not been mentioned previously. For this reason, and mainly because two thirds of these diseases are now amenable to chemotherapy, it seems well to emphasize them. Among the 29 cases 8 (27.5 per cent) were due to bacterial endocarditis and 7 (24.1 per cent) to acute osteomyelitis (table 1).

Bacterial Endocarditis—Myocardial changes have been frequently noted and stressed in cases of acute and subacute bacterial endocarditis. Clawson⁴ reported a greater frequency of abscesses in this than in any other form of endocarditis. Saphir⁵ noted that typical abscesses were often present in

point of frequency and present ability to cope with bacterial endocarditis myocardial abscess due to this cause is of little importance.

Acute Osteomyelitis—The surprising finding is that acute osteomyelitis may be more severe on the myocardium than bacterial endocarditis. A total of 80 patients with acute osteomyelitis came to autopsy, of which number 7 (8.7 per cent) had abscesses in the myocardium. Both diseases seem to affect the young especially males more frequently than females. The average duration of symptoms in those with bacterial endocarditis was 85 days while in those with acute osteomyelitis it was 75 days. The difficulty in diagnosis was equally great in the two groups and the staphylococcus was the common offender. However it is the great difference in response to present treatment that needs to be stressed. Wilkins

⁴ Clawson B. J. Myocarditis. *Am Heart J* 1:1 (Oct) 1925.
Saphir Otto. Myocardial Lesions in Subacute Bacterial Endocarditis. *Am J Path* 11:145 (Jan) 1935.

bacterial endocarditis is seldom cured by the sulfonamide compounds, acute osteomyelitis is and can be cured by one of these drugs or by surgery, or by a combination of the two

Miscellaneous Infections—These include cases of myocardial abscess resulting from cellulitis, acute tonsillitis and pneumonia (table 4). In 13 of the 15 cases, chemotherapy or surgery or both as employed today might possibly have altered the outcome. This is becoming more apparent every day in cases of staphylococcemia. Besides the 252 cases of bacterial endocarditis and the 80 of osteomyelitis, there were 50 cases of septicemia or pneumonia, which made a total of 382 such blood stream infections. Myocardial abscesses were present in 29 (7.5 per cent).

COMMENT

This study of autopsies on patients with myocardial abscesses serves only to emphasize the importance of the underlying infection and to reemphasize the potential severity of so-called minor surface infections. Little can be added to the subject of bacterial endocarditis. However, an aspect of acute osteomyelitis is revealed which has not been mentioned previously. It should be looked on with the same view that the physician looks at bacterial endocarditis, as an extremely serious and fatal infection.

Although there is disagreement on the treatment of acute osteomyelitis, there is no question that it can be treated well if the diagnosis is made early. Grasso⁶ contends that it is not a primary disease of the bone but a localization of general septicemia or septicopycemia and should be treated as such. Key⁷ advocates early operative treatment, while Wilson⁸ holds that the surgeon should not be stampeded into an expedient operation simply because an abscess develops within the substance of a bone of a patient with septicemia. The mortality from septicemia associated with bone infections can be considerably reduced if sulfathiazole is employed in conjunction with relatively early adequate surgical drainage of the local lesion.⁹ Results obtained at Duke Hospital in the treatment of acute osteomyelitis with staphylococcic septicemia suggests that, with the exception of sulfathiazole, the sulfonamide compounds are contraindicated.¹⁰ Wilensky¹¹ stated that in actual practice the treatment of osteomyelitis with one of the sulfonamide compounds has not produced the startling results obtained in some other conditions, notably pneumonia. The results have been relatively good in the phase of general infection (bacteremia).¹² Mahorner and Cram¹³ feel that the important features responsible for the higher mortality are unjustified emergency operations without proper preoperative care and failure to reestablish preoperatively a normal physiologic state by fluid and electrolyte replacement and blood transfusions. The report of Hoyt, Davis and Van Buren¹⁴ confirms Grasso's contention, in 8 cases of acute staphylococcic osteomyelitis in which treatment with sulfathiazole without operation had been given, the end results were perfect, the bacteremia, as evidenced by positive blood cultures, was controlled by the administration of sulfathiazole without incision and drainage of the local abscess.

Whatever the outcome of the controversy on the treatment of acute staphylococcemia, it can safely be said that the introduction of the sulfonamide compounds has renewed and sustained great interest in the entire subject, with definitely improved results. Regardless of the cause of the staphylo-

coccic bacteremia, sulfathiazole appears to be the best therapeutic agent available at present for this type of infection, and it can be administered with a reasonable degree of safety.

SUMMARY

Abscesses in the myocardium are rare, as only 29 cases (0.2 per cent) were noted in a series of 14,160 autopsies at the Cook County Hospital. In itself it is not important, but it places proper emphasis on the significance of the underlying infection. The staphylococcus was the common offender in 23 cases (79.3 per cent). Among these cases bacterial endocarditis and acute osteomyelitis were found to be the main underlying diseases. The latter, along with such causes as cellulitis, acute tonsillitis, pneumonia and mastoiditis, are now more amenable to treatment, especially with sulfathiazole. The causes of myocardial abscess, particularly acute osteomyelitis, should be viewed in the same light as bacterial endocarditis, but with a greater degree of optimism, for with early diagnosis and proper treatment a favorable outcome is the end result.

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TARGET CELLS IN POSTVACCINAL JAUNDICE

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In 1937 Haden and Evans¹ described red blood corpuscles shaped in the form of a "Mexican hat" or a "sugar loaf." They claimed that these cells occur only in sickle cell anemia. A year later Barrett,² in an extensive study, showed the presence of these bodies (which he named "target corpuscles") in such varied conditions as obstructive jaundice, a "hypochromic" group of anemias in which the color index was not more than 0.8, steatorrhea, and following splenectomy. An interesting case of erythroblastic anemia in a young adult with target cells was described by Dameshek.³ In a more recent paper Singer, Miller and Dameshek⁴ discussed hematologic changes following splenectomy in man with particular reference to target cells and their physicochemical behavior.

THE TARGET CELL

In Wright's stained preparations, these red cells may vary from 7 to 10 microns in diameter. A small central mass of hemoglobin surrounded by a clear area, which in turn is circumscribed by an additional ring of hemoglobin, makes up the picture of the target cell. Often there is an apparent bridge between the central mass and the peripheral ring of hemoglobin (fig. 1). It is the position of the bridge. This can be readily demonstrated in the dark field. Barrett's² comparison with a "squat collar button" compares more favorably as a model for the description of these cells rather than the "Mexican hat" or "sugar loaf." In all our cases a "heparinized wet preparation" of venous blood was examined with the dark field microscope. The target cells were easily demonstrated in every instance. Here a more typical target effect can be observed (fig. 2).

6 Grasso, R. Hematogenic Acute Osteomyelitis. Treatment by Expectation, *Polichinico (sez. prat.)* 48: 601 (April 7) 1941.

7 Key, J. A. Early Operative Treatment of Acute Hematogenous Osteomyelitis, *Surgery* 9: 657 (May) 1941.

8 Wilson, J. C. Delayed Operative Treatment of Acute Hematogenous Osteomyelitis, *Surgery* 9: 666 (May) 1941.

9 Penberthy, G. C., and Weller, C. N. Chemotherapy as an Aid in Management of Acute Osteomyelitis, *Ann. Surg.* 114: 129 (July) 1941.

10 Baker, L. D. Acute Osteomyelitis with Staphylococcus Septicemia, *South M. J.* 34: 619 (June) 1941.

11 Wilensky, A. O. Value of Chemotherapy in the Treatment of Osteomyelitis, *Arch. Surg.* 44: 234 (Feb.) 1942.

12 Wilensky, A. O. Chemotherapy in Osteomyelitis, *Am. J. Surg.* 57: 76 (July) 1942.

13 Mahorner, Howard, and Cram, A. P., Jr. Acute Hematogenous Osteomyelitis, *Ann. Surg.* 115: 790 (May) 1942.

14 Hoyt, W. A., Davis, A. E., and Van Buren, George. Acute Hematogenous Staphylococcic Osteomyelitis. Treatment with Sulfathiazole Without Operation, *J. A. M. A.* 117: 2043 (Dec. 13) 1941.

15 Spink, W. W., Hansen, A. E., and Paine, J. R. Staphylococcal Bacteremia. Treatment with Sulfapyridine and Sulfathiazole, *Arch. Med.* 67: 25 (Jan.) 1941.

Col. William S. Culpepper, M. C., commanding officer of the hospital, gave his full cooperation in this study.

1 Haden, R. L., and Evans, F. D. Sickle Cell Anemia in the White Race. Improvement in Two Cases Following Splenectomy, *Arch. Med.* 60: 133-142 (July) 1937.

2 Barrett, A. M. Special Form of Erythrocyte Possessing Resistance to Hypotonic Solution, *J. Path. & Bact.* 46: 603-613 (Feb.) 1938.

3 Dameshek, William. "Target Cell Anemia." An erythrocytic form of Cooley's Erythroblastic Anemia, *Am. J. M. Sc.* 200: 143 (Oct.) 1940.

4 Singer, Karl, Miller, E. B., and Dameshek, William. Hematologic Changes Following Splenectomy in Man with Particular Reference to Target Cells, Hemolytic Index and Lysocellin, *Am. J. M. Sc.* 204: 187 (Aug.) 1941.

We are in agreement with the observations of Barrett² and Dameshek³ as to the increased resistance of target cells to hypotonic saline solution. In 2 of our cases the actual blood smear count totaled as high as 40 per cent target cells. In 1 of these cases hemolysis was not complete in dilutions as low as 0.14 per cent of saline solution. Normally, hemolysis as

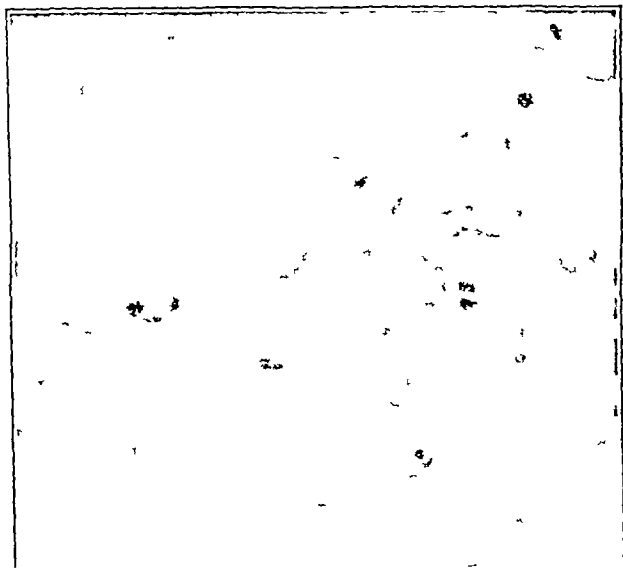


Fig 1—Appearance of target cells oil immersion

given by Samford⁴ is complete at a concentration of 0.32 to 0.34 per cent. In 73 per cent of our cases a definite increase of resistance to hypotonic salt solution was noted.

From June to September 1942 22 patients with postvaccinal (yellow fever) jaundice were admitted to the Medical Service of Camp Stoneman Station Hospital. In a routine blood smear of the very first patient with jaundice a high percentage of target cells was seen. Repeated blood smears from this patient continued to show these bizarre cells. All of our subsequent postvaccinal icteric patients were followed in a like manner

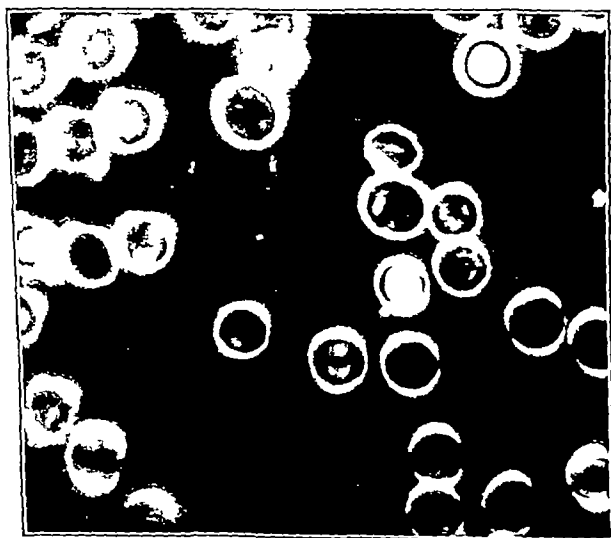


Fig 2—Appearance of target cells oil immersion dark field

and showed a similar pattern. These cells diminished in number as the icteric index decreased. However, a parallelism did not exist between the number of target cells and the severity of the icterus. When the icteric index became normal, few or no target cells were found. The smears also showed

varying degrees of macrocytosis, which has been commonly observed in jaundice in the past.

In a special survey conducted by the Surgeon General's Office⁵ a thorough investigation of the outbreak of jaundice in the Army was made. This included studies of liver function, kidney function and bile pigment excretion along with the usual laboratory procedures. Our findings in this respect are similar to that given by the Surgeon General and are therefore omitted from this report.

COMMENT

The origin of target cells is not within the scope of this report. The explanation of the aforementioned investigators as to the mechanism of the increased resistance of these corpuscles (target cells) can best be stated by quoting Barrett: 'The target cell is thinner than the normal red cell and thus could imbibe more water before bursting (hemolyzing) in hypotonic solutions or salt.'

It is our belief that target cells are more prevalent than heretofore recognized.

SUMMARY

- 1 Twenty two cases of postvaccinal (yellow fever) jaundice were studied.
- 2 An unusually high percentage of target cells in circulating blood in these cases has been found.
- 3 An increased resistance of the red cells to hypotonic salt solution was shown by 73 per cent of the cases.
- 4 The use of a heparinized preparation of venous blood with the aid of the dark field microscope offers an excellent means of studying these cells.

ACUTE NEPHROSIS COMPLICATING TWO DAY ARSENIC AND FEVER THERAPY FOR EARLY SYPHILIS

EVAN W. THOMAS, MD, GERTRUDE WEYLER, MD, MAX SCHUR, MD, AND WILLIAM GOLDRING, MD, WITH THE TECHNICAL ASSISTANCE OF ANNA EGGLESTON, MS, NEW YORK

A one day treatment for early syphilis has been reported by Rose, Simpson and Kendall.¹ They employed artificially induced fever for ten hours in combination with mapharsen from 120 to 240 mg in the treatment of 23 patients. The only evidence of intoxication reported for these patients was transient increase in serum bilirubin or mild observable jaundice.

We have administered a two day treatment to 48 patients, consisting of two intravenous injections of mapharsen of 100 mg and 60 mg on the first day followed on the second day with two injections of 60 mg each and artificially induced fever to about 105.8 F for seven hours.

This report is concerned with 4 patients of our group who developed acute nephrosis. The clinical course of all 4 is shown graphically. An additional 4 patients developed severe albuminuria and azotemia of brief duration without fixed specific gravity of the urine. All recovered from the acute episode.

The absence of significant evidence of dehydration and the prompt loss of renal concentrating capacity in the 4 cases reported in the accompanying charts indicates that the azotemia was due to severe intrinsic renal damage rather than to hemoconcentration. The incidence of this renal complication in our group was 8.3 per cent. The chief subjective symptoms of our patients were nausea and vomiting. One patient was semistuporous for about twelve hours. Two had anuria or about twenty-four hours duration followed by oliguria persisting for a week or more. The other 2 had definite oliguria, but they would have been overlooked if daily urine analyses and repeated blood chemistry tests had not been done routinely.

As far as we know renal damage has not been reported for patients treated intensively with mapharsen alone. Large numbers of patients have now been treated with massive arseno-

5 Surgeon General's Report, The Outbreak of Jaundice in the Army, J. A. M. A. 120: 51 (Sept. 25) 1942.
From the Departments of Dermatology and Syphilology and Medicine, New York University College of Medicine and the Department of Dermatology and Syphilology, Third Medical Division (New York University), Bellevue Hospital.
1 Rose, I. M., Simpson, W. M. and Kendall, H. W. Treatment with a Single Intensive Session of Combined Fever Chemotherapy. Ven. Dis. Inform. 23: 411 (Nov.) 1942.

5 Todd, J. C. and Sanford, A. H. Clinical Diagnosis by Laboratory Methods, ed. 9. Philadelphia, W. B. Saunders Company, 1942, p. 320.

therapy² but we have found no report of serious acute renal damage. In a series of 280 patients treated for early syphilis at Bellevue Hospital in a period of six to ten days with a total of 0.66 to 1.2 Gm of mapharsen alone no renal damage resulted. Seventy-three patients in this series had two injections of 100 mg of mapharsen daily for six days. Among 773 patients with early syphilis treated at Bellevue Hospital in a period of six to ten days with combined mapharsen and fever induced by typhoid vaccines, 1 had a transient hematuria with no azotemia. Albuminuria developed in many of the patients in this group during the days they received typhoid vaccine but there was no evidence of serious kidney damage. It is evident, however, that the combination of mapharsen with electropylrexia prolonged over six hours may cause acute kidney damage.

REPORT OF CASE

For the sake of brevity a detailed case history of only 1 patient is given. Laboratory findings of 4 are shown in the charts. Patient A. B., shown graphically in chart 1, was a Negro woman aged 21. She was admitted to Bellevue Hospital on Nov 10, 1942, the diagnosis was secondary syphilis. The urine on admission was normal with a specific gravity of 1.030. The blood nonprotein nitrogen was 34 mg per hundred

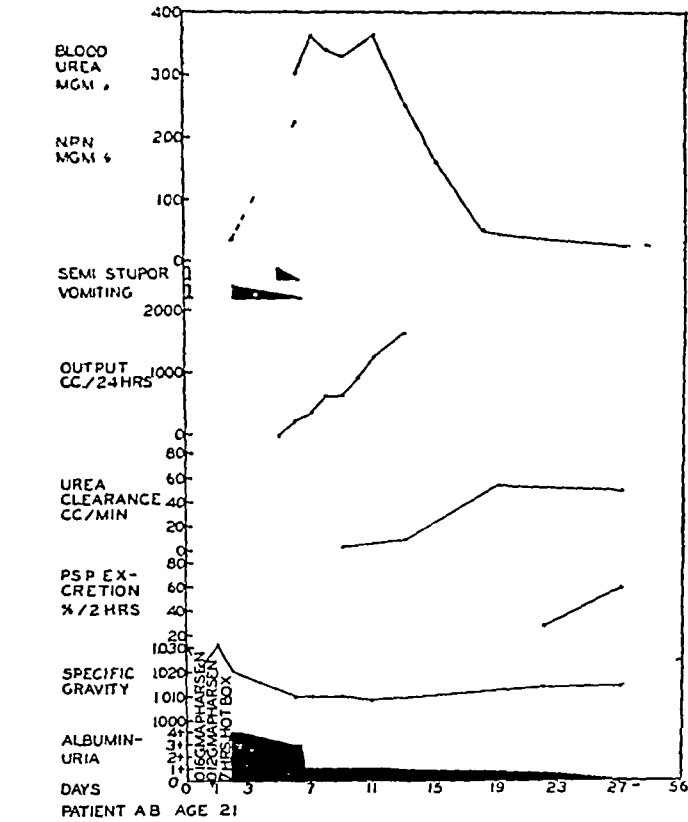


Chart 1—Course in case 1

cubic centimeters, the blood pressure 110 systolic and 80 diastolic. The hemoglobin was 90 per cent (Sahli), the red blood cells 4,200,000, the white blood cells 8,150 with 45 per cent polymorphonuclear cells, 41 per cent lymphocytes, 1 per cent monocytes, 2 per cent myelocytes and 1 per cent eosinophils. Antisyphilitic therapy consisted on November 12 of 0.1 Gm of mapharsen intravenously at 8:30 a.m. and 0.06 Gm of maphar-

2. Leifer, William, Chargin, Louis and Hyman, H. F. Massive Dose Arsenotherapy of Early Syphilis by Intravenous Drip Method. Recapitulation of Data. J. A. M. A. 117: 1154 (Oct. 4) 1941. Bowman, G. W. and Sheehan, F. G. Massive Arsenotherapy (with Neosphenamine and Mapharsen). J. Indiana M. A. 34: 665 (Dec.) 1941. Thomas, E. W. and Wexler, Gertrude. Rapid Treatment of Early Syphilis with Multiple Injections of Mapharsen. Am. J. Pub. Health 31: 545 (June) 1941. Shaffer, L. W. Massive Arsenotherapy in Early Syphilis. J. Michigan M. Soc. 40: 527 (July) 1941. Elliott, D. C., Baehr, George, Shaffer, L. W., Usher, G. S. and Lough, S. A. Evaluation of Massive Dose Therapy of Early Syphilis. J. A. M. A. 117: 1160 (Oct. 4) 1941. Sadusk, J. L., Jr., Craige, Branch, Jr., Brookens, Norris, Poole, A. K. and Strauss, M. J. Massive Dose Arsenotherapy with Mapharsen of Early Syphilis by Intravenous Drip Method. Toxicology, Clinical Observations and Therapeutic Results. Yale, J. Biol. & Med. 14: 333-335 (March) 1942. Rattner, Herbert. Live Dry Treatment (Using Mapharsen). Illinois M. J. 81: 29 (Jan.) 1942. Kaplan, B. I. Intravenous Drip Method in Intensive Arsenotherapy with Mapharsen. Arch. Derm. & Syph. 45: 941 (May) 1942. Prats, G. Florencio, Varas, Luis Infante, and Haraszti, Esteban. Massive Arsenotherapy of Syphilis by Continuous Drip Method. Preliminary Report on 271 Patients Treated with Mapharsen, ibid. 45: 885 (May) 1942.

sen intravenously at 3 p.m., and, on November 13, seven hours of artificial fever at 105.8 F, 0.06 Gm of mapharsen thirty minutes after the temperature reached 105 F and 0.06 Gm of mapharsen two hours before the cabinet was opened. During the fever session she received 53 Gm of sodium chloride and 3,000 cc of water. There were no complaints.

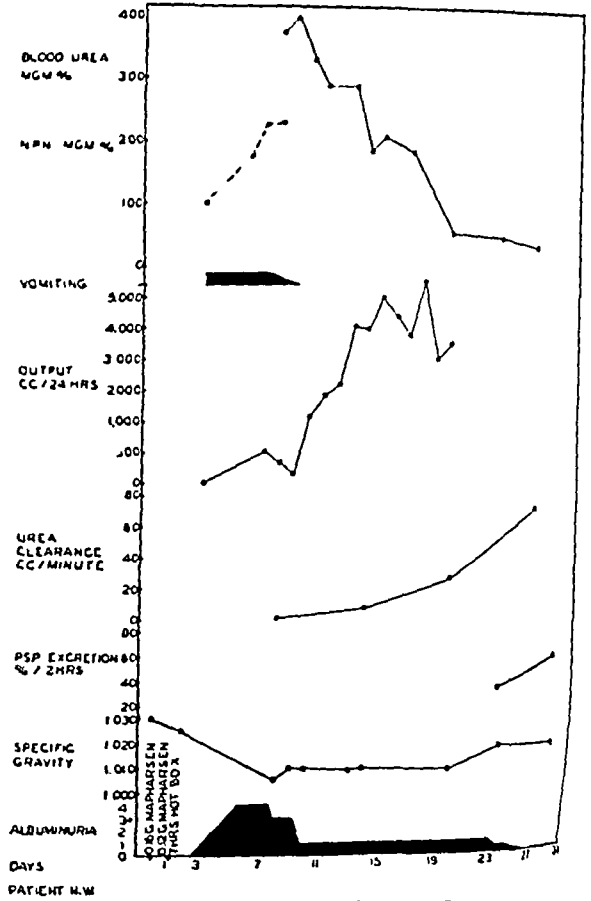


Chart 2—Course in case 2

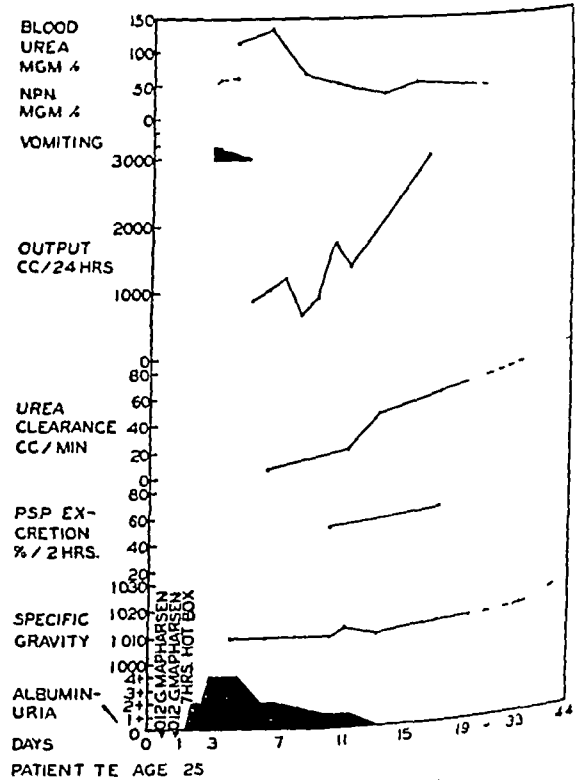


Chart 3—Course in case 3

during the treatment. She vomited once. The blood pressure after the electropylrexia was 100/72.

On the day following the artificial fever the nonprotein nitrogen content of the blood was 35 mg per hundred cubic centimeters and the blood chlorides 600 mg per hundred cubic centimeters. Examination of the urine showed a specific gravity of 1.020, severe albuminuria and many granular casts.

She vomited frequently for the first three days following the fever therapy and then once a day for the next three days. The fourth day after treatment she voided no urine. On this day the nonprotein nitrogen content of the blood was 175 mg per hundred cubic centimeters. The following morning 75 cc of urine was obtained by catheter. The urine specific gravity was 1.010. It contained definitely increased protein, occasional granular casts and 6 to 8 red blood cells per high power field. The patient was semistuporous. There was no edema; the reflexes were normal; the blood pressure 138/76. The blood nonprotein nitrogen was 225 mg per hundred cubic centimeters, the urea 304 mg per hundred cubic centimeters and creatinine 6 mg per hundred cubic centimeters. The hemoglobin was 70 per cent, the red blood cells 3,680,000, the white blood cells 15,000 with 62 per cent polymorphonuclear cells, 22 per cent lymphocytes and 16 per cent monocytes. The carbon dioxide combining power of the blood was 32 volumes per cent. She was given an infusion of 2,000 cc of 5 per cent dextrose in isotonic solution of sodium chloride to which 5 Gm of sodium chloride was added. That afternoon she voided 150 cc of urine. In the next two days she was given similar infusions. Beginning with the third day, clinical improvement was rapid. The

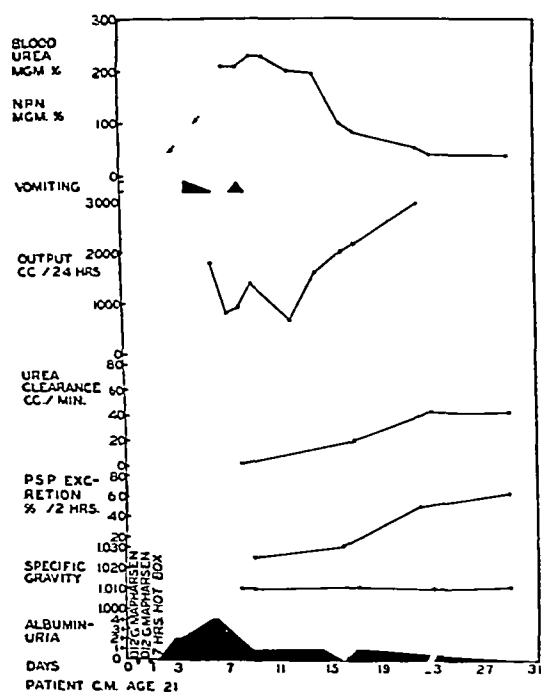


Chart 4—Course in case 4

urinary output gradually increased and on the eleventh day after the fever treatment it was normal.

On the sixth day after treatment a catheterized specimen of urine showed 1 plus protein and 2 to 10 red blood cells per high power field. Until the eighteenth day after fever therapy there was a faint trace of protein and occasional red blood cells in the urine. Fixed specific gravity at 1.010 persisted until the patient was discharged on the twenty-seventh day after treatment. Renal function tests showed a maximum specific gravity of 1.015 and a maximum dilution of 1.010 on the twentieth and twenty-sixth days. On the eighth day the standard urea clearance was 2 cc per minute. The maximum urea clearance on the twelfth day was 97 cc per minute and on the eighteenth day 553 cc per minute. On the twenty-sixth day the standard urea clearance was 346 cc per minute. The phenolsulfonphthalein excretion for two hours was 28 per cent on the twentieth day after fever treatment and 581 per cent on the twenty-sixth day.

The nonprotein nitrogen content of the blood and the blood urea remained very high until the tenth day after treatment. Thereafter they gradually fell becoming normal in about three weeks after the treatment for syphilis.

On Dec 10 1942 the patient was discharged. Her blood pressure was 100/60. On Jan 7, 1943 the blood nonprotein nitrogen was 27 mg per hundred cubic centimeters and the urine was normal with a specific gravity of 1.024.

SUMMARY

Forty-eight patients with early syphilis have been treated with mapharsen and artificially induced fever.

Of this group 4 patients, promptly after treatment, developed an acute renal lesion with severe functional impairment. All patients recovered from the acute episode.

While no speculation has been attempted, the complication appears to be an acute nephrosis induced by the combination of arsenic and prolonged artificial fever.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PURSUANT TO THE ACTION TAKEN BY THE COUNCIL AT ITS LAST MEETING (J. A. M. A. 121:838 [March 13] 1943) THE COUNCIL IS WITHHOLDING FROM THIS COLUMN STATEMENTS ON TESTS AND STANDARDS ACTIONS, USES AND DOSAGE OF NEWLY ACCEPTED DRUGS WHICH MIGHT BE OF INTEREST TO THE ENEMY. THUS SUCH STATEMENTS FOR SUCCINYL SULFATHIAZOLE ARE OMITTED UNTIL A FUTURE DATE. THEY WILL APPEAR IN THE COUNCIL PUBLICATION NEW AND NONOFFICIAL REMEDIES AND MAY BE OBTAINED FROM THE COUNCIL OFFICE ON REQUEST.

AUSTIN E. SMITH, M.D., Secretary

CALCIUM LEVULINATE—The dihydrated normal calcium salt of levulinic acid— $(\text{CH}_3\text{COCH}_2\text{CH}_2\text{COO})_2\text{Ca} \cdot 2\text{H}_2\text{O}$ —M. W. 306.32.

Actions and Uses—Calcium levulinate is used to obtain the therapeutic effects of calcium. It may be administered orally or intravenously and is virtually nonirritant for subcutaneous or intramuscular injection.

Dosage—By injection, for adults 1 Gm daily or on alternate days for children 0.2 to 0.5 Gm. Orally for adults 4 to 5 Gm three times a day for children 1 to 2 Gm three times a day. BURROUGHS WELLCOME & Co., Inc., NEW YORK.

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PAUL LEWIS LABORATORIES, Inc., MILWAUKEE.

Calcium Levulinate (Powder) bulk. Packed in 1, 5, 10, 25, 50 and 100 pound packages.

SUCCINYL SULFATHIAZOLE—2-(N⁴-succinylsulfanilamido) thiazole monohydrate—2-(p-succinylaminobenzene-sulfonamido) thiazole monohydrate— $\text{C}_{12}\text{H}_{13}\text{N}_3\text{O}_5\text{S} \cdot \text{H}_2\text{O}$ —M. W. 373.4.

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DEXTROSE (See New and Nonofficial Remedies 1942 p. 418).

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THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies 1942 p. 555).

The following additional dosage form has been accepted.

WHITE LABORATORIES, Inc., NEWARK, N. J.

Tablets Thiamine Hydrochloride 10 mg.

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SATURDAY, JULY 17, 1943

FEASIBILITY OF BACTERIAL WARFARE

The Geneva Disarmament Conference of 1932 considered bacterial warfare serious enough to prohibit its use. This action contributed to the popular fear of pathogenic micro-organisms as effective military weapons. To allay this fear come two timely reprintings of the classic paper by Col. Leon A. Fox¹ of the U. S. Army Medical Corps, which summarize the current opinion of military experts.

Threatened introduction of new weapons or methods of warfare has often had to overcome opposition based on ethical, religious or humanitarian grounds. The early use of gun powder had to overcome opposition of this type. Military history, however, teaches that a weapon has never been abandoned for such reasons unless displaced by more effective weapons or until adequate countermeasures have been developed. Military history also reveals that epidemics were often the determining factor in past wars. In many campaigns contagious diseases caused such great loss of life and such large numbers of non-effectives on both sides as to lead to a stalemate. In other campaigns great differences in the degree to which the two opposing armies reacted to such epidemics occurred.

The major military pests of the past have been the enteric fevers, typhus, bubonic plague and smallpox, with influenza, the pneumonias, malaria, measles, meningitis and syphilis playing a minor role. Popularly it is often assumed that these diseases would be particularly effective military weapons. However, fully virulent causative agents cannot be prepared in large quantities and cannot be introduced in adequate doses into the bodies of unprotected and nonimmunized enemy populations. The essential problem of bacterial warfare from an offensive point of view is therefore the problem of mass production of military pathogens and of devising safe and effective methods of inoculating the enemy. The whole group of enteric infections, for example, could probably never be successfully used as instru-

ments of warfare. Real epidemics of these diseases are traceable only to infected drinking water. While contamination of reservoirs and municipal storage tanks is militarily feasible, such contamination would be largely ineffective because of routine filtration or chlorination methods. Modern sanitary methods, therefore, should be adequate countermeasures against this type of bacterial warfare.

Among the respiratory infections, a number of maladies are serious enough to be effective if ways of using them can be devised. The two diseases of this group most frequently mentioned are influenza and meningitis. In neither disease could the infective agent be prepared in sufficient quantities, virulence or stability for military use. The meningococcus, for example, is so delicate that it rapidly dies when exposed for even a few hours to temperature much below that of the human body. The only feasible methods of introducing meningitis into opposite forces would be by human carriers. This would be hardly worth while, since any military aggregation of great size already has so many meningitis carriers (anywhere from 2 to 30 per cent) that the introduction of a few more carriers would be of little moment.

The use of insect borne diseases has also been repeatedly mentioned in the press, bubonic plague being the most thoughtful example. Possibly airplanes flying low could drop recently infected rats on opponent terraces. Even this, however, would probably not start an epidemic. Plague has been more or less endemic as a rodent disease on our own Pacific Coast for over a generation, yet there have been no local human cases in this region sufficiently numerous to be designated as epidemic. Only 6 cases of plague developed in 1924 among European troops stationed in the Punjab, in spite of the fact that 500,000 cases developed in the indigenous population.² Typhus also would be ineffective, since control of typhus is a question of local control.

Tetanus, gas gangrene and anthrax have been suggested as particularly effective military pathogens, since they are caused by resistant, spore forming bacteria capable of prolonged periods of viability without loss of virulence outside the animal body. These micro-organisms, however, do not produce epidemics even though they are of military interest as wound invaders. Effective methods of preventing and treating wound infections have been developed. Since wound invaders are omnipresent in nature, the indiscriminate distribution of a few additional wound invaders would not add appreciably to the present dangers of combat.

One of the commonest scares concerns the dissemination of "deadly bacterial toxins," of which botulinus toxin seems to be the pseudoscientific favorite. True,

¹ Fox, Leon A. Mil. Surgeon 90 563 (May) 1942, reprinted in J. Lab. & Clin. Med. 28 539 (Feb) 1943.

² Pentler, C. F. Some Thoughts on Bacteriological Warfare. Graduate Thesis, Department of Biology and Public Health, Massachusetts Institute of Technology.
³ Gill, C. A. The Genius of Epidemics, London: Baillière Tindall & Co., 1928.

"an airplane can carry sufficient (botulinus) toxin to destroy an entire city," provided a carefully measured lethal dose of this toxin is administered orally, subcutaneously or intrarectally to each inhabitant of that city. The release of food materials contaminated with tremendous amounts of this toxin might conceivably cause a wholesale local destruction of rodents and sparrows. At most the number of human casualties would be negligible. Bacterial toxins like bacteria are readily destroyed by heat and are therefore inactivated by cooking. They are wholly unsuited for use in shrapnel or other projectiles.

Bacterial warfare is often extended in popular literature to include the use of boll weevils, corn borers and other agricultural pests. Most of these pests, however, take several years to propagate and invade a sufficient terrain to be effective economically. This would violate one of the fundamental laws of military science, since it might merely interfere with postwar economics, reducing the ability of a conquered nation to pay indemnities.

Summarizing his argument, Colonel Fox concludes that there are 'practically insurmountable technical difficulties preventing the use of biological agents as effective weapons of warfare.' In this he confirms the previous opinion of numerous German bacteriologists, who, five years before the first war, were assigned the task of suggesting safe and effective weapons of bacterial warfare. Ehrlich, for example, replied that 'nothing [he] could suggest would be of more than a nuisance value to the enemy and might even be a source of danger to our own troops.'⁴

It is hoped that Colonel Fox's paper will be as widely quoted in the popular press as have been the numerous frightening hypotheses that it contradicts.

PSYCHOANALYSIS AND THE SCIENTIFIC METHOD

In 1928 the late Dr. Joseph Jastrow¹ declared that the Freudian movement was rejected by the medical profession as unorthodox. "Its entire history is unfortunate," he said. "It was born in the clinic—an unfortunate birthplace for any doctrine with so wide and so personal an application, it was reared in distracting controversy, it traveled on the vise of psychoanalysis—a procedure as open to abuse as any narrow cult, and more so." A vast literature on Freudianism and the psychoanalytic method, some of it bitterly derogatory, has appeared. Now, some thirty-seven years since the Freudian theory was first brought to the United States by an article published by Boris Sidis in the *Journal of Abnormal Psychology*, an unprejudiced opinion of Freudianism as a theory and psychoanalysis as an instrument is still difficult to secure.

The aim of psychoanalysis as Freud conceived it "was not to tell people unpleasant truths about themselves but to cure patients by giving the integrative powers of their rational and conscious personality an opportunity to deal with those psychologic forces which were excluded from their conscious mind."² The criteria for judging Freudianism as a scientific contribution must be the same as those employed in judging any other scientific discipline. The features which have caused the greatest disrepute to fall on psychoanalysis are, first, the self-imposed requirement of justifying psychoanalysis by the results of treatment and, second, the preoccupation of Freudians with sex. Other phases of medical science have not been forced to justify their recognition by the results of treatment, this attempt to cite 'cures' as vindication may have hampered the true function of psychoanalysis. Indeed, when the results of therapy have been analyzed by objective observers (e.g. Kessel and Hyman³), grave question as to the value of the psychoanalytic method in treatment has arisen. As far as preoccupation with sex is concerned, the strong motivating force of sex drives has never been doubted but it is questionable whether this affects human behavior as much quantitatively as has been commonly claimed by most psychoanalytic workers. Indeed, a recent application of psychoanalysis to the problem of the Negro⁴ suggests that sex blockages play a comparatively small part in their motivation.

Unique in psychoanalysis has been the requirement that those who wish to evaluate Freudianism must themselves be psychoanalyzed. Of lesser importance is the divergence of most of those in the field of psychoanalysis from the usual custom of the medical profession regarding the collection of fees from other members of the profession.

Psychoanalysis has a nomenclature and diction that have been characterized as an unintelligible jargon. True, mathematics, physics and chemistry employ special symbols. It should be possible to make the language of any science understandable, at least with the help of a dictionary. A sentence such as the following, however, from a recent article in the field of psychoanalysis is without value to the uninitiated and its real significance even to those actively working in the field may be questioned. "This ego-feeling cathexis in turn depends on the compatibility of the single element with the whole ego unity."

² Sigmund Freud 1856-1939 editorial J. A. M. A. 113 1-94 (Oct. 14) 1939

³ Kessel Leo and Hyman Harold Thomas. The Value of Psychoanalysis as a Therapeutic Procedure J. A. M. A. 101 1612 (Nov. 18) 1935

⁴ Holloman Laynard L. On the Supremacy of the Negro Athlete in White Athletic Competition Psychoanalytic Review 30 157 (April) 1943

⁴ Manwaring W. H. Personal communication 1909

¹ Jastrow Joseph Relation of Medicine to Psychology J. A. M. A. 92 720 (March 2) 1929

Leaders in the field of psychoanalysis may easily meet some of the more serious criticisms. By abandoning unscientific procedures and by adapting itself to the rapid evolution of psychosomatic medicine as a specialty, freudianism will achieve greater scientific stature and fulfil more promptly its early promise of extending the borderlines of medical knowledge.

Current Comment

DETOXICATION BY LIVER EXTRACTS

In standardized and well controlled experiments on rats, Chamelin and Funk¹ found that extracts of whole liver reduced toxic action of sulfanilamide injected intraperitoneally in toxic quantities (400 mg per kilogram). The liver extract had the same effect on the toxic action of diethylstilbestrol in rats. They found also that in mice injected with a strain of *Streptococcus hemolyticus* the survival rate was higher when the sulfonamide was combined with liver extract than when the drug alone was given, in other words, the liver extract diminished the toxicity of sulfanilamide without impairing its bacteriostatic action. Others have found that whole liver or liver extracts counteract chronic intoxication by sulfonamide drugs. Whole liver extract apparently reduces the toxicity of two substances widely different in chemical structure and pharmacologic action. Both the evidence and the mechanisms by which these effects are secured invite further study.

AFFILIATED HOSPITAL UNITS FOR CIVILIAN DEFENSE

In THE JOURNAL for June 26, page 606, attention was called to the fact that two hundred and fifty-one hospitals and medical schools have been invited by the Surgeon General of the U. S. Public Health Service to organize affiliated hospital units of the Emergency Medical Service of the U. S. Office of Civilian Defense. Already more than one thousand physicians and dentists have applied for association with these units. Members of the staffs of affiliated units are commissioned in the inactive reserve of the U. S. Public Health Service, generally with ranks equivalent to those of captain, major or lieutenant colonel in the Army. They remain on inactive status except when there is an emergency arising from an air raid or other grave wartime disaster. When called to active duty they then receive the pay and allowances of officers of equivalent grade in the armed forces. They are expected to furnish service only in their own or neighboring states, and their obligation ceases at the termination of the

present national emergency. The nature of the service is recognized by authorization to wear a lapel button which indicates that they have enlisted for emergency service. They do not wear a uniform until called to active duty and need not purchase one unless directed to do so when called to active duty. The Board of Trustees of the American Medical Association and the Directing Board of the Procurement and Assignment Service have authorized essential physicians to accept positions with these affiliated units. Some physicians have expressed the fear that acceptance of these commissions might involve them in a responsibility to the U. S. Public Health Service and might in some way encourage the acceptance by the profession of the proposed Wagner-Murray-Dingell bill. This is a misunderstanding. Those who become associated with affiliated units are under no obligation to serve in any other capacity, no matter what functions Congress may some day see fit to thrust on the U. S. Public Health Service. Duties of members of affiliated units are limited strictly to those which they have agreed to assume as a result of enemy action.

THE DOCTOR'S RESPONSIBILITY IN ABSENTEEISM

From a governmental agency engaged seriously in the war effort with employees who work under the rules and regulations of the Civil Service Commission comes a complaint that some physicians do not take with sufficient seriousness their responsibility in controlling unnecessary absenteeism. One of the rules of the Civil Service Commission concerns the number of days and the pay allowed as sick leave. A request for over three days' sick leave must be accompanied by a certificate from a physician. Absence from duty is not permitted because of a slight illness which would not prevent the performance of duty or endanger the health of others. Nevertheless, many employees are absent for three or more days and seem to be able to prevail on some physicians to write certificates. If these physicians knew that certificates which cover certain slight illnesses would not necessarily be honored they probably would not bother to issue them. In one instance just checked by the government agency concerned, a physician in Philadelphia issued a certificate to the effect that a worker was sick with gastroenteritis and was unable to work for a period of six days in the month of May, whereas investigation developed the fact that the person who submitted the certificate actually was working in another establishment on the dates stated and was attempting to obtain pay from two sources by requesting sick leave with pay from one of them. In the interest of the war effort and as a means of reducing inexcusable absence physicians should refuse to issue certificates except in cases that can undoubtedly be considered to be of a serious nature and where there is no question but that the illness would incapacitate the person concerned for duty.

¹ Chamelin, I. M., and Funk, Casmir. The Action of Liver Extracts in Counteracting the Toxic Effects of Diethylstilbestrol and Sulfanilamide, *Arch. Biochem.* 29 (April) 1943.

² Schriefer, A. E., McKibbin, J. M., and Elvehjem, C. A. Nicotinic Deficiency Studies in Dogs, *J. Biol. Chem.* 144: 679 (Aug.) 1942. Daft, F. S., Ashburn, L. L., and Sebrell, W. H. Biotin Deficiency and Other Changes in Rats Given Sulfamylguanidine or Succinylsulfathiazole in Purified Diets, *Science* 96: 321 (Oct. 2) 1942.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

ARMY

ARMY SPECIALIZED TRAINING PROGRAM FOR MEDICAL STUDENTS

The War Department has sent the following letter to the deans of all participating medical schools

It is anticipated that training in medicine, dentistry and veterinary medicine under the Army Specialized Training Program will have been initiated by July 23 in all approved schools of medicine, dentistry and veterinary medicine, with the exception of the Woman's Medical College of Pennsylvania

The assignment of enlisted men to the Army Specialized Training units at these institutions is until further notice, restricted to those who are currently enrolled in these schools, to those who have been accepted by them for entering classes in medicine and dentistry and to accepted preveterinary students who are members of the Enlisted Reserve Corps

The present restriction of selection for the continuation of preprofessional and assignment for professional training under the Army Specialized Training Program to the enlisted men who have assured individual vacancies in approved schools, through their acceptance for a future entering class, is necessitated by the fact that the freshman classes have been filled for 1943 the first half of 1944 and, in a number of instances, for late 1944. If these accepted applicants are in or enter active military service they will be assigned to the Army Specialized Training Program for the completion of the prerequisite preprofessional training and subsequent timely transfer to the Army Specialized Training unit at the school by which accepted

It is obvious, however, that the medical and dental schools cannot continue to fill their future freshman classes from civilian sources only many students contemplating or preparing for the study of medicine or dentistry will have been inducted into one of the armed forces before acceptance by an accredited school is possible. If the supply of physicians and dentists, not only to meet the requirements of the armed forces but also for postwar civilian needs is to continue beyond those now in or accepted for professional training, appropriate steps must be taken by the Army and by the Navy to assure necessary preparatory studies by qualified individuals in the military service, with a view to subsequent professional training in medicine and dentistry

In order that detailed plans may be made for such premedical and pre dental training under the Army Specialized Training Program it is necessary that the War Department determine the number of Army trainees who may be assigned to Army Specialized Training units at medical and dental schools in future freshman classes. The program of the Army will require at least 55 per cent of the vacancies in medical schools and 35 per cent of those in schools of dentistry. No trainees other than as stated above, will be assigned to units at schools of veterinary medicine

HOW MEDICAL STUDENTS WILL BE SELECTED

The purpose of this letter is to explore the possibility of a mutual agreement whereby carefully selected enlisted men not accepted as individuals by the individual schools of medicine or dentistry may be assigned to Army Specialized Training units thereat for professional training with a view to receiving the appropriate degree in medicine or dentistry and appointment as first lieutenants in the Medical or Dental Corps of the Army or the United States

The procedures involved in the selection and training of the enlisted men whom you will be requested to train in medicine or dentistry may be outlined briefly as follows

On entering the Army, the recently inducted soldier is given certain classification tests the results of which are entered on the record which accompanies him to the unit or installation in which he receives his basic military training, thirteen weeks in duration. Those with certain high scores will there appear before the Army Specialized Training Program field selection boards for determination whether they should be assigned to this program for training at the college level. The actual field of such training and the academic level at which training should begin will be determined at the classification and assignment unit to which the selected soldiers are first assigned (Specialized Training and Reassignment Unit referred to as a STAR Unit)

From the STAR unit candidates who are manifestly suitable for or interested in the study of medicine or dentistry will be transferred to an appropriate training unit to begin preprofessional instruction at the basic level. The preprofessional curriculum of the first two terms of twelve weeks each, is common to that followed by trainees tentatively selected for engineering studies, mathematics, physics, general chemistry, English and so on

It is during the second term that the real selection for preprofessional training is made with a view to subsequent training in medicine or dentistry. Representatives of approved schools of medicine and dentistry will participate in this selection. It is on them that the War Department is depending for the most careful determination of the enlisted men who should continue training in preprofessional studies. Since premedical and pre dental training per se, is of little value in the military service attrition must be held to the minimum. At this level the trainees not considered fully qualified especially as regards fitness and aptitude for and attitude toward the study and practice of medicine and dentistry and service as officers in the Medical or Dental Corps of the Army of the United States, may be considered for training in other fields

The trainees selected for future training in medicine or dentistry begin, in the third term their biologic studies. These continue through term IV and term V the last term. Organic chemistry and psychology are added in the fourth and fifth terms. In these two terms eight semester hours are available for subjects selected by the institution based on the special aptitude and interest of the trainee. This will permit a brief refresher course in a modern foreign language for trainees who have had appropriate previous instruction. It has not been considered possible to include such a course as a prescribed subject throughout the five terms

PROGRESS OF TRAINEES WILL BE CHECKED

The progress of the premedical trainee will be checked both by the usual faculty examinations and also by periodic nationwide tests. The enlisted men who satisfactorily complete the premedical curriculum will be considered available for transfer to Army Specialized Training units for further training in medicine or dentistry. Such assignments must necessarily be governed by timely regional vacancies. The Army trainee will not make application for matriculation nor will he be accepted individually for a vacancy reserved for the War Department. His fitness for the study of medicine or dentistry has been determined. It is recommended at the completion of preprofessional training he will be academically qualified. If it is proved that he cannot continue satisfactory progress in his medical or dental studies he will be relieved from the Army Specialized Training Program for assignment to other duties

While it is felt that in the future the complete task of preparing physically qualified male students for the study of

medicine or dentistry will devolve principally on the Army or the Navy, it is certain that premedical and pre-dental students will continue to enter the military service at various academic levels. At the completion of their basic military training these individuals must be given serious consideration for the continuation of their preprofessional training and subsequent professional training under this program. The selection of these enlisted men for such training will be made at STAR units and must be conducted with the same care as, indeed with even greater care than, that applied to trainees whose complete collegiate training has been under either the Army or the Navy program. Separate curriculums have been arranged for such trainees.

CONTRACTS WITH WAR DEPARTMENT

Within the near future negotiations will be begun with your institution for a contract with the War Department for the training of enlisted men in medicine or dentistry under the Army Specialized Training Program. This contract will contain provisions whereby the school will agree to train the enlisted men currently enrolled and those who have been accepted by the school for certain entering classes. It will also stipulate that, for the freshman class of the academic session agreed on by you and the negotiation officer, and for subsequent entering classes, you will make available to the War Department a specified number of vacancies for Army trainees. The number desired by the War Department represents, is already stated, approximately 55 per cent of the first year classes in medicine, 35 per cent of those in dental schools. The Navy is, I understand, requesting 25 per cent of such vacancies in medical schools, 20 per cent in dental schools.

Because of the necessity of assigning Army trainees to fill these vacancies on a strictly numerical rather than on a name basis, no assurance can be given that individual students accepted by you for classes in which a definite number of vacancies have been reserved for the War Department will be assigned to the Army Specialized Training unit at your school. It is realized that such a policy will limit the personal selection of medical and dental students which has proved so satisfactory and successful in previous years. However, no plan whereby individual assignment to these units may be effected appears feasible.

The transfer of medical or dental trainees from one unit to another is not contemplated, except, of course, in the case of medical trainees who have successfully completed their training in the schools of the basic medical sciences. It is felt that such trainees may advantageously be transferred as individuals, and to this end it is requested that arrangements now in force between the deans of the various approved schools of medicine be continued.

The War Department and my division fully appreciate the wholehearted cooperation which has characterized the attitude of the medical and dental schools toward the Army Specialized Training Program. I feel confident that this radical departure from the admissions procedures previously in operation at your school may be effected without detriment to sound medical and dental education.

HERMAN BEUKEMA, Colonel, G S C
Director, Army Specialized Training Division

NEW HAMPSHIRE STAR UNIT SENDS TWENTY-FIVE STUDENTS TO YALE

Dr Bennett F Avery, dean of the School of Medicine at Boston University, and Dr H Houston Merritt, assistant professor of neurology at Harvard Medical School, visited the Specialized Training and Reassignment unit at the University of New Hampshire on July 2 to interview candidates for premedical, dental and veterinarian Army Specialized Training. The student soldiers had already been tested and classified by the STAR unit at the university as candidates for those branches of Army Specialized Training.

The New England schools of medicine are cooperating with the Army in the careful selection of medical, dental and veterinary trainees for further study in the Army Specialized Training. Dr Avery, Dr Merritt and Dr George H Smith,

assistant dean of Yale University School of Medicine, make up the medical committee chosen to meet with the STAR unit in the First Service Command.

Each month, or whenever a group of candidates is ready, this committee sends two representatives to the STAR unit. The doctors study preparatory and college records of qualifying trainees and interview them personally to determine personality and character. Students selected for dental and premedical Army Specialized Training are those who, in the opinion of the committee, will not only be useful to the Army as dentists and doctors but will qualify with the medical profession as dentists and doctors after the war.

Drs Avery and Merritt, when interviewed, agreed that through Army Specialized Training their profession would gain many valuable members who, as civilians, might never have been able to afford a college and medical education both because of lack of funds and because of their families' need of their immediate earnings. Under Army Specialized Training, premedical and medical students are paid by the Army while in training.

Col George A Pollin, commandant of the Army Specialized Training, Specialized Training and Reassignment and Reserve Officers Training Corps units at the University of New Hampshire, expressed satisfaction in the method evolved in the First Service Command for choosing candidates for Army Specialized Training, particularly for premedical training.

Twenty-five premedical students were sent from the STAR unit at the University of New Hampshire for Army Specialized Training at Yale University on July 1.

NEW BRIGADIER GENERALS

The War Department announced on July 1 that the President had recommended to the Senate, among others, that Col Joseph E Bastion, M C, and Col Percy J Carroll, M C, be given temporary promotions to the rank of brigadier general. Colonel Bastion was formerly chief of the medical branch of the Sixth Service Command in Chicago and was transferred to Battle Creek, Mich, to command the Percy L Jones General Hospital, succeeding in that position Brig Gen Norman T Kirk, who became Surgeon General of the Army on June 1. Colonel Carroll was born in Illinois and graduated from the Louis University School of Medicine in 1914. He was commissioned first lieutenant in the medical corps of the regular army on Sept 27, 1917 after having served in the medical reserve corps previously from Oct 23, 1915.

COUNTY MEDICAL SOCIETIES AND THE CLINIC AT FORT CUSTER

Representatives of fourteen county medical societies, in all about 150 physicians, attended a clinic at Fort Custer, Michigan, on June 30, arranged by the army medical officers serving at the 1,500 bed station hospital. Col John G Slevin, Detroit surgeon, the commandant, said that the idea of a military hospital presenting a clinic day for civilian physicians was developed as a result of the curtailment of medical society meetings during the war, further, that a wealth of material is available in the larger military hospitals which, when presented to the highly qualified medical officers, fills a need in the community at this time for scientific instruction.

The medical clinic at Fort Custer was in charge of Lt Col Frank B Lusk, chief of the medical service at the station hospital and formerly professor of medicine at the Cook County Postgraduate School of Medicine, Chicago. The surgical service was in charge of Lieut Col Joseph W Gale, professor of surgery in absentia at the University of Wisconsin School of Medicine.

In the afternoon a clinicopathologic conference was held under the direction of Major Joseph M Looney, chief of the laboratory section at the station hospital and formerly director of the laboratory section at the Worcester State Hospital, Massachusetts.

NAVY

PROMOTIONS IN THE NAVY

The following medical directors in the U S Navy have received executive nomination for the rank of rear admiral, for temporary service, while serving as district medical officer as indicated to rank from June 25, 1943

Edward Urbane Reed 3d Naval District
George Carroll Thomas 11th Naval District
William Leak Mann Jr 13th Naval District
Joseph John A McMullin 5th Naval District
Richard Henry Laning 1st Naval District
Daniel Hunt 12th Naval District

The following lieutenants (HC) have been advanced to the grade of lieutenant commander (HC)

Carl A Setterstrom	Thomas E Kent
Allen F Bigelow	Jason H Barton
Abraham T Schwartz	Ervin C Eastman
Benjamin W Claggett	Charles P Hines
Benjamin E Irwin	Corliss P Dean
Edward G Dennis	Willie R Joiner
Walter H MacWilliams	George A Fox
Norman L Saunders	

CONVALESCENT PSYCHIATRIC CENTERS

Certain facilities at the U S Naval Convalescent Hospitals at Sun Valley, Ida, Ahwahnee, Yosemite National Park, and Glenwood Springs, Colo, are now being used for the care and treatment of patients who have combat or operational fatigue. These neuroses are considered amenable to treatment by means of group psychotherapy. The treatment program planned for these hospitals covers a maximum of four to six weeks for each patient, and it is hoped that the majority can be returned to duty.

NAVY PERSONALS

Rear Adm D G Sutton, MC, USN, has been reassigned to the Division of Inspections in the Bureau of Medicine and Surgery and as medical inspector, Eastern Area.

Rear Adm E C White MC USN has been reassigned as medical inspector in Central United States.

Lieut Comdr William A Morris formerly medical director at the Yonkers General Hospital New York, reported for duty in June at the Naval Air Technical Training Center in Chicago.

CIVILIAN DEFENSE

NEW RECOMMENDATIONS ON TREATMENT OF BURNS AND WOUND INFECTIONS

The Medical Division of the Office of Civilian Defense announced on July 10 that it has revised the pamphlet 'Treatment of Burns and Prevention of Wound Infections' to incorporate new techniques that have been developed within the last year. The recommendations in this pamphlet are based on recent directions of the Committee on Chemotherapeutic and Other Agents and the Subcommittee on Burns of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Originally drawn up by these committees for the armed forces the recommendations have been modified to adapt them to the problems involved in the treatment of civilian casualties.

Recommendations for the use of sulfonamides are accompanied by the observation that these drugs must be used more cautiously in the treatment of civilian wounds than is necessary in the care of military casualties for the following reasons:

'The injured may include individuals of all ages and with various types of preexisting disease, instead of a selected group of healthy young men. The possibility of toxic effects is therefore greatly enhanced. Moreover, it is assumed that in civilian injuries hospitalization will be possible in a relatively short time, whereas in military operations such is not always the case. This usually makes it possible to postpone all consideration of chemotherapy until the injured have been hospitalized. It is then possible to administer sulfonamides with better safeguards and to consider such contraindications as other pathologic conditions or known sensitivity to individual drugs. The dangers of dehydration can also be better prevented or overcome under such circumstances.'

In a discussion of intra-abdominal wounds leading to perforation of the hollow viscera, the revised pamphlet advises sodium sulfadiazine as the drug of choice for parenteral administration which is considered preferable to oral therapy during the first forty-eight hours. Sulfanilamide was recommended in the previous edition. Concentrated solutions of sodium sulfadiazine are not recommended for subcutaneous or intramuscular routes but it is pointed out that weak solutions (0.5 per cent) may be used with little danger of sloughing of the tissues.

Special emphasis is placed on the danger of giving sulfonamide drugs to a patient who is not voiding normally (over 1000 cc per day).

Should circumstances require sulfonamide administration in the presence of inadequate urinary output the urine should be watched for evidence of renal damage and the dosage of drug adjusted so that a blood concentration as evidenced by daily determinations, not to exceed 10 mg per hundred cubic centi-

mers, is maintained. If further diminution of the urinary output occurs administration of the drug should be stopped immediately and fluids should be forced orally if possible, and by means of dextrose and water (5 per cent in sterile distilled water) intravenously if necessary. If anuria due to bilateral obstruction of the ureters develops ureteral catheterization and lavage of the renal pelvis may be required.

The emergency care of burns is outlined in this pamphlet as follows:

'Whenever casualties with extensive burns can be admitted to hospitals without delay and definitive treatment can be instituted promptly morphine sulfate 1/2 grain should be administered at the scene of the incident and no local therapy applied to the burned area except sterile gauze to exposed surfaces to prevent infection.'

The most notable change in the pamphlet is the withdrawal of the recommendation of the use of ointments or jellies containing tannic acid in the first aid treatment of burns. The new advice given is that when definitive care cannot be carried out within two hours the patient should receive sufficient morphine to relieve pain (not less than 1/2 grain, except for patients with lung and bronchial damage the very old or the very young), and the burned surfaces should be covered with sterile boric acid ointment or petrolatum over which one or two layers of gauze of fine mesh (44) is to be smoothly applied. Over this dressing thick sterile gauze or sterile cotton waste is to be placed and the entire dressing is to be bandaged firmly but not tightly. Substitution of jelly containing 5 per cent sulfathiazole in water soluble base, which is supplied in the Office of Civilian Defense carrying case A for mobile medical teams, is permissible.

The discussion of definitive treatment of burns has been expanded to stress the necessity for administration of large amounts of plasma.

For patients with severe burns quantities up to 12 units or more may be required in the first twenty-four hours. To the patient in critical condition plasma must be given rapidly (as much as 500 cc in ten minutes may be necessary) and not allowed to flow drop by drop. It must never be administered by any other than the intravenous route. Syringe injection may be used. If facilities for hematocrit determinations are available the following general rule can be used for guidance regarding the amount of plasma required. For each point that the hematocrit is above 50 per cent cells at least 100 cc. of plasma should be administered. If clinically satisfactory results are not obtained with this dosage larger quantities should be given. A footnote points out that rapid administration of intravenous fluids may be dangerous to cardiac patients and that the physician's judgment will have to determine the amount as well as the rate of administration in such cases.

The pamphlet describes "open" and "closed" treatment for burns. The "open" treatment, which is now considered the treatment of choice and is especially recommended for treatment of burns of the hands, face, feet, perineum and genitalia, consists essentially of the application of boric acid ointment or petrolatum, with pressure dressings. Such dressings can often be left in place twelve or fourteen days.

The "closed" treatment, which is the tanning or eschar method, is particularly indicated in extensive "flash" or second degree burns of the trunk. This method is recommended only

if the following conditions are present: (1) If not more than twenty-four hours have elapsed, (2) if the burned area has not been grossly contaminated, (3) if strict surgical asepsis is employed in the preparation of the burned surface and (4) if coagulation is rapidly accomplished, i. e., by combined use of trinitic acid and silver nitrate. The method of tanning is described as in the original edition of the pamphlet.

In the new directions, additional emphasis is placed on masking of both the patient and his attendants in order to minimize the danger of secondary infection.

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

Medical Schools Cooperate in Graduate Education

Under the auspices of the Wartime Graduate Medical Meetings arrangements have been made with fifty-five medical schools, through the Council on Medical Education and Hospitals, to participate in the teaching programs. The faculty members have already been designated from the University of Chicago, the University of Louisville, Emory University School of Medicine, Yale University and New York University.

The section committees of the Wartime Graduate Medical Meetings are engaged in conferences with commanding officers of service hospitals in their areas, selecting subjects, dates and teaching personnel for graduate courses. A recent directive was issued from the Office of the Surgeon General of the Army calling attention of commanding officers to this educational project and urging their cooperation and active participation.

PROCESSING PHYSICIANS IN THE FIELD

New instructions have been issued by the Officer Procurement Service and the Procurement and Assignment Service concerning the recruitment of physicians.

All available physicians are mailed invitations to seek commissions by the Procurement and Assignment Service. The invitation should be marked by the physician, indicating his choice of service, returned to the state chairmen, Procurement and Assignment Service, and forwarded to the appropriate agency. All requests for army appointments, including the Army Air Force, will be turned over to the Officer Procurement Service for processing and completion of the application.

The director of Naval Officer Procurement Service will handle requests for appointment in the Navy. Recent memoranda to the Officer Procurement Service stress urgent need for additional medical officers for the Army and describe techniques to be employed.

SALE OF PENICILLIN RESTRICTED

The War Production Board has issued allocation order No. M-338 which states that on and after July 16 no supplier shall use or deliver penicillin except as specifically authorized in writing by the War Production Board. The word "supplier" in this order means any person who produces penicillin, imports penicillin or purchases penicillin for resale as penicillin but shall not include any retail pharmacist, hospital or physician.

The order points out that the fulfillment of requirements for the defense of the United States has created a shortage in the supply of penicillin for defense, for private account and for export.

MATERNITY CARE FOR WIVES OF ENLISTED MEN

More than three fourths of the states have received approval by the Children's Bureau, Department of Labor, of programs for medical and hospital maternity care for wives of men in the four lowest pay grades of the armed services. Secretary of Labor Perkins reported on July 2. Following approvals by the Bureau, funds for the specified services have been made available to thirty-seven states, the District of Columbia and Hawaii.

Plans for New York, California and Iowa also have cleared the Bureau. Secretary Perkins said "When the funds for the

year beginning July are forthcoming, New York, California and Iowa will be in a position to authorize maternity and infant care for the wives and babies of enlisted men in the fourth, fifth, sixth and seventh pay grades. Plans from the health departments of Alaska, Ohio and Virginia are before the Children's Bureau for consideration and with their clearance there will remain only nine states which have not made application for federal funds or submitted plans for their services. These are Colorado, Georgia, Louisiana, Massachusetts, North Dakota, Oregon, Pennsylvania, Tennessee and Texas."

When a state plan has been approved and federal funds have been made available to the state health department, a serviceman's wife living in that state may make application for complete medical care during pregnancy and childbirth and for six weeks after childbirth. She may also apply for medical care for her child to extend throughout the child's first year of life. To get such care, all that the wife needs to do is to fill out simple forms, which, if her own doctor is unable to furnish copies, she can get from the state health department.

PRISONERS OF WAR

The Prisoners of War Information Bureau, under the Provost Marshal General in Washington, D. C., is the government agency which keeps records of American prisoners of war and civilian internees and maintains contact with their next of kin. However, the National Red Cross Societies and other humanitarian organizations accepted by the belligerents under the Geneva convention provide the machinery for giving relief supplies and other aid to the prisoners and also serve as a means of contact between the prisoners and their relatives. It is the function of the protecting power (Switzerland in the case of the United States) to see that the Geneva convention is properly observed by the detaining powers. The carrying out of the provisions for sending parcels and relief to internment camps, and for exchanging information between prisoners of nations at war and their own countries, is a tremendous task. The chairman of the American Red Cross, Norman H. Davis, recently said that the parcels of relief for American prisoners of war in Europe are operating smoothly and that, despite difficulties which at times appear overwhelming, the Red Cross and governmental agencies have continued negotiations to open relief channels to our prisoners in the Far East.

The rights of prisoners of war and their obligations are covered by international treaties which have been negotiated during the last seventy years and which culminated in the Geneva convention in 1929, signed and ratified by forty-two nations.

A prisoner has the right to receive letters as well as to write them and to receive parcels of food, tobacco, clothing, comforts and books, also the right to a proper trial for any alleged infringement of camp discipline.

In Switzerland more than five thousand persons are employed by the International Red Cross Committee, most of them volunteers, endeavoring to carry out the provisions for sending parcels and relief for internment camps and for exchanging information between prisoners of nations at war and their own countries. The committee has a card index of twelve million cards, if news seems to move slowly to the families of prisoners of war, one should consider the amount of detail involved in the difficulties of transportation and the fact that a great many persons are constantly trying to improve this service.

OFFICE OF PRICE ADMINISTRATION

AMENDMENTS TO RATION ORDERS OSTEOPATHS, CONDENSED MILK, FATS, OILS AND HOSPITALS

The Office of Price Administration announced on July 2 that any medical practitioner authorized by the state in which he practices to prescribe all internal drugs is also authorized to certify that a person requires supplementary food rations for health reasons. Authority to make such certification was previously confined to doctors of medicine. OPA has now broadened the authority so that osteopaths in states which license osteopaths to prescribe all internal drugs may also prescribe supplementary food rations. Food rationing regulations provide that a person whose health requires more rationed food than his ration points permit him to buy may apply to his local board for necessary additional points. In some illnesses foods are prescribed in addition to drugs or medicines, or as a substitute for them. In some counties the work of ration boards in processing such applications has been much simplified through the voluntary help of the doctors themselves. By establishing panels to review all medical certifications and to advise the boards responsibility for issuing extra rations for health reasons has been kept on a professional level.

The Office of Price Administration under date of June 1 placed evaporated and condensed milk on the list of rationed products. These types of milk are added to the group of rationed foods containing meats and fats for which red ration stamps are needed, without any increase in the total number of points allowed for this group. One point is required for one 14½ ounce can or for two 6 ounce cans or for two 8 ounce cans. This means that the child may use 7 of his 16 points per week for his milk requirements in terms of evaporated milk, which allows slightly less than the equivalent of a quart of whole milk per day, and have 9 points remaining for his meat and fat requirements. An invalid or any other person whose health requires that he have more canned milk than he can obtain with the stamps in his War Ration Book II may apply at his local War Price and Rationing Board for additional points. The consumer must submit a written statement of a licensed physician showing why he must have more canned milk, the amount needed during the succeeding two months and why unrationed foods cannot be used instead. A supplemental allotment to acquire canned evaporated and condensed milk needed by a hospital to meet the dietary needs of its patients may be obtained on application to its local War Price and Rationing Board. It is understood that if the present method of rationing does not make evaporated milk available in all areas for infants and children some more effective method will be worked out.

The Office of Price Administration has issued an amendment to ration order number 16 (R O 16, amendment 25) which permits the use of rationed fats and oils for external therapeutic purposes. This includes the use of vegetable oils, such as cottonseed oil, for bathing newborn infants, for external application in skin diseases, for urethral injection or lubrication of urethral instruments, and for x-ray visualization. Such use of rationed fats and oils is defined as 'industrial consumption' and persons using these products for such purposes are classified as 'industrial consumers.' An industrial consumer engaged in the care and treatment of the sick and needing rationed fats and oils for this purpose may apply to his district Office of Price Administration for a certificate with which to acquire them. The procedure to be followed briefly, is as follows. The application should be made on form R-1605 to the district office. If the applicant is a hospital the district office will pass on the application by using the same method of computing allowances as the local boards use in computing allotments for industrial users, otherwise the application will be forwarded to the Washington office for action. If the applicant requires more than he would receive by the method of computation described, he should also submit form R-315 stating the reasons for such request. An industrial consumer to whom a certificate is issued for 'industrial consumption' of rationed fats and oils may use it only to acquire the foods for which application was made and may use those foods only for the purpose for which the application was granted.

For several months the Office of Price Administration and medical authorities have been studying the hospital problem with a view to developing a uniform procedure covering the granting of supplemental allotments for hospitals. Solution of the problem is believed near. In the meantime a provision in the regulations (section 116 of general ration order 5) should enable hospitals to obtain the necessary supplemental allotments so that patients need not suffer from dietary deficiency. This provision gives local boards authority to grant such allotments to meet the dietary requirements of patients living in and receiving care in hospitals whether or not such patients are on special diets. In determining the amount of the supplemental allotment of processed foods and the commodities covered by ration order 16, the local board will take into consideration the availability of fresh fruits and vegetables unrationed substitutions such as poultry and fresh fish and the physical facilities of hospitals to process and store such foods.

PUBLIC HEALTH UNDER HITLER

According to *l'Effort* of March 24, chocolate in which fish liver with vitamin A is incorporated is now manufactured in Marseilles exclusively for the Secours national and distributed to children in tablets of 30 Gm containing 250,000 international units each.

DNB of March 27 states that the fourth Swiss Medical Mission with its auxiliary staff has returned home. Like the previous missions it has served for three months in military hospitals in the East and done valuable service in treating and caring for our wounded. This medical mission too has gained valuable experience and conveyed new knowledge and ideas to Swiss medical science and research.

The Berlin correspondent of *Svenska Dagbladet* of March 3 reports that the German birth rate statistics for 1942 show a sharp decline in the birth rate and a smaller decline in the death rate. The surplus of births declined by 53.6 per cent.

In Germany, excluding the former Polish territory of Eupen and Malmédy, 1,238,845 children were born against 1,528,330 in 1941, that is 15.2 and 18.8 per thousand respectively.

The number of deaths, excluding the armed forces declined from 995,573 to 990,346 that is from 12.3 to 12.1 per thousand. The surplus of births in 1942 apart from military losses, was 248,499 persons against 532,737 in 1941. During 1942 607,021 marriages were concluded against 589,614 in 1941. In December the birth rate was slightly better than during the previous month, namely 14.3 per thousand against 13.2 in November, but the December death rate was slightly higher and even higher than in December 1941.

In the protectorate the birth rate increased throughout last year the total figure for 1942 being 18.3 per thousand against 16.7 in 1941. The death rate also increased being as much as 15.3 per thousand last December against 13.9 per thousand for the year 1942 an extremely high figure considering the hygienic standard of the protectorate.

The *Donauzeitung* Rumania, of February 3 reports that the Bucharest registrar's office recorded a total of 11,089 births, 12,215 deaths and 10,432 marriages in 1942. The birth rate has risen by about 5 per cent and the death rate by about 8 per cent as compared with the previous year whereas there was a slight drop in the number of marriages as against 1940.

OFFICE OF WAR INFORMATION

MEDICAL NEWS LETTERS

The following item prepared by the Office of War Information has been approved for release by the Department of State.

The Office of War Information, in cooperation with the American Medical Association, has since July 1942 been preparing biweekly Medical News Letters for transmission to medical men and scientists abroad, where they are received with enthusiasm. Before the war, United States journals had wide circulation outside the country, and the lack of such material in foreign countries today is somewhat alleviated by these condensations from the journals, since shipping conditions do not permit transportation of heavy periodicals.

The Medical News Letters constitute straight scientific information service to physicians cut off from their quota of current news of medical progress, and the humane service they render redounds to America's advantage. For eager doctors, who are thus kept abreast of new developments and who would otherwise be left in the dark, are grateful to the United States for enlightenment.

The material, about 2,500 words or digests of current advances, is prepared by the abstracting staff of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and edited and printed by the Features Division of the Overseas Branch of the Office of War Information. It then goes to the State Department, which distributes it to the OWI outposts and diplomatic missions overseas.

The News Letters are sent by air to more than sixty areas, from Iceland to South Africa, including such remote points as Noumea and Madagascar. OWI regional outposts, when they receive the material, reproduce it in large quantities. In Ireland alone, for instance, 3,000 copies of the Medical Letters are circulated to Irish doctors and institutions, and in Sweden about 6,000 Science News Letters are now being distributed.

In English speaking countries they are printed as they stand in the medical journals of the area. In non-English speaking countries they are translated on the spot and reproduced in Swedish, French, Arabic, Chinese, Hindustani or numerous other foreign journals. If no journals exist, the letters are mimeographed and mailed to all the doctors and interested parties in the region.

That the Medical News Letters are welcome becomes increasingly clear as the file of dispatches conveying the appreciation and thanks of foreign scientists for the American effort to keep them abreast of current developments grows. These men express their gratitude not only for the Medical Letters but also for the other scientific information that the OWI is distributing. Science News Letters in the fields of astronomy, agriculture, genetics, biology, physics, geology, psychology and engineering are prepared, with the help of experts in each field, and delivered to many countries each month. This list is still growing. Ophthalmology, animal husbandry and veterinary medicine will be covered shortly.

Many illustrations could be given of the enthusiasm with which the News Letters are received. The following few will suffice to show the value of the project. A quotation from a letter written by a Swedish physician reads: "Please excuse my bad English. You can be sure that I am glad to have your Medical News Letter. When I saw it at first I had a glimpse of a sunray coming into this black night of isolation and almost hopeless fear that for so many years—yes, it seems like so many dark years—have been so heavy on our depressed minds."

A well known professor from the University of Finland, after expressing his gratitude, pointed out that the "sending of scientific information such as that embodied in the News Letters is a shrewd and effective way of reminding intelligent Finns

that the United States is a more enlightened and civilized country than Dr. Gockbels would have people believe." Another Swedish dispatch said that "the Swedish medical men have long been accustomed to receive American medical journals and they have expressed great disappointment over their failure to arrive. The Medical News Letter fills a definite need, both psychologically, in making the Swedish medical men feel they still have contact with the democratic countries, and materially, in giving them information regarding the progress of medicine in the United States."

An interesting letter from a Moslem doctor in Syria who was furnished with a Medical News Letter reads in part: "The best way to love God is to love His creatures, and it is equally true that love of God is to relieve the ills of mankind. The credit of maintaining this service goes to American scientists, who during these difficult times are extending such a medical service, especially to this little known country."

Two Italian physicians in Eritrea took the trouble to write: "We very much appreciate the effort made to put us doctors in contact with medical progress after so long an interruption." The vice chancellor of Queen's University in Belfast described the Science News Letter as most interesting and said: "It is a very great pleasure to receive these papers, which I am circulating to our scientific departments, and they will be very much appreciated. Under present conditions it is far from easy for scientific workers in the United Kingdom to keep fully informed about the progress which their colleagues in the United States are achieving, and these papers will be read with the greatest interest. Perhaps you will kindly convey the sincere thanks of this university for the help which the Americans are so kindly rendering."

From distant Lourenço Marques in Portuguese East Africa, a communication arrived which reads: "Physicians and military men here are most anxious to keep abreast of developments in the United States, and many of the medical men have requested me to express their appreciation to the Office of War Information and the American Medical Association for the News Letters, which are being widely distributed throughout this area and receiving such favorable comment." And in Great Britain, which, despite the war, is keeping up progress in medicine and research, this item appeared in the *Medical Press and Circular* of March 24. It was headed "Medical Letters" and ran as follows: "Most of us are familiar with our own *Bulletin of War Medicine*, a publication which has proved of extreme value in the dissemination of the latest information on problems arising out of the war. The Office of War Information of the United States government is now providing a series of Medical Letters which are published fortnightly and issued in this country from the American Embassy in London. These letters, if informally, are most attractively presented. They consist of a series of condensed reports on various advances in the field of medicine, prepared by the American Medical Association; they are not specifically confined to war medicine, although this subject receives its full share of attention. One of the most interesting features comes under the heading 'What U.S. Doctors Are Talking About.' Altogether, these Letters, which so far as we know represent a very novel departure on the part of any government, are of the greatest interest and value. We would like to congratulate those responsible for their production most heartily. Incidentally, we trust that they will be continued after the war. It seems a pity that such an excellent idea should be restricted merely to these abnormal times, although the needs of the moment may be."

It could not be made more dramatically clear that the world over still look to America for light and progress.

ORGANIZATION SECTION

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Bills Introduced—H R 3087, introduced by Representative McGhee, Mississippi, proposes to amend the privileged communication statute of the District of Columbia so as to make it inapplicable to information obtained by a physician in professionally attending a patient in cases wherein the physical or mental condition of the patient is in issue H R 3150 introduced by Representative Randolph West Virginia, proposes to amend the healing arts practice act of the District of Columbia to eliminate the requirement that an applicant, applying for a license without examination must have practiced the healing art under a license obtained in another jurisdiction for not less than two consecutive years immediately preceding the date of his application for his license in the District As a substitute for this requirement, the bill would provide that the applicant must have practiced the healing art after the issuance of the license obtained in another jurisdiction for not less than one continuous year out of three years immediately preceding the date of his application for license in the District This bill would provide too that the required one continuous year's practice may be either private institutional or governmental, or a combination thereof

MEDICAL BILLS IN CONGRESS

Changes in Status—H R 997 has passed the House and Senate establishing a Pharmacy Corps in the Medical Department of the Army As originally introduced this bill proposed to eliminate the Medical Administrative Corps and to substitute therefor a Pharmacy Corps As enacted this legislation leaves intact the Medical Administrative Corps H R 2936 has passed the House and Senate authorizing an additional \$200,000,000 for expenditure under the Lanham Act for the construction of community facilities S 1250 has passed the Senate, repealing existing law under which the pay of persons in the military and naval service who are absent from duty on account of the direct effects of venereal disease due to misconduct is forfeited

Bills Introduced—S 1277, introduced by Senator Thomas, Utah, proposes that the benefits of the United States Employees' Compensation Act be extended to all civilian officers of the United States, commissioned officers of the Coast and Geodetic Survey, commissioned officers of the regular corps of the United States Public Health Service and officers in the Reserve of the United States Public Health Service on active duty S 1295 introduced by Senator Pepper Florida, provides for the making of loans to war service persons on honorable discharge or honorable release from service to enable them to complete their education Any war service person the bill provides while receiving educational training or the husband, wife child or children of such person shall be eligible to receive any necessary medical attention or care at any hospital or medical institution wholly supported by the United States Government when facilities exist in such hospital or medical institution for furnishing such medical service or care S 1320 introduced by Senator La Follette Wisconsin, proposes that the Surgeon General of the Public Health Service shall provide on the request of state or local health authorities for the hospitalization treatment and subsistence in hospital facilities operated by the Public Health Service of persons registered under the Selective Training and Service Act who are found to be infected with venereal disease Senator La Follette first offered this legislation as an amendment to H R 2935 the Labor-Federal Security Appropriation Act but the amendment was ruled out of order S 1329 introduced (by request) by Senator George Georgia and H R 3176 introduced by Representative Rankin Mississippi propose to regulate the furnishing of artificial limbs or

other appliances to retired officers and enlisted men of the Army, Navy and Marine Corps or Coast Guard and to certain civilian employees of the military and naval forces of the Regular Establishment H R 3086, introduced by Representative Forand, Rhode Island, proposes to provide identification buttons for persons discharged from military or naval service due to physical defects not due to personal misconduct H R 2939, introduced by Representative McMillan South Carolina, proposes to provide a uniform allowance for members of the Army Nurse Corps H R 3178, introduced by Representative Celler New York proposes to provide for the wartime care and protection of children of employed mothers

STATE MEDICAL LEGISLATION

Alabama

Bill Introduced—S 328 proposes the creation of a board of medical technicians examiners and defines a medical technician as a person who, as a result of certain technical training (in a training school approved by the Council on Medical Education and Hospitals of the American Medical Association) or certain apprenticeship-instruction is engaged in the practice of standardized or experimental technical procedures covering any of the various departments or laboratory methods (urinalysis, hematology, bacteriology parasitology, histopathologic technic, biochemistry and serology) the results of which are interpreted by a physician in the diagnosis of disease

Bill Enacted—S 213 has become Governor's No 164 of the Laws of 1943 It authorizes the governing bodies of every state department county, municipality, board, commission or subdivision of the state of Alabama to adopt and carry into effect a system of group life insurance and group hospitalization insurance or either, for the benefit of its employees

Connecticut

Bills Enacted—S 253 has become chapter 332 of the Laws of 1943 It authorizes the state board of examiners for nursing to issue temporary licenses to certain properly qualified persons H 312 has become chapter 366 of the Laws of 1943 It provides for an appropriation of \$50,000 for furnishing medical, hospital, nursing, obstetric and pediatric care to wives and children of service men when they are unable to purchase such care for themselves H 1026 has become chapter 325 of the Laws of 1943 It authorizes a court, in certain circumstances to order the examination of an accused person to determine whether or not such person is suffering from a venereal disease and if the result of the test is positive to make such order as may be necessary for the detention and treatment of such person The examination shall be conducted at the expense of the state H 1312 has become chapter 311 of the Laws of 1943 It amends the law relating to the practice of chiropractic by eliminating therefrom the existing requirement that chiropractors show satisfactory evidence at the time of the annual renewal of their licenses that they have attended at least one of the two day educational programs conducted by the Connecticut Chiropractic Association, Inc the subjects of such programs being under the supervision of the state board of chiropractic examiners

Ohio

Bill Enacted—S 36 was approved June 3 It is an administrative procedure bill providing for uniformity of procedure in hearings and actions taken by administrative boards such as the medical board

Medical News

(PHYSICIANS WILL CONFIR A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, LAW, HOSPITALS, EDUCATION, AND PUBLIC HEALTH)

CALIFORNIA

Dr Swartout Appointed Health Officer of Los Angeles County—On June 17 Dr Hubert O Swartout was appointed health officer of Los Angeles County. Dr Swartout has been acting health officer since the appointment of Dr Wilton I Halverson as state health officer (*THE JOURNAL*, February 13, p 530).

Herbert Evans Honored—Dr Herbert M Evans, Morris Hertzstein professor of biology and director of the Institute of Experimental Biology, University of California Medical School, San Francisco, was guest at a dinner on June 4 given by members of the medical and other faculties of the university to mark his sixtieth birthday, which will be observed in September. The celebration was held at the Bohemian Club, San Francisco, under the chairmanship of Dr William J Kerr, San Francisco, professor of medicine at the medical school. Dr Evans was presented with an anniversary volume published by the University of California Press entitled "Essays in Biology," containing forty-eight scientific contributions from pupils, associates and friends representing the physiology of reproduction, locomotion, nutrition and the history of medicine and science. Reports that the publication was planned before the war, and the participants are leading foreign and American workers in their respective fields.

DELAWARE

Rocky Mountain Spotted Fever—On June 24 the Delaware Board of Health, Wilmington, reported 2 cases of Rocky Mountain spotted fever in Cedar Creek and Little Creek townships. According to the *New York Times*, June 25, this brings to 4 the number of cases reported in the state during the previous two weeks. No cases were reported last year.

DISTRICT OF COLUMBIA

District Medical Election—Dr James N Grear Jr was chosen president-elect of the Medical Society of the District of Columbia at its annual business meeting on May 5 and Dr Fred R Sanderson was installed as president. Mr Theodore Wiprud is the secretary-treasurer. The annual scientific assembly will be held at the Mayflower Hotel, Sept 30 to Oct 2, 1943.

Fund for Psychiatric Aid to Children—The Loren B T Johnson Memorial Fund has been established by Mrs David S Barry Jr in honor of her father. The \$25,000 trust fund will be used for "the intensive and specialized care and treatment of children in connection with the special objectives of the Washington Institute of Mental Hygiene." Dr Johnson, who died in December 1941, helped organize the Washington Child Guidance Clinic and the Life Adjustment Center, which were later merged to form the Washington Institute of Mental Hygiene, now supported by community chest funds. Dr Winfred Overholser succeeded the late Dr Johnson as president of the mental hygiene institute.

ILLINOIS

Bicounty Defense Zone Health Department—The Fulton and McDonough counties have joined to establish the first locally directed bicounty defense zone health department in the state. The unit is under the full time supervision of Dr Edward L Hill Jr with headquarters at Macomb.

Chicago

Course on Wartime Nutrition—A postgraduate assembly on wartime nutrition will be sponsored by the Institute of Medicine of Chicago at the Palmer House, November 17-18. Details of the course, for which there will be no registration fee, will be announced later.

Dr Stewart Thomson Named Assistant Dean—Dr Stewart C Thomson, assistant professor of anatomy, Loyola University School of Medicine, has been appointed assistant dean of the school, succeeding Dr John G Powers, who plans to enter private practice. Dr Francis J Braceland, dean of the medical school, is now in the Navy. Dr Thomson has been a member of the faculty of Loyola since he graduated there in 1936.

The Capps Prize—Announcement is made of the Joseph A Capps Prize offered annually by the Institute of Medicine of Chicago for the most meritorious investigation in medicine or in the specialties of medicine. The investigation may be also in the fundamental sciences, provided the work has a definite bearing on some medical problem. Competition is open to graduates of Chicago medical schools who completed their internship or one year of laboratory work in 1941 or thereafter. Manuscripts must be submitted to the Institute of Medicine of Chicago, 85 East Randolph Street, not later than December 31.

INDIANA

Mental Patients' Orchestra—So successful has been an experiment with an orchestra composed of inmates at the Indiana Hospitals for Insane that an additional program for the development of singing and dancing has now been undertaken, according to the state medical journal. The orchestra has grown from a group of 12 to 29. None of the inmates who agreed to try to learn to play musical instruments had had any previous experience. A campaign was conducted by the *Michigan City News Dispatch* to obtain instruments. The first appearance was before members of the board of trustees. Patients who previously had refused to study music became eager to do so. The 29 inmate-musicians at the time of this report had a repertoire of twenty-five pieces.

MICHIGAN

Changes in Health Officers—Dr Leonard C Bate, Stambaugh, director of the Iron County Health Department, was placed in charge of the unit in Ontonagon County, effective June 1. The central office of the two counties will be maintained in Stambaugh with a branch in Ontonagon. Dr Clifford C Corkill resigned as head of the Menominee County Health Department, effective July 1, to enter private practice. Dr Madeline M Donnelly has been named director of health district number 7 comprising Clare, Gladwin and Arenac counties, following the vacancy that occurred with the transfer of Dr Helen E P Lanting, Gladwin, to a similar position in the Shiawassee County health district.

Annual Report of Children's Fund—More than \$34,000 was expended by the Children's Fund of Michigan through various agencies, including donations of \$96,000 to seven war agencies, according to its fourteenth annual report recently made public and covering the year ended April 30. Of the original fund of \$10,000,000, which was later increased by more than \$2,000,000 by Senator James Couzens, more than \$7,500,000 remains. Both capital and earnings of the fund are to be applied in the field of child health and guidance over a twenty-five year period at the annual rate of about \$700,000. The largest contributions for the fiscal year, the report showed, were in the field of child health, with expenditures totaling \$337,039. In the field of health education \$10,650 was appropriated. The year concluded the second in which the Children's Fund subsidized the state department of public instruction to help it incorporate within itself a system of health education. Prior to the arrangement with the state department, the Children's Fund had for a number of years been financing a health education demonstration. The total expenditure for dentistry was \$144,757. Four counties, Grand Traverse, Leelanau, St Clair and rural Wayne, have completed health organization, one of the objectives of the fund, while Iron, Menominee, Mecosta and Osceola counties will soon complete their own programs, making a total of ten locations previously subsidized by the fund from which it will retire. Other donations to independent health agencies include the second payment of \$20,000 on an \$80,000 appropriation to the House of Good Shepherd in Detroit for a new hospital building. Under grants to war agencies, the report lists a \$50,000 donation to the War Chest of Detroit and a payment of \$32,500 on a \$65,000 pledge to the American Red Cross. A fund of \$10,000 was also set up late in the year to assist in the establishment of nurseries in schools to care for children of working mothers. Seven child guidance institutions received grants totaling \$110,607, including \$90,857 to the Children's Center, Detroit, which was created by the fund. An \$11,000 grant made annually for child guidance on a statewide basis will be discontinued, with the state taking over the appropriation next year. Thirteen recreational organizations received grants of \$38,050, and the Michigan Children's Aid Society, which cares for dependent children, received \$29,150. Research programs, including projects at both Wayne University, Detroit, and the University of Michigan Medical Center, received \$68,416. General administration costs totaled \$43,342.

NEBRASKA

The Eleventh Annual Assembly—The Omaha Mid-West Clinical Society will hold its eleventh annual assembly, October 25-29. Among the guest speakers and their subjects will be Drs. Eben J. Carey, Milwaukee, basic sciences, Sanford R. Gifford, Chicago, eye, ear, nose and throat, Cyrus E. Burford, St. Louis, genito-urinary, Jennings C. Litzberg, Minneapolis, gynecology and obstetrics, James E. Paullin, Atlanta, Ga., and Tom D. Spies, Birmingham, Ala., and Cincinnati, medicine, Harold G. Wolff, New York, neurology, Frank R. Ober, Boston, orthopedic surgery, Luther Emmett Holt Jr., Baltimore, pediatrics, and Raymond W. McNally, Chicago, and Robert Lee Sanders, Memphis, Tenn. surgery. A symposium on military medicine and surgery will be a feature of the meeting on Friday, October 29.

NEVADA

State Board of Medical Examiners—Dr. Robert P. Roantree, Elko, was reelected president of the Nevada State Board of Medical Examiners at a meeting on May 5 and Dr. George H. Ross, Virginia City, was chosen secretary-treasurer. Dr. Ross was named to succeed Dr. Richard A. Petty, Carson City, who resigned to enter the Navy.

NEW HAMPSHIRE

Broadcasts on Industrial Hygiene—The division of industrial hygiene of the New Hampshire State Board of Health is presenting a series of broadcasts on industrial health problems.

Dr. Fréchette Granted Leave for Rehabilitation Work—Dr. Alfred L. Fréchette has been granted a leave of absence as secretary of the New Hampshire State Board of Health, Concord, to engage in war rehabilitation work under the auspices of the U. S. Public Health Service. He left for his new activities on May 20. He has been with the state board since 1938, first as director of the division of venereal disease control and later as deputy secretary. In 1942 he was named secretary and executive officer of the board.

NEW YORK

Outbreak of Septic Sore Throat—*Health News* recently reported an outbreak of septic sore throat and scarlet fever involving over 50 students and faculty members of an upstate school. Tapioca pudding which had been allowed to stand overnight without refrigeration was served at a school lunch. It had been prepared by a woman cook who, after the outbreak, stated that she had "felt poorly" during the previous day or two and who on the day of the luncheon had gone home with a sore throat. The symptoms included fever, inflamed throat and swollen glands, and in a few cases there was a scarlet fever rash. Every one of the 55 patients had eaten the school luncheon regularly, while no illness was found among 14 pupils who had the noonday meal at home.

New York City

Dr. Oswald Avery Retires at Rockefeller Institute—Dr. Oswald T. Avery, a member of the staff of the Rockefeller Institute since 1913, has been made member emeritus of the institute. He has reached the retirement age. A graduate of Columbia University College of Physicians and Surgeons, 1904, Dr. Avery was associate director of the department of bacteriology at the Hoagland Laboratory of the Long Island College Hospital, Brooklyn, from 1907 to 1913. His work in bacteriology and immunology of respiratory diseases had won for him the J. Mather Smith Prize, the John Phillips Memorial Medal and the Paul Ehrlich Gold Medal. In 1930 he was president of the Association of Immunologists and in 1933 of the American Association of Pathologists and Bacteriologists.

Annual Graduate Fortnight—'Disorders of the Digestive Tract' will be the theme of the sixteenth Graduate Fortnight of the New York Academy of Medicine, October 11-22. Following an address of welcome by Dr. Arthur F. Chace, president of the academy of medicine, Dr. Andrew C. Ivy, Bethesda, Md., will deliver the Ludwig Kast Lecture on 'The Physiology of the Gastrointestinal Tract'. On Friday the Wesley M. Carpenter Lecture will be delivered by Dr. Robert Elman, St. Louis, on 'Parenteral Fluids and Food in Gastrointestinal Diseases'. Other speakers on the program will include

Dr. Harold G. Wolff, Emotions and Gastric Function
Dr. Edward B. Benedict, Boston, A Critical Review of Gastroscopy
Dr. Arthur W. Allen, Boston, Diagnosis and Treatment of Benign and Malignant Lesions of the Stomach
Dr. Harry Shay, Philadelphia, The Pathologic Physiology of Gastric and Duodenal Ulcer

Dr. Asher Winkelstein, Recent Advances in the Therapy of Peptic Ulcer
Dr. Rustin McIntosh, Disorders of the Gastrointestinal Tract in Children
Dr. William E. Ladd, Boston, Surgical Aspects of Congenital Anomalies of the Gastrointestinal Tract in Children
Dr. Ralph Colp, Postcholecystectomy Syndrome and Its Treatment
Dr. Allen O. Whipple, Recent Advances in the Surgery of the Pancreas
Dr. Jacob A. Bergen, Rochester, Minn., Present Status of Regional Enteritis and Ulcerative Colitis
Dr. Wilhelm M. Firor, Baltimore, The Sulfonamides in Gastrointestinal Diseases
Lieut. Col. Thomas T. Mackie, M. C., A. U. S., Amebiasis and the Flagellate Diarrheas
Rene J. Dubos, Ph.D., Boston, Problems of Immunity to Bacillary Dysentery
Dr. William Osler Abbott, Wynnewood, Pa., The Management of Acute Intestinal Obstruction
Dr. William L. Watson, Treatment of Diseases of the Esophagus
Dr. Henry W. Cave, The Surgical Management of Certain Diseases of the Colon
Dr. Harvey B. Stone, Baltimore, Diseases of the Anus and Rectum
Dr. Frederick J. Stare, Boston, Nutrition in Medicine

Morning panel discussions will be held Tuesday, October 12, on 'Emotions and Gastric Function' with Dr. Wolff as chairman. Friday, October 15, 'Diagnosis of Gastrointestinal Lesions by Means of X-Ray and Gastroscopy' Dr. Ross, Golden, New York. Tuesday, October 19, 'Use of Sulfonamides in Gastrointestinal Diseases,' Dr. Walter A. Bastado, Friday, October 22, 'The Commoner Diseases of the Anus and Rectum of Interest in General Practice' Dr. Stone. There will be exhibits demonstrating the recent advances in the etiology, pathology, diagnosis, prophylaxis and treatment of disorders of the digestive tract and special demonstrations of fresh pathologic material. There will be a special exhibition of books on the subject. Afternoon clinics have been planned at various hospitals in the city.

NORTH CAROLINA

School of Physical Therapy Established—The medical school and the Woman's Coordinate College of Duke University, Durham, will open a school of physical therapy, September 27, with Dr. Lenox D. Baker, head of the Duke orthopedic service, as medical director. Miss Helen Kaiser, Cleveland, formerly president of the American Physiotherapy Association, will be the technical director. The school will be conducted at Duke Hospital and will give a nine months course of study and training. Candidates must satisfy one of the following requirements: two years or sixty semester hours of college, including courses in physics and biology, graduation from an accredited school of physical education or graduation from an accredited school of nursing. Owing to the war demands for nurses at this time, candidates from the latter group are not especially desired. A number of scholarships are given for the benefit of women interested in this field of work. Miss Kaiser graduated in the course of physical therapy of Harvard Medical School, Boston, and served there as assistant instructor. She served three years as chief physical therapist of the Detroit Orthopaedic Clinic. She reorganized and established the physical therapy departments of the Woman's Hospital and the Mount Sinai Hospital, Cleveland.

TEXAS

University News—Leslie L. Lumsden, New Orleans, epidemiologist, medical director U. S. Public Health Service, retired, has been made lecturer in epidemiology at the University of Texas Medical Branch, Galveston. The regents of the University of Texas have accepted legislative authorization to incorporate the Texas Dental College, Houston, into the University of Texas health program. Fred C. Elliott, D.D.S., has been appointed by the regents to continue in charge of the institution which will be known as the University of Texas School of Dentistry. Dr. Eric Ogden, associate professor of physiology at the University of California Medical School, San Francisco, was a recent guest at the University of Texas Medical Branch, Galveston, where he spoke on 'Renal Factors in Hypertension'.

WASHINGTON

New State Health Director—Dr. Leland E. Powers, health officer of Tacoma, has been appointed director of the Washington State Department of Health. He succeeds Dr. Donald G. Evans, Seattle, who according to *Northwest Medicine*, will enter private practice.

Personal—Dr. Robert H. Welding, Ellensburg, has been named health officer of Kittitas County.—Dr. John W. Units, Seattle, has been appointed medical supervisor for the department of social security. He succeeds Dr. John M. Flude, Olympia, who resigned to enter private practice in California.

WYOMING

State Medical Election—Dr Thomas J Riach, Casper, was chosen president-elect of the Wyoming State Medical Society at the meeting of its house of delegates in Casper, June 6. Dr Paul E. Wheldon, Sheridan, was installed as president. Other officers are Drs George H. Phelps, vice president, Frederick I. Beck, treasurer, and Marshall C. Keith, secretary, all of Cheyenne.

GENERAL

Public Meeting on Enrichment of White Flour—A public meeting to consider the advisability of requiring all white flour distributed for human consumption to be enriched will be held on July 21 in the South Agriculture Building Auditorium, Washington, D. C. There is a federal standard for enriched flour which at present requires specific quantities of thiamine, niacin and iron. Beginning on October 1 the vitamin riboflavin will also be required. The need for a wide distribution of the vitamins and minerals contained in enriched flour was the basis for the provision of Food Distribution Order number 1 requiring enrichment of all bakery white pan bread. In order that all white bread, whether baked in the home, in an institution or in the commercial bakery, may contain these essential nutritive factors, it has been proposed to enrich all white flour distributed for human consumption. A proposed order has been drafted in accordance with recommendations received from the National Research Council. The effective date of the order, if issued, will be made not less than one hundred and twenty days after its date of publication, affording millers who have not enriched their flour an opportunity to obtain necessary equipment and materials. Likewise bakers who are enriching bread by other means will have an opportunity to consume their stocks of enrichment agents. Persons unable to attend the public meeting may address expressions of opinion to the Director of Food Distribution, War Food Administration, Washington, to be received not later than July 26.

Meeting of Board of Obstetrics and Gynecology—At the annual meeting of the American Board of Obstetrics and Gynecology in Pittsburgh, May 20-25, 108 candidates were certified. A number of changes in board regulations and requirements were put into effect. Examples are the allowance of a stipulated amount of credit toward special training requirements for men in service and assigned to general surgical positions, special training allowances on a preceptorship basis for men assigned to obstetric or gynecologic duties in military hospitals and working under the supervision of certified specialists or recognized obstetrician-gynecologists, as well as credit toward the "time in practice" requirement of the board to be allowed for time in military service. The board will no longer require a general rotating internship but will now accept a one year intern service. Such services must be in institutions approved by the Council on Medical Education and Hospitals of the American Medical Association. The privilege of reopening applications by candidates who have been declared ineligible has been extended to two years from the date of filing the applications instead of one year. The board has ruled temporarily to excuse men in military service from the submission of case records at the stipulated examination times, thereby permitting them to proceed without further delay with the board examinations. This does not obligate the board, however, to waive the case record requirement for such candidates. Plans have been made to provide similarly for service men on their eventual discharge from the armed forces and to permit the greater use of operations done while in residency or in civilian practice before the war. Applications and bulletins of detailed information regarding the board requirements will be sent on request to the secretary, Dr Paul Titus, 1015 Highland Building, Pittsburgh.

Committee of Physicians for the Improvement of Medical Care, Inc., Issues Statement—On July 6 the Committee of Physicians for the Improvement of Medical Care, Inc., which is apparently the continuing body of the so-called Committee of Four Hundred which was prominent around 1937, issued a statement which apparently is being circulated to those who signed its first communication. The committee now includes Drs Channing Frothingham, chairman, Milton C. Winternitz and Carl A. L. Binger, vice chairmen, Russell L. F. Cecil, honorary chairman, John P. Peters, secretary and treasurer, and Bertram M. Bernheim, Ernst P. Boas, Samuel Bradbury, Allan M. Butler, Hugh Cabot, Louis Casamajor, Thomas B. Cooley, Charles A. Flood, Francis T. H'Doubler, William J. Kerr, H. Clifford Loos, George M. Mackenzie, Harry S. Mackler, Thomas Guer Miller, George R. Minot, Robert B. Osgood, Henry B. Richardson, G. Canby Robinson,

David Seegal, Richard M. Smith, Borden S. Veeder and Mortimer Warren. In this statement the committee duplicates a letter in which it congratulates Senator Robert F. Wagner for presenting the Wagner-Murray-Dingell bill. The committee states that it will give the bill careful consideration and report results of its studies at an early date. On the subject of medical education the committee states that it is hesitant to criticize but feels nevertheless that several features of the program established by the armed forces are open to criticism. The committee feels that control of the educational system should not be left to the military authorities but that it is preferable to establish "at once a comprehensive authority to assume direction of medical education, with separate bodies responsible for the major scientific and technical branches." On the subject of medical manpower the committee accepts in toto the recent report from the Office of War Information and says "One centralized federal body should be given responsibility for the control of medical manpower." It argues that this should be the United States Public Health Service and that this service should provide not only doctors but also nurses and other personnel and all the facilities of modern medicine. It states that use should be made of Negro physicians and qualified refugee physicians in meeting shortages in various areas. In order to prevent competition with medical practice, it is proposed that the fees collected by these physicians from those able to pay should be turned over to a federal agency for expansion of local health service under the direction of the United States Public Health Service. The report states that this will require at most four thousand physicians. In discussing the National Physicians Committee for the Extension of Medical Service, the committee indicates that it is confused as to the nature of the conduct of the National Physicians Committee and attacks the National Physicians Committee for its point of view regarding the private practice of medicine.

LATIN AMERICA

New Medical Journals—*Obstetricia y Ginecologia Latino Americanas*, a bimonthly journal, made its first appearance with the February 28 issue. Dr Manuel Luis Perez is the editor. The headquarters are at Calle J. E. Uribe 157, Buenos Aires.—The first issue of *Boletín Médico Mexicano* appeared in January. Dr L. B. Robinson is the director and J. P. Martinez the editor. The headquarters are at Calle de Bolívar Num 23, desp 116, D. F., Mexico.

Roving Doctors Care for Rubber Tappers—Rubber tappers in remote malaria infested jungles of Central America are being cared for by a new type of roving doctor, the practitioner. The practitioner usually is a young medical student with sufficient practical knowledge to treat the rubber tappers for malaria, wounds and insect bites and similar ailments common to forest workers. One practitioner working in the departments of Peten and Quiché saw 99 tappers and their families in a month's travel of 300 miles by boat and mule. In this group 26 men were found with malaria. Practitioners are being assigned to this work in various parts of Central America where the Institute of Inter-American Affairs is cooperating with local authorities in the organization of health services for workers.

Health Projects Surmount Wartime Material Shortages—Wartime shortages of steel, concrete and other construction materials have not halted the inter-American health and sanitation program in Central America. Scores of health facilities are being pushed to completion, including health centers, clinics, hospitals, water supply and sewerage systems, surface drainage installations for malaria control and other health projects. To meet the problem of diminishing supplies, an announcement from the Institute of Inter-American Affairs states that the engineers have revived old techniques of building used a hundred years ago, discovered substitutes for concrete from local materials and used Indian craft. In an inter-American project for malaria control at San Miguel, the masonry is made in the same fashion in which Indians produced it before the arrival of the white man.

CORRECTION

Wetting Agent Formula—In the report of the Committee on Occupational Dermatoses on Recognition and Prevention of Industrial Dermatitis, which appeared in THE JOURNAL, formula 11 of a wetting agent should have read

FORMULA 11

Sulfonated olive oil
Light liquid petrolatum
Sulfonated neat's foot oil
Gelatin, 25 per cent aqueous solution

Parts

3

1

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 5, 1943

Medical Results in the Tunisian Campaign

The treatment of the British wounded in the Tunisian campaign seems to have been the most successful recorded in war. This result can partly be explained by the innovation of transport by air. Toward the end of the previous great war one British hospital in France had 1,300 severely wounded, of whom 113 died. In Tunis a similar hospital had 1,500 severely wounded, of whom only 5 died. Full statistics are not yet available, but we are assured that when they are they will amaze the world. There has been no tetanus and little gas gangrene and sepsis has been largely controlled by sulfonamides. These results have been achieved in spite of great transport difficulties. The wounded had to be moved hundreds of miles, sometimes by motor ambulance, sometimes by hospital train. Once we gained air superiority it was possible to send them by hospital ship. But the most valuable means of transport were troop carrier aircraft fitted to take 18 stretcher cases, as well as air crew, doctor and nurses. More than 15,000 wounded were evacuated by air, usually to Algiers or Oran, sometimes to Gibraltar, occasionally even to America or England. In April alone 7,000 were thus transported. Aircraft also carried medical supplies in the opposite direction. One flew plasma to the Eighth Army in Tripoli. The most remarkable achievement was to fly the whole of a small general hospital to American troops isolated in desert country. The job took eighty loads, but it was done in one day.

The lives of many wounded in Tunisia were saved by blood transfusion and many more by major operations performed closer to the firing line than ever before. Our new field surgical units, staffed by young surgeons, have done miracles under fire. The air-borne surgical team proved worthy of the parachutists whom it served and with whom it dropped. One surgeon broke his leg above the knee in landing. He concealed the injury for three weeks during which he performed a number of major operations, giving himself a local anesthetic between operations. Another had a severe wound for thirty-one hours.

The general health of the First Army was no less remarkable than its recovery from wounds. Probably no force on active service has ever been healthier. The much disliked inoculations produced complete absence of tetanus and almost complete absence of typhoid. There were hardly any typhus cases, though there was much typhus in the country and there was a severe epidemic during the previous winter. The malaria season began last month but plans to control the disease were begun in January. All the troops now take antimalaria pills, which they dislike very much.

An Indian Army Medical Corps to Be Formed

A recent example of the endeavor of the British government to promote the advancement of the various peoples of the empire is in the medical sphere. The immediate formation of an Indian army medical corps, to be organized on lines similar to those of the medical corps of the British army, is announced. It will take the place of the existing Indian Medical Service which is now rather more European than Indian. This action follows the visit to India of the Medical Personnel Mission which was headed by Mr. H. S. Souttar, chairman of the council of the British Medical Association and included the director general of the army medical service and a former director general of the Indian medical service. The mission was sent at the request of the government of India. The two

sources of supply of doctors in India are the graduates (about 12,000) and the licentiates (about 35,000). The graduates have passed through a full medical curriculum and have acquired a qualification registrable in Britain. Many of them have attained distinction and are capable of specialized work of high order. For the licentiates we have no exact parallel here. They vary much in primary education and professional attainments. But their training has been much improved in recent years and many of them are skilled and compete successfully in civil practice with the graduates. The mission visited Cairo on their way to India and made special inquiries about the work of the licentiates in the war and found that their commanding officers considered them capable of full medical responsibility. They have already been employed in the Indian army but with lower rank and less pay than the graduates.

The mission proposed—and the proposal has been accepted by the government—that all candidates for a commission in the new medical corps, whether graduates or licentiates, shall undergo at least a three months preliminary course of training in subjects important for military service, such as anesthesia, blood transfusion, war wounds, nutrition, tropical diseases and hygiene. They will be under close observation during this period, and on the report given by the commandant will depend the bestowal of a commission. The most noteworthy reform is that every doctor qualified to practice in India will have the opportunity to rise in the corps to any position which his abilities justify.

The absence of an effective nursing service from the Indian army impressed the mission. There are only 300 registered male nurses in the whole of India. The bulk of the nursing is performed by sepoy who have received only a brief military training. The attempt will be made to attract to the army a superior class of men, who will be trained in nursing and first aid.

A tribute should be paid to the highly efficient Indian medical service, which is now to be superseded. It began as a purely British service, but with the progress of medical education in India it became more and more Indian. At the outbreak of the war it numbered 780, of whom 60 per cent were European and 40 per cent Indian. The number is now 2,838 of whom only 20 per cent are European. Thus the wartime increase has been almost entirely Indian. It was from the Indian medical service that the most important British advances in tropical medicine came. The most important example was the discovery of the malarial parasite by Ross.

Attacks on Hospital Ships

The recent torpedoing and sinking of the Australian hospital ship *Centaur* by the Japanese has recalled the frequency with which this outrage has been perpetrated by the Germans and Italians. In the House of Commons Sir William Davison, First Lord of the Admiralty, gave a list of twenty-six Axis attacks on hospital ships, beginning with the *Atlantis*, which was bombed four times off Norway from May 1 to May 11, 1940 but escaped damage. Many were severely damaged and three were sunk. All forms of attack—bombing, dive bombing, machine gunning, shelling and torpedoing—were suffered with much loss of life to patients, medical staff and nurses. All the ships were properly marked in accordance with the Geneva Convention but this did not save them. It is curious that the last attack on a British hospital ship according to the official list was on May 10, 1942 when the *Ramb II* was bombed and sunk near Alexandria.

Norwegian ships have also suffered. From the Norwegian government information office in London H. K. Lemkuhl has written to the *Times* describing the sinking of Norwegian hospital ships. On April 24, 1940 the hospital ship *Braut II* was bombed by German dive bombers outside Valsnes. One doctor, two nurses and three ambulance men were killed. This

ship was clearly marked with red crosses. The survivors were also machine gunned from the air after they had succeeded in landing on an island. On April 20, 1940 the hospital ship *Queen Maud*, also clearly marked with red crosses, was bombed at Girtangen, north of Narvik. There were 22 casualties. On June 9, 1940 the hospital ship *Isadna*, white painted and clearly marked with red crosses, was bombed and sunk outside Tromsø during the evacuation.

Wartime Changes at Oxford

The opening of term is marked by various professorial changes. Sir Farquhar Buzzard retires from the regius professorship of medicine and is succeeded by Prof. Arthur Ellis. Prof. J. A. Ryle becomes the first professor of a new chair—social medicine.

AUSTRALIA

(From Our Regular Correspondent)

April 13, 1943

Opposition to a Salaried Medical Service

Unified opposition to change in the present system of medical practice was expressed at a recent convention in New South Wales, which adopted the motion that "a whole time salaried service for a nationwide medical service is not in the interests of the community." The convention, which consisted of representatives of medical organizations in the state of New South Wales called together by the council of the New South Wales branch of the British Medical Association, was held in Sydney on February 4 and 5. In his inaugural address Sir Charles Blackburn said that there was a certain amount of resentment that the discussion would center to a large extent around a scheme submitted by the National Health and Medical Research Council, and there was a strong feeling that the government had slighted the medical profession by not coming direct to it for its advice on a matter about which it was most competent to speak.

The convention was of the opinion that the optimum efficiency of medical service to the people of Australia could be provided under the existing structure of consultant, general practitioner and hospital services together with the adoption of certain measures which included the extension of group practice initiated by members of the profession themselves. The principle of free choice of doctor and patient and the maintenance of the personal relationship between them was upheld. A motion was carried to the effect that complete disciplinary control of members accepting service in any scheme which might be initiated should be exercised only by members of the British Medical Association. The convention was opposed to any change being made in the status of the medical profession and conditions of medical practice during the currency of the war and for a period of one year after its termination and resolved that the federal council of the British Medical Association be instructed to oppose it by all possible means.

The Future of Medical Practice

That medical men are individualists is well proved by the evidence given by members of the profession before the Parliamentary Joint Committee on Social Security. While many of the witnesses have attempted to avoid committing themselves to any one policy for the reorganization of medical practice, a diversity of opinions has been expressed. Of some sixteen doctors who have given evidence before the committee, four were opposed to any radical change in the present system of medical practice, four preferred "fee for service" basis of payment or a scheme based on that functioning in New Zealand, four were in favor of a salaried medical service and two openly opposed it, three were wholly noncommittal and seven of the sixteen emphasized the importance of maintaining the personal relationship between doctor and patient.

Social Trends in Australian Medical Practice

Various schemes for a general medical service for Australia are now under consideration. These include (a) national health insurance as proposed under the National Insurance and Pensions Act of 1938, (b) the plan of the federal council of the British Medical Association in Australia for a medical service on a capitation fee basis, limited to a fixed income group of the population, (c) a scheme for medical, hospital and related benefits such as is in operation in New Zealand, where the "fee for service" system and the capitation system of payments are worked concurrently, (d) a salaried medical service such as that outlined by the National Health and Medical Research Council or by the Victorian Branch Council of the British Medical Association in Australia, or (e) evolution on the present basis of practice, without radical change or government control.

The inclusion of medical benefits under a national insurance scheme is not supported by any section of the community. The government is apparently in favor of a salaried medical service, but a large part of the medical profession is opposed to it. A considerable group of medical men consider that any radical change in the existing system of practice is unnecessary. The profession as a whole is of the opinion that no fundamental changes should be made before the end of the war.

Venereal Disease Control in the Army

Since the beginning of the war the incidence of venereal disease, except syphilis, has in this country remained surprisingly low. Measures adopted by the Australian army to combat the disease include lectures given by specialists to army medical officers and to combatant officers and noncommissioned officers, who in turn are expected to impart their knowledge to troops of their unit. Regimental medical officers are instructed to give frequent talks on the subject to their own particular units, and relevant articles written in nontechnical language for the education of the soldier are published from time to time in the army magazine *Salt*.

The army and civil authorities cooperate fully in tracing sources of infection and in bringing them under medical control. A monthly meeting, attended by commonwealth and state authorities, together with representatives of the services, including the United States Army, is held for the purpose of discussing the latest methods of prophylaxis and treatment and the means for coordinating efforts between the services.

Schools for the training of medical personnel in the prophylaxis of venereal disease are held at a special army hospital, and from these schools the staffs for various prophylactic depots are selected. The prophylactic depots, which have been established in large cities, in all standing camps and in numerous country towns where there are concentrations of troops in the vicinity, are built to standard design, efficiently equipped and open day and night. No names or regimental numbers are recorded, but prophylactic measures are withheld from men showing signs of venereal disease, which are reported to a medical officer. Condoms and "blue light" outfits containing a silver proteinate and mild mercurous chloride ointment are issued free on the application of troops proceeding on leave. An adaptation of a talking film produced by the Medical Corps of the United States Army is being exhibited to all services. Special medical inspection is made of all troops on their entering camp, at various times during training, and before they go on draft. No diagnosis is attempted or treatment given in the field, but suspected cases are evacuated immediately to a special army hospital.

Army personnel suffering from syphilis were originally discharged as medically unfit and were reported to the director of social hygiene, who instructed them to report to a consultant or to the board of health. Many of these men are listed after completing their course of treatment. By a

recent arrangement soldiers infected with syphilis are treated at special hospitals until noninfective and then are drafted to an employment company for duty while continuing their weekly injections

Control of Contraceptives

During the past few years the general public has been increasingly menaced by "quack" commercial concerns, which have been capitalizing on the emphasis placed on venereal disease in wartime. Many have been sending literature relating to articles used for contraceptive purposes indiscriminately through the post or delivering it from house to house as part of advertising campaigns, and a large group of individuals have established themselves profitably as "consultants" on matters relating to birth control and other sex matters. In Victoria a few years ago an act was passed giving very stringent control over advertising and display, but in the other states no such control existed. Recently, however, the commonwealth government under national security regulations made it illegal to display, advertise or promote the sale of any article as a medicine, instrument or appliance for the alleviation of venereal disease or the prevention of contraception.

BRAZIL

(From Our Regular Correspondent)

June 14 1943

A New Antihemorrhagic Agent

In its issue of May 31, 1941 page 2521, THE JOURNAL published the conclusions of Drs. Eduardo Vaz and Mario Pereira of the Instituto Pinheiros, São Paulo, Brazil, in their studies on the action of snake venom as an antihemorrhagic agent (bothropase). Recently Dr. Alberto Barbosa Hargreaves of the University of Rio de Janeiro has studied the jararaca venom (*Bothrops jararaca*) so as to obtain thromboplastic material in dosage of prothrombin. The solution of crystallized snake venom in a concentration of 1:15,000 is added to an equal amount of a solution of calcium chloride in a concentration of 1:11 per cent. From this mixture 0.2 cc. is added to 0.1 cc. of plasma. The time between the addition to plasma and the beginning of the formation of net of the fibrin is noted by a chronometer. The operation is repeated with diluted plasma until the concentration of 20 per cent, and curves are made after the dilution. By this method curves are obtained like those with the use of rabbit's brain thromboplastin. The author concluded that the action of the mixture snake venom plus calcium plus plasma is equal to the thrombokinasin plus calcium plus prothrombin. According to comparison with the results obtained with Russell viper venom the snake venom demonstrated a powerful action. The differences noted in the highest dilution are probably due to the minor power of the viper venom in relation to the jararaca venom.

Neuromas of the Appendix and Chronic Appendicitis

Dr. João Montenegro of the Instituto Adolfo Lutz of São Paulo made recently a general survey of the so-called neuromas of the appendix mucosa as the cause of appendalgia. He reviewed the works of Masson, Maresch and Rossle on the matter and accepts the hypothesis that the nervous hyperplasia of the mucosa possibly results from inflammation stimuli but these structures are not amputation neuromas.

Regarding the clinical meaning of such structures, Montenegro emphasizes the difficulty in establishing the facts. The false conclusions come perhaps not so much from a too short follow-up postoperative period as from unreliable information furnished by the patients whether consciously or, more commonly, subconsciously. He thinks that the high percentages of cure formerly reported after operations for chronic appendicitis were largely exaggerated and, on such a false basis, wrong

conclusions were drawn regarding the value of the minor pathologic findings of the appendix. He says that one may admit that very exceptionally these so-called neuromas of the mucosa may be so numerous and bulky as to cause stenosis of the appendix lumen and give rise to disease curable by appendectomy, but that is nothing compared to the enormous number of patients operated on for chronic appendicitis in whose appendix there were neuromas with or without active inflammation, in these cases the cure was not obtained because of a chronic typhlocolitis.

Montenegro reports 45 cases in which he operated with the diagnosis of chronic appendicitis. The histologic sections of the appendix were stained by the trichromic method of Masson and some by silver impregnation. In 9 cases the so-called neuromas were found. Only 1 of these patients was cured, but in his appendix there was also a focus infiltrated with leukocytes situated in the muscular coats and extending down to the submucosa, occupying an area of about 1 millimeter. Five of the patients were not relieved of their symptoms and they have now a chronic nonspecific colitis which they probably had concomitantly with the appendicitis.

Since the symptoms of chronic appendicitis are as a rule equal to those of chronic typhlitis and since these two disorders often coexist, it is impossible in such cases to assign the roles played by the appendix lesions.

Chagas Disease

Chagas disease is well known as a peculiar tropical disease (trypanosomiasis) described by a Brazilian scientist, Dr. Carlos Chagas of the Instituto Oswaldo Cruz, Manguinhos, Rio de Janeiro. Until a few years ago it was believed that this disease was transmitted only by wild insects. Although Chagas had verified infestation of cats and dogs by the parasite of the American trypanosomiasis it has not been proved until now that those animals can transmit the disease to human beings. Recently, as a result of researches carried out in a country village of the state of Rio Grande do Sul, Dr. D. J. Clausell demonstrated that the dog is the vector of the parasite and responsible for Chagas disease in a district where no wild insects are to be found.

Marriages

ROCKWOOD WILDE BULLARD JR., St. Claire, Mich., to Miss Maryetta Moylan Fitts of Drewrys Bluff, Va., in Chicago, April 24.

ALEXANDER J. STEIGMAN, Philadelphia, to Miss Katherine Colvin of Arlington Heights, Ill., in Salisbury, England, June 26.

SAMUEL JOHNSON FAIRSTEIN to Miss Alice M. Atwell, both of Mount Vernon, N. Y., at Norfolk, Va., June 28.

JAMES STUART KNIFE, San Jose, Calif., to Miss Kathleen Mary Newman of Clear Lake, Iowa, June 8.

JAMES N. PROFFITT, Nashville, Tenn., to Miss Ruth Elizabeth Goddard of Alcoa, in Maryville, in June.

WILLIAM JEROME BRUCKNER, Brooklyn, to Miss Alice Jeanne Lamb at Wellington, New Zealand, April 6.

JULIAN CARR LENTZ JR., Durham, N. C., to Miss Mary Nell Lee of Maryville, Tenn., in Athens, Tenn., June 19.

HUGH CATHCART, Charleston, S. C., to Miss Marguerite McDonnell in Washington, D. C., June 19.

FREDERICK GEORGE KROVCKE, Roanoke Rapids, N. C., to Miss Jeannette Valentine of New York, June 4.

HENRY L. WATSON, Tampa, Fla., to Miss Tallulah Josephine Newman of Woodruff, S. C., May 20.

RUSSELL PEYTON HARRIS JR., Newell, N. C., to Miss Bernice Carolyn Carter of Asheville, June 12.

DONALD WALTERS, Charlottesville, Va., to Miss Babette R. Rothschild in Philadelphia, June 3.

WILLIAM L. BLANCH JR., to Miss Lucile Stevens, both of Fayetteville, Ark., June 16.

Deaths

Clifford Black Walker ☉ Los Angeles, Johns Hopkins University School of Medicine, Baltimore, 1911, clinical professor of surgery (ophthalmology) at the University of Southern California School of Medicine, formerly professor of clinical ophthalmology at the College of Medical Evangelists, at one time assistant in ophthalmology at the Harvard Medical School, Boston, served as a member of the American Board of Ophthalmology, member of the American Academy of Ophthalmology and Otolaryngology, American Ophthalmological Society, Association for Research in Ophthalmology, Inc., Western Ophthalmological Society and the Pacific Coast Oto-Ophthalmological Society, past president of the Los Angeles Society of Ophthalmology and Otolaryngology, served on the staff of the California Hospital, Eye and Ear Hospital, Good Hope Clinic, Los Angeles County Hospital and the Hospital of the Good Samaritan, formerly on the staff of the Peter Bent Brigham Hospital, Boston, in 1914 received the first Knapp Medal from the Section on Ophthalmology of the American Medical Association for his paper on "Topical Diagnosis of the Hemorrhagic Pupillary Reaction and the Willbrand Humanopic Prism Phenomenon, with a New Method of Performing the Latter", aged 58, died, July 3.

Murray Snell Danforth ☉ Providence, R I, Johns Hopkins University School of Medicine, Baltimore, 1905, specialist certified by the American Board of Orthopaedic Surgery, Inc., recently elected president and formerly vice president of the Rhode Island Medical Society, past president of the Providence Medical Society, member of the American Orthopaedic Association, American Academy of Orthopaedic Surgeons and the New England Surgical Society, chairman of the Rhode Island Committee for Crippled Children, fellow of the American College of Surgeons, served as a major in the medical corps of the U S Army during World War I, chief, fracture service and consultant in the orthopedic service, x-ray and physical therapy department, Rhode Island Hospital, consulting orthopedic surgeon to the Butler Hospital and Charles V. Chapin Hospital, Providence, South County Hospital, Wakefield and the Westerly (R I) Hospital, aged 64, died, June 5, of cerebral hemorrhage.

Harold Ward Dana ☉ Brookline, Mass., Harvard Medical School, Boston, 1905, assistant in bacteriology at his alma mater from 1911 to 1913, formerly instructor in clinical medicine, assistant professor of theory and practice of medicine, associate professor of medicine and clinical professor of medicine at the Tufts College Medical School, Boston, specialist certified by the American Board of Internal Medicine, served as a major in the medical corps of the U S Army during World War I, fellow of the American College of Physicians, member of the American Association for the Advancement of Science and the American Heart Association, at one time on the staff of the Boston City Hospital, aged 65, died, May 8, of pneumonia.

Stella May Gardner, Chicago, Northwestern University Woman's Medical School, Chicago, 1899, member of the Illinois State Medical Society and the American Society of Clinical Pathologists, specialist certified by the American Board of Pathology, Inc., inspector of schools from 1899 to 1905 and member of the board for physical examination of teachers in public schools from 1905 to 1920, formerly professor of laboratory diagnosis and assistant professor of microscopic and clinical diagnosis at the University of Illinois College of Medicine, part owner of the Lincoln-Gardner Laboratory, aged 75, died, May 5, in the West Suburban Hospital, Oak Park, Ill., of myocarditis and arteriosclerosis.

Andrew Sloan ☉ Utica, N Y, Columbia University College of Physicians and Surgeons, New York, 1902, member of the House of Delegates of the American Medical Association at the 1935 special session, fellow of the American College of Physicians, a charter member and for many years president of the Medical Society of the State of New York, chairman of the medical advisory board, Utica Visiting Nurses and Child Health Association, member of the consulting service, Marcy (Pa.) State Hospital, the Children's Hospital Home and St. Luke's Home and Hospital, where he died, April 21, of cardiovascular disease, aged 63.

Chancey Adams ☉ Concord, N H, Medical School of Maine, Portland, 1891, formerly a druggist, member of the state board of health from 1903 to 1906, for many years county medical referee, past president of the Concord medical division

of the bureau of pensions, formerly city physician and physician of the state prison, member of the advisory board during World War I, fellow of the American College of Surgeons, surgeon emeritus on the staff of the Margaret Pillsbury Hospital and consulting physician for the New Hampshire State Hospital, aged 82, died, May 11, of coronary sclerosis.

Frank Roscoe Makinson ☉ Oakland, Calif., Oakland College of Medicine and Surgery, 1913, member of the House of Delegates of the American Medical Association in 1940, fellow of the American College of Surgeons, past president of the Alameda County Medical Society, councilor of the Seventh District of the California Medical Association, served as president of the Public Health League of California, on the staffs of the Peralta, Samuel Merritt and Providence hospitals, aged 57, died, April 18, in the University of California Hospital, San Francisco, of lymphosarcoma.

Lee L. Armistead, Campbell, Ala. (licensed in Alabama in 1892), aged 78, died suddenly, May 7, of coronary thrombosis and arteriosclerosis.

Engelbert Charles Bender ☉ Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1902, aged 63, on the staff of the Misericordia Hospital, where he died, May 3, of heart disease.

Frederick Otto Bowe ☉ Chicago, Northwestern University Medical School, Chicago, 1903, associate in obstetrics at his alma mater, served as a member of exemption board number 63 during World War I, past president of the staff, and chairman of the obstetric and gynecologic section of the Illinois Masonic Hospital, on the staffs of the John B. Murphy and Evangelical Deaconess hospitals, aged 64, died, May 20, of coronary thrombosis and arteriosclerosis.

Bernard Laurence Campbell, Milwaukee, Chicago Medical College, 1884, past president of the Waukesha County Medical Society, examiner for the draft board during World War I, aged 89, died, April 26, of probable carcinoma of the stomach.

Robert Cathcart Jr., Lakewood, Ohio, University of Edinburgh Faculty of Medicine, Scotland, 1938, member of the Ohio State Medical Association, diplomate of the National Board of Medical Examiners, medical director, civilian defense in the village of Fairview, aged 31, died, May 20, in Dallas, Texas, of military tuberculosis.

Ulysses Simpson Cordell, Macomb, Okla., Chattanooga (Tenn.) Medical College, 1895, member of the Oklahoma State Medical Association, aged 74, died, May 28, of myocarditis.

John De Rosa ☉ Paterson, N J, Licentiate in Medicine, Surgery and Midwifery of the Apothecaries' Society of London, England, 1927, school physician, aged 43, on the staff of the Paterson General Hospital, where he died, April 22, of Hodgkin's disease.

William Roy Dillingham ☉ Salina, Kan., University Medical College of Kansas City, Mo., 1908, served as a captain in the medical corps of the U S Army during World War I, on the staffs of St. John's and Asbury Protestant hospitals, aged 59, died, May 6, of hypertensive heart disease.

John A. Eichling, Gore, Okla., Barnes Medical College, St. Louis, 1898, aged 72, died, April 17, of heart disease.

Frank Barnett Farnsworth ☉ Janesville, Wis., Northwestern University Medical School, Chicago, 1898, one of the founders of the Munn-Farnsworth Clinic, aged 79, on the staff of the Mercy Hospital, where he died, May 5, of heart disease.

August Anton F. Gossow ☉ St. Charles, Mo., St. Charles, Mo., St. Louis College of Pharmacy, 1886, Beaumont Hospital Medical College, St. Louis, 1892, past president of the St. Charles County Medical Society, served during World War I, lieutenant colonel in the medical reserve corps of the U S Army, not on active duty, city physician, served two terms as coroner of St. Charles County, aged 74, died, April 27, in the Veterans Administration Facility, Jefferson Barracks.

William Henry Graham, Springfield, Ohio, Eclectic Medical Institute, Cincinnati, 1901, member of the Ohio State Medical Association, aged 67, died, April 13, of cerebral hemorrhage.

Benjamin H. Gray ☉ Richmond, Va., University College of Medicine, Richmond, 1903, specialist certified by the American Board of Obstetrics and Gynecology, Inc., professor of clinical obstetrics at the Medical College of Virginia, member of the South Atlantic Association of Obstetricians and Gynecologists, fellow of the American College of Surgeons, president and on the staff of the Stuart Circle Hospital, on the staff of the Memorial Hospital, aged 64, died, April 15.

Edgar M. Hughes, Truscott, Texas (licensed in Texas under the Act of 1907), aged 74, died, April 15, in a hospital at Wichita Falls of cerebral arteriosclerosis.

Frank Louville Judkins, Lynn Mass. Medical School of Maine, Portland 1879, member of the Massachusetts Medical Society, a founder, first president and for many years chief surgeon at the Union Hospital, aged 90 died April 20 as the result of injuries received in an automobile accident in March 1942

Mark Keller, McKeesport, Pa. University of Pittsburgh School of Medicine, 1924, aged 43, died, April 28, of heart disease.

Clifford Paul Krohn, Morrow Ohio Eclectic Medical Institute, Cincinnati, 1904, served during World War I, aged 70, died, April 13, in Cortez, Fla., of heart disease

Theophile Laurin, Lowell, Mass., Baltimore University School of Medicine, 1895, University of Bishop College Faculty of Medicine, Montreal, Que., Canada, 1899 member of the Massachusetts Medical Society, aged 72, died, April 10, of heart disease.

Winbon Joseph Long, Townsend Ga., University of Georgia Medical Department, Augusta, 1899, aged 68, died in April of cardiovascular disease

Franklin Fulforth Massey, Philadelphia, Hahnemann Medical College and Hospital of Philadelphia 1903, served as a captain with the American Expeditionary Forces during World War I and held a reserve officers' commission until 1926, past president of the board of health of Womelsdorf, Pa., at one time on the staff of the Homeopathic Hospital, Reading, Pa., aged 61, died April 9 in the Hahnemann Hospital of congestive heart disease, cirrhosis of the liver and uremia

Charles Lee McCann, Dallas Texas College of Physicians and Surgeons Baltimore 1887, aged 83 died, April 16, of arteriosclerotic heart disease and bronchopneumonia

Alvah John McCarter, Chicago Bennett Medical College, Chicago, 1914 member of the Illinois State Medical Society, served on the staff of the American Hospital, aged 63, died, March 31, in Menominee, Mich. of chronic myocarditis

Harold James McDonald ♂ Buffalo, St. Louis University School of Medicine, 1910 diagnostician for the city health department for many years, formerly city physician, served on the staffs of the Children's Hospital, Edward J. Meyer Memorial Hospital, St. Mary's Infant Asylum and Maternity Hospital and the Emergency Hospital of the Sisters of Charity, where he died, April 25, of acute congestive heart disease aged 54

Wilson Davis McNary ♂ Milwaukie, Ore., Vanderbilt University School of Medicine Nashville, Tenn., 1894, for many years superintendent of the Eastern Oregon State Hospital, Pendleton, aged 69, died, April 9, in the Good Samaritan Hospital, Portland

Daniel Arnel Metzgar, Braddock Pa., Western Pennsylvania Medical College, Pittsburgh, 1896 member of the Medical Society of the State of Pennsylvania, surgeon in chief at the Braddock General Hospital aged 71, died, April 17, at his home in Edgewood of coronary occlusion

John Robert Monihan, Cleveland University of Buffalo School of Medicine, 1912 served as a captain in the medical corps of the U. S. Army during World War I member of the staffs of St. Luke's, St. John's and Lutheran hospitals, aged 52 died April 21

Arthur Rembrandt Moore ♂ Portsmouth Ohio, Bellevue Hospital Medical College New York, 1892 during World War I served overseas as a captain in the medical corps of the U. S. Army city physician from 1935 to 1942, served on the staffs of the Mercy and Portsmouth General hospitals, aged 72 died, April 7, of angina pectoris

Edwin Jarrett Nevill, Houston Texas University of Nashville (Tenn.) Medical Department, 1874, aged 93 died May 16, in the Heights Hospital of heart disease.

William James O'Malley, Miami, Fla. Maryland Medical College Baltimore, 1912, served during World War I, aged 58, died April 11

Robert Linn Osborn, Clarksburg, W. Va. University College of Medicine, Richmond 1908 member of the West Virginia State Medical Association, veteran of the Spanish-American War and World War I, formerly a colonel in the West Virginia National Guard member and formerly chairman of the Harrison County Selective Service Board number 1, city health officer, aged 60 died April 13

Thomas Joseph O'Toole ♂ Eagle Grove Iowa Omaha Medical College, 1896 past president of the Wright County Medical Society, president of the Security Savings Bank, part owner of the O'Toole Christensen Hospital aged 72 died, April 14, of carcinoma of the throat.

Samuel M. Pittman, Galesburg Ill., Rush Medical College Chicago 1888, aged 80, died, April 16, in Galva of cerebral hemorrhage

Max Lawrence Polowe, New York University and Bellevue Hospital Medical College, New York, 1903, aged 63, died, April 14

Saul Max Rubinow ♂ Newark, N. J., University of Moscow Faculty of Medicine Russia, 1897, served as a captain in the medical corps of the U. S. Army during World War I, examining physician for Selective Service Board number 23, served on the staffs of the American Legion Memorial, Presbyterian St. James and Beth Israel hospitals vice president of North American Building and Loan Association and a director of Barton Savings and Loan Association, aged 70, died, April 13, of coronary thrombosis and arteriosclerosis

Matthew Maurice Ryan, Philadelphia, N. Y. The Hahnemann Medical College and Hospital Chicago, 1894, aged 75, died April 23, of myocardial degeneration

Campbell Sansing, Blossom Texas, Medical Department of Tulane University of Louisiana, New Orleans, 1895, formerly associated with the U. S. Veterans Bureau, aged 70, died, April 3, of a self-inflicted gunshot wound

Henry Timrod Schiffler ♂ Orangeburg S. C. Medical College of the State of South Carolina Charleston 1912 served overseas during World War I, aged 55 on the staff of the Tri-County Hospital, where he died, April 18 of chronic nephritis

Guy Graham Shaw Kautman, Texas, College of Physicians and Surgeons Little Rock, 1909, member of the State Medical Association of Texas health officer of Kaufman, formerly health officer of Kaufman County, aged 57, died recently in a Dallas hospital

Arthur Burton Shimer ♂ Atlantic City, N. J. Medico-Chirurgical College of Philadelphia, 1896, also a pharmacist, for many years on the staff of the Atlantic City Hospital, aged 74, died, April 23 of coronary thrombosis

Jacob Daniel Singer, Brighton Mich. Western Pennsylvania Medical College Pittsburgh 1896 for many years physician for the Detroit Recreation Camp near Brighton member of the Volunteer Medical Corps during World War I, aged 84 died, March 15

George C. Stemen, Denver Fort Wayne (Ind.) College of Medicine 1886, formerly on the staffs of the old Denver General Hospital the Mercy and St. Joseph's hospitals at one time a member of the state board of health formerly secretary of the Denver branch of the medical division of the bureau of pensions, aged 78, died, April 10, of carcinoma of the prostate

James Walter Stiles Jr., New York University and Bellevue Hospital Medical College, New York 1902, aged 63, died, April 13 of carcinoma of the prostate

Michael Sullivan, Alhambra Calif. College of Physicians and Surgeons Keokuk Iowa, 1878 at one time a pension medical examiner, served three terms as mayor of Adrian, Minn., and postmaster for four years aged 91, died, April 17, in Glendale of chronic myocarditis and arteriosclerosis

James Wallace Summers, Murfreesboro Tenn. (licensed in Tennessee in 1896), aged 74, died, April 17, in the Rutherford Hospital of heart disease

William Thomas Thornton ♂ Missoula Mont. American Medical Missionary College, Battle Creek Mich. and Chicago 1903 part owner of a hospital bearing his name, aged 65, died, April 28 of multiple myeloma

Leopold Wedeles, Chicago Deutsche Universität Medizinische Fakultät Prague Austria 1890 member of the Illinois State Medical Society, served on the staff of St. Anthony de Padua Hospital aged 80, died March 18, of pulmonary embolism

George Frank Zerzan ♂ Holbrook Kan. Rush Medical College Chicago 1900 also a pharmacist served during World War I aged 64 died March 22 in St. John's Hospital Salina of arthritis and carcinoma of the pancreas

CORRECTION

Commander Lipshutz Not Killed in Action.—Information recently received from Capt. Lowell F. Bushnell M. R. C. U. S. Army and the Surgeon General's Office U. S. Navy indicates that Lieut. Comdr. Joseph Lipshutz (MC), U. S. Navy died on Dec. 17, 1942 of a self-inflicted bullet wound. THE JOURNAL, March 27 page 1107 reported the death of Lieutenant Commander Lipshutz under "Killed in Action."

Correspondence

"BROMIDISM"

To the Editor—In *THE JOURNAL*, June 19, page 496, Nielsen reports a case of bromidism from prostigmine bromide. The data given, however, are inadequate for such a conclusion. The patient could not have taken the drug for more than two hundred days, and the larger doses much less time. She had raised the dose until she took 240 mg per day. Had she taken 240 mg for two hundred days it would equal 48 Gm.

Since the bromine content of prostigmine bromide is approximately 26 per cent, 48 Gm would be equivalent to 15 Gm of sodium bromide or 18 Gm of potassium bromide. At death the patient's blood contained 225 mg of bromide per hundred cubic centimeters. If the total blood volume was 4,000 cc the total bromide in the blood would be equivalent to 9 Gm of sodium bromide. With this volume of blood a person should weigh about 52 Kg (115 pounds).

We may assume that the bromide in the blood and in the other fluids is dispersed in the same ratio as the chlorides. The total sodium chloride in the body is normally about 0.3 per cent of the body weight. For a person of 52 Kg the sodium chloride therefore should be about 156 Gm, of which about 32 Gm would be in the blood. If the blood contains the equivalent of 9 Gm of sodium bromide, therefore, under our assumption which is based on accepted data, the amount of bromide in the body of the case cited would be $32 \times 156 \div 9 = 563$ Gm, or $1 \approx 44$ Gm of sodium bromide.

Since she consumed at most the equivalent of 15 Gm of sodium bromide in two hundred days, a large proportion of which would have been excreted, the likelihood of prostigmine bromide causing bromidism seems absurd. If the amount of bromide at death was 225 mg per hundred cubic centimeters of blood, it could not have come from the prostigmine bromide.

This seems to be another case of mistaken bromidism, of which there are already too many in the literature.

H A McGUIGAN, M D, Chicago

REPORTS OF SUCCESSFUL ARTIFICIAL DONOR INSEMINATIONS

To the Editor—Artificial donor insemination is rightfully taking its place in the armamentarium of the physician who treats infertility. However, only when the husband has been shown to be absolutely sterile and all efforts to effect male fertility have failed should donor insemination be attempted. Reports of successful cases are appearing in the literature with greater frequency.

It is advisable, when reporting single isolated successful cases, that the physician (for the protection of the family concerned) deliberately omit certain of the details from his report. The following are examples of the type of facts which are best left unreported:

- 1 The date of the child's birth or the date of the successful impregnation
- 2 The locale or environs of the mother's residence
- 3 The age, sex and description of the baby
- 4 Exact details of the past history of the barren couple which may possibly be used to throw light on their identity

On the other hand, the complete details of the case history, with the solitary exception of the identity of the individuals concerned, should be available to interested reputable physicians or to recognized national medical committees.

ARNER I WEISMAN, M D, New York

"THE MENACE OF TYPHUS IN EUROPE"

To the Editor—Reference is made to the editorial appearing in *THE JOURNAL*, June 5, on "The Menace of Typhus in Europe." The editorial is based on Biraud's summary of the typhus situation in Europe and North Africa and his account of the typhus vaccines now in use. In both Biraud's account and in the editorial the statement is made that in the presence of typhus epidemics a live virus vaccine should be used on account of the short period required for the development of protection.

The theoretical considerations concerning inoculations with a living virus to produce an active immunity are championed by some and condemned by others. The living virus used in the live virus typhus vaccines is not that of epidemic (louse borne) but of endemic (flea borne or murine) typhus. There has been no attenuation of this murine virus since adequate dosage in animals will produce the typical disease. From this then it would seem that we would expect to see actual cases of endemic (murine) typhus developing in a certain proportion of vaccinated individuals if (1) slightly too strong a dosage of living virus was administered or (2) the susceptibility of part of or the whole group was greater than expected. Actually both of these circumstances have occurred in field vaccination, witness Biraud's account of the Chilean experience which was written off as improper dosage, and the statements in previous reports that the reactions in Europeans are too severe to warrant its use.

In addition, it should be noted that a fair percentage of those inoculated get no protection whatever. Attention should be given to the fact that this vaccine, depending on the presence of a living agent, may and probably does contain contaminating organisms which per se may be dangerous. As to the evidence of the value of the living vaccines, it should be noted that in the field work in North Africa with this vaccine some two or more million individuals were vaccinated. It should also be noted that no adequate controls were used, and no definite conclusions as to its value in the control of epidemics is warranted.

The opinion of opponents to the use of a living typhus vaccine may be summed up by stating that it is the consensus that any living typhus vaccine so far suggested is too dangerous and too uncertain to use. This is surely true for our troops.

A great deal of work has been done in recent years on killed typhus vaccines, and our troops destined for areas where typhus is present are vaccinated with such a vaccine. The vaccine manufactured in America will produce antibodies within two weeks sufficient to protect animals against the subsequent inoculation of the living agent of the disease. Killed vaccine also employs strains of epidemic (louse borne) typhus for protection against the epidemic (louse borne) type of the disease. The vaccine produces in man less reaction than typhoid vaccine. This vaccine can be and is now being produced in practically unlimited quantity. The evidence as to its value may be summed up by stating that it apparently gives good protection against death from subsequently acquired typhus and may so modify a later attack of the disease as to warrant the hope that lice cannot become infected by feeding on such a patient. Whether or not an epidemic of typhus can be controlled by any vaccine alone has not as yet been determined. The killed vaccine is sterile and therefore entirely free of danger of infection caused either by the presence of living typhus rickettsiae or by other organisms.

The control of epidemics of typhus lies in proper care and protection of cases and efficient delousing measures. Vaccine (killed) should be used as an adjunct.

R E DYER, M D, Bethesda, Md

Director, National Institute of Health

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL* July 10 page 765

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* August 24 Sec Dr J S Rodman 225 S 15th St. Philadelphia

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written* Various center Sept 27 *Oral* Philadelphia Nov 26 Final date for filing application is August 16 Sec Dr C Guy Lane 416 Marlboro St., Boston

AMERICAN BOARD OF INTERNAL MEDICINE *Oral* New Orleans Aug 10-11 Final date for filing application is Aug 1 *Written* Oct 18 Final date for filing application is Sept 1 At St Sec., Dr William A Werrell 1401 University Ave Madison Wis

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written Part I* Locally Feb 12 Final date for filing application is Nov 15 Sec Dr Paul Titu 1015 Highland Bldg Pittsburgh Pa

AMERICAN BOARD OF OPHTHALMOLOGY *Oral Parts I and II* Chicago Oct 8-9 Sec Dr John Green 6830 Waterman Ave St Louis Mo

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Written and Oral Part I* New Orleans Oct 8-9 New York Oct 15-16 Chicago Oct 22-23 San Francisco Oct 29-30 Final date for filing application is Aug 10 *Written and Oral Part II* Chicago Jan 21-22 Sec Dr Guy A Caldwell 3503 Prytania St New Orleans Louisiana

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Chicago Oct 6-9 Sec Dr Dean M Lierle University Hospital Iowa City Iowa

AMERICAN BOARD OF PEDIATRICS *Written* Locally Oct 8 *Oral* New York City Nov 20-21 Cincinnati Dec 11 Final date for filing applications is Aug 10 Sec Dr C A Aldrich 707 Fullerton Ave Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *Written* Locally Oct 30 *Oral* Locally Dec 20-21 Final date for filing application is Sept 30 Sec Dr Walter Freeman 1025 Connecticut Ave NW Washington D C

AMERICAN BOARD OF SURGERY *Written Part I* Oct 7 Final date for filing application is Aug 1 Sec Dr J S Rodman 225 S 15th St Philadelphia

AMERICAN BOARD OF UROLOGY *Oral* Chicago February *Written* Various centers December Final date for filing application is Nov 1 Sec Dr Gilbert J Thomas 1409 Willow St Minneapolis Minn

Miscellany

THE EARLIEST DEMONSTRATION OF THE TUBERCLE BACILLUS IN THE UNITED STATES

Baldwin¹ writes that 'Edward L Trudeau was one of the earliest in America to appreciate the discovery made by Koch in 1882. He did not have the advantage of first hand contact with Koch as did Welch, Prudden and H P Loomis. Nevertheless he quickly acquired the technic of staining the bacillus from Prudden and Hodenpyl of the old laboratory of the College of Physicians and Surgeons in New York, as has been so graphically told in his autobiography. It is related that the late Surgeon General George M Sternberg was believed by his wife to be the first to stain the tubercle bacillus in America. However Dr T Mitchell Prudden visited Koch's laboratory in 1885 and brought back a thorough knowledge of the methods of the master.'

According to Winslow² the elder Flint brought the news of Koch's discovery to Welch who before many weeks were past succeeded in staining the bacillus by Koch's methods and also demonstrated it to his colleagues.

In the biography of her husband Mrs Sternberg³ states (p 87) that in 1881 he demonstrated and photographed the tubercle bacillus discovered by Professor Koch earlier in the

same year. I am informed on good authority that this was the first demonstration of the organism in America. A statement to the same effect is made on page 255. Obviously 1881 is a mistake, because Koch's announcement of his discovery was made on March 24, 1882.

Trudeau⁴ was immediately impressed with the full significance of Koch's discovery. He could not read German and was much pleased to receive for Christmas, apparently in 1882, an English translation of Koch's paper. In his account of learning to stain the bacillus he does not state clearly just when he worked in Prudden's laboratory, perhaps in 1883 or 1884. In 1885 he was staining the bacillus for diagnostic purposes. 'In the fall of 1885, as soon as I had equipped my little laboratory room I began to work. At first my knowledge was limited to the detection of tubercle bacilli in the secretions of patients' (p 201). At this time he began to cultivate the bacillus and he was undoubtedly the first one to do so in this country.

No account of the early study of the tubercle bacillus in this country is adequate without mention of the remarkable work of William T Belfield and Henry Gradle.⁵

When Koch's announcement was made, Belfield, then in Vienna, described the event in letters to a Chicago medical journal.⁶ Soon after his return he showed the tubercle bacillus at a meeting (October 1882) of the Chicago Pathological Society.⁷ This appears to be the first public demonstration of the bacillus in this country. Belfield remarked that on a recent occasion he had found the bacillus in 22 specimens of sputum. In February 1883 he gave the Cartwright Lecture⁸ in New York, discussing in detail the discovery and the significance of the tubercle bacillus (pp 67-95) as well as the methods of staining it (p 129). He emphasized the diagnostic value of examining the sputum for the bacillus with clinical examples (p 90). In the summer of 1883 he stained the bacillus in the course of a necropsy in a case of pulmonary tuberculosis before medical students in the morgue of the Cook County Hospital, Chicago.⁹

In the same year 1883 Henry Gradle¹⁰ on his return from study abroad where he had worked with Koch also published a book on bacteria and disease in which the tubercle bacillus (pp 152-170) and its staining (p 162) are described in detail. On page 162 he wrote 'Apart from the fundamental scientific importance of Koch's work it has almost at once led to immediate practical results. Koch's own statement, that the bacilli are often present in the sputum of consumptives has been confirmed by a host of other observers so that the microscopic examination of the sputum possesses now a decided diagnostic value. It is necessary hence, to become acquainted with the mode of demonstrating the bacilli.'

The importance of microscopic examination in the diagnosis of consumption was emphasized also in a paper with Woltman early in 1883.¹¹

Belfield and Gradle were among the first in not the very first, to demonstrate adequately the tubercle bacillus in this country. It is noteworthy too that the book each wrote is one of the earliest books in the English language on the relations of micro-organisms to disease.

4 An Autobiography of Edward Livingston Trudeau Philadelphia and New York Lea & Febiger 1916 Trudeau E L An Experimental Research on the Infectiousness of Nonbacillary Phthisis Am J M Sc 59 361 (Oct.) 1885

5 Hektoen Ludwig Notes on the History of Bacteriology in Chicago Bull Soc Med History or Chicago 5 3 (Jan) 1937

6 Chicago M J & Examiner 44 613 (May) 45 37 (June) 170 (July) 1882

7 Chicago M J & Examiner 45 216 (Oct) 1882

8 Belfield W T On the Relations of Micro-Organisms to Disease The Cartwright Lectures Delivered Before the Alumni Association of the College of Physicians and Surgeons New York Feb 19 21 24 and 27 1883 M Record 23 197 225 250 261 309 1883 These lectures were published in book form under the same title by Trow 1883

9 Holme B Medical Education in Chicago in 1882 and After Medical Lite 28 9 (Jan) 1921

10 Bacteria and the Germ Theory of Disease Eight Lectures Delivered at the Chicago Medical College by Dr Henry Gradle Professor of Physiology Chicago Medical College Oct 10 to the Michael Reese Hospital Chicago W T Keener 1883

11 Gradle Henry and Woltman H The Diagnosis of Consumption by Means of the Microscope Medical News 42 124 (Feb 17) 1883

1 Baldwin E R History of Tuberculosis Research in America Yale J Biol & Med 15 303 (Jan) 1945

2 Winslow C E A The Life of Herman M Biggs Philadelphia Lea & Febiger 1929 p 50

3 George Miller Sternberg A Biography by His Wife Martha L Sternberg Chicago American Medical Association 1920

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Angulation Following Complete Fracture of Humerus—The plaintiff, a boy aged 14 years at the time, suffered "a complete breaking" of the humerus of the left arm approximately at the junction of the lower and middle thirds of the humerus, the two broken ends of which overlapped. The child was taken to a hospital operated by the defendant partnership of physicians and was attended at times by different physicians, all of whom were orthopedists and were either employees of the partnership or copartners in the group. The fracture was reduced and traction applied. Some time later after the application of a plaster cast, the child was released from the hospital but returned at different times for observation and treatment. Considerable difficulty was experienced in effecting a union, and when union was effected angulation was present, the arm was $\frac{1}{2}$ inch shorter than before fracture and there was a large knob of bone at the point of union. An action for malpractice was instituted against the copartnership and the physicians who attended the patient. The jury returned a verdict for the patient for \$8,500 and from a judgment on the verdict and from an order denying a motion made by the defendant physicians for judgment notwithstanding the verdict, the physicians appealed to the district court of appeal, second district, division 1, California.

In effect, the sole question for the determination of the appellate court was whether or not under the applicable law there was sufficient evidence in the record to support the verdict of the jury in favor of the patient. The degree of care and skill, said the court, required of physicians in treating patients is recapitulated in *Adams v. Boyce*, 37 Cal App (2d) 541, 99 P (2d) 1044, in part, as follows:

The law on the subject of the care and skill required of physicians in the treatment of patients is well settled and was epitomized in the case of *Hesler v. California Hospital Co*, 178 Cal 764, 767, 174 P 654, 655, where it was said that the law requires of the physician only "first, that he shall have the degree of learning and skill ordinarily possessed by physicians of good standing practicing in that locality, and second, that he shall exercise reasonable and ordinary care and diligence in treating the patient and in applying such learning and skill to the case. The law takes cognizance of human weakness and liability to err in the application of skill and learning and it requires only the exercise of reasonable and ordinary care and diligence to avoid error."

Concerning the obligations assumed by a physician when he undertakes to treat a patient, it is said in the same case at page 766 of 178 Cal at pages 655 of 175 P:

"A physician and surgeon, by taking charge of a case impliedly represents that he possesses, and the law places upon him the duty of possessing, that reasonable degree of learning and skill that is ordinarily possessed by physicians and surgeons in the locality where he practices, and which is ordinarily regarded by those conversant with the employment as necessary to qualify him to engage in the business of practicing medicine and surgery. Upon consenting to treat a patient, it becomes his duty to use reasonable care and diligence in the exercise of his skill and the application of his learning to accomplish the purpose for which he was employed. He is under the further obligation to use his best judgment in exercising his skill and applying his knowledge." *Pike v. Honsinger*, 155 N Y 201, 209, 49 N E 760, 762, 63 Am St Rep 655. "The difficulties and uncertainties in the practice of medicine and surgery are such that no practitioner can be required to guarantee results, and all the law demands is that he bring and apply to the case in hand that degree of skill, care, knowledge, and attention ordinarily possessed and exercised by practitioners of the medical profession under like circumstances." *Zotere v. Repp*, 187 Mich 319, 330, 153 N W 692, 695. "It is never enough to show that he has not treated his patient in that mode, nor used those measures, which in the opinion of others, even medical men, the case required, because such evidence tends to prove errors of judgment, for which the defendant is not responsible, as much as the want of reasonable care and skill, for which he may be responsible." *Leighton v. Sargent*, 27 N H 460, 474, 59 Am Dec 388.

What is or what is not, continued the court, proper practice on the part of the physician is uniformly a question for experts and can be established only by the testimony of such experts.

But it is not required that the evidence demonstrate conclusively and beyond possibility of a doubt that the defendants' negligence was the proximate cause of the plaintiff's injury, it is sufficient if there is substantial evidence which reasonably supports the judgment.

A medical expert witness called by the plaintiff was asked a hypothetical question concerning the treatment rendered by the defendant physicians predicated on (1) an alleged failure by the defendant physicians to have roentgenograms of the patient's arm taken frequently enough to keep them advised of the progress of the healing of the broken bone, (2) a failure properly to read or evaluate the roentgenograms themselves and then to take the necessary steps to correct the apparent progress of angulation of the union, (3) a possibility that too much traction had been applied, thereby keeping the broken ends of the bone apart so that they did not unite properly and straight, (4) a failure to maintain traction and casts on the arm for a sufficient length of time and (5) a failure to take proper measures to correct the angulation before the broken bone formed in a solid union impossible of being straightened except by operative means. In answer to the question and assuming the truth of the assumed facts, the witness stated that, in his opinion, the defendants did not exercise that degree of care and skill exercised and possessed by the average physician practicing in the locality and that "there was a degree of carelessness through the entire procedure," as stated in the hypothetical question. The testimony of this witness, in the court's opinion, was sufficient to support the verdict of the jury against the defendant physicians. Finally, said the court, when there is substantial evidence, as here, "from which the jury could infer that the course of treatment persisted in by defendant [sic] was not of that care, diligence and skill possessed and used by prudent, skillful and careful practitioners of medicine practicing in the same vicinity" a reviewing court will not set aside a determination of a jury that the defendant had been negligent.

The trial court instructed the jury that since the defendant physicians had held themselves out to be specialists and experts in the treatment of injuries such as that sustained by the plaintiff they must have and use the same degree of knowledge and skill ordinarily possessed and used by other specialists and experts of the same type in the particular locality and would be held to a standard of care and skill higher than that possessed and utilized by the ordinary practicing physician. The defendants contended that this instruction told the jury that there was required in this case a higher standard of care than generally in actions of this kind. But, answered the court, all defendants in this case were orthopedists and held themselves out as such. An orthopedist is a surgeon engaged in that branch of medicine which deals with the correction of deformities and chronic diseases of the joints and spine and, as stated in *Hopkins v. Heller*, 59 Cal App 447, 210 P 975:

One who holds himself out as a specialist in the treatment of a certain organ, injury or disease, is bound to bring to the aid of one so employing him, that degree of skill and knowledge which is ordinarily possessed by those who devote special study and attention to that particular organ, injury or disease, its diagnosis and its treatment, in the same general locality, having regard to the state of scientific knowledge at the time.

The instruction complained of, concluded the court, correctly sets forth the duty of the defendants in this case.

The judgment in favor of the patient was accordingly affirmed.—*Sansom v. Ross-Loos Medical Group*, 134 P (2d) 927 (Cal), 1943).

Society Proceedings

COMING MEETINGS

Oregon State Medical Society, Portland, Sept 4-5, Dr T Robertson, St Vincent's Hospital, Portland, Secretary.
Utah State Medical Association, Salt Lake City, Aug 27-29, D D Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent position only from them.

Titles marked with an asterisk (*) are abstracted below.

American J Digestive Diseases, Fort Wayne, Ind 10 121-160 (April) 1943

- Gastric Acidity Nutritional Hydration and Appetite F Hoelzel — p 121
Observations on Starvation Diets and Hunger Ketosis G F Dick, M G Coldner and T P Singer — p 124
Treatment of Diabetes Mellitus Without Regard to Hyperglycemia and Glycosuria H J John — p 129
Some Problems in Diagnosis of Cancer of Colon and Rectum A Trasoff and D H Goodman — p 132
Ketosis in Health and Disease J H Barach — p 134
Postratal Treatment of Biliary Colic (Its Relation to Prevention of Acute Cholecystitis) D MacDonald — p 138
Biliary Constipation H Gruss — p 141
Cross Hemorrhage from Rectum C J Drueck — p 144
Metastatic Melanotic Sarcoma to Ileum Causing Intussusception J R Phillips — p 147
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American Journal of Hygiene, Baltimore 37 121-238 (March) 1943

- Studies on Nutrition of Tapeworms A C Chandler — p 121
Urban Air Pollution and Respiratory Diseases C A Mills — p 131
Effect of Trichomonas vaginalis on Tissue Culture Cells Mary Jane Hogue — p 142
Duck as Host for Avian Malaria R D Manwell and A E Hatheway — p 153
*Epidemiology of Pneumococcus Prevalence of Pneumococci in Throats of Group of Homeless Men W G Smilie F A Calderone and Jeanne M Onslow — p 156
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Tuberculosis Studies in Tennessee Morbidity and Mortality in White Households During Period of Observation H C Stewart R S Gass Ruth R Puffer and W C Williams — p 193
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Occurrence of Salmonella in Retail Meat Products W B Cherry M Scherago and R H Weaver — p 211
Mouse Adapted Lansing Strain of Poliomyelitis Virus III Comparison with Strain of Mouse Encephalomyelitis Virus Isolated from Intestines of Normal Mice L E Young and Mary C Cumberland — p 216
Failure to Demonstrate Synergism Between Diphtheria Toxin and Extracts of *Corynebacterium diphtheriae* Gravis M Frobisher Jr and Evelyn A Mauss — p 225
Antigenicity of Diphtheria Toxin in Chicks Mice and Rats Evelyn A. Mauss and M Frobisher Jr — p 234

Prevalence of Pneumococci in Throats—The report by Smilie and his collaborators is a summary of the results of a study carried on from December to June of the years 1940 and 1941 of the prevalence of various types of pneumococci in the nasopharynxes of a group of occupants of one of the New York City municipal lodging houses. The purpose of the study was to determine the spread from person to person of the various types of pneumococci under conditions most favorable for transmission. The authors hoped to detect the invasion of a virulent strain of pneumococcus before the occurrence of actual disease and to follow the dispersion of this organism through the community. In the 111 men all the standard pneumococcus types except I and XXIII were encountered as well as many unusual types. Conditions were highly favorable for the

exchange of nasopharyngeal flora, and a multiplicity of types was found in many individuals, 1 man harboring seven different pneumococcus types. Many men were persistent carriers of the same type of pneumococcus. A type II pneumococcus invaded the community about February 24. Although everything seemed favorable for its dissemination through the group, only 4 men acquired the strain, and no lobar pneumonia or other serious consequences resulted. This is contrary to the experience in previous studies.

American Journal of Medical Sciences, Philadelphia 205 313-468 (March) 1943

- Vasomotor and Other Reactions to Injuries and Venous Thrombosis J Homans Boston — p 313
*Some Observations on Gastritis and Peptic Ulcer Mary M Maher, M M Zimninger L Schiff and N Shapiro Cincinnati — p 328
Late Postoperative Follow Up Studies on Patients with Recurrent Appendicitis G J Willauer Philadelphia and J F O'Neill Winston Salem N C — p 334
*Absorption Excretion and Toxicity of Penicillin Administered by Intrathecal Injection C H Rammelkamp and C S Keefer Boston — p 342
Fibrinolysin Test Following Hemolytic Streptococcus Infections H Yan net and A Leibovitz Southbury Conn — p 350
Specific Gravity of Whole Blood and Serum P A Gray and A H Elliot Santa Barbara Calif — p 356
Chemical Fractionation from Exudates of Factor Promoting Leukocytosis V Menkin and M A Kadish with assistance of A A Warren Boston — p 363
*Erythroblastosis Fetalis and Blood Factor Rh D H Kariher and H A Spindler Rochester N Y — p 369
Absorption of Sulfadiazine After Oral and Intraperitoneal Administration in Dogs and After Intraperitoneal and Local Administration in Man A M Ambrose A Griswold and J E Hamilton Louisville Ky — p 376
Prevention of Infectious Ulcerative Cecitis in Young of Rats by Chemotherapy of Mother A L Bloomfield and W Lew San Francisco — p 383
Clinical and Electroencephalographic Observations in Severe Epilepsy Under Treatment D Goldman Cincinnati — p 388
Minerals and Toxemias of Pregnancy C T Javert Cesira Macri and Katherine Kuder New York — p 399
*Treatment of Lead Poisoning by Sodium Citrate S S Kety and T V Letonoff Philadelphia — p 406
Specific Dynamic Action of Protein M S Abel Philadelphia — p 414

Gastritis and Peptic Ulcer—Of 40 patients with peptic ulcer Maher and her associates made satisfactory gastroscopic examinations of 28. Thirty-six of the patients were subjected to a partial gastrectomy and 4 were studied post mortem following injection of the stomach with solution of formaldehyde immediately after death. The criteria of gastritis were essentially those of Schindler. Atrophic gastritis of an arbitrary grade 1 to 4 was observed microscopically in 36 of the 40 patients. The gastritis did not vary essentially from that of 35 patients with gastric cancer except that hyperplasia was present in 16. The gastric mucosa appeared normal in 12 superficial gastritis was present in 10 and either hypertrophic gastritis or hypertrophic and superficial gastritis was present in 6 of the 28 patients on whom satisfactory gastroscopic examinations were made within one month of resection or necropsy. Microscopically, atrophic gastritis was present in the 12 cases that were normal at gastroscopy and in 13 of the remaining 16. This discrepancy may be explained partially by the presence of some atrophic gastritis in the so called normal stomach and by the masking of atrophic changes by superficial or hypertrophic gastritis. The fact that the gastritis associated with peptic ulcer is similar to that seen with gastric cancer suggests that the gastritis by itself may not be a specific precursor of either gastric cancer or peptic ulcer. The frequent microscopic evidence of atrophic gastritis in an apparently normal stomach indicates the necessity for further study of control groups of stomachs.

Penicillin Administered by Intrathecal Injection—The effect of penicillin on certain types of staphylococcal and pneumococcal meningitis which failed to respond to the sulfonamide drugs was studied by Rammelkamp and Keeter. Penicillin appeared in the blood stream for several hours after its intrathecal injection into patients with meningitis and its excretion was increased suggesting that penicillin is absorbed more rapidly when the meninges are inflamed. The results following injection into closed cavities were similar to those after intra-

theeal injections in normal subjects in that absorption was slow and the total amount excreted in the urine was small. Significant amounts of penicillin remained in the spinal fluid for twenty-four hours. An intrathecal injection of 10,000 Florey units into a normal subject was followed by nausea, vomiting and headache. When 5,000 Florey units were injected, the only toxic symptom was a mild headache. There was a slight increase in the number of cells in the spinal fluid without an increase in the intrathecal pressure. In the presence of meningitis or cerebral abscess the injection of 3,000 to 10,000 Florey units was not attended by toxic symptoms. Necropsy on 2 subjects revealed penicillin in significant concentrations in the cisterna magna and the third ventricle, indicating that after lumbar injections the antibiotic agent will diffuse throughout the ventriculosubarachnoid space.

Erythroblastosis Fetalis and Blood Factor Rh—Six cases of fetal erythroblastosis are reported which, Kariker and Spindler state, support the thesis of isommunization of the mother by the Rh agglutinin from the fetus as being responsible for erythroblastosis of the litter. Because of antepartum Rh studies on the mother of 1 of the infants, the subsequent delivery of an erythroblastotic infant was expected. The infant was treated by numerous transfusions of Rh—, anti Rh— blood. This therapy is recommended for all cases of erythroblastosis. The case of a "habitual aborter" is described in which the absence of the Rh factor in the mother seemed to be the cause of the repeated abortions. It is suggested that the term "erythroblastosis" be dropped and the conditions icterus gravis, fetal hydrops, hemolytic anemia and the like be included under the term "hemolytic disease of the newborn."

Sodium Citrate Treatment of Lead Poisoning—Kety and Letonoff used sodium citrate in the treatment of 15 adult patients with lead poisoning. The administration of sodium citrate caused a definite fall in the concentration of lead in the blood of every patient. After twenty days of citrate therapy there was no value over 0.1 mg per hundred grams. In a few patients the initial fall in blood lead was followed by a secondary rise during the course of the therapy. This rise was never great, the patients were free from symptoms during its occurrence and when the observations were continued the blood lead concentrations fell once more. Before citrate therapy the colic of 12 of the 15 patients required belladonna or opiates for its control. After citrate treatment was instituted these drugs were not necessary and abdominal pain did not recur. The one symptom that did not respond to citrate therapy was constipation. However, under citrate treatment 4 of the 7 so affected patients did improve. All patients had evidence of moderately severe anemia. In 3 of the 10 whose hemoglobin was determined before and after treatment a definite increase was shown, a slight increase in 3 and a slight decrease after citrate therapy in 4. Drugs containing iron were not used during the study. All patients experienced a definite general improvement and feeling of well being in addition to improvement in specific symptoms soon after citrate therapy was begun. No reactions attributable to sodium citrate or to lead were observed, nor did symptoms of alkalosis appear, and there was no significant change in alkali reserve or total base of the blood.

Annals of Internal Medicine, Lancaster, Pa

18 271-444 (March) 1943

- Type VIII Pneumococcus Development of Sulfadiazine Resistance, Transmission by Cross Infection, and Persistence in Carriers A W Frisch, A E Price and G B Myers—p 271
- Review of Drastic Shock Therapies in Treatment of Psychoses F G Ebaugh—p 279
- Tuning Fork Auscultation Test for Abdominal Adhesions B B V Lyon—p 297
- Allergy to Injectable Liver Extracts Clinical and Immunologic Observations S M Feinberg, H L Alt and R H Young—p 311
- Cardiac Problems in Wartime P D White—p 323
- Myxedema Heart Pathologic and Therapeutic Study J S La Due—p 332
- Abdominal Pain in Pulmonary Thrombosis W S Middleton—p 345
- Ten Years' Experience with Thorotrast Hepatosplenography W M Yater and F O Coe—p 350
- Recording Sphygmomanograph Machine for Continuous Recording of Systolic and Diastolic Arterial Pressure in Man K Lange—p 367

Annals of Surgery, Philadelphia

117 321-480 (March) 1943

- Continuous Caudal Analgesia in Surgery J L Southworth, W B Edwards and R A Hingston—p 321
- Early Mortality of Burns as Influenced by Rapid Tanning and by Transfusions R Elman—p 327
- Gutter Incisions I H Lahey—p 332
- Preoperative and Postoperative Use of Metal Tipped Gastroduodenal Tube as Aid in Surgical Treatment of Duodenal Obstruction in Newborn L P Morris, A C McGuinness, H T Lee, J E Rhoads and W E Lee—p 348
- Congenital Cystic Dilatation of Common Bile Duct Case Report and Review of Literature T A Shallow, S A Eger and F B Wagner—p 355
- Indications for Jejunal Alimentation in Surgery of Peptic Ulcer R Colp and I J Bruckerman—p 387
- Diverticula and Variations of Duodenum W Ackermann—p 403
- Gastrojejunocolic Fistulas with Special Reference to Associated Nutritional Deficiencies and Certain Surgical Aspects J S Atwater, H R Butt and J I Priestley—p 414
- Acute Ileus Analysis of 130 Cases Operated on at Presbyterian Hospital, New York City, from 1936 to 1939, Inclusive, with Use of Miller Abbott Tube in 1938 and 1939 Beverly C Smith and F T Van Beuren—p 427
- Islet Cell Carcinoma of Pancreas with Metastasis H A Hanno and R W Brink—p 437
- Cholesterosis of Gallbladder Observations on 25 Cases Without Stones K M Lewis and C W Peterson—p 450
- Late Invasion of Bladder and Prostate in Cancer of Rectum or Rectosigmoid Following Abdominoperineal Resection G D Oppenheimer—p 456
- Chochilomyia Americana Infestation in Man Case Report R O Pearman and L Haseman—p 468

Archives of Internal Medicine, Chicago

71 443-582 (April) 1943

- *Streptococcal and Pneumococcal Infections of Nose and Throat in Young Adults Incidence, Epidemiology and Clinical Features P S Rhoads and M E Afremow—p 443
- Renal Concentration Test Using Solution of Posterior Pituitary H F Wall—p 454
- Studies on Action of Quinidine in Man I Measurement of Speed and Duration of Effect Following Oral and Intramuscular Administration E L Sagall, C D Horn and J E F Riseman—p 460
- Effects of Vitamin A Depletion in Young Adults Sadie Brenner and Lydia J Roberts—p 474
- Excretion of Coproporphyrin in Hepatic Disease IV Isolation and Identification of Urinary Coproporphyrin Isomers S Nesbitt—p 483
- Copper and Iron in Human Blood A Sachs, V E Levine, F C Hill and Rita Hughes—p 489
- Aneurysm of Heart J H Crawford—p 502
- *Enterococcal Infections Evaluation of Importance of Fecal Streptococci and Related Organisms in Causation of Human Disease L A Rantz and W M Kirby—p 516
- Concentration of Carbon Dioxide in Expired Air in Heart Disease P K Boyer and C V Bailey—p 529
- Kinetics of Respiration in Experimental Pulmonary Embolism R S Megibow, L N Katz and M Feinstein—p 536
- Electrocardiographic Changes with Exercise Their Relation to Age and Other Factors W H Barrow and R A Ouer—p 547
- Night Cramps and Quinine A Gootnick—p 555
- Liver and Biliary Tract Review of Literature for 1942 C H Greene—p 563

Infections of Nose and Throat in Young Adults—Rhoads and Afremow found that hemolytic streptococci were responsible for about two thirds of the attacks of tonsillitis, pharyngitis, laryngitis and sinusitis in young adults. These diseases are probably more frequent and cause more disability than any other diseases affecting this age group. The serious results of allowing carriers of hemolytic streptococci to circulate in groups of young adults, such as soldiers in barracks, is apparent. Cultures should be made in all instances of infection of the throat or the nose. Serious consideration should be given to quarantining persons harboring hemolytic streptococci in the throat or the nose or green-forming cocci in the nose.

Enterococcal Infections—Rantz and Kirby isolated enterococci from various materials obtained from more than 200 persons. Enterococci are bacteria of relatively low virulence and invasiveness but are not infrequently responsible for serious local or generalized infection. Enterococci whose normal habitat is the human bowel form a group of hemolytic and non-hemolytic streptococci of unique biologic properties and are members of the Lancefield group D. They are exceedingly resistant to the bacteriostatic action of sulfonamide compounds and are more frequently isolated from human clinical material other than the respiratory tract than any other streptococci.

Archives of Otolaryngology, Chicago

37 463 608 (April) 1943

- Otomycetitis of Skull Resulting from Infection in Sinuses W L Simpson—p 463
- Local Use of Sulfathiazole in Otolaryngologic Practice R A Fenton—p 491
- *Local Use of Sulfathiazole Powder for Acute Pharyngeal Infections M S Freeman—p 496
- On Planning Nasal Surgery A W Proetz—p 502
- Recoveries from Staphylococcal Meningitis Following Bacteriophage Therapy W J MacNeal Frances C Lister and Anne Blevins—p 507
- Mediastinal Emphysema and Bilateral Simultaneous Pneumothorax Complicating Tracheotomy in an Adult W P Work—p 506
- Subdural Abscess Complicating Frontal Sinusitis B S Ray and H Parsons—p 536
- Cyst of Larynx N Fox and R Dimolt—p 552
- Constricting Double Aortic Arch Report of Case P A Herbut and T T Smith—p 558
- Anatomy and Physiology of Ear J R Richardson—p 567

Sulfathiazole Powder in Pharyngeal Infections —

Thirty-four patients with acute pharyngeal infections were treated by Freeman with topical application of sulfathiazole powder. The criteria for inclusion in the series were (1) a history of sore throat or dysphagia with or without systemic manifestations and (2) physical findings consistent with the diagnosis of acute infection of the pharynx or nasopharynx. Sulfathiazole powder was applied to the pharyngeal mucosa with a compressed air powder syringe until it thickly coated the involved areas. Nasopharyngeal applications were made through the nose or with a shortened eustachian tube catheter placed behind the soft palate. The dose varied between 1 and 2 Gm per treatment. Much of this was lost by expectoration, but examination at one, two three and four hour intervals following treatment revealed a surprisingly large amount of the powder clinging to the nasopharyngeal and pharyngeal mucosa in the vallecula and in the crypts of the tonsils. The patients were instructed to avoid eating or drinking for two hours following treatment and were told to use no other form of therapy. Subjective improvement was noted in one to twenty-four hours after the first treatment with an average of ten hours. Objective improvement was obtained in from twenty-four to fifty-six hours with an average of 24.6 hours. From one to four treatments at twenty-four hour intervals were required. Of 18 of these patients who were followed at twenty four hour intervals with determinations of the free sulfathiazole in the blood only 5 (27.7 per cent) showed any presence of the drug. Subjective and objective improvements were rapid especially in cases of acute nasopharyngitis. The duration of the disease was decreased considerably. In 1 case of follicular tonsillitis the patient who had received treatment returned three days later with an incipient peritonsillar abscess which was promptly aborted by sulfanilamide given orally and hot irrigations of the throat. Three patients with acute pharyngitis and coryza obtained subjective relief from their symptoms within three hours but the disease subsequently ran the course of a typical catarrhal rhinosinusitis. In 2 cases of tonsillar ulceration due to Vincent's organisms no improvement was obtained. The possibility of systemic damage from the use of sulfathiazole is negligible with this method of treatment. The method is inexpensive and is easily carried out on ambulatory patients.

Staphylococcal Meningitis Recoveries Following Bacteriophage Therapy—MacNeal and his collaborators were able to find records of only 48 acceptable examples of recovery from staphylococcal meningitis. During ten years of bacteriophage therapy of staphylococcal infections they recorded 11 recoveries from staphylococcal meningitis of which 7 are considered acceptable as recoveries from diffuse cerebrospinal staphylococcal leptomeningitis. Two of the cases have been previously reported. One patient who apparently recovered from diffuse meningitis subsequently died after unsuccessful craniotomy for an abscess of the brain and is therefore omitted from the group of valid instances of recovery. A case of local cerebral meningitis and 1 of local cervical pachymeningitis with recovery are also not included in the group of diffuse meningitis. Recovery from staphylococcal meningitis may be achieved by skilful use of bacteriophage without other therapy. The authors recommend the use of a sulfonamide drug preferably

sulfathiazole or sulfapyridine along with bacteriophage. Antitoxic serum may also be added to this therapeutic combination during the first week. Bacteriophage therapy should be continued long after apparent clinical recovery in order to prevent the development of dangerous sequelae, especially abscess of the brain.

Bulletin of Johns Hopkins Hospital, Baltimore

72 127-202 (March) 1943

- *Treatment of Essential Hypertension by Sympathectomy Report on 12 Patients Three to Seven Years Following Operation J Bordley 3d M Goldston and W E Dandy—p 127
- Constrictive Pericarditis Due to Bacterium Tularensis Report of Case and Review of Reported Cases of Pericarditis Occurring with Tularemia B A Jager and J C Ransmeier—p 166
- Preparation and Properties of Bacteriologic Peptones I Enzymic Hydrolyates of Casein E Leitson—p 179

Sympathectomy in Hypertension—Bordley and his associates report the results of splanchnicectomy in the treatment of 12 patients with essential hypertension. Ten of these have been followed for three to seven years after the operation. Two died shortly after operation. The sole criterion for operation was the presence of incapacitating symptoms. In 3 patients a supradiaphragmatic splanchnicectomy (Peet operation) and in 9 an infradiaphragmatic splanchnicectomy (Adson-Craig operation) was performed. The level of arterial pressure was lowered for six to eighteen months in 4 of the 9 patients treated by the infradiaphragmatic operation and for four and one-half years in 1 of the 3 patients treated by the supradiaphragmatic operation. Symptomatic relief appeared to depend on lowered arterial pressure in 4 of 9 patients in whom it occurred. In 2 patients abnormal findings in the heart and eyegrounds regressed during the period of lowered arterial pressure and returned after the arterial pressure again rose. Return of arterial pressure to preoperative hypertensive levels was not associated with regeneration of sympathetic nerves supplying the lower extremities which were severed during the Adson-Craig operation.

Kansas Medical Society Journal, Topeka

44 73-108 (March) 1943

- Fundamentals of Psychiatry VI Psychosexual Development W C Menninger—p 73
- Acute Iritis Acute Conjunctivitis Acute Glaucoma and Their Differential Diagnosis A L Pettis—p 8

New York State Journal of Medicine, New York

43 481-576 (March 15) 1943

- Rhabdomyosarcoma in Lower Urinary Tract R W Hunt—p 513
- Transurethral Prostatectomy W A Milner—p 517
- Summary of Endocrine Effects in Advanced Prostatic Cancer C Hug—p 519
- Late Results Following Transurethral Prostatic Resection L M Orr P R Kundert and T J Pyle—p 521
- What's Wrong with Our School Health Service H H Mitchell—p 527
- Ways to More Effective School Health Service G M Wheatley—p 529
- Education and Health E C Jessup—p 533
- Absorption of Carbon Dioxide from Anesthesia Apparatus D H Batten—p 539

Pennsylvania Medical Journal, Harrisburg

46 529-656 (March) 1943

- Chronic Cholecystitis Indications for Medical Treatment D MacDonald—p 543
- Panel Discussion on Intravenous Therapy R L Haden J E Rhoad M Strumia L Hollander and G J Thomas—p 549
- Points in Pathogenesis of Silicosis of Practical Importance in Its Diagnosis S R Haythorn—p 561
- Resume of Sulfonamide Drugs in Ophthalmology E B Spaeth—p 566
- Pharmacology of More Recent Drugs E F Kelly—p 569
- Treatment of Fractures of Long Bones by Open Operation D M Headings—p 573
- Present Use of Protamine Zinc Insulin R Richardson—p 584
- Technic of Vaginal Medication Clinical and Roentgen Study A E Rakoff and S L Casper—p 582
- Management of Fractures of Tibia and Fibula W D Griesemer—p 590
- Factors Contributory to Geriatric Nutrition J T Freeman—p 593
- Further Observations on Prophylaxis and Treatment of Traumatic Wounds and Compound Fractures by Local Use of Sulfathiazole G C Weil D W Whitaker and D O Johnston—p 599

Public Health Reports, Washington, D C

58 417-464 (March 12) 1943

Recommendations of Joint Committee on Rural Sanitation—Rural Sewage Disposal—p 417
Giemsa Stain of Quite Constant Composition and Performance Made in Laboratory from Losin and Methylene Blue R D Illie—p 449

58 465-504 (March 19) 1943

What's Past is Prologue Academic Qualifications of Registered Nurses is Revealed by 1941 National Survey of Registered Nurses Henry L Landau—p 465
Comparison of Rabbit and Horse Serums in Meningococcus Infections Sara L Brumham—p 478
Location and Movement of Physicians 1923 and 1935—Age Distribution in Relation to County Characteristics J W Mountain E H Pennell and Virginia Nicolay—p 483

58 505-540 (March 26) 1943

*Aqueous Base Yellow Fever Vaccine M V Hargrett, H W Burruss and A Donovan—p 505
*Experimental Chemotherapy of Burns and Shock III Effects of Systemic Therapy on Early Mortality S M Rosenthal—p 513
American and Australian Q Fevers Persistence of Infectious Agents in Guinea Pig Tissues After Defervescence R R Parker and E A Steinhaus—p 523

Aqueous Base Yellow Fever Vaccine—According to Hargrett and his co-workers the preparation of aqueous base living yellow fever vaccine was undertaken by the United States Public Health Service in 1941. This vaccine is an aqueous extract of 10 to 11 day old chick embryos infected with the attenuated 17 D strain of yellow fever virus. It differs from the 17 D serum base vaccine extensively used in recent years in that it contains 75 per cent, rather than 10 to 40 per cent, embryo extract and no serum diluent. The extract is preserved by desiccation under high vacuum from the frozen state, with storage at subfreezing temperatures in an atmosphere of dry nitrogen. For administration the dried preparation is rehydrated and diluted 1:10 with isotonic solution of sodium chloride, with each recipient receiving 0.5 cc subcutaneously. The increased virus content of the aqueous product as contrasted with the serum containing preparation insures that a greater quantity of virus is inoculated. This favors host immunization. In excess of 600,000 doses of the aqueous type vaccine have been released to date for general use without encountering unfavorable reactions. Of 28 individuals studied, all possessed specific virus neutralizing bodies several weeks after vaccination. Danger of vaccine contamination by serum containing pathogenic agents is eliminated by this new method of preparation.

Experimental Chemotherapy of Burns and Shock—Rosenthal studied the effects of systemic therapy, employing a standardized procedure for the production of burns fatal to mice within forty-eight hours. He was concerned only with the early mortality and therefore limited his therapy to the first seven hours after the burn. He observed no benefit from epinephrine, posterior pituitary injection, adrenal cortex extract or desoxycorticosterone acetate injected subcutaneously. Sodium chloride by mouth or intraperitoneally caused a significant reduction in the mortality. Intravenous administration was less effective. Isotonic solution of sodium chloride by mouth was superior to hypertonic solutions. Potassium chloride caused an acceleration in the time of death, and when administered with sodium chloride it antagonized the effects of the latter. Calcium gluconate orally was without effect. Isotonic dextrose solutions orally showed slight therapeutic action. The administration of hypertonic dextrose solutions or water by mouth caused the animals to die faster than the controls. Sodium acetate, succinate, bicarbonate and lactate were as effective as sodium chloride. Mouse serum intravenously was slightly less active than equivalent volumes of 0.9 per cent sodium chloride orally. Little effect was observed from the intravenous administration of a hypertonic solution of human serum albumin.

Rocky Mountain Medical Journal, Denver

40 217-288 (April) 1943

Carbon Monoxide Asphyxia A G Kammer and E H Carleton—p 234
Cancer of Breast C F Hegner—p 241
Industrial Surgeon and Insurance Carrier R N Gray—p 245

Southern Medical Journal, Birmingham, Ala

36 247-320 (April) 1943

Electrophoretic and Kjeldahl Analysis of Protein in Nephritic Urine and Effect of Proteinuria on Human Kidney S S Blackman Jr and B D Davis—p 247
*Prostatic Cancer An Evaluation of Treatment by Castration E. Rupel—p 251
Referred Pelvic Pain W F Mengert—p 256
Cysts of Spleen J W Snyder and P R Rezek—p 263
Loeffler's Syndrome J H Smith—p 269
Dislocation of Proximal End of Fibula Case Report S R Terhune, S B Thompson and F S Eddleman—p 271
Medical Aspects of Hiatal Hernia Review of 65 Cases W H Higgins—p 273
Immigration and Endocrine Dysfunction D L Sexton—p 276
Gastrointestinal Disorders as Seen in Army Station Hospital I J Pincus—p 284
Peptic Ulcer in Army H M Thomas Jr—p 287
Sulfonamide Therapy in Surgery J R Veal and R G Klepser—p 292
Experience of Johns Hopkins Hospital with Breech Presentation Analysis of 1,444 Cases W T Moore and P P Steptoe Jr—p 295
Comparative Study of "Dilantin Sodium" and Phenobarbital in Negro Epileptics S B McLendon—p 303
Factors in Resistance to Tuberculosis as Revealed by Case Finding Program L W Parr—p 306
Parinaud's Ocular Glandular Syndrome F H McGovern—p 317

Castration in Prostatic Cancer—Rupel calls attention to the fact that the prostate shrinks following castration in malignant as well as in benign hyperplasia. These end results are caused by the elimination of androgenic substance normally released by the interstitial cells. Similar results may be obtained with estrogens. When the serum level of acid phosphatase fails to fall to normal after castration, we may suspect that some other foci are producing the enzyme or that the malignant process is of the undifferentiated type. Diethylstilbestrol could be utilized for the very aged and for those who refuse to submit to castration. Its use, however, is not without some risk. Administration of diethylstilbestrol in 1 mg doses daily over a period of two months has produced distinct breast changes, pain and lumps, in 4 of 8 patients. The author excised the testes of 26 patients with prostatic cancer, 8 others received diethylstilbestrol. The symptoms of these patients varied from mild prostatism to intolerable pain, complete retention and continuous hemorrhage. With 1 exception, every patient had a definitely fixed, nodular, or flat prostate. X-ray studies of the bony pelvis, including the spine and upper portions of the femurs, were made on every patient. The King-Armstrong method was used for serum phosphatase determinations. The response to testicular excision has been the relief from pain, relief in bladder neck irritation and production of atrophy of prostatic cancer cells. Usually the prostatic atrophy becomes palpably noticeable in four months, reaches a state of fixed, smooth concavity in eight, and the gland disappears in a year. The patient has no pain, gets about well, may have some short "hot flashes," is not eunuchoid in appearance and is in good health.

Virginia Medical Monthly, Richmond

70 173-226 (April) 1943

Treatment of Mental Diseases Related to Involutional Period D C Wilson—p 175
Cardiophrenic Syndrome W B Porter—p 179
Some of the "Do's and Don'ts" in Treatment of Fractures With Special Reference to Rural Practitioner Whose Burden and Responsibility will be Increased by Present Emergency T J Hughes—p 187
On Lacquer Dermatitis W T Vaughan—p 193
Effect of Castration on Serum Phosphatases in Case of Metastatic Carcinoma of Prostate L D Abbott Jr, G W James and J T Jarrett—p 195
Benign and Malignant Lesions of Urachus With Special Reference to Colloid Carcinoma of Bladder M L Dreyfuss—p 200
Further Experience with Tubal Division in Salpingitis P Jacobson—p 205
Nonpenetrating Foreign Bodies of Eye W F Hatcher—p 207

Western J Surg, Obst & Gynecology, Portland, Ore

51 89-134 (March) 1943

Vesicovaginal Fistula A V Pettit—p 89
Genital Anomalies with Pregnancy J M Ewer—p 94
Failure in Induction of Labor C A DePuy—p 102
Work Imposed on Heart in Pregnancy and Labor J J Sarras—p 107
Fibroids in Pregnancy, Labor and Puerperium E M Lazard—p 111
Endometriosis W W Pascoe—p 123
Appliance for Colostomy Control O F Lamson—p 127

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

18 1-64 (March) 1943

- Studies in Anemias of Infancy and Early Childhood. Part XII. Re-evaluation of Hemo-lobin and Lute Span of Erythrocytes in Normal and Pathologic Conditions. H. S. Baar and T. W. Lloyd—p. 1
Nutrient Enema. J. W. A. Mackenzie—p. 22
Absorption of Drugs from Rectum. J. W. A. Mackenzie—p. 28
Intrathoracic Cysts of Intestinal and Bronchial Structure. W. G. Wyllie and R. S. Pilcher—p. 34

British Medical Journal, London

1 435-460 (April 10) 1943

- Experience with Typing of Typhoid Bacilli by Means of Vi Bacteriophage. A. Felton—p. 435
Endemicologic Study of Bacterium Typhosum Type D4. W. H. Bradley—p. 438
Surgical Treatment of Osteomyelitis Due to Penetrating Wound. C. Perkins—p. 441
Treatment of Scabies by Tetraethylthiuram Monosulfide. T. M. Clayton—p. 443
Value of Vitamin B₁ in Prevention of Toxemia of Pregnancy. F. J. Browne—p. 445

1 467-496 (April 17) 1943

- Strategy and Tactics in Research. F. M. R. Walshe—p. 467
Pathology of Closed Injuries of Chest. J. A. Wilson—p. 470
Outbreak of Epidemic Catarrhal Jaundice. L. R. L. Edwards—p. 474
Pediculosis Capitis and Intelligence in W. A. A. F. Recruits. H. R. Rollin—p. 475
Treatment of Malaria in England. A. Winnell—p. 476

Typing of Typhoid Bacilli by Means of Vi Bacteriophage—During the period from 1940 to 1942 440 strains of typhoid bacilli were examined by the Vi bacteriophage method of Craigie and Yen. Of 432 strains that were Vi forms 363 (84.1 per cent) were successfully typed while 69 (15.9 per cent) were untypable or imperfect Vi forms. The remaining 8 strains including 6 from chronic carriers could not be typed because the cultures were O forms. Most of the strains belonged to 8 of Craigie's original phage types. In addition 4 new Vi phage types were identified. The bacteriophage test is a reliable guide to the epidemiologic investigation of outbreaks or sporadic cases of typhoid. Its application greatly facilitates the detection of chronic carriers especially of those responsible for sporadic cases in endemic areas.

Tetraethylthiuram Monosulfide in Scabies—Clayton found that a 25 per cent emulsion of tetraethylthiuram had a curative effect in 11 out of 14 cases of severe and complicated scabies, the remaining 3 cases being probable reinfections. In 15 volunteers and in 18 patients the emulsion failed to produce dermatitis or irritation beyond a preliminary smarting in some severe cases. The preparation appears to have extremely beneficial results on some of the secondary concomitants of scabies. In 5 per cent aqueous solution it has proved curative in 93 consecutive cases and produced only mild dermatitis in 7 cases. It has proved to be a sarcopticicide of potency against the human itch mite and is worthy of extended trial.

Edinburgh Medical Journal

50 129-192 (March) 1943

- Observations on Flexner Dysentery. W. A. Caldwell and S. W. Hardwick—p. 129
Reflex Vasodilatation in Surgery. J. R. Learmonth—p. 140
Sciatica—From Orthopedic Point of View. R. I. Stirling—p. 155
Idiopathic Aplastic Anemia. Report of 4 Cases. J. W. MacFarlane and J. P. Currie—p. 171
Clinical Trials of Petidine. A. W. Braunwood—p. 177

Flexner Dysentery—Caldwell and Hardwick review observations on 357 cases of severe diarrhea or definite dysentery occurring in mental hospitals between 1940 and 1942. In November 1941 an improved technique was adopted in the collection of fecal specimens and the desoxycholate citrate medium of Hynes was used in place of MacConkey's. As the result of these improved methods a high proportion of cases of diarrhea suspected of being dysentery (Flexner) have been bacteriologically confirmed. The majority of persons infected with Bacterium dysenteriae excrete the bacilli during convalescence and the temporary carrier state may last for several weeks. Contacts may become infected and exhibit mild symptoms or none.

Prophylactic inoculation with a B. dysenteriae vaccine has not prevented infection, but it may have modified the course of the disease in some instances. The following factors are of importance in the spread of the disease: (1) failure of the nursing staff from ignorance or from a mistaken sense of duty to report gastrointestinal symptoms, (2) the common temporary carrier state following infection, (3) the occurrence of missed cases, toxemic frustres or asymptomatic cases. Sulfanilylguanidine appears to be an effective antidyenteric agent. It probably shortens the course of the disease and appears to clear the stools of B. dysenteriae more rapidly than the sodium sulfate treatment. It is useful in cases of chronic diarrhea following dysenteric infection suggesting that it may be an effective treatment of the chronic carrier.

Journal of Royal Army Medical Corps, London

80 51-114 (Feb) 1943

- Personal Impressions of Medical Services in Present War. P. H. Mitchiner—p. 51
Medical Experiences with the Ringrose Force in Abyssinia. R. J. McGill—p. 58
Notes on 4 Cases of Blackwater Fever Occurring in Southern Nigeria. E. P. V. Creagh—p. 64
Further Investigation of Night Vision Among Personnel of an A. A. Unit. B. St. J. Steadman—p. 73
Forward Medical Services of Red Army. E. M. Cowell—p. 83

Lancet, London

1 449-480 (April 10) 1943

- Chemotherapy by Blocking Bacterial Nutrients. Antistreptococcal Activity of Pantoyltaurine. H. McIlwain and F. Hawking—p. 449
Dyspepsia in the Army. L. C. Hill—p. 452
Vitamin C Intakes at Residential Home. L. J. Harris and Mamie Oliver—p. 454
Jaundice in Syphilis Under Treatment. Possible Transmission of Virus. J. W. Bigger—p. 457
Effect of Coumarin and Dicoumarin Derivatives on Prothrombin Level. J. Lehmann—p. 458
Stricture of Small Bowel Following Strangulated Hernia. S. C. Raw—p. 460

Antistreptococcal Activity of Pantoyltaurine—McIlwain and Hawking draw attention to the fact that the therapeutically successful level of sulfanilamide may or may not be inhibitory in vitro, according to the coincident concentrations of antagonistic compounds, or which p-aminobenzoate is the most important. This compound is more than a drug antagonist since it is a substance essential to animals and to bacteria. The action of sulfanilamide depends on its preventing the micro-organisms use of the p-aminobenzoate apparently by virtue of its structural similarity to p-aminobenzoate. It appeared possible that bacterial growth might be also prevented by compounds chemically related to other substances essential to bacteria such as pantothenate, which is present in the blood of animals. Several compounds structurally related to pantothenate were examined and pantoyltaurine was the most actively antibacterial in vitro preventing the growth of hemolytic streptococci when present in concentrations two hundred times those of the coincident pantothenate. Pantoyltaurine is a compound which was designed to inhibit growth of bacteria needing pantothenate by displacing it from the points at which it interacted with micro-organisms and so starving them or a substance essential for growth. Streptococcus hemolyticus was particularly sensitive to this action in vitro. Pantoyltaurine was rapidly excreted by rats but the ratio of pantoyltaurine to pantothenate concentrations in their blood could be kept above the range of in vitro action for most of the day by frequent subcutaneous doses to which there was no intolerance. Rats so treated for four days were protected from approximately 10,000 lethal doses of a virulent strain of streptococcus and less completely from 1,000,000 lethal doses. Mice whose blood pantothenate was much higher than that of the rat or of man were not protected. Sulfonamide resistant streptococci and some strains of Corynebacterium diphtheriae are sensitive to pantoyltaurine. Since the concentration of pantothenate in human blood is slightly less than that in rat blood, somewhat lower levels would be necessary for therapeutic action in man. Practical applications to human therapy may be possible along these lines but the main value of this work lies in its description of new methods for the discovery of chemotherapeutic compounds.

Medicina Española, Valencia

5 539-744 (Dec) 1942 Partial Index

- *New Treatment of Infantile Kala Azar Hexonate of Antimony in Oil Solution or Concentrated Ramos Fernandez, Silva Gimbrera and Sanjose Capella—p 545
- Maternophobia Neurosis of Great Demographic and Social Importance A Clivero Nuñez—p 567
- Diet During Pregnancy I Bonilla and G. Alvarez Ossorio—p 590
- *Intraperitoneal Hemorrhages Caused by Rupture of Corpus Luteum J Rincon Nunez and I. Oliva Priego—p 612
- Hypochloremia in Nursing A Galdo—p 629
- Early Diagnosis of Cancer of Uterine Cervix R. Horno Alcora—p 666
- Treatment of Adnecitis by Anesthetic Block of Pelvic Perineal Plexus L. Abad Colomer—p 680

New Treatment of Kala-Azar in Children—Neostibosan, the preparation most widely used at present, is, according to Ramos Fernandez and his associates, difficult to preserve, it must be given intravenously, which constitutes a difficult technique to be employed for hospitalized children. The intramuscular injection often results in local intolerance, while some cases are resistant to the drug. The discovery of the hexonate of antimony (solustibosan) constituted an improvement. This substance is available in a 20 per cent oily solution or in a concentrated aqueous solution. The hexonates of antimony have a much lower toxicity than other preparations of antimony and are therefore better tolerated. The aqueous solution of the hexonates of antimony are rapidly eliminated from the organism, while the oily solution permits of slow absorption. The authors compute the total dose on the basis of 1 cc per kilogram of body weight. The total dose is divided into five fractionated doses, which are injected intramuscularly on alternate days. The maximal total dose is 60 cc and the maximal individual dose is 5 cc. For the concentrated solution the total dose per kilogram of body weight is 0.4 cc, this is divided into ten separate doses, which are injected at twelve hour intervals. The maximum total dose is 24 cc and the individual dose 2 cc. The authors present clinical histories of 7 children treated with the new preparation.

Intraperitoneal Hemorrhage Caused by Rupture of Corpus Luteum—Rincon Nuñez and Oliva Priego report the history of a woman aged 29 who was operated on for suspected appendicitis. The operation revealed an intraperitoneal hemorrhage which originated in a ruptured corpus luteum of the right ovary. Studies of serial sections excluded the existence of an ovarian pregnancy. Grave intraperitoneal hemorrhages of ovarian origin are comparatively rare. One author reports having seen only 3 cases in more than three thousand laparotomies. Infectious processes, intoxication from absorption of abortifacients, masturbation, coitus interruptus, myomas and uterine retroflexion have been suggested as possible causative factors. The quantity of blood in the peritoneal cavity varies between 200 and 500 cc but as much as 1,500 and even 3,000 cc has been reported. Microcystic degeneration of the ovaries, inflammation of the tubes, fibromatous uterus and fixed retroflexion are lesions often encountered. Some observers, particularly Forssner, maintain that these hemorrhages are invariably caused by ovarian pregnancy. To rule out this cause the extirpated ovary should always be subjected to microscopic study. In the case reported, as well as in some cases mentioned in the literature, the patients were virgins. This fact is important for the diagnosis. Symptoms of hemorrhage from ruptured corpus luteum are often mistaken for those of appendicitis or ectopic pregnancy.

6 1-124 (Jan) 1943 Partial Index

- *Onset of Labor and Stimulation of Uterine Contraction by Estrogen A. Ferreira Gomez—p 23
- Lathyrism Clinical Study A. Gonzalez Paracuellos—p 46

Onset of Labor and Stimulation of Uterine Contraction—Ferreira Gomez administered intramuscularly from 50,000 to 100,000 international units of estrogen to 20 women in a state of ruptured membranes without uterine contraction or with weak uterine contractions. The results were satisfactory with all patients given 100,000 international units and in 75 per cent of those given 50,000 units of the substance. In 1 case of a hydatid mole and in 1 case of retained dead fetus intramuscular injection of 300,000 international units of the substance caused

the expulsion of the mole and of the retained fetus. The author recommends 100,000 international units as the proper dose to initiate labor or to stimulate uterine contraction when the fetus is alive. A smaller dose of the substance may fail, whereas a larger dose may inhibit secretion of milk.

Revista Médica Latino-Americana, Buenos Aires

28 233-270 (Jan) 1943 Partial Index

- *Gigantic Pleural Emphysematous Blebs Seven Cases E. S. Mazzer—p 237
- Abortive Therapy of Furuncles and Anthrax Edmundo Escamei—p 245

Gigantic Pleural Emphysema—Mazzer reports observations on 7 men between the ages of 30 and 62 years with gigantic emphysematous blebs of the pleura. The disease involved only the right lung of 4 and the right lung predominantly with mild involvement in the left one of 3. The clinical symptoms and the roentgenologic signs of all were typical. The disease of 1 was associated with pulmonary tuberculosis, of 2 with bronchial cancer and of 1 with arteriosclerosis of the pulmonary artery (Ayerza's disease). Necropsy was performed in 3 cases. The author believes that the disease is acquired. The most frequent symptom is dyspnea of the orthopneic type. Other symptoms are those of ordinary emphysema, spastic bronchitis and pneumothorax. The x-ray shadows of intrapulmonary emphysema of moderate size show up as intrapulmonary ring shadows, whereas those of gigantic emphysema occupy the entire hemithorax and are similar to those of chronic pneumothorax. The differential diagnosis is made on the following signs: (1) The size of the x-ray shadow may increase after an attack of dyspnea and diminish after administration of bronchodilating drugs, (2) the collection of air has no proper wall in the roentgenogram. It is delimited by the visceral pleura and by a layer of collapsed pulmonary tissue, (3) iodized oil administered through the bronchi passes to the emphysema cavity only exceptionally, (4) local infection and suppuration are extremely rare. The course of the disease depends on the degree of the intracavitary air pressure, which is related to the degree of bronchial obstruction. Rupture of emphysema leads to formation of pneumothorax. Bronchodilating drugs, especially ephedrine and aminophylline, are indicated to prevent respiratory insufficiency. Removal of emphysemal air by means of repeated puncture is indicated in cases of gigantic emphysema with increased internal air pressure and threatening respiratory insufficiency.

Semana Médica, Buenos Aires

50 121-162 (Jan 21) 1943 Partial Index

- Functions of Hypothalamus F. Vidal—p 121
- "Benign" Auricular Fibrillation M. Joselevich and P. G. Zwab—p 130
- *Treatment of Incomplete Abortion V. Marino Donato—p 144
- Erythrodeposition in Pulmonary Tuberculosis I. Natin and B. Rapaport—p 152

Treatment of Incomplete Abortion—Marino Donato reviews observations on 1,936 incomplete abortions treated in the maternity ward of the Hospital Juan F. Salaberry in the course of sixteen years. Authors advocating active treatment regard the product of conception when retained in the uterine cavity as a culture medium for micro-organisms and see danger in the postponement of the evacuation of the uterus. At the author's clinic treatment consists in bed rest, an ice bag to the lower part of the abdomen and quinine in doses of 0.5 Gm every hour until three have been taken. An hour after the administration of the last tablet, hypophysin is injected subcutaneously. In some cases cardiac and general stimulants are added. If the uterus is not evacuated within several days an active intervention is instituted. Between 1936 and 1941, medical treatment was used in more than 76 per cent of the afebrile cases of incomplete abortion, whereas preceding this period curettage had been employed in over 85 per cent. The superiority of the conservative over the active treatment in the febrile cases has been established beyond a doubt. The fever usually subsides in a relatively short time and spontaneous evacuation of the product of conception takes place within a few days. Afebrile incomplete abortion should be treated in the same manner.

Book Notices

Diseases of the Breast. Diagnosis Pathology Treatment. By Charles F. Geschickter M.A. M.D. Lieut. Commander Medical Corps United States Naval Reserve. With a special section on treatment in collaboration with Murray M. Copeland A.B. M.D. F.A.C.S. Instructor in Surgery Johns Hopkins Medical School Baltimore. Fabrikoid. Price \$10. 1p 223 with 193 illustrations. Philadelphia Montreal & London J. B. Lippincott Company 1913.

This is a comprehensive book on the diseases of the breast written in the light of newer knowledge of structure function and method. It is based to a large extent on observations and experiments of the author himself. The topics of the first part are the development and physiology of the breast and methods of diagnosis of mammary diseases. Then is described the breast in pregnancy and lactation with special reference to their influence on mammary lesions, particularly carcinoma and mastitis. Chronic cystic mastitis and noncancerous mammary tumors are discussed in the third and fourth parts respectively. The fifth part devoted to all phases of mammary cancer except treatment is the longest part (255 pages). The treatment of mammary tumors is described in part six. In part seven are reviewed the author's work on experimental cystic mastitis and on mammary tumors.

There are many tabulations of the results of analysis of clinical and pathologic material some of which are of little value because the social and other conditions represented by the material are not known. The effort to simplify complex problems by means of diagrams sometimes results in confusion. Most of the illustrations are original but vary greatly in quality. The magnification of the photomicrographs is not given.

The word cancer is used as synonymous with carcinoma. This is contrary to general usage e.g. American Society for Cancer Research National Cancer Institute American Society for the Control of Cancer the British Empire Cancer Campaign and *Cancer Research*.

The book contains statements and conclusions with formidable implications but inadequate proof. Thus it is stated that in certain cases of adenosis or Schimmelbusch disease the lesions disappear after pregnancy. It is potentially cancerous lesion—as many authorities believe Schimmelbusch disease to be—actually disappears after pregnancy the fact would be of the greatest importance but unfortunately proof of such disappearance is lacking. The author has included many cases without microscopic proof hence the nature of many lesions remains in doubt and it is probable that patients whose breasts improved after pregnancy were suffering from physiologic states which regress spontaneously and not from Schimmelbusch disease.

The author arrives at the important conclusion that no etiologic relationship exists between chronic cystic mastitis and carcinoma and thus places himself in direct contradiction with an increasing body of opinion (Ewing McCarthy Konjetzny Semb Cheate Cutler and others). Warren's recent statistical studies also are opposed to the author's conclusions. Cheate's extensive studies of the breast by means of whole serial sections are opposed to the conclusions of Geschickter who did not examine his specimens by Cheate's method. The fallacies in the author's presentation of precancerous lesions are obvious for the following reasons: 1. Large numbers of cases (as high as 70 per cent in some categories) are without microscopic proof under circumstances in which an accurate clinical differentiation between such conditions as mastodynia adenosis and so called chronic cystic mastitis is not possible. 2. The average duration of the follow up (10.2 years) is inadequate and by no means excludes the later development of cancer in a certain proportion of the patients. 3. Many patients who are reported well after local excision of the lesion and even after mastectomy are cited as proof of the innocent nature of the lesion but obviously many such cases are examples of surgical cures of potentially cancerous lesions. 4. Under the term chronic cystic mastitis the author includes lesions which are physiologic and certainly innocent with lesions such as Schimmelbusch disease which are distinctly pathologic and menacing. To group such

a variety of lesions in unknown proportions and often without microscopic proof in a statistical analysis is unsound, and to draw the conclusion from such a study that these various conditions are not etiologically related to cancer is obviously unwarranted. Before accepting the conclusion that cysts, papillomas and Schimmelbusch disease are innocent lesions, the physician should weigh the author's evidence against the formidable body of opinion which holds the opposite view.

The pathologic classification of mammary cancer adds further confusion in a field already hopelessly confused. Meaningless names are given to microscopic appearances of fragments of tissue from the breast when it is well established by means of whole serial sections that several or all of such appearances may be present in the same breast.

In his experimental work the author produced lesions in the breast of the rat which seem to be comparable morphologically with lesions in the human breast but he has oversimplified the mechanism of formation of the lesions and assumes an analogy between the two with unwarranted positiveness. The suggested endocrine treatment of various lesions of the human breast is without adequate basis. Thus on page 64 the author admits that testosterone does not act in the same manner in man as in the rat yet throughout the book he draws conclusions that the effects of testosterone are similar in the rat and in the human female breast and suggests endocrine therapy on this basis.

Preventive Inoculation. By W. Powell Phillips M.R.C.S. L.R.C.P. D.P.H. Deputy Medical Officer of Health Cardiff and C. Woodroffe Anderson M.B. Ch.B. D.P.H. Assistant Medical Officer of Health Cardiff. With introduction by J. Greenwood Wilson M.D. F.R.C.P. D.P.H. Medical Officer of Health Cardiff. Cloth. Price 6s. Pp. 74. London. The Practitioner in conjunction with Eyre and Spottiswoode 1912.

This little volume is the seventh of a series of handbooks published by the *Practitioner* and designed as practical guides for the busy physician. The first part of the book discusses in elementary style the basic principles of infection and immunity and their application in the prophylaxis of disease. There follows a simple statement of technique of injection and apparatus required. In the remaining two thirds of the volume the authors describe briefly immunization against diphtheria tetanus scarlet fever typhoid and paratyphoid fevers whooping cough measles, influenza and the common cold. A final chapter describes immunization against other diseases a few lines being given respectively to tuberculosis plague typhus fever cholera, dysentery yellow fever poliomyelitis cerebrospinal meningitis anthrax and pneumococcal pneumonia.

This is strictly a handbook for the practitioner who has no time to read the standard textbooks of preventive medicine or bacteriology. The discussions of the various procedures are too brief and elementary to satisfy the needs of the medical student who must be more thoroughly trained in basic principles.

The American reader will note references to antigens not used in this country such as toxoid antitoxin floccules and the new alcohol killed typhoid vaccine of Felix. He will wonder at the suggestion that women should be given smaller doses of typhoid vaccine than should men. It is not clear why the authors chose to ignore the typhoid studies of Siler and his colleagues at the Army Medical School. Similarly it is surprising to note the statement that for yellow fever immunization one should inject a small quantity of immune human serum a few hours before administering the vaccine. It may be wondered why the authors fail to mention the newer yellow fever vaccines in general use for over five years.

Burns Shock Wound Healing and Vascular Injuries. Prepared under the auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. *Military Surgical Manuals Volume V.* Cloth. Price \$2.50. 1p 272 with illustrations. Philadelphia & London W. B. Saunders Company 1913.

This is the fifth of the series of six military surgical manuals and covers the management of the several wartime emergencies indicated in the title. Despite the variety of the material covered the general standard of the book is high and this volume compares favorably with the other volumes in the series. In fact the subjects covered especially burns and shock repre-

sent especially important aspects of present day military medicine. Each of the four chief sections of the book represents a discrete condition and should be considered separately.

The section on burns, covering 103 pages, divides the discussion into general management, local care, early plastic care and late plastic care. In addition there is a good short but incomplete and overcondensed account of the management of burns received in chemical warfare by Dr David P Barr. In this chapter only three of the gases are considered and no mention is made of phosphorus, magnesium or other burns due to metals, which are so important in the present war. The first chapter, on the general management of burns, by Dr Henry N Harkins, rightly emphasizes the especial importance of plasma administration in the control of burn shock. Drs Roy D McClure and Conrad R Lam discuss the local care of burns and cite the advantages and limitations of the tanning, pressure dressings, sulfadiazine spray and other methods. Drs McClure and Harkins in a third chapter from the Henry Ford Hospital group discuss the early plastic treatment and care of amputating surfaces. They cite the importance of early skin grafting and point out the particular military applicability of the Padgett-Hood dermatome for this purpose. The next chapter, on the late plastic care, by Dr James B Brown, represents one of the best accounts of the subject in the literature and is remarkable for the excellence of the illustrations.

The second section, on shock, is divided into three chapters: mechanism, by Dr Norman E Freeman, prevention and treatment, by Dr Alfred Blalock, and fluid replacement therapy, by Dr Max M Strumia. In a space of 67 pages these authors have written what is, in the reviewer's opinion, the best account on shock extant. The only possible criticism of this section is that it is not graced by the presence of a bibliography. Since the military surgical manuals will undoubtedly be studied at base hospitals in this country as well as at the front, it seems that a brief bibliography would be desirable.

The short (17 pages) third section, on wound healing, by Dr Allen O Whipple, is beyond criticism.

The fourth section, on vascular injuries, is written jointly by the subcommittee of the National Research Council on that subject, composed of Dr John Homans, chairman, and Drs Arthur W Allen, Geza de Takats, Daniel C Elkin and Walter G Maddock. The material occupies 64 pages and considers control of hemorrhage, injuries to arteries, diseases of arteries and diseases of veins. The use of heparin in vascular surgery is cited, but the book was apparently written too early to describe some of the most recent developments in arterial anastomosis. The section on injuries to arteries in special locations includes a very helpful account of the anastomoses in each location with excellent diagrams. The role of sympathetic block in vascular surgery is adequately presented along with several illustrations of great merit. Finally, the ever practical subject of varicose veins is competently delineated.

This book is to be recommended not only to military surgeons but to those in civil life as well, both practitioners and medical students.

Etapas de la vida médico patricia del doctor Juan Madera procer de Mayo Por Luciano Abeille. Second edition. Paper. Pp 324, with illustrations. Buenos Aires, 1942.

For the historian concerned with the rise of modern medicine in South America this book will be an invaluable document. From it we learn about the life of Dr Juan Madera, born in Buenos Aires in 1782, physician and patriot, head of the first medical military unit and of the first institution of sanitary police of Argentina, first professor of therapeutics, physician of the Hospital for Foundlings, member of the first Academy of Medicine of Buenos Aires. However, his most important contribution was the introduction of jennsonian prophylaxis in his country, for which he was appointed first "administrator of the vaccinia." The virus was imported from Rio de Janeiro in 1805 by three slaves previously inoculated, and the practice of vaccination spread rapidly. Madero propagated the virus through cows and was himself responsible for isolating a strain of cowpox in his country. The Englishmen whom he fought

in his youth as a soldier and a military surgeon later rewarded his efforts by nominating him honorary member of the London Vaccine Institution. Abeille's book can hardly be called a biography. It is rather a complete compilation of documents—many of them direct reproductions of the originals—concerned with the manifold episodes of Madero's picturesque life. With these abundant data the reader is left free to speculate at will on the man and on his surroundings, and the sight of the beautiful, romantic painting of Dr Madero himself reproduced on the first page of the book is certainly an invitation to do so.

Food Poisoning By G M Dack, Ph.D., M.D. Associate Professor of Bacteriology, the University of Chicago. Cloth. Price, \$2. Pp 138. Chicago: University of Chicago Press. London: Cambridge University Press, 1943.

This volume carries on the tradition begun in the University of Chicago, Department of Bacteriology, by Prof E O Jordan, who devoted himself particularly to the salmonella type of infection. In the present work the various chapters cover chemical poisoning, poisonous plants and animals, botulism, staphylococcus food poisoning, salmonella, streptococci and other bacteria. The final chapter relates to infections which must be differentiated from food poisoning, such as the dysenteries and trichinosis. The work is succinct, accurate and up to date, offering in brief scope what every doctor should know on this subject. The American people preserve immense amounts of food, at least fifteen million families do some home canning. The hazards and the standards are fully elucidated in this book.

Diccionario de términos y expresiones hematológicas Por el Dr Leo poldo Cea. Paper. Pp 355. San Salvador, El Salvador: C A Imprenta Nacional, 1941.

In this dictionary the author has collected the terms associated with hematology, providing for each a definition as well as some brief notes regarding etymology. More than a thousand words are included, which is an indication of the rapid rise of our knowledge of hematology in recent years. One would have expected a reference to the sedimentation test, which, however, does not appear. The names of a few leading workers in the field are included, but many an important investigator is omitted.

Twenty-First Hospital Yearbook 1943 Hospital Purchasing File Directory of Hospital Products Manufacturers' Catalogs Editorial Reference Section Twenty-First edition. Cloth. Price \$2.50. Pp 1,023 with illustrations. Chicago: Modern Hospital Publishing Co Inc, 1943.

The contents of this useful book include the catalogues and advertisements of many sources of supply for practically every thing used in the hospital. The manufacturers' catalogues are classified under clinical and scientific, general furnishings, food service, laundry and construction. An editorial section includes timely articles on wartime activities, the hospital pharmacy, other administrative data, and a preview of postwar hospital and medical planning.

Influencia del equilibrio ácido básico en la reactividad cutánea. Estudio experimental en hombres Por Arturo Manrique Mera. Tesis. Universidad nacional de Buenos Aires, Facultad de ciencias medicas. Paper. Pp 50 with 11 illustrations. Buenos Aires: Imprenta de Alfredo Frascoll, 1942.

The author describes experiments carried out in man tending to prove that the skin reactions brought about by local applications of dinitrochlorobenzene are enhanced in patients subjected to an alkalosis producing diet, and diminished in patients under an acidosis inducing diet. Work leading to analogous conclusions by previous workers and contributions on allied topics are thoroughly reviewed.

El bocio tóxico Por Jose Alberto Caeiro. Paper. Pp 119 with 22 illustrations. Buenos Aires, 1942.

An excellent short monograph on goiter, the surgical aspect being specially emphasized. Yet, in the preliminary chapter, the anatomy and physiology of the thyroid gland are summarized but clearly described and the clinical symptoms in the different forms of glandular dysfunction are dealt with in some detail. For this reason the book will be advantageously read both by the medical student and the general practitioner as well as by the specialized surgeon. The photomicrographs are excellent.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

PHYSICAL EFFICIENCY AND TOBACCO SMOKING

To the Editor—Is there any scientific basis for the popular belief that smoking causes shortwindedness? If so what are the physiologic mechanisms involved?

Lieutenant (MC) U.S.N.R.

ANSWER—A lowering of physical efficiency has been reported during and immediately after the use of tobacco in a number of studies which have been summarized in the extensive reviews Tobacco and Physical Efficiency by M. V. O'Shea (New York: Macmillan Company, 1923) and Tobacco and Human Efficiency by Schrumpt-Pierron (New York: Paul B. Hoeber, 1927). Diminution in muscular capacity as measured with the ergograph was reported by W. P. Lombard (*J. Physiol.* 13:1, 1892) and many though not all, later workers, and fatigue was reported to commence earlier and the output of work diminish (Hough *Am. J. Physiol.* 5:240, 1901 and Baumberger, J. P. Perry E. E. and Martin, E. G. *J. Indust. Hyg.* 3:1, 1921). But it is particularly the shortwindedness and lowering of respiratory reserve that has led most coaches and physical directors to insist that smoking be restricted, at least during the season of competition (Pack, F. J. *Pop. Sci. Month.* 81:330, 1912). More than a third of the subjects of a blindfold test reported 'shortness of breath' which they ascribed to the smoke (Bogen Emil. The Composition of Cigarets and Cigarette Smoke, *THE JOURNAL* Oct. 12, 1929, p. 1110).

The carbon monoxide in tobacco smoke is insufficient to exert much effect in this regard (Hanson, H. B. and Hastings A. B. The Effect of Smoking on the Carbon Monoxide Content of Blood *ibid.*, May 13, 1933 p. 1481). The various irritating substances in tobacco smoke contribute to pharyngeal inflammation and an annoying cough more than to actual decrease in vital capacity (Bogen Emil *California & West Med.* 45:342 [Oct.] 1936). Most of the shortness of breath reported by smokers appears to be due to the effect of the nicotine in the smoke on the heart and the circulation (Parkinson, J. and Koetod, H. *Lancet* 2:232 [Aug. 18] 1917). An accelerated pulse beat, an exaggerated sinus arrhythmia and the occurrence of premature contractions may result from the action of the nicotine on the innervation of the heart. The more alarming pain on exertion, or tobacco angina pectoris "in heavy smokers has been ascribed to coronary contraction resulting from nicotine (Vaquez, H. Diseases of the Heart, translation, Philadelphia: W. B. Saunders Company, 1924). This has been questioned by others (White, P. D. and Sharber, Trimble. Tobacco, Alcohol and Angina Pectoris, *THE JOURNAL*, March 3 1934, p. 635) and the resulting coronary insufficiency sharply distinguished from true coronary occlusion (Masters, A. M. Carroll H. H. and Andrews, Cecil U. S. *Nat. M. Bull.* 40:810 [Oct.] 1942).

That excessive smoking interferes with athletic prowess and may bring on shortness of breath is generally admitted (Fisher G. J. and Berry, Elmer. The Physical Effects of Smoking 1932). The differences, though distinct, are not great enough to erase all differences in native ability, and so we find that some athletes have actually succeeded in attaining distinction in spite of the persistent use of tobacco although their number is much less than might be inferred from advertisements. Although a number of physiologic mechanisms have been presented to account for the total effect observed, their relative importance and true relationship to the entire phenomenon may still repay further investigation.

REPEATED ADMINISTRATION OF TETANUS ANTITOXIN

To the Editor—In *The Journal* April 3 1943 page 1157 in the editorial comment on Tetanus in the Middle East it is stated that each wounded man is given a dose of 3,000 international units of tetanus antitoxin. Further weekly doses of the antitoxin are given to the patients who have not been actively immunized. Is it safe to give further doses of antitoxin to patients at a time when reaction may be expected to occur? Could a second skin test be depended on to warn of danger?

M.D. Pennsylvania

ANSWER—Injection of antitoxin at intervals of not more than seven days is regarded as safe. Induced serum disease as a rule does not manifest itself earlier than nine days or so after injection of serum. The object of injecting tetanus anti-

toxin under the circumstances is to prevent tetanus and because tetanus is almost always fatal one is justified in trying to prevent it to take some small risk of causing a form of serum disease which is not dangerous to life. Repeated injections at weekly intervals are necessary to maintain a satisfactory antitoxin level in the patient. A positive skin test would, of course indicate established sensitivity to the antitoxin.

CONCENTRATES OF VITAMIN D AND ARTERIOSCLEROSIS

To the Editor—A visiting physician expressed the opinion that vitamin D if taken in concentrated form, can lead to arteriosclerosis even in infants. I am considerably perturbed because when volunteering my services to the Army Medical Corps the month of Pearl Harbor I was turned down the reason given being early arteriosclerosis of my lower extremities as demonstrated by x rays. I was then 47. Furthermore my children are aged 21, 19 and 16 years and 16 months respectively. For many years I have prescribed cod liver oil usually in concentrated form for a number of patients and all the members of my family have taken it faithfully. Since plain and fancy preparations of the oil itself are quite messy and unpleasant and since the concentrated forms of cod liver oil are quite the reverse please inform me authoritatively whether it is unwise to use the concentrated form of cod liver oil. M.D. Kentucky

ANSWER—Extremely large doses of activated sterols or of fish liver oils may produce calcification of the soft tissues including the aorta and arteries in experimental animals and in human subjects. This effect is associated with the 'calcemic' principle of the products and is not necessarily proportional to their antirachitic activity and has nothing to do with vitamin A activity. The effect is accompanied by other manifestations of toxicity: anorexia, vomiting and loss of weight.

The doses which have produced abnormal calcification have been about five thousand times those recommended for prophylaxis or rickets in normal animals, but doses only about a hundred times the prophylactic dose may produce symptoms in persons with renal insufficiency.

There is no evidence that concentrates of cod liver oil are more toxic than equivalent doses of the oil and no evidence that ordinary prophylactic doses of either will produce arteriosclerosis.

SEVERE CHRONIC CONSTIPATION

To the Editor—A woman who suffers from chronic constipation sometimes to the extent of going five and six days without a bowel movement is most desirous of finding a more normal and natural method of handling her problem than resorting to the use of laxatives and enemas. The constipation seems to be of the atonic type as the only laxative which seems to be of any value is a combination of aromatic cascara and physostigmine. The movement is usually small in amount, hard and dehydrated and dark brown. Please inform me if there are any exercises or calisthenics which would increase the tone of the colon. Any other suggestions you have will be appreciated.

Lieutenant M.C.A.U.S.

ANSWER—A person suffering from chronic constipation of this type should have a basal metabolic test to see whether or not hypothyroidism is not an important etiologic factor. It is present $\frac{1}{2}$ to 1 grain (0.03 to 0.06 Gm.) of thyroid three times a day may relieve the constipation. If the basal metabolic rate is within limits of normal, the constipation is probably on a psychogenic basis. I would suggest that the patient consult a neuropsychiatrist for this hypothetical approach. Most functional disturbances of the colon are of neuropsychiatric origin.

BRONCHOPNEUMONIA AS CAUSE OF DEATH IN EARLY INFANCY

To the Editor—In the following cases bronchopneumonia was given on the death certificate as the only cause of death. The age and the date of death were: 1. 1 day June 22 1942; 2. 1 day July 8 1942; 3. 1 day August 16 1942; 4. 3 days October 17 1942; 5. 27 days October 12 1942. These questions automatically arise: 1. Is it possible for bronchopneumonia to be the primary cause of death in the first week of life? 2. Is it possible for intrauterine bronchopneumonia to develop in the last month of pregnancy with no signs of symptoms of pneumonia in the mother?

William C. Buss M.D. Bakersfield Calif.

ANSWER—1. It is possible for bronchopneumonia to be the primary cause of death in the first week of life. A number of such cases occur both in premature and in full term infants in whom the larynx and trachea have been traumatized by the passage of a tracheal catheter and in others as the result of aspiration pneumonia. The difficulty in making a diagnosis of bronchopneumonia rather than pneumonia alone naturally is open to question.

2. It is certainly possible for intrauterine pneumonia to develop in the last month of pregnancy without the mother giving signs of circulatory infection from which source it must have derived. On the whole this could be considered an uncommon cause.

UNCLASSIFIED GLYCOSURIA OR DIABETES

To the Editor—A man aged 35 first had sugar in his urine fifteen years ago. Since that time he has consistently had sugar in his urine specimens. His general health has been excellent. His laboratory findings were as follows:

Dextrose (100 Gm) Tolerance Test

Time	Specific Gravity	Sugar in Urine		Sugar in Blood Mg./100 Cc
		Qualitative	Per Cent	
0	1.031		0.3	105
15 minutes				147
30 minutes		+	0.7	133
45 minutes				183
60 minutes	1.040	+	2.0	187
75 minutes				175
90 minutes				175
105 minutes				179
120 minutes	1.040	+	2.25	172
150 minutes				161
180 minutes		+	1.1	94

Should this patient be on a restricted diet or should the presence of sugar in the urine be ignored?
M.D., Connecticut

ANSWER—Further information is necessary before one should attempt a diagnosis.

1. Was the dextrose tolerance test carried out after an all night fast or at least five hours or more after food? 2. Was the patient free from infection as proved by temperatures taken at the beginning and end of the test? It is assumed that he did not have chronic arthritis or hyperthyroidism. 3. What method was used for the estimation of the blood sugar? 4. Are the data based on capillary blood from the ear or finger or on venous blood? Values for capillary blood are higher than for venous blood taken simultaneously save in the fasting state. An example follows:

	Fasting	½ Hr	2 Hrs	4 Hrs	5 Hrs
Capillary	95	204	150	98	80
Venous	91	156	120	76	74

It is a safe rule not to diagnose diabetes by capillary blood after food unless the value reaches 200 mg or more in contrast to 170 mg by venous blood. If the bloods in this case were capillary bloods, the patient would not be considered diabetic, but by venous blood the diagnosis would be diabetes.

Tests of the urine all indicated the presence of sugar even though certain blood sugar values were normal. It is unjustifiable, however, to assume that true renal glycosuria is present, because it is not stated whether the bladder had been emptied an hour or more before the first test. The 0.3 per cent sugar in the fasting specimen might have passed into the bladder several hours previously, and likewise at 180 minutes the 1.1 per cent sugar in the urine with a blood sugar of 94 mg would not prove renal glycosuria, because only one hour before the urine contained 2.25 per cent sugar and the sugar might have been passed into the bladder after that.

Irrespective of the diagnosis, whether unclassified glycosuria or diabetes, it is obvious that such a patient should be watched for life, although it is the exception for borderline cases such as this to change their status. The patient should not expose himself to diabetes by a gain in weight or by indulgence in a rich carbohydrate diet or conversely by imposition of a low carbohydrate diet.

PERFORATION OF DRUM MEMBRANE AND EXPOSURE TO NOISE

To the Editor—It is my impression as an industrial physician that a person with chronic active otitis media with perforation of the tympanum and moderate drainage should not be permitted to be exposed to repeated loud noises such as one might encounter in a riveting operation. It is also my impression that a person with arrested otitis media with a perforation of the drum but no discharge but with a history of discharge within the past five years should not be placed on riveting. I am unable, however, to find a reference that would substantiate this opinion. I should like an opinion on whether such restriction on employment is reasonable.
M.D., New Jersey

ANSWER—Perforation of the drum membrane with or without discharge would not make an ear more susceptible to acoustic trauma from riveting but would rather protect the ear, since the impairment of sound conduction resulting from such a perforation or otitis media diminishes the volume of sound reaching the nerve of hearing and acts exactly the same as a tight plug in the ear canal. Therefore there is no reason to restrict the employment of such persons or to avoid riveting.

SYPHILIS AND NEPHRITIS

To the Editor—A white man aged 32 was rejected by the army in January 1942 because of a positive Wassermann reaction. Two subsequent serologic tests were positive. He admitted exposure but had no knowledge of symptoms or signs of syphilis. In 1934 he was sick for a few days with the grip. In 1936 he had a sore throat for three days; the doctor consulted suggested tonsillectomy. In 1937 he passed an examination for life insurance. The only complaint is slight backache. Physical examination discloses nothing abnormal. The age, height and weight ratios are correct. The blood pressure is 120/78. The cardiovascular system, the reflexes, the abdomen, the lymph nodes (except in the cervical region) and the spinal fluid are normal. A blood count showed 7,100 white blood cells and 77 per cent polymorphonuclears, the hemoglobin was 80 per cent (Sahli). The phenolsulfonphthalein response was excellent. The prostate was normal. There was slight to 4 plus albumin in the urine and the specific gravity range was from 1.006 to 1.024. In the beginning, red blood cells were found and a few hyaline and granular casts. Two dead teeth were extracted, later on tonsillectomy was performed because the tonsils looked suspicious. A consultant urologist found the genito-urinary tract normal. A small polypus of the bladder was cauterized, and since then the red cells have almost disappeared but albumin and infrequent granular casts are still found. A series of bismuth sub-salicylate and mapharsen, small doses of each, including potassium iodide, has been given for some months. Full details relative to diet, rest and hygiene have been planned. The patient looks well and has no complaint. The question arises whether to continue with small doses of the drugs or in view of the urinary findings, to forego specific treatment and wait for the kidneys to improve? Will you please advise me with regard to this case?
M.D., Virginia

ANSWER—The onset of an acute nephritis in a patient who has early syphilis is an extremely rare complication. Such a nephritis is evidenced by varying degrees of edema and the presence in the urine of large amounts of albumin and small numbers of casts and blood cells. The edema and urinary findings usually disappear rapidly following the administration of small amounts of arsphenamine and bismuth. Syphilis of the kidney as a complication of late syphilis is practically unknown, at least it is impossible to differentiate it from the common types of nephritis as seen occasionally in cases of syphilis.

In the case under discussion evidence is not available apparently to determine the duration of the syphilis, and the basis for the diagnosis of syphilis appears to be on only the serologic evidence. It is not stated whether the serologic reports were all strong positives or were of a questionable positive nature, and thus the question is raised as to the authenticity of the diagnosis of syphilis. If the diagnosis is still justified by repeated strongly positive serologic reports obtained from different laboratories on the same specimen of blood, it would then seem advisable to treat the patient for syphilis and nephritis simultaneously. The use of mapharsen and bismuth compounds in smaller doses than usually given a young man would be justified. The spinal fluid should be examined to determine whether there is need for intensifying the treatment, if and when possible. Such dietetic and other measures as are indicated for the nephritis should be employed concurrently. Under such a program urinary findings of the type described usually disappear, however, the patient must be kept under close surveillance to make certain that the kidney damage is not extensive and of a permanent nature.

REMOVAL OF FISH HOOKS

To the Editor—I was much interested to read in *Queries and Minor Notes* Department in *The Journal*, May 22, 1943, page 268, the discussion about fish hooks. My office and house are surrounded by wharves, beaches and cliffs, all giving access to the Atlantic Ocean and amateurs come from New England's industrial area to leave fish hooks, ashore and afloat. On the theory of chance, a certain number of hooks end up in human flesh usually in *persona propria* but frequently in *alter*. The presence of the hook is a psychologic as well as a physical hazard and everybody goes to work to extract it. There are two schools of thought—the 'push 'em out' school and the 'pull 'em out' school. How many of these subscribers to either of these techniques are successful, I do not know because I never see them. I believe they are few or none. The ones I see are those who are in shock as the result of one of their misguided enthusiasms, with the hook still in. I should like to recommend a little 2 per cent procaine hydrochloride alongside the shaft, a rubber band for a tourniquet, an incision parallel to the shaft with a wide blade along the barb, and out comes the hook with a wide, cleanly incised wound behind to treat according to one's fancy and the latest style. These wounds never get infected, never fail to heal nicely and the patients are greatly surprised. With all these questionnaires as to specialty, I have often thought of answering fish hooks. It certainly would have to be no more silly than some of the others. But I think I would have to take a trip to the Grand Banks really to qualify as a specialist. If Kipling was right the technic is the same minus the anesthesia but not the 'push 'em or 'pull 'em business—that would be too heroic for even the 'Captains Courageous'.
Edward M. Cook, M.D., York Harbor, Me.

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ROCKY MOUNTAIN SPOTTED FEVER

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CASPER, WYO

Western physicians are offered an unusual opportunity for study of Rocky Mountain spotted fever, one not commonly extended their colleagues in other sections of the country. Since identification of the first cases of the disease in the East shortly more than a decade ago, tick fever has stimulated additional interest among members of the profession from year to year because of the apparent rapid dissemination throughout our nation. Those in practice elsewhere are for the most part unfamiliar with manifestations of the disease. There is a distinct obligation to furnish them with accurate information regarding it. The subject of tick fever is an extensive one. No attempt should be made in a single article to deal with its numerous phases but rather to select those of major importance and to present material for further thought and consideration on a disease entity which can in time assume proportions of grave national significance.

Tularemia and tick fever are two diseases which have been dealt with from beginning to end by American investigators. More concisely, the latter condition has been dealt with almost in its entirety by those of the West. The risks run and sacrifices made by Dr Walter Reed and his associates during their yellow fever studies are noteworthy. The ones of Dr Howard Ricketts, his colleagues and contemporaries in their tick fever researches are equally outstanding. Unfortunately they have never received the recognition to which they are rightfully entitled. It is felt by some that in the future the name Rocky Mountain spotted fever as it applies to the disease will or necessity be changed. It is nationwide in distribution and carried by numerous species of ticks besides wood ticks. Although we commonly refer to the disease as "tick fever" for the sake of brevity the present accepted terminology of Rocky Mountain spotted fever serves to identify it among medical men and to honor the original investigators forever in the pages of American medicine.

It is not known whether tick fever was originally a disease of the eastern and southeastern sections of the country, carried from there westward by emigrants in their heterogeneous wagon trains, or one of the West carried eastward by more rapid means of communication at the turn of the present century. It is a rickettsial infection, closely related in many respects

to typhus fever a disease generally conceded to have been existent in certain parts of Europe and Asia for countless centuries. It is believed by most that tick fever was never absent from the Western states.

Prior to entrance of white men into the Rocky Mountain regions, references made to the disease by resident Indian tribes although legendary were nevertheless prevalent. It is probable that tick fever was endemic in localities where the savage nomads resided because they carefully avoided infested regions as much as it was possible for them to do during tick seasons. Early explorers stated that medicine men related to them the Great Spirit would not allow travelers to enter much less traverse certain sections of His domain during the spring and early summer months. To do so invited His displeasure, manifested by illness and possible death. Subsequent investigations have shown the forbidden regions to be ones where the disease has apparently been prevalent from time immemorial. Lewis and Clark made no mention of a disease entity simulating tick fever or of ticks during their extensive wanderings in the western country. They passed through and camped in several infested localities at the optimum time of year. In other respects they kept rather complete and comprehensive records of their travels.

Other explorers did not tell of the disease. It is assumed that they were unfamiliar with its manifestations. It was not until Mormon emigrants traveled overland to Utah and gold seekers to California that the first comprehensive references to conditions simulating tick fever began to appear. Army surgeons stationed at the various frontier posts came in contact with the disease. They apparently confused it with conditions known to them in the East, altered in the raw western country by climate and environment.

Pioneers of the medical profession in the unsettled West were primarily workers. Not being recorders they left little information for posterity on tick fever. Over a period of many years most of them were not aware that a new disease entity had been encountered. In time observant physicians practicing in heavily infested areas came to recognize that they were encountering a strange disease or group of diseases.

Progress in knowledge of tick fever was slow and tedious, observations on the disease often being confusing and contradictory. It was not until residents of the Bitter Root Valley of Montana began to doubt the expressed theory that it was caused by drinking snow water which had flowed through decomposed sawdust and to suspect wood ticks as vectors that tangible information was sought. A series of brilliant studies were undertaken. They revealed that tick fever was due to bites from infested wood ticks and isolated the causative micro-organism. Painsstaking investiga-

Read in part before the regional meeting of the American College of Physicians Great Falls Mont May 1 1943.
Drs. R R Spencer R R Parker G E Davis H R Cox and N H Topping of the National Institute of Health Dr N H Savage epidemiologist of the Wyoming State Health Department and others lent material and gave helpful suggestions making the preparation of this paper possible.

tions followed. They were successful in establishing other important features of the disease so that in time a clear concept of its many phases resulted.

As the western country became more populated, the number of cases of tick fever increased at an alarming rate, finally threatening to decimate certain sections of the newly won virgin territory. A laboratory was established for the purpose of further studies on the disease at Hamilton, Mont., in the center of the western endemic area, the site selected being one where need for added investigations appeared to be most acute. In time the laboratory was taken over by the United States Public Health Service and from a humble beginning it has grown to the modern, up to date and scientific institution with which we are familiar. The outstanding investigators in the Division of Infectious Diseases of the National Institute of Health have given us most of our present knowledge on tick fever and tick borne infections in general, as well as a great deal that pertaining to other rickettsial diseases, notably typhus fever and allied conditions.¹

The cause of tick fever is generally agreed to be a micro-organism, *Dermacentor andersoni rickettsii*. It is a gram negative Rickettsia, best identified in infected tissues by means of modified Giemsa's stains. Rickettsias are small, intracellular, coccoid or bacillary bodies observed in the tissues of infected animals. They were first described in typhus fever by Ricketts, who succumbed to the illness and in whose honor they received their name. Rickettsias can be cultivated on living tissues. To the present, attempted growth on mediums free from living cells has met with failure. They probably represent a new type of micro-organism, bacterium-like in character, displaying the same characteristics of staining shown by spirochetes. It is possible that rickettsias are pathogenic organisms adapted to insect life and peculiar to insects.

They are most difficult to study because of their minute size. In ticks rickettsias undergo a morphologic sequence indicative of a life cycle. They multiply within nuclei of cells and in cytoplasm. In human tissues they exist mainly as relatively large, deeply stained lanceolate forms in pairs, measuring approximately 1 micron in length. Three definite types are recognized in ticks. They are seen early in the infection as faintly staining rods without granules. Minute rod-like bodies are later seen, displaying chromatoid granules. The third forms are relatively large and lanceolated, being similar to those found in mammalian tissues. It is possible that the micro-organism is passed between hosts in this form.

Dermacentor andersoni, the wood tick, is the vector of tick fever in the western endemic areas. It is a three host blood sucking tick. Blood is probably its only food. Three meals are necessary for it to complete a life cycle. Blood ingestion stimulates metamorphosis

of larval into nymphal forms, nymphal into adult forms and brings about fertilization and egg laying in adult female ticks.

Female meet male ticks while feeding on larger wild or domestic animals. Following feeding, impregnation occurs. Female forms become enormously engorged, owing to the presence of ingested blood. In nine days they drop to the ground and hide away. Seven days later they begin to lay eggs at the rate of 300 a day. The eggs accumulate in a pile. The process takes a period of three weeks, during which time 2,000 to 7,000 eggs are laid. After an incubation period of thirty days they hatch into small six legged larval forms, which crawl to a convenient bush, weed or clump of grass, there lying in wait for small rodent hosts. They commonly attach themselves around the eyes or ears of the animals, partake of blood meals and after a period of six days fall to the ground and hide away. They molt into somewhat larger forms, the eight legged nymphs. Feeding and change take place in the midsummer months.

Nymphal forms lie dormant until spring. With advent of warm weather they seek similar vantage points, there lying in wait for rodent hosts. Following attachment they feed for a week, drop to the ground, hide away for three weeks and molt into adult male and female forms. By the time adult ticks have made their appearance it is too late in the season for them to seek hosts. They hibernate until spring, at which time they seek vantage points and lie in wait for larger wild or domestic animals. After attachment has occurred, the life cycle begins anew.

Tick fever is not a disease primarily of human beings but is one of animals and would exist if the former were eliminated from the picture. Ticks are not parasites of the human race. When individuals are bitten, the occurrence is purely an accident.

In the western section of the country the tick season begins early in the spring, usually around the middle of March. It continues for approximately three and a half months and tapers off around the first of July. The appearance and disappearance of ticks is governed by conditions of moisture and temperature. They may appear earlier one season than another and likewise disappear earlier. If adult ticks do not find hosts the first year, they hibernate through the winter and try the following spring. If they fail to find hosts at that time, they again hibernate and try again the second year. It is not unusual for them to survive at least four years when hosts are not found in the interim.

Wet damp weather makes ticks less active. As a result they are less apt to seek hosts. Warm dry weather brings them into full activity, so that they attach themselves readily. When ticks emerge in the spring from hibernation, their virus virulence is low. If subjected to incubation or allowed to ingest blood, they gain the ability to bring about frank infections. The phenomenon is called "reactivation." It accounts for the observation that but few cases of tick fever are seen for a variable period of time following appearance of ticks in the spring. After they have lain dormant all winter the infectiousness of virus carried by them is at a low ebb. With advent of warm weather the vectors become activated and quickly infectious. As a result, the number of cases of the disease increase as the season advances. In any locality tick fever can occur in the colder months of the year, granted that there is an abundance of warm sunshine or adequate cover.

¹ Badger, L. F., Dyer, R. E., and Rumreich, A. S. Infection of Rocky Mountain Spotted Fever Type. Identification in the Eastern Part of the United States, Pub. Health Rep. 46: 463 (Feb. 27) 1931. Is Rocky Mountain Spotted Fever Present in the Eastern United States? editorial, J. A. M. A. 96: 1146 (April 4) 1931. The Spread of Rocky Mountain Spotted Fever, editorial, Ann. Int. Med. 13: 739 (Oct.) 1939. Ricketts, H. T. Role of the Wood Tick in Rocky Mountain Spotted Fever and Susceptibility of Local Animals to This Disease, J. A. M. A. 49: 24 (July 6) 1907. A Micro Organism Which Apparently Has a Specific Relationship to Rocky Mountain Spotted Fever, ibid. 52: 379 (Jan. 30) 1909. Rumreich, A. S., Badger, L. F., and Dyer, R. E. The Typhus Rocky Mountain Spotted Fever Group. An Epidemiologic and Clinical Study in the Eastern and Southeastern States, Pub. Health Rep. 46: 470 (Feb. 27) 1931. Toomey, Noxon. Mountain Fever and Spotted Fever of the Rocky Mountains, Ann. Int. Med. 5: 585 (Nov.) 1931. Typhus like (Spotted) Fever from Tick Bite, ibid. 5: 1296, 1932. Baker, Cohen, Parker. Rocky Mountain Spotted Fever. Pincoffs and Shaw. Ricketts and Gomez. Symposium. Rocky Mountain Spotted Fever.

tions of artificial heat. These factors release ticks from their dormant state, reactivating them so that they move about in search of hosts.

During cold months of the winter nymphal and adult forms lie in hibernation under decaying vegetable matter, logs or stones or in the thick coats of animals. Eggs and larval forms are quickly killed by cold or inclement weather, but adult and nymphal ones are remarkably resistant to such changes. Larval nymphal and adult ticks feed during successive years. Larval and nymphal forms pass the virus of infection to adult forms of the same generation, and adult female ticks pass it to their progeny by means of eggs which they lay. Adult ticks infect one another during the act of copulation. Infection from eggs is carried by larval and nymphal forms of that generation.

Transmission of tick fever by species other than wood ticks is apparently possible. By making modifications for altered life cycles and host habits of other types, maintenance of the disease is explained wherever it exists. At least eight other species have been incriminated. It is known that they serve as carriers of the infection in nature or both as carriers and transmitters of it to human beings. The potentialities of the majority of them with the exception of *Dermacentor variabilis*, the common dog tick, are not completely understood. As ticks are widely distributed in nature, for every section of the country where tick fever has made its appearance native species have been isolated and their potentialities partially identified.²

The gross or macroscopic findings detected in those who have succumbed to tick fever are neither numerous nor distinctive. The petechial eruption persists after death, and an early rigor mortis sets in. The muscles are normal. The skin demonstrates subcutaneous hemorrhages. Gangrene may be present, commonly affecting the scrotum, faucial pillars or soft palate. The peritoneal, pleural and pericardial cavities are normal. The lungs show hypostasis. Occasionally bronchopneumonia is found. The heart may have hemorrhages into the pericardium. The right side is distended with blood, the left side contracted. No lesions of the aorta, vena cava or large vessels of the extremities or trunk are found. The spleen is enlarged, being soft or firm in consistency. The liver demonstrates fatty changes. It is enlarged and pale, and injection is apparent. There is stasis of bile in the ducts. There are no gastrointestinal lesions. Pancreatic enlargement may exist. The kidneys are at times enlarged, being injected and degenerated or fatty. There may be injection of the renal capsules and all serous membranes. The uterus and bladder show no lesions. The lymph nodes are usually enlarged. Central nervous system lesions consist mainly of injection of the meningeal blood vessels.

Microscopic findings are more typical. Certain variations are said to exist between eastern and western forms of the disease, to which the interested reader is

referred for further study. The alterations typical of the disease are found in the blood vessels of the skin, subcutaneous tissues, testes and appendages. Blood vessels of the skeletal muscles are spared. Early vascular lesions consist of proliferations of the vascular endothelium accompanied by infiltration of the vessel walls with mononuclear cells and polymorphonuclear leukocytes. Thrombus formation follows degeneration of the proliferated endothelium. There are heavy perivascular accumulations of mononuclear cells, presumably of endothelial origin. The endothelial reaction, followed by necrosis of the small blood vessels of the skin is the mechanism of cutaneous and subcutaneous hemorrhages. Other features of the rash are explained by the occurrence of occluding thrombi in small arteries and veins. The changes brought about by the disease are so typical that tick fever may well be called a condition of the peripheral blood vessels or an acute specific endangitis.

The minute causative micro-organism may be demonstrated with considerable difficulty in the blood vessel walls in the endothelium and smooth muscle fibers of the media in relationship to thrombi. Vascular and diffuse cellular lesions and focal necrosis of the heart muscle and at times lesions of the vasa vasorum of the aorta are found. Capillary and sinus thrombosis and focal necrosis of the liver and spleen occur, accompanied by reticulum cell swelling. The spleen shows pronounced engorgement, there being extensive phagocytosis of red blood cells. The lymphoid tissue is decreased in amount. A reticulum macrophage reaction occurs in the lymph nodes which may terminate in necrosis. Adrenal alterations are either slight or absent. The accumulation of endothelial cells in the blood vessels of all organs including the gastrointestinal tract indicates the general reaction to the disease. No particular lesions of the central nervous system are recorded.³

Tick fever has a usual incubation period of from four to eight days, the extremes being two to twelve. The prodromal manifestations resemble those of any febrile illness, there being malaise, headache, anorexia and chilly sensations. They vary in degree, lasting an average of two or three days.

The disease usually has abrupt onset, initial symptoms often appearing in the late afternoon or early evening. There is a definite chill, pronounced frontal headache and severe aches and pains in the muscles, bones and joints. The latter are more pronounced in the back and lower extremities. Firm pressure over the calf muscles or free motion of them often elicits pain. Crawling or attached ticks are sometimes detected on inspection of the patient. Although none are usually found, indurated sites of former attachment may be palpated. Inspection of the bite areas reveals nothing unusual with the exception of occasional discolorations from subcutaneous blood extravasation. The regional lymph nodes are at times palpable and tender.

There may be an initial elevated macular rose-colored eruption, similar to that common in measles. Its presence is not distinctive. The petechial eruption first appears on the wrists and ankles twenty-four to

2 Mokler V A. Rocky Mountain Spotted Fever (Tick Fever Mountain Typhus Trail Fever). *J. Lancet* 5:4 781 (Dec. 15) 1934. Parker R R. Certain Phases of the Problem of Rocky Mountain Spotted Fever. *Arch. Path.* 15 398 (March) 1935. Ticks of the United States in Relation to the Disease in Man. *J. Econ. Entomol.* 30 5 1937. Rocky Mountain Spotted Fever. *J. A. M. A.* 110 1185 (April 9) 1273 (April 16) 1938. Parker R R, Philip C B and Jellison W L. Rocky Mountain Spotted Fever. Potentialities of Tick Transmission in Relation to Geographic Occurrence in the United States. *Am. J. Trop. Med.* 13 341 (July) 1933. Pinkerton Henry and Hass G M. Spotted Fever. Intranuclear Rickettsiae Studied in Tissue Culture. *J. Exper. Med.* 56 151 (July) 1932. Sampson J S. Rocky Mountain Spotted Fever. A Review of the Literature with Some Previously Unreported Notes from a Number of Wyoming Physicians. Senior Thesis at the University of Nebraska College of Medicine 1936. Baker C, Carey and Duncan. Clinical Notes. Observations on Rickettsial Diseases. Hutton C, Pincoff and Shaw. Ricketts. Role of the Wood Tick. A Micro-Organism. Symposium. Rocky Mountain Spotted Fever. Toomey, Wolbach.

3 Bowersfeld E H. Rocky Mountain Spotted Fever with Unusual Features. *J. A. M. A.* 112 1819 (May 6) 1939. Lillie R D. Pathol. of Eastern Types of Rocky Mountain Spotted Fever. *Pub. Health Rep.* 46 28-30 (Nov. 27) 1931. Maxey E E. Rocky Mountain Spotted Fever Northwest. *Med.* 30 512 (No.) 1931. Richards G G. Rocky Mountain Spotted Fever. *Ann. Int. Med.* 6 1207 (March) 1933. Wolbach S B. Rocky Mountain Spotted Fever. *Pathology and Etiology*. Third Annual Report Montana State Board of Entomology 1919 p. 55. Carey and Duncan. Parker. Rocky Mountain Spotted Fever.

forty-eight hours after the onset of tick fever. It is the most reliable early manifestation of the disease. It may be overlooked in individuals of dark skinned races or ones much tanned on the extremities from overexposure to the elements. It soon becomes sharply perceptible and spreads from the initial locations in a centripetal fashion over the chest and abdomen and thence to the remainder of the body (figs 1 and 2). It is always more pronounced on the extremities than elsewhere. Extension is complete in two or three days. The associated generalized aches are then relieved to a degree, but the temperature remains high. The petechial eruption is thought to be the most characteristic finding in tick fever, but diagnosis of the disease must not be made on its presence. Some patients, particularly those only mildly affected or those previously vaccinated, never show a rash or have an insignificant one; others die before its appearance from toxemia, and yet others demonstrate atypical or bizarre eruptions. Petechiae do not disappear on pressure except during the initial stages of tick fever. They are accentuated by tourniquet application. They may eventually involve the palms of the hands, soles of the feet and mucosa of the inner cheeks and throat. A patient so erupted is truly spotted or speckled, having a rash which covers the entire body. Petechiae may appear in successive crops each of which has an average life cycle of two weeks.

The eruption tends to remain discrete in milder cases of tick fever. It is first rose red and later bluish red. Discreteness does not persist in more severe ones. The petechiae increase in size and become confluent, finally coalescing and then becoming purpuric. A mass of such areas may involve the entire body. If terminal gangrene ensues, with sloughing of the soft palate, scrotum or other dependent portions of the body, the afflicted person presents a tragic appearance (figs 3 and 4).

The petechial eruption gradually fades as patients recover. Fading takes much longer in severe cases than in mild ones. It occurs with the fall in temperature. There may be desquamation, either branlike in character or so complete that casts of body parts are



Fig 1—Petechial eruption on upper extremities during early stages of Rocky Mountain spotted fever. The original sites were on the wrists but extension to the hands and lower arm regions has begun.

exfoliated. Pigmentation remains at former petechial sites. It may be followed by formation of minute cicatrices. For several months following recovery from tick fever, overexposure to heat or cold often brings out temporary manifestations of the eruption. They last only a short while and clear when the skin temperatures again return to normal.

Temperature rises abruptly within the first twenty-four hours of the onset of the disease. There are but one or two slight remissions, a fastigium of 103 to 105 F being reached by the beginning of the second week in mild cases, by the second or third day in more severe ones. With recovery from acute manifestations



Fig 2—Petechial eruption following extension over the body. The lesions remain discrete but are well distributed over the arms, chest and abdomen.

of the illness, it falls either by rapid or by slow lysis rarely by crisis unless the case is an abortive one. There may be slight temperature remissions in mild cases, but it is constant to slightly rising in more severe ones. It is sometimes distinctly remittent after the first few days, particularly in moderately severe protracted cases, but never ceases until terminal lysis has occurred. The temperature may be normal from the first or subnormal in very severe forms of the disease, to rise sharply in the twenty-four hours preceding death, or it may be high from the first, then drop to normal and rise again before death occurs. If the temperature drops uneventfully to normal and later shows a secondary rise without apparent justification, complications must be sought for.

Early in the disease the pulse is of good volume. It is slow, averaging 90 beats a minute. Early disproportion of pulse and temperature ratios is one of the characteristics of tick fever at its onset. When myocardial weakening ensues in severe cases as a result of toxemia, loss of strength and volume of the pulse occurs. It rises out of proportion to the temperature. As a result of cardiac involvement the blood pressure falls and the first heart sound becomes muffled and indistinct.

The respirations are at first normal or but slightly increased. They accelerate in severe cases, with alterations of the pulse and temperature ratio. Increase in rates often signify the development of broncho pneumonia.

The foregoing manifestations are considered to be the most typical ones in tick fever. There are other findings. They exist in various combinations, their intensity often depending on the severity of the existent disease process.

Patients moderately or severely ill with tick fever are severely prostrated. The senses are dulled. Although afflicted persons appear rational to superficial examination, close inspection reveals that they are mentally confused. There is amnesia. It may persist until the eruption is complete or for some time afterward. Patients appear anxious and concerned over their illnesses. The eyes are injected and the cheeks flushed.

There may be photophobia. Nervous disturbances such as lethargy, restlessness or nervous irritability are frequent. Children are prone to convulsions and may die during them. Insomnia is at times troublesome. There can be active delirium particularly in severe cases during the terminal stages of the illness. Muscular twitchings or fibrillatory tremors are common. Muscle tonus is definitely increased throughout the body. Aches and pains in the muscles persist throughout the disease. At times the distress from them is agonizing. When located in the muscles of the abdomen an acute surgical condition can be simulated. Movement of the neck muscles often elicits slight stiffness.

The tongue is swollen and moist early in the disease. In severe cases it becomes dry and coated with a darkened border and prominent papillae. The tongue often protrudes from the mouth when profound swelling ensues. It becomes fissured and covered by sordes if coma occurs. There is pharyngeal engorgement accompanied by a dry, hacking nonexudative cough indicative of bronchial irritation. There is often profound chilliness. It is not shaking or chattering in character but tends to be most persistent and drawn out frequently lasting for a period of from two to four hours.

The skin is tender. Many patients complain bitterly of pressure from light bed coverings or drafts of air. As the disease progresses it becomes dark red or bluish in more severe cases, the color changes being most evident on the back and thighs. An ill defined bluish discoloration is commonly seen beneath the skin surfaces when patients are examined under satisfactory light conditions. Dependent portions of the body such as the scrotum or soft palate may slough in severe cases. Necrosis can occur, commonly affecting the prepuce, toes, fingers or ear lobes. Alopecia sometimes appears. It may be permanent.

There is anorexia. Nausea and vomiting take place in some cases, the regurgitated material at times containing blood. Diarrhea occasionally occurs, the stools may be bloody. Constipation is usual. It can be most obstinate and difficult to overcome. Sphincter control is often lost in severe cases. The spleen is enlarged and tender. The liver sometimes demonstrating similar find-

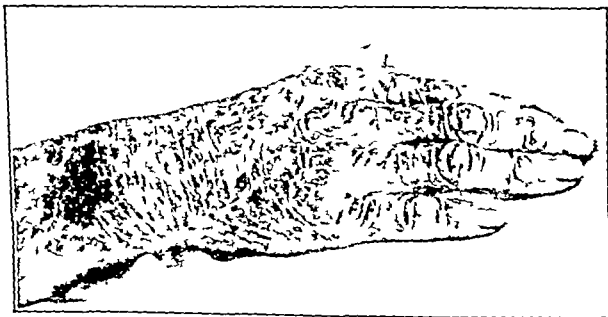


Fig. 3—Appearance of the right hand in the terminal stages of a fatal case of Rocky Mountain spotted fever. Necrosis of the fingers has begun later eventuating in gangrene. The skin of the dorsum of the member being ichthyoid in character and commencing to exfoliate.

ings. There is jaundice. It is nonobstructive in type and tends to deepen definitely in the terminal fatal stages.

Increased muscle tonus may result in an inability to void urine. At times there is incontinence. Urination can be distinctly painful. A lessened secretion of urine sometimes occurs. It is caused either by changes in the kidney or by a failing circulation and is frequently

accompanied by edema. There may be total repression of urine formation at the end in fatal cases of tick fever.

The blood findings are not unusual. There is a lowered red blood cell count and hemoglobin content later in the disease, resulting in a secondary anemia. The total white blood cell count averages 12,000 to



Fig. 4—Advanced terminal necrosis of the toes and feet of a fatal case during the final stages of Rocky Mountain spotted fever later eventuating in massive gangrene of the parts.

15,000. It may be as high as 30,000. A relative mononucleosis is common, the average being 10 to 12 per cent.

The urine may be highly colored. There is an increased specific gravity. Old or debilitated persons commonly show albumin in varying amounts, together with acetone bodies and microscopic alterations. Younger persons or those who have previously enjoyed good health do not manifest urinary changes so frequently.

Blood chemistry studies in tick fever have never been conclusively worked out. There are no significant spinal fluid findings. Demonstrations of the causative micro-organism of the disease in blood smears are so inconstant that time and energy expended in search for them is not worth the effort involved.⁴

Tick fever may be confused with various other infections, particularly when the disease appears unexpectedly in a locality or it encountered by those unfamiliar with its manifestations. The diseases most commonly causing confusion are typhoid and allied conditions: severe measles, smallpox, epidemic meningitis, especially of the septicemic variety, undulant fever, streptococcal septicemia, purpura, typhus fever and Colorado mountain fever. It is not within the scope of this paper to discuss the conditions, references being made to them elsewhere. For the most part confusing diseases can be ruled out by careful histories, examinations and repeated observations of the infected persons together

⁴ Baker, G. E. Rocky Mountain Spotted Fever with Reference to Prevention, Recognition and Treatment. *Rocky Mountain M. J.* 35: 36 (Jan.) 1938. Rocky Mountain Spotted Fever. *Ann. Int. Med.* 17: 247 (Aug.) 1942. Clinical Notes. Observations on Rickettsial Diseases. *Seminars* 4: 6. 1942. Cohen, M. H. Unusual Case of Rocky Mountain Spotted Fever in Southeastern Pennsylvania. *J. A. M. A.* 115: 1441 (Oct. 26) 1940. Pincoffs, M. C. and Shaw, C. C. Eastern Type of Rocky Mountain Spotted Fever. Report of a Case with Demonstration of Rickettsiae. *M. Clin. North America* 16: 1027 (March) 1933. Caley and Duncan. Hutton. Parker. Rocky Mountain Spotted Fever. Symposium. Rocky Mountain Spotted Fever.

with confirmatory laboratory studies. The three diagnostic procedures ordinarily employed are the infection test, the Weil-Felix agglutination reaction and the protection or virus neutralization test. They are not dealt with in this article. References to them may be found in other papers.¹

Tick fever could be completely eradicated were it possible to dispose of vectors of the disease. The undertaking is an impossible one. Conditions favorable to ticks exist in all localities where the disease is found. These allow hosts for both immature and adult forms to flourish in abundance. Vegetation and physical conditions exert an indirect influence, because they afford suitable surroundings for animals serving as tick hosts. Once established in a locality, ticks continue to thrive if there are sufficient numbers of wild or domestic animals present.

Prevention of exposure to infection is secured only by remaining out of localities where ticks abound. Such precautions are not at all times possible or feasible. Those entering infested localities should wear trousers, gathered by some means at the bottoms in order to prevent vectors from crawling up the legs. Ticks do not jump on those who pass their vantage points but lie in wait on low grass or vegetation not over a foot and a half above the surface of the ground, actively moving their numerous serrated legs, by which means they seek transfer to objects that brush by. Clothing should have a minimum of seams and openings in order to prevent their ingress to body surfaces. Smooth clothes prevent ticks from gaining footholds, yet those with a rough nap impede their progress once they have got on the body covering. It is a good plan while in tick infested localities to pass the hand occasionally over the back of the neck in order to detect crawling ticks. They may gain access to the body by working themselves beneath the collar.

Clothing should be removed at least two or three times a day and the body thoroughly examined for the presence of crawling or attached ticks. As they hide away in body folds, crevices and hairy portions free from rubbing, a diligent search must be conducted. Camps should be located where rodents are few, preferably in places where no low grass, sagebrush or small bushes are growing. Wooded areas along creek banks are best avoided, as are the vicinities of old trails and roads. Ideal camping spots are usually where standing timber is present with a minimum of low vegetation. Persons must again inspect their persons, clothing and bedding before retiring for the night in the open. The precaution is most important when 2 persons sleep in close proximity. Infected ticks may attach themselves to both persons successively. The first one may escape infection or be but mildly ill, the second one more seriously so from reactivation of virus in the tick vector by blood ingestion from the first victim. While in tick infested localities it is unwise to leave bedding spread on the ground during the day. It attracts ticks, often from a considerable distance. After return from trips, clothes and bedding should be carefully gone over, aired and then removed to buildings not used for human habitation. Once ticks have taken up their abode in a location, eradication is apt to prove most difficult and uncertain.

When ticks gain access to the body surfaces they move slowly about for a variable length of time, during which they seek suitable locations for attachment. The process is not noticeable to victims, nor are they usually

aware of crawling ticks. It is supposed that vectors of the disease are not actively infectious until several hours have elapsed, but little reliance can be placed in this contention. When located, attached ticks must be removed without delay. The procedure is one requiring considerable skill and perseverance if it is to be safely accomplished. As a rule the head of the tick is embedded beneath the surface of the skin, the body remaining free and protruding at an angle from it. The head is held firmly in place by mouth parts, so that hasty or careless plucking often serves to remove the body alone, leaving the remainder in place to serve as a potential source of infection. Gentle traction may be successful in removing the tick. Close inspection then reveals it to be intact, often with a small fragment of epidermis caught in the mouth parts. Failing in the procedure, a small piece of epidermis in which the tick's head lies embedded must be elevated with a pair of tweezers and a tentlike wedge of tissue snipped with a fine pair of scissors. The maneuver is accomplished in a matter of seconds and insures complete removal. Resultant wounds from tick extraction by any means are to be thoroughly cauterized by means of phenol, silver nitrate, iodine or similar agents. A light dressing can then be applied. Care must be exercised so as not to crush ticks. If the accident occurs, the discharged contents should be thoroughly washed from the hands by soap and water, care being exercised not to irritate the skin. For the reason that virus is apt to be highly infectious, even on unabraded skin surfaces, precautions for its removal are most important. Removal of engorged ticks with bare hands is a dangerous practice.

Tick vaccine gives protection against tick fever. It is prepared by the Rocky Mountain Laboratory of the National Institute of Health, Division of Infectious Diseases, at Hamilton Mont., and is dispensed to physicians desiring it for the purpose of immunizing those who run the danger of being exposed to the disease. Tick vaccine is made in two types, the older one from tick tissues and the more recent one from embryonic chick tissues. The chick embryo type has not superseded the vaccine prepared from ticks, and, although it is less likely to cause reactions, evidence regarding its immunizing value is not so certain. Recommended dosage of tick tissue vaccine for those who have never previously been vaccinated is 2 cc., repeated at an interval of from seven to ten days. If the particular locality is one in which serious cases of tick fever are known to originate, the second injection must be followed by a third, administered after the same time interval. Children receive a proportionate amount of material, 1 cc. being recommended for those 10 years of age or younger. Dosage of the chick embryo type is slightly different, in that three injections of 1 cc. each, administered at the same time interval, are recommended. For individuals who have been vaccinated each of the past three years, two injections of 1 cc. each of either the chick embryo or tick tissue types are suggested.

The degree of protection afforded by vaccine and the duration of such protection varies with vaccinated persons and the virulence of infection to which they are exposed. As a rule, those vaccinated in the spring of the year retain a considerable degree of immunity for at least the remainder of that year. This is usually sufficient to afford full protection against relatively mild strains of the disease but is progressively less effective as virulence of the virus is increased. Nevertheless

against even the more severe forms of tick fever it is usually adequate to anchorate materially the usual stormy course of the infection so as to insure ultimate recovery. It is probable that a certain proportion of individuals carry an indefinite degree of immunity into the second year even against highly virulent strains

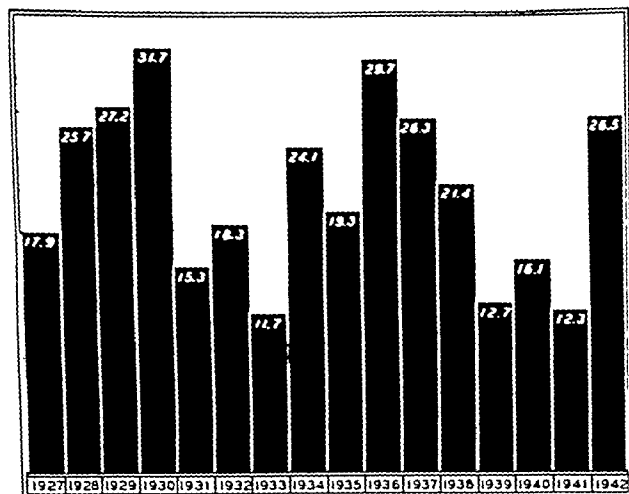


Fig 5—Case fatality rates from Rocky Mountain spotted fever in Wyoming from 1927 to 1942. 1930, 1936 and 1942 were years of high fatality rates. 1927, 1933 and 1939 ones of low fatality rates. There is apparently a definite six year occurrence of high and low rates. (Courtesy Dr. H. Savage, epidemiologist, Wyoming State Health Department.)

of virus. The degree of protection appears to be greater in those who have been vaccinated for two or more successive years. Evidence does not indicate that any considerable degree is carried into the third year. In order to afford the greatest degree of protection possible, it is recommended that immunization be performed each year.

Intramuscular administration of vaccine is not known to bring about more than a slight constitutional reaction. The same precautions must be observed as with the injection of any biologic product intended for an immunization procedure. Immediately there ensues a sensation of fullness at the site, followed by one of smarting or stinging. Itching may occur, exacerbated by scratching or rubbing the part. A generalized malaise sometimes is noticed, often with a slight febrile reaction. The manifestations are usually transitory, subsiding before subsequent administrations of the material. These usually result in much milder symptoms or none at all. Reactions to the use of vaccine have not been so prevalent in recent years. It has been purified and standardized, and of late embryonic chick tissue preparations prepared by the yolk sac method of Cox have been extensively used.⁵

Treatment of tick fever is purely symptomatic and supportive in character. There is no specific. Its absence must not predispose to an attitude of helplessness and hopeless inactivity on the part of those caring for the disease. Carefully directed symptomatic care and supportive measures aid patients to eliminate toxins from their bodies, support them during the period of

invasion and assist them in every means possible. Vigorous yet well directed procedures bring about successful outcomes for many patients whose recovery appears hopeless at the time they are first placed under care.

Bed rest with good nursing care is necessary from the beginning of the illness in order to conserve strength as much as possible. At the onset patients frequently do not appear ill enough to make the precautions necessary, but the rapidity with which serious manifestations appear make those in attendance thankful that they have been insisted on. Patients must be kept as quiet as possible, both mentally and physically. Baths, packs and simple sedation are often effective. If codeine or even morphine is indicated, they must be used as freely as necessary. Bath temperatures should be 70 F or above to be safely tolerated. Cold or tepid bathing often results in shock to seriously ill victims of tick fever.

The gastrointestinal tract needs careful watching. Regular elimination may be facilitated by mild enemas or cathartics. The diet should be nourishing, adequate and easily digestible. Frequent urinary examinations are indicated. They detect pathologic alterations at their onset. Fluids must be freely given by mouth if tolerated. When there is excessive vomiting they may be administered by other routes. Adequate amounts combat the ever present trend to acidosis.

It may be necessary to support the heart should myocardial weakening appear imminent. Care to the skin is important. Equal parts of hamamelis water and alcohol in water applied once or twice a day as a sponge often comforts and invigorates severely ill patients. It removes soreness from muscles and revives them. They are less mentally dulled, appearing stronger for several hours following the procedure. Mouth hygiene is important. Oral antiseptic washes rid the region of accumu-

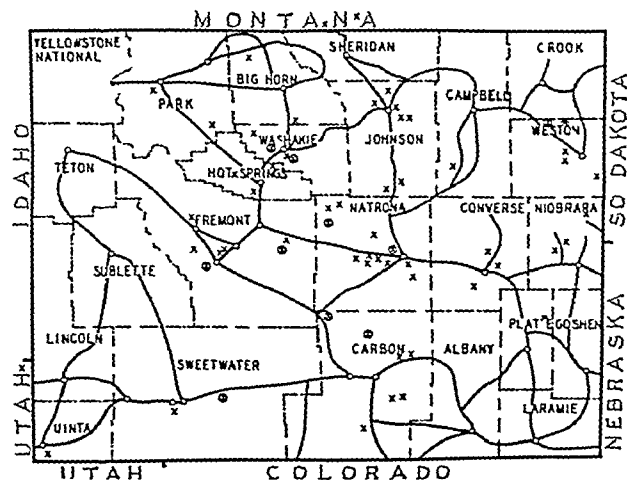


Fig 6—Cases and deaths by sites of infection for 1940. There were 62 cases of Rocky Mountain spotted fever with ten deaths. Three of the cases were out of state infections, 2 in Montana and 1 in Utah but were reported by Wyoming physicians. (Courtesy Dr. H. Savage, epidemiologist, Wyoming State Health Department.) Symbols on maps: x cases; o in circle deaths; * infected in Wyoming, death in adjoining state.

lated waste products, so that sufferers are made more comfortable during the acute phases of the illness.

Convalescent serums and transfusions have been resorted to, apparently without beneficial effect. Auto-hemotherapy has been used by some physicians, 10 to 20 cc of citrated blood from the patient being read-

5 Cox H. R. Use of Yolk Sac of Developing Chick Embryo as Medium for Growing Rickettsiae of Rocky Mountain Spotted Fever and Typhus Groups. *Pub. Health Rep.* 53:2241 (Dec. 25) 1938. Rocky Mountain Spotted Fever. Protective Value for Guinea Pigs of Vaccine Prepared from Rickettsiae Cultivated in Embryonic Chick Tissues. *ibid.* 54:1070 (June 16) 1939. Ricketts H. T. and Gomez L. Studies in Immunity in Rocky Mountain Spotted Fever. *J. Infect. Dis.* 5:221 1908 Symposium. Rocky Mountain Spotted Fever. *Internat. M. Digest* 41:312 (Nov.) 1941. Baker¹, Carey and Duncan², Hutton³, Parker⁴. Rocky Mountain Spotted Fever⁵.

administered intramuscularly. The procedure is repeated as often as necessary. Many drugs have from time to time been lauded as specifics in the treatment of tick fever. It is agreed that the action of the majority of them is not certain and for that reason they have been generally discarded. Drugs of the sulfonamide series

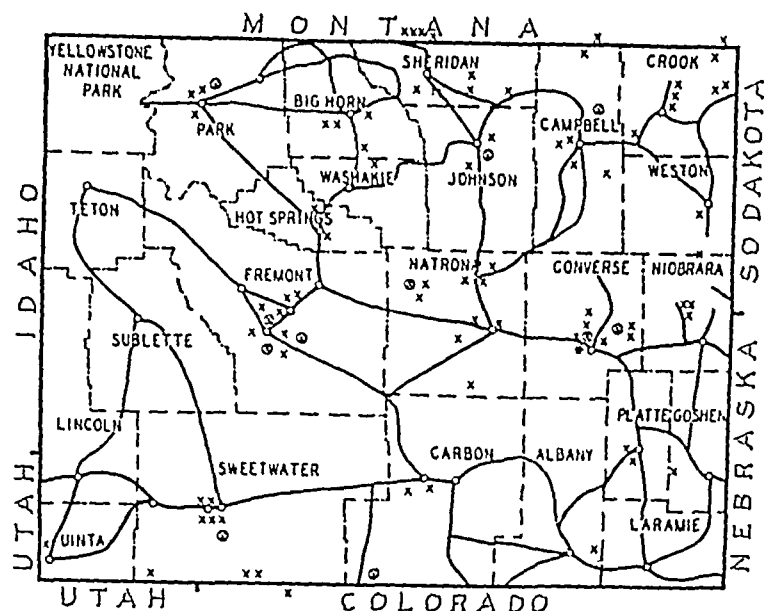


Fig. 7—Cases and deaths from Rocky Mountain spotted fever in Wyoming, by sites of infection for 1941. There were 89 cases with eleven deaths. Seven of the cases were out of state infections, 6 in Montana and 1 in Colorado but were reported by Wyoming physicians. (Courtesy Dr. N. H. Savage, epidemiologist, Wyoming State Health Department.) * Infected in Wyoming, died in Colorado.

have little or no value in the management of tick fever, according to information available on them at this time. If bronchopneumonia, phlebitis or other complications due to secondary invaders appear, their use is certainly justified, the drugs of choice depending on the nature of the invading micro-organisms. Recently Topping has produced an immune serum in rabbits, using tick virus as the antigen. The rabbit serum has been shown to contain large amounts of antibodies. Satisfactory results have been achieved from its use, at first in animal experimentation and later in an increasing number of human beings. Tick vaccine must never be used for treatment. It has no beneficial action when used for this purpose. In milder cases its use is too drastic to be justified, in more severe ones it may prove dangerous as regards ultimate recovery.⁶

Tick fever appears to have a cyclic tendency, more cases appearing during some years than others, the reason for the trend is unknown, but it is believed to depend on local and regional conditions. The number of individuals exposed, the abundance of ticks, the percentage of ticks carrying infection, the capability of virus to produce frank infections and the possible relationship between the prevalence of ticks and animal hosts seem to play a part.

The highest incidence of tick fever in the western area is from the early spring into the early summer months. In the mountainous regions it is highest during the late spring months, owing to delay in the advent of warm weather. In the eastern areas the disease is more prevalent in the late spring and early summer months, but cases can occur in the fall of the year.

6 Carey, L. S., and Duncan, G. G. Rocky Mountain Spotted Fever in the East, J. A. M. A. 110: 175 (Jan. 15) 1938. Clinical Notes Insect Incendiaries, What's New 66: 7, 1943. Hutton, J. G. Rocky Mountain Spotted Fever, J. A. M. A. 117: 413 (Aug. 9) 1941. Topping, N. H. Rocky Mountain Spotted Fever. Treatment of Infected Laboratory Animals with Immune Rabbit Serum, Pub. Health Rep. 55: 41 (Jan. 12) 1940. Baker, Clinical Notes. Observations. Parker, Rocky Mountain Spotted Fever. Symposium. Rocky Mountain Spotted Fever.

The virulence of tick fever varies greatly in different areas but appears to remain fairly constant in any one region. Reasons for the variance are now known. It is supposed that repeated passages of the virus through successive animal hosts play a part. It is justifiable to speak of mild, moderately severe or severe types of the disease, in view of the great differences in virulence of the infection in various localities and sections of the country.

Practicing medicine in the western endemic area, in a section of Wyoming where tick fever occurs with considerable frequency, I have had occasion to make extensive study of its various aspects. It is possible that the number of individuals stricken with the disease is beginning to show a yearly decrease. Education of the public is a possible explanation for the reduction. Local residents have become aware of the serious potentialities of tick fever. As a result, many of them take very definite precautions in order to avoid infection.

Tick fever in this particular locality is moderately severe to severe in type. Seldom is one of mild intensity seen. As fatalities from the disease closely parallel in number the severity of existent infections, deaths must be expected. For a period of time from 1927 to 1942, during which accurate statistics on tick fever have been kept by the Wyoming State Health Department the average mortality for our (Natrona) county has been 20 per cent. During the same time interval the average for the entire state has been 19.5 per cent. As it is believed that the mortality from the disease for the United States is in the vicinity of 12.5 per cent both local figures are considerably higher than those for the nation as a whole (figs. 5, 6, 7, 8 and 9).

Tick fever has always demanded earnest consideration from members of the local medical profession, residents in the community and surrounding rural areas. For a period of the past fifteen years every fifth person who has contracted the disease has succumbed to it. Symptomatic and supportive measures offer much in treatment, but unfortunately they are not sufficient in

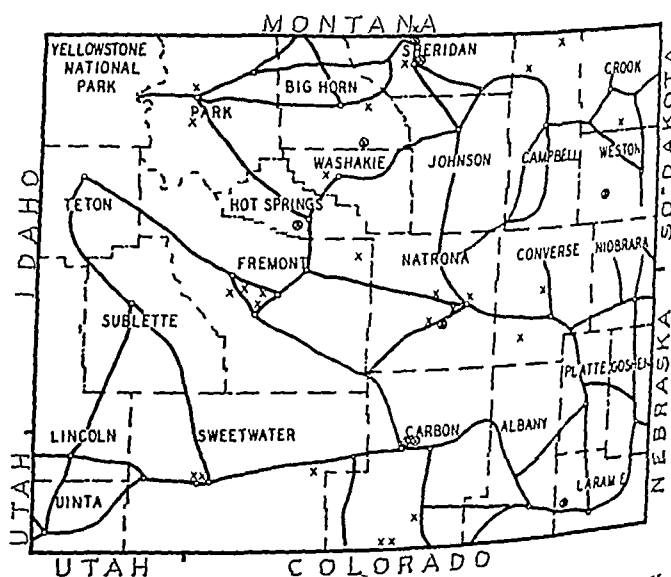


Fig. 8—Cases and deaths from 1942 by sites of infection. There were 36 cases of Rocky Mountain spotted fever with 9 deaths. Two of the cases were out of state infections, 1 in Montana and 1 in South Dakota but were reported and treated by Wyoming physicians. (Courtesy Dr. N. H. Savage, epidemiologist, Wyoming State Health Department.)

themselves to insure recovery. Prognosis in the ultimate depends on the ability of infected persons to withstand ravages of the disease, particularly in reference to myocardial and renal intoxication. Bad omens are those of a confluent purpuric eruption with terminal

sloughing, definite temperature and pulse reactions, severe intoxication of the brain and central nervous system, and the development of complications, particularly in older or debilitated persons or those ill with intercurrent conditions.

In 1934 the late Dr J C Kamp of Casper and I began original investigations on the use of neosarsphenamine dissolved in aqueous metaphen solution administered intravenously. We had previously received encouraging reports of responses obtained by use of the two drugs in combination for treatment of typhus fever. That year we used them in 9 moderately severe cases of tick fever without any deaths from the illness. Response was so gratifying that we decided to administer neosarsphenamine in metaphen in the future as a routine measure in all cases which came under our supervision.

Since that time an average of 3 to 4 cases of the disease have been under my care each season. During the past eight years all those so treated have recovered. Local physicians and ones practicing in other sections of the state have used the two drugs in combination as an adjunct to care for individuals seen by them. Those whom I have communicated with report equally gratifying responses, many of them joining in the firm conviction that neosarsphenamine in metaphen solution is a definite therapeutic aid in treatment of tick fever.

It is not thought that they exert a specific action on manifestations of the disease. Their approach is admittedly uncertain. Benefits derived from their use may be credited to direct action on rickettsias in the tissues. They can be attributable to a combination of the bactericidal action of metaphen together with the spirocheticidal action of neosarsphenamine on a microorganism which is bacterium-like in character yet has staining properties similar at least to those displayed by spirochetes. It is certain that those treated show less evidence of intoxication, minimal damage of the heart and kidneys and a more discrete, brighter colored eruption. The rash does not become hemorrhagic and is usually more sparse in distribution. There are less mental depression and milder nervous symptoms. In fact, the entire clinical picture is less alarming. Convalescence is more rapidly established, being of shorter duration with a minimum of complications. None of the patients had received tick vaccine for the purpose of immunization against the disease.

In the performance of the procedure 0.3 Gm. of neosarsphenamine is dissolved thoroughly in 10 cc. of an aqueous 1:1000 metaphen solution. The resultant yellow and turbid mixture changes but little on standing. It is warmed and injected slowly by vein, the same precautions being observed as with any chemotherapeutic agent intended for intravenous administration. Solution is administered and blood alternately withdrawn into the syringe until the entire amount has been given. The procedure usually consumes a period of five to ten minutes. No reactions local or constitutional, either immediate or delayed, have thus far been observed.

Administration of the two drugs is repeated at three to four day intervals. Three or four injections have customarily been sufficient to ameliorate the clinical picture so as to insure ultimate recovery. Continued or recurrent manifestations would apparently justify additional administration of neosarsphenamine in metaphen solution.

A word of warning appears indicated to those who might contemplate use of the two drugs in combination for treatment of tick fever. Should a case of the disease demonstrate severe renal injury as a result of the infection, careful consideration must then be given to the question as to whether or not their use is justified. The inherent risks associated with drugs of considerable potency on an already damaged kidney must be weighed against benefits to be derived from their administration. It has been my custom to secure first morning specimens of urine for examination on the day the material is to be given. These have never shown sufficient alterations

Cases of Rocky Mountain Spotted Fever, Deaths and Fatality Rates for Wyoming 1940 and 1941, 1942 and 1927 to 1942

	Cases 1940 and 1941	Deaths 1940 and 1941	Cases Fatality Rates 1940 1941	Cases 1942	Deaths 1942	Cases Fatality Rates 1942	Total Cases 1927-1942	Total Deaths 1927-1942	Cases Fatality Rates 1927-1942
Albany	1	0		0	0		16	4	25.0
Big Horn	6	0		2	1	50.0	53	13	22.0
Campbell	7	1	14.3	2	0		64	5	7.8
Carbon	11	3	27.3	2	2	40.0	62	21	33.9
Converse	11	2	18.2	2	0		45	8	16.7
Crook	7	0		1	0		30	2	6.6
Fremont	17	5	29.4	5	0		145	40	27.0
Goshute	1	0		0	0		2	0	
Hot Springs	3	0		1	1	100.0	32	11	31.2
Johnston	10	1	10.0	0	0		71	6	8.5
Laramie	0	0		1	1	100.0	15	4	26.6
Lincoln	0	0		0	0		11	4	36.3
Natrona	22	3	13.6	5	1	20.0	144	29	20.0
Niobrara	7	0		0	0		25	1	4.0
Park	6	1	16.6	2	0		73	9	11.5
Platte	2	0		0	0		15	4	26.6
Sheridan	4	0		3	2	66.6	86	17	19.8
Sublette	0	0		0	0		0	0	
Sweetwater	11	2	18.2	3	0		31	7	22.6
Teton	0	0		0	0		0	0	
Lincoln	2	0		0	0		6	0	
Washakie	6	2	33.3	1	0		64	13	20.3
Weston	5	1	20.0	1	1		31	11	35.5
Montana	8	0		1	0		9	0	
Colorado	1	0		0	0		1	0	
Utah	1	0		0	0		1	0	
South Dakota	0	0		1	0		1	0	
	151	21	13.9	36	9	25.0	1070	209	19.5

Beginning with 1940 all cases and deaths have been allocated to the county or adjoining state where the infection occurred. This gives a more accurate picture of the attack and fatality rates for each county and eliminates out of state infections. Prior to 1937 all cases were assigned to the counties reporting regardless of the site of infection. (Courtesy of Dr A H Savage epidemiologist Wyoming State Health Department.)

One Converse County 1941 death and one Weston County 1940 death occurred out of the state but the infections occurred in Wyoming.

to suggest severe renal disease. For that reason neosarsphenamine in metaphen solution has routinely been given at the time scheduled for its use.

Detailed discussion of several cases of tick fever serves no useful purpose. The majority of them demonstrate clinical manifestations similar to what has been given in the preceding pages. A few have been selected for brief presentation, as they are sufficiently interesting or unusual to emphasize important features of the disease.

REPORT OF CASES

A middle aged rancher and his wife (J D) seen in February 1933 were ill with tick fever. Even though attached ticks were found on both patients at the time they were first examined and complete eruptions had occurred we were at a loss to explain the source of infection. The weather was extremely cold and the ground covered by several inches of snow. Their residence was a single room house heated by a kerosene burner. Examination of a sheepskin coat which hung behind the stove revealed it to have several dormant wood ticks deeply hidden

in the wool lining. The coat had been worn the spring before by another person engaged in lambing activities. It had later been brought to town and discarded in the place where it was later found, being so old and worn out as to be nearly forgotten. It is assumed that artificial heat created by the stove had released tick vectors from hibernation in the coat. They had been aroused from a dormant state and had easily found human hosts. One patient was more ill than the other, but both recovered. It is assumed that in infected tick or ticks had in some manner been reactivated, in feeding on successive hosts or incubation by warmth from the base burner, either of which would have predisposed to increased virulence in vectors of the disease. As a result one of the infected persons was stricken with a severe type of tick fever.

R S, a middle aged shepherd, seen during May 1940, was ill with tick fever, moderately severe in type. The patient had been in Wyoming a month, coming to the state from Pennsylvania, where he had farmed for several years. Prior to becoming ill he had found numerous crawling and attached ticks on his person. They caused him no concern and were carelessly plucked off. On being advised as to the nature of his illness and the manner in which it had been contracted, the patient became most disgruntled, stating that ticks which attached to human beings were common in many sections of the state where he had formerly resided. They were not considered dangerous. To his knowledge no one had ever developed an illness simulating the one he was diagnosed as having. An attached wood tick was detected in the left axilla, deeply hidden by the hair. The tick was removed and shown to the patient. Following careful inspection of it he agreed that those with which he was familiar in Pennsylvania were not wood ticks but ones of another species. The patient made an uneventful recovery. Following discharge from the hospital he left immediately for home and never again returned to Wyoming.

O W, a young housewife, reported for care in May 1941. Her complaints were those of headache and generalized malaise. An attached wood tick was found on the right shin. It was removed and symptomatic measures were instituted. Two days later she was seen again, at that time being quite ill. A beginning petechial eruption was noted on the wrists and ankles, the associated manifestations being those of moderately severe tick fever. The patient consistently denied having been in rural areas before the onset of her illness, stating that she had not left her home for a period of several weeks prior to becoming ill. Her husband was a fishing enthusiast. He had made several trips into tick infested localities, it being a custom for him to place his outing clothes on a line in the yard when returning home. It is believed that he had brought ticks to town with him. As the same line was used by the patient to hang the family washing, it is assumed that an infected tick had dropped to the grass beneath the line and had later attached itself to her. The husband of the patient had routinely been immunized against the disease each spring. She had refused vaccination, as fishing and outdoor activities did not interest her. For that reason she did not feel the precaution to be necessary.

S F, an elderly rancher, was seen in May 1941 suffering from a moderately severe type of tick fever. Although a complete eruption was present at the time he was first seen, he stoutly maintained that he could not have the disease. He had ranched in the same locality for a period of forty-five years. Never having gotten tick fever, it was his assumption that he was immune to it. As serious manifestations from the illness developed rapidly, persuasion was not difficult. The prognosis was guarded because of his age and of a past history of chronic alcoholism. He developed a complicating bronchopneumonia but recovered following a prolonged and stormy illness. During its acute stages he was mentally confused and often irrational. A brother from whom he had been estranged for several years, realizing the seriousness of the patient's condition and believing him about to die, attempted to bring about an alteration in his will. Had his plan been successful the unscrupulous rascal would have inherited a large sum of money, leaving the patient's wife and children in a destitute state. Legal intervention prevented the misdeed. Following recovery and having no recollection of what had transpired,

the patient was most disconcerted to learn that he had agreed to the unreasonable alteration. He was finally convinced that the confusional state existent during the acute stages of his illness was responsible for the errors in judgment shown by him at the time.

SUMMARY AND CONCLUSIONS

Rocky Mountain spotted fever (tick fever) is wide spread in distribution throughout the country. It has possibilities for far greater dissemination, being a disease of serious potentialities. The clinical picture is fairly typical. There is a possibility of confusion with other disease states. Prevention of infection may be secured by simple precautions and the use of tick fever vaccine. Treatment is essentially symptomatic and supportive. Neoarsphenamine dissolved in aqueous metaphen solution has been used intravenously as an adjunct to treatment. Satisfactory results have been obtained in a number of cases so treated over a period of the past eight years. It is believed that the two drugs in combination exert a definite beneficial action on the course of moderately severe cases of the disease.

226 East Second Street

HISTAMINE IN THE TREATMENT OF MÈNIÈRE'S SYNDROME

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This paper is concerned with the results obtained by the intravenous use of histamine phosphate in patients who are the victims of the symptom complex called Meniere's syndrome. As none of our patients came from a distance it was possible to follow the results obtained by each patient from the first day of treatment up to the present time. Since December 1940 we have treated 22 patients with Mènière's syndrome by means of histamine phosphate intravenously. Seventeen of these patients had striking results and at present all are well and going about their daily tasks. With 5 patients our results were disappointing. Only 1 of these 5 patients had had a major attack. These 5 patients have agreed to further study. Among our patients women predominated, and the ages varied from 40 to 76.

Mènière's syndrome is the name given to a group of symptoms in which vertigo, nerve deafness and tinnitus predominate. The nerve deafness may be either unilateral or bilateral and the loss of hearing is variable, ranging from slight diminution to total deafness. Most of the attacks of vertigo occur without previous warning and often are terrifying in their intensity. The attacks may be accompanied by nausea and vomiting. In most instances objects whirl about the patient or the patient rotates about the objects. He may fall suddenly to the ground or, if in bed, he grasps the sides, as he has the sensation of being thrown to the floor. However, the attacks of vertigo may occur without deafness or tinnitus. Some patients, indeed, have an ever present mild vertigo that in most instances has been preceded by major attacks.

It is generally accepted that the symptoms of Meniere's syndrome are the result of a local disturbance of the inner ear. Horton¹ believes that the most likely

Read before the Eastern New York Eye, Ear, Nose & Throat Association, Albany, N. Y. Oct. 1, 1942.
1. Horton, B. T. The Use of Histamine in Meniere's Disease. Gynec. & Obst. 72: 417-420 (Feb. 15) 1941.

causative factor is local alteration in the permeability of the capillary wall of the labyrinth resulting in local edema. Dale proposed several years ago that, when the particular foreign substance to which man or animal is hypersensitive comes in contact with its specific antibody in the tissue cells, histamine is released. Histamine in turn causes smooth muscle spasm and localized edema which are the lesions of anaphylaxis and allergy.² It follows that the intravenous use of histamine results in desensitization and amelioration of the symptom complex.

In 1861 Meniere, a French physician described the disease, and nothing as far as the symptoms are concerned has been added to his original observations. Meniere reported the history of a young woman who spent the night riding on top of a stagecoach exposed to a cold drizzling rain. She contracted a severe cold that was accompanied by persistent vertigo, deafness and vomiting, the vertigo and vomiting being aggravated by any movement of the body. After five days of illness the girl died. At necropsy a bloody exudate was found in the semicircular canals.

This was before Pasteur established the bacterial origin of disease, so Meniere incorrectly concluded that his patient's death was due to hemorrhage within the semicircular canals. We know now that the girl died of purulent labyrinthitis.

We can trace Meniere's syndrome back to antiquity. One of the best medical writers of the twelfth century was a Benedictine abbess, later canonized Saint Hildegard. She considered vertigo as being caused by a congested condition of the brain. "When headache and vertigo attack a patient simultaneously," she observes, "they render a man foolish and upset his reason." Martin Luther, while an Augustinian monk, suffered from attacks. During his career as a reformer occurred the scene in which he threw the inkwell at the devil who was roaring in his ears. Dean Swift, the great satirist, also was afflicted and carefully recorded his own symptoms. Never a pleasant man, he turned violently sour the latter part of his life because of the frequency of the attacks and lived in seclusion. Beethoven was afflicted with bilateral nerve deafness. It is probable that the rages to which that great man was subjected were brought on by attacks of Meniere's syndrome. The first movement of the fifth symphony is highly suggestive. It is a matter for conjecture—the effect on that great genius if he had had a bilateral resection of the auditory nerve performed. Our own Gamahel Bradford, noted for his character studies was also afflicted. He described vividly his symptoms as "the swoop of the hawk."

Alexander of St. Louis was the first to report the intravenous use of histamine for chronic urticaria. Horton of the Mayo Clinic, encouraged by Alexander's success, treated a patient suffering from Meniere's syndrome with the intravenous use of histamine late in 1939.¹

The technic for treating these patients is as follows. One cc of histamine phosphate 2.75 mg is diluted in 250 cc of isotonic solution of sodium chloride. This is given drop by drop. In the beginning we gave 60 drops to the minute, and the time required for the treatment was about one and one-half hours. At the present time we are giving 70 drops to the minute. Two patients, however, could tolerate only 40 to 50

drops a minute. Many patients complain at first of constriction of the chest, and to be on the safe side in the beginning we never give more than 20 or 30 drops a minute for the first five minutes. Occipital headache is complained of quite early, but in a short time the pain leaves the occipital region and is confined to the frontal region. At first the face is flushed and within fifteen or twenty minutes the erythema spreads to the chest, the thighs and in some instances the soles of the feet and the toes. By the time the patient returns to his room the flush has disappeared. The blood pressure is determined every ten minutes. With most patients there is a considerable variation.

CASE 1—A woman aged 73, the first patient we treated, first seen by us in August 1940, had had several major attacks of Meniere's syndrome. Ammonium chloride and a salt free diet were advised. Five weeks after her visit she had two major attacks. She then summoned her family physician, who in turn called in a general surgeon. Her gallbladder was removed. Eight weeks after the gallbladder operation she suffered several major attacks. Following these attacks she consulted us again. She entered the Troy Hospital in December 1940. Histamine was given intravenously, and later several subcutaneous injections of 1 cc of histamine phosphate 0.275 mg were given at the office. She has been free from attacks ever since.

CASE 2—An Italian woman aged 52 had a severe major attack of the syndrome at about 4 one morning in July 1941. The attack lasted several hours. She also had diabetes, which was controlled with insulin. After three weeks of dizzy spells and spending most of her time in bed she entered the hospital and was treated with histamine intravenously. She was given 1 cc of histamine phosphate 0.275 mg subcutaneously twice a week for four weeks. She had had no return of Meniere's syndrome.

CASE 3—A woman aged 62 had several major attacks of Meniere's syndrome in May 1941. The attacks lasted about four hours and the vomiting was severe. The attacks occurred in the early morning hours. She was given several subcutaneous injections of histamine without effect. Intravenous therapy was suggested but was not acceptable at this time.

The patient had a slight enlargement of the thyroid, and, as she had been advised several years before to have it removed, it was decided to have a thyroidectomy performed at the Albany Hospital. Three or four days before operation, and while at the hospital, she had a major attack of the syndrome. Oxygen was given over a period of several hours, but it was of no benefit. She was operated on and had no further attacks until she returned home. The attacks began and histamine was given subcutaneously. The vertigo was not controlled. We treated her intravenously at the Troy Hospital and she remained free from attacks for seven weeks. The attacks recurred and she returned to the hospital for intravenous therapy and remained free from attacks for three months. She then began to have some slight vertigo and after histamine was given subcutaneously all symptoms disappeared. When the attacks first occurred she weighed 108 pounds (49 Kg). Today she weighs 120 pounds (54.4 Kg) and has had no further attacks.

The following case is of interest from a medicolegal standpoint.

CASE 4—In May 1941 a glazier was working on a scaffold in a new building. Through the carelessness of another workman he was knocked to the pavement striking his head. The blow rendered him unconscious. He regained consciousness after several hours but had a constant vertigo aggravated on movement. X-ray examinations for fracture of the skull were negative. He was discharged from the hospital after three weeks but was still dizzy and somewhat deaf.

We saw him almost three months after his accident. He had a staggering gait and had a tendency to lurch to the left, the side injured. He never left the house unless accompanied

² Alexander H. L. Treatment of Allergic Disorders with Histamine and Histaminase. *J. Lab. & Clin. Med.* 26: 110-116 (Oct.) 1940.

by his wife. We felt that the primary cause of his symptoms was a fracture through the petrous bone.

The lawyers for the insurance company refused settlement.

He entered the Troy Hospital on July 23, 1941 and was given histamine intravenously. He was considerably improved and could walk to the bathroom unaccompanied. He was given another intravenous injection a few days later.

He was given histamine subcutaneously and was symptom free for six weeks. A friend took him for a motor ride, and while walking from the car to the house he fell to the ground. He had a major attack that lasted about one-half hour. He was given another intravenous injection at the Troy Hospital. The subcutaneous injections were maintained for several weeks. Since early in September 1941 he has had no attacks.

In October, one month after he was free from any symptoms, his case was called. The lawyers who previously would not settle for any amount, reinforced by lawyers from New York, who evidently had done some reading on Meniere's syndrome, decided to settle with our patient before the case went before a jury. Our patient received \$15,500.

The last 2 cases are presented for comparison because patient 5 for years has been allergic to extrinsic irritants and patient 6 at no time ever has had symptoms even remotely associated with a reaction from any extrinsic irritant.

CASE 5—A woman aged 62 was unable as a child to participate in winter sports because of a blanching and numbness of the hands and feet. In recent years she no longer had had involvement of the feet, the symptoms being confined to the fingers of both hands. She has always been careful not to place her hands in cold water because of the severe reaction. During the cold months she wore woolen gloves and carried a muft but in spite of these precautions when she returned home she found it necessary to immerse the hands in warm water to restore the circulation. For hours afterward she could not hold a pencil or pen to write. For the past six years she has had attacks of erythema confined generally to the calves of the legs. There were present patches of variable size which caused intense itching. This symptom developed early in the fall and lasted until warm weather. She also was afflicted with vasomotor rhinitis and seasonal hay fever.

When the patient was 18 years of age a physician in Troy diagnosed her condition as Raynaud's disease, for which he was treating her father at the same time. Twenty-five years ago the patient noticed a slight unsteadiness in gait. Glasses were prescribed but they gave no relief. About ten years ago she became aware of tinnitus in the right ear and two years later noticed a loss of hearing in that ear. About six years ago the vertigo which had annoyed her for many years became aggravated, so much so that the patient's husband often found it necessary to accompany her when she went shopping.

In 1938 the patient had three major attacks of Meniere's syndrome accompanied by nausea and vomiting. The first attack lasted four hours and the other attacks about two hours each. After the major attacks the patient discovered that she could not walk a straight line. She had never been free from the sensation of light-headedness but now had a dread of being alone on the streets, especially at street crossings. After arising in the morning it was an hour or two before her equilibrium was restored enough so that she could go about her household duties. She consulted us three years ago because of the vertigo. Nerve deafness of the right ear was found. There was an annoying tinnitus of the right ear. Various forms of treatment that have been suggested during the past several years were tried, but little or no benefit was obtained. The patient was given histamine intravenously on March 18, 1941 at the Troy Hospital. For several weeks she was given a maintenance dose three times a week.

She remained symptom free until Dec. 16, 1942, when she had a very serious major attack that lasted several hours. She felt weak and quite unsteady after this attack. She was given an intravenous treatment of histamine on December 28. This was followed by histamine subcutaneously three times a week. She is no longer dizzy or unsteady and is going about her

duties as well as ever. Her major attack was preceded by an almost unbearable roaring in her right ear. The roaring has stopped.

CASE 6—A woman aged 52 has had roaring noises in both ears for the past six years. At times she had attacks of vertigo. In November 1942 she began to have frequent attacks of vertigo, nausea and vomiting and was a patient in the hospitals of her city for complete examinations. She was advised to have a resection of the vestibular nerve. Her attacks grew more frequent and more severe. About every other day she would have two or three attacks of the syndrome, until she was near exhaustion.

When she entered the Troy Hospital on Jan. 1, 1943 she had no attacks, but about 8 a. m. on January 2 a major attack developed which was accompanied by a severe, spontaneous nystagmus to the left, directed to the more affected side.

When the intravenous treatment was begun the patient immediately had a flushing of the face. Most patients complain at first of occipital pain and a constriction of the chest, but this patient had neither. At first the nystagmus was exaggerated but in twenty minutes it had lessened. At no time did she have dryness of the nose and throat, a common complaint of our patients.

After thirty minutes of medication the flush left the face and body and the nystagmus was apparent only when the patient looked to the left. There was very little vertigo except when the patient turned her head to the left. When she left the operating room all symptoms had disappeared.

The next day the patient attempted to go to the bathroom unaccompanied and had to grasp the bed to save herself from falling. She had no symptoms after getting into bed and enjoyed her meals. On the following morning the patient was given another intravenous treatment. This time she reacted in the usual manner, to intravenous therapy. The erythema of the face and body and other reactions were about the same as those described in the beginning of this paper. There was, however, very little variation in blood pressure. At the present time the patient is back at work and is free from all symptoms.

COMMENT

In the light of our experience with the last 2 patients in particular and with our other cases in general, we have come to the conclusion that one intravenous treatment for Meniere's syndrome is not sufficient. One should give at least two intravenous treatments and in some cases three on alternating days.

Horton,¹ to whom we are indebted for this new form of therapy, lays stress on the subcutaneous maintenance dose. Our experience, however, has placed considerable doubt as to the therapeutic value of the maintenance dose. It is possible that we shall get to rely on the intravenous therapy exclusively.

Alexander² conservatively states that "there have been no confirmatory reports regarding Horton's work."

It is hoped that this report may make some positive contribution to this new therapy for Meniere's syndrome.

CONCLUSIONS

We know that many patients with Meniere's syndrome get well without treatment. Some patients may have intervals of ten or twenty years between attacks. Various forms of treatment such as sedatives, ammonium chloride, salt free diet and catheterization of the eustachian tubes often help. On the other hand, the major attacks are terrifying, and the lesser symptoms such as the ever present giddiness and nausea are a physical and mental handicap to the otherwise healthy patient. If our diagnosis of Meniere's syndrome is correct, there is in histamine therapy the most promising method of treatment up to the present time.

17 Second Street

THE 1942 SAN ANTONIO POLIOMYELITIS EPIDEMIC

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SAN ANTONIO, TEXAS

AND

MAJOR ALBERT O. LOISELLE

MEDICAL CORPS, ARMY OF THE UNITED STATES

In the past eight years, epidemics of poliomyelitis have appeared in the South and Southeast for the first time notably in the Carolinas, Florida, Alabama and Mississippi. With the exception of California, the states of the Southwest have generally escaped epidemics of any size and the state of Texas in particular has been relatively free of the disease. In 1916 there were only 63 cases reported in the entire state. In 1935 there were 78, in 1936 there were 65 cases and in 1937 there were 637 cases though these were widely scattered through the north central part of the state and were not numerous in the cities. In the next year 1938 only 60 cases were reported and in 1940 there were 161 cases. The Texas cities have been com-

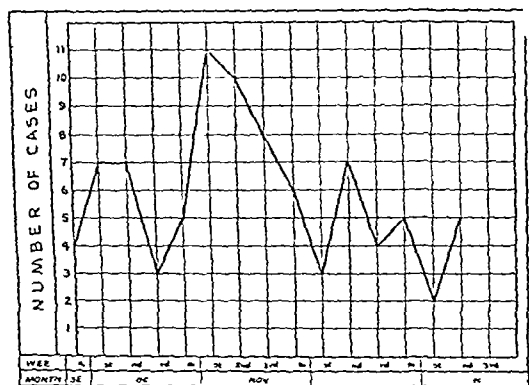


Chart 1—Time of occurrence of acute cases of poliomyelitis in San Antonio during the 1942 epidemic

paratively free of the disease except for 58 cases observed in Fort Worth in 1927. San Antonio at no time has had over 10 cases in a single year.

In the fall of 1942, however, 87 cases of poliomyelitis were seen between Sept 26 1942 and Jan 19 1943 in persons who resided in the metropolitan area of San Antonio. An even more severe outbreak occurred simultaneously at Corpus Christi 150 miles to the southeast. Before Sept 26 1942 only 2 sporadic cases had been observed in San Antonio during the entire summer "polio season." After Sept 26 1942 cases began to appear in the frequency shown in chart 1.

Reports of "winter epidemics" of poliomyelitis have been made in the past but it must be borne in mind that San Antonio winters are mild and, as chart 2 shows the fall and winter months of 1942 were quite warm. In October, November and December the daily temperatures ranged in the 80's and on only one night was the minimum temperature as low as 26 F. Consequently the period under consideration was climatically very similar to the northern late summer season.

San Antonio is normally a city of 260,000, but the present population with the large army and air force concentrations reaches well over 400,000. This more

than 50 per cent rapid increase in population has thrown unusual demands on water supply systems sewage disposal facilities housing and all public health activities. This might of itself favor the outbreak of epidemic diseases and especially the so-called intestinal diseases.

Of the 87 patients with poliomyelitis there were 46 males and 41 females. They were divided among the racial groups as follows: Anglo-Americans, 63 cases,

TABLE 1—*Ages of Patients with Poliomyelitis*

Under 1 year of age	6 cases
1-5 years of age	46 cases
5-10 years of age	17 cases
10-15 years of age	5 cases
15-20 years of age	5 cases
20-25 years of age	6 cases
25-30 years of age	1 case
30-35 years of age	0 cases
35-40 years of age	1 case
Total	87 cases

Mexicans 20, Italians 2, Negroes 2. This corresponds roughly with the proportions of the various racial groups in the San Antonio population (1940 census: Anglo-Americans, 56 per cent; Mexicans, 34 per cent; Negroes 7 per cent; Italians 2 per cent).

The ages of the patients with poliomyelitis varied from eight months to thirty-eight years and were distributed as shown in table 1. As can be seen approximately 60 per cent of the patients were 5 years of age or less and nearly 80 per cent of the patients were less than 10 years of age.

The signs and symptoms which led to the diagnosis of poliomyelitis were fever, headache, stiff neck, stiff back and muscular weakness. Sixty-two of the patients were of the paralytic type and showed definite muscular weakness. The remaining 25 patients were "abortive" and showed no muscular weakness at the end of the acute state of the illness. With few exceptions we examined every patient in this group and numerous others who were poliomyelitis suspects, but in this statistical study we are including only those cases in which the diagnosis could be made with certainty. Routine spinal fluid examinations were not made in

TABLE 2—*Principal Paralysis of Sixty-Two Patients with Muscular Weakness*

Left leg	24 cases
Right leg	19 cases
Both legs	11 cases
Left arm and shoulder	10 cases
Right arm and shoulder	3 cases
Both arms	4 cases
Facial weakness	6 cases
Bulbar type paralysis	7 cases (6 deaths)

all cases because we felt that the diagnosis was sufficiently clear in many to eliminate the necessity for it. Moreover, in those cases in which stiffness of the back was pronounced we felt that the procedure was too painful for the little additional diagnostic advantage gained. Of the spinal fluid examinations which were made we found the usual increase in protein content and cell counts ranging from 10 to 220.

The principal paralysis of the 62 paralytic patients who presented muscular weakness as a prominent symptom are given in table 2. Of course, the pattern

of paralysis was exceedingly varied and some patients showed several extremities involved, which explains the discrepancy between the number of patients and the number of paralyzed extremities. As is generally true, nearly all the patients with bulbar paralysis died despite the use of the respirator and other supportive measures. Two patients showed the polynuritic type of poliomyelitis in which there was severe pain and tenderness of the legs which persisted for many weeks.

As soon as it became apparent that many acute cases of poliomyelitis were developing, the Robert B Green (City-County) Hospital established a poliomyelitis ward and an isolation unit. Physical therapy technicians specially trained in the Kenny method of treatment were secured through the local chapter of the National Foundation for Infantile Paralysis and the

As a measure for retarding spread of the epidemic we advised the families of patients to fill the house where the patient lived with insect spray and to repeat it

TABLE 3—After Effects

Completely recovered	30 cases
Slight residual weakness	16 cases
Moderate residual weakness	12 cases
Severe residual weakness	17 cases
Died	6 cases
Results unknown	6 cases
Total	87 cases

before the quarantine was lifted. It was recommended that other children who lived in the house or nearby should have oil of citronella applied to exposed skin

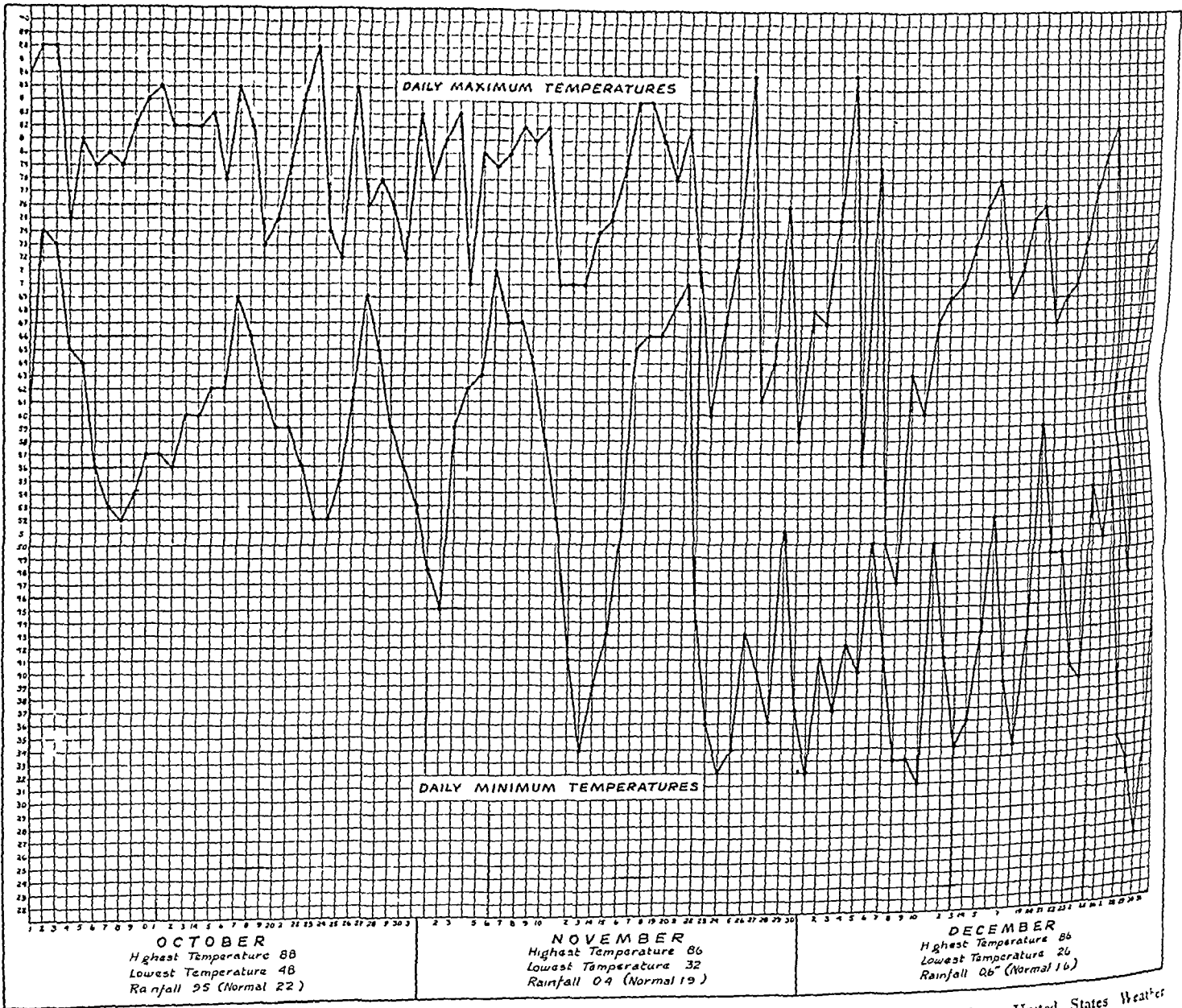


Chart 2—Daily maximum and minimum temperatures in San Antonio October-December 1942 Prepared from United States Weather Bureau statistics

Texas State Crippled Children's Bureau During the time of the outbreak, 39 cases were treated in the hospital by the Kenny trained physical therapists. In other words, all patients who showed any muscle tenderness or weakness, stiffness of the back or hyper-tonicity of muscles were given the treatment as outlined by the Minneapolis group. Moreover, intensive treatment was abandoned only when all muscle hyper-irritability and pain were overcome

surfaces when playing outdoors or when in public places. While patients were in the hospital and for two months after going home, a tablespoon of phenol was placed in bowel movements (in bedpans) and allowed to remain fifteen minutes before emptying in the toilet. On Jan 21, 1943 we reexamined all the patients and collected reports on every one who had had acute poliomyelitis to determine the extent of their recovery up to that time. Thirty patients were free from all effects

of the disease with no muscle weakness or residual hypertonicity of any muscle groups. These included the 25 cases which were considered to be abortive or which showed only slight temporary muscular weakness. The results of the examinations made immediately after the epidemic are given in table 3. At the time of reexamination there were no joint deformities or muscle contractures in those patients who had been treated by the Kenny method. Two who had refused treatment showed considerable muscle contracture and beginning deformity. Also none of these patients had developed definite sympathetic changes (discoloration, cold clammy skin and extensive atrophy) in the involved extremities.

As stated before there was a relatively severe outbreak of poliomyelitis in Corpus Christi, Texas, during the time of the San Antonio epidemic and we saw 15 patients with poliomyelitis who resided in towns adjacent to San Antonio that are not included in this series.

Through the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army Dr. John R. Paul, professor of preventive medicine in the Yale University School of Medicine and director of the Commission on Neurotropic Virus Diseases was sent to San Antonio in December 1942 to study the course of this epidemic. In his report to the Surgeon General's Office these epidemiologic observations were made:

In keeping with the experience of other southern epidemics which have occurred since 1938 the age group in the San Antonio cases was lower than the average age group in northern epidemics.

Several cases occurred in children who had just recently moved to San Antonio and in 1 instance the child had been in the city only five days before developing the disease.

From stool specimens of the San Antonio patients a typical strain of the poliomyelitis virus was isolated.

Sewage and sludge samples collected at the city sewage disposal plant were negative for evidence of the poliomyelitis virus.

From flies collected in homes of patients with poliomyelitis a strain of poliomyelitis virus was isolated.

SUMMARY

1 The 1942 poliomyelitis epidemic in San Antonio has been studied by our personal observation of all the patients who were known to have the disease.

2 The 87 patients were with few exceptions treated by the Kenny method and a follow-up examination revealed more rapid recoveries than usual among those who were not severely paralyzed at the onset. Observations indicate that there will be less residual deformity among these patients than is usually observed.

3 The 1942 epidemic in San Antonio occurred principally in October, November and December, whereas the normal peak months of epidemics elsewhere are June, July and August.

4 The age incidence of the patients in this epidemic was lower than is usual in northern epidemics but was in keeping with experience during other outbreaks in the South.

5 Careful epidemiologic studies were made in San Antonio during the epidemic by Dr. John R. Paul and the findings were reported.

1426 N. W. Professional Building

BACTERIAL CONTAMINATIONS IN SULFONAMIDE OINTMENTS

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That sulfonamide compounds in themselves are bacteriostatic rather than bactericidal agents in vitro is an established fact¹. The rapidly growing medical use of sulfonamide powders, ointments and solutions for topical application in superficial and deep wounds raises the question of the possibility of their becoming contaminated with pathogenic organisms not affected by the drugs.

TABLE 1—Agar Cup Plates, *Staphylococcus Aureus* Vo 209

Sulfonamide	Antiseptic Added	Zone of Inhibition Mm	
		Complete	Partial
Sulfathiazole 5%	0	0	10
Sulfathiazole 10%	0	0	10
Sulfathiazole 5%	Amylphenol 0.5%	0	10
Sulfathiazole 5%	Oxyquinoline benzoate 0.1%	5	10
Sulfathiazole 5%	Oxyquinoline sulfate 0.1%	3	10
Sulfathiazole 5%	Chlorobutanol 1%	0	9
Sulfathiazole 5%	Urea borate 1%	0	5
Sulfathiazole 5%	Chlorbthymol 0.05%	0	10
Sulfathiazole 5%	Sodium benzoate 0.1%	0	9
Sulfathiazole 5%	Boric acid 1%	0	5
Sulfathiazole 5%	Urea peroxide 1%	15-17	0
Sulfathiazole 5%	Urea peroxide 0.5%	15-17	0
Sulfathiazole 5%	Urea peroxide 0.25%	13	0
Sulfathiazole 5%	Urea peroxide 0.1%	8	10
Sulfathiazole 5%	Sodium perborate 0.1%	7	10
Sulfathiazole 5%	Calcium peroxide 0.1%	0	10
Sulfathiazole 5%	Potassium permanganate 0.1%	0	10
Sulfathiazole 5%	Benzoyl peroxide 0.1%	0	10
Sulfathiazole 5%	Benzoyl peroxide 1.0%	0	10
Sulfathiazole 5%	Zinc peroxide 0.1%	0	10
Sulfathiazole 5%	Zinc peroxide 1.0%	4	10
Sulfanilamide 5%	0	0	7
Sulfanilamide 5%	Sodium perborate 0.1%	7	0
Sulfanilamide 5%	Calcium peroxide 0.1%	0	10
Sulfanilamide 5%	Magnesium peroxide 0.1%	5	10
Sulfanilamide 5%	Urea peroxide 0.1%	0	7
Sulfanilamide 5%	Urea peroxide 1.0%	15	0
Sulfanilamide 5%	Potassium permanganate 0.1%	0	7
Sulfanilamide 5%	Zinc peroxide 0.1%	0	7
Sulfanilamide 5%	Zinc peroxide 1.0%	1	7
Sulfanilamide 5%	Benzoyl peroxide 0.1%	0	6
Sulfanilamide 5%	Benzoyl peroxide 1.0%	0	7
Sulfadiazine 5%	0	0	4
Sulfadiazine 5%	Sodium perborate 0.1%	10	0
Sulfadiazine 5%	Calcium peroxide 0.1%	0	2
Sulfadiazine 5%	Magnesium peroxide 0.1%	4	0
Sulfadiazine 5%	Potassium permanganate 0.1%	0	0
Sulfadiazine 5%	Urea peroxide 0.1%	0	0
Sulfadiazine 5%	Urea peroxide 1.0%	10	0
Sulfadiazine 5%	Benzoyl peroxide 0.1%	0	3
Sulfadiazine 5%	Benzoyl peroxide 1.0%	0	3
Sulfadiazine 5%	Zinc peroxide 0.1%	0	0
Sulfadiazine 5%	Zinc peroxide 1.0%	0	3

Recent findings have shown some products so contaminated. Our experiments have led us to believe that serious contaminations do occur. Welch, Slocum and Herwick² have emphasized the necessity for sterilization of sulfonamide dusting powders since these powders were incapable of killing tetanus spores with which they were contaminated. Recently a report³ has come from

From the Warner Institute for Therapeutic Research.

Read at the third session of the Laboratory Section of the seventy-first annual meeting of the American Public Health Association Oct. 23, 1942.

¹ Long, P. H. and Bliss, Eleanor A. The Clinical and Experimental Use of Sulfanilamide, Sulfapyridine and Allied Compounds. New York: Macmillan Company, 1939. After Erwin. Action of Sulfanilamide on Hemolytic Streptococci, Lancefield Types A and D in Growth Promoting and Non Growth Promoting Mediums. J. Infect. Dis. 68: 273-284 (May-June) 1941.

² Welch, Henry, Slocum, C. C. and Herwick, R. P. Tetanus from Sulfonamide Dusting Powders. J. A. M. A. 120: 561-564 (Oct. 3) 1942.

³ Tetanus After Local Chemotherapy. Lancet. 1: 772 (June 27) 1942.

England of the death of a patient from tetanus following the postoperative use of powdered sulfapyridine in the abdomen

Experiments using the agar cup plate test⁴ indicate that ointments prepared in a water dispersible base⁵ with 5 per cent sulfanilamide, sulfathiazole or sulfadiazine

The use of urea to increase the rapidity of wound healing has been advocated⁹

Oxidizing agents seemed to offer promising possibilities for increasing the bactericidal activity of the sulfonamide ointments in vitro. Further studies were conducted therefore with benzoyl peroxide, urea-hydrogen peroxide (hereinafter referred to as urea peroxide) and zinc peroxide

TABLE 3—Contamination of Sulfonamide Ointments with *Staphylococcus Aureus*

Sulfonamide with Oxidizing Agent	Period of Contact								
	1 Hr	2 Hr	4 Hr	6 Hr	8 Hr	18 Hr	24 Hr	48 Hr	
Sulfathiazole 5%	+	+	+	+	+	+	+	+	
Sulfathiazole 5% with benzoyl peroxide 1%	+	—	—	—	—	—	—	—	
Sulfathiazole 5% with urea peroxide 1%	+	—	—	—	—	—	—	—	
Sulfathiazole 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+	
Sulfadiazine 5%	+	+	+	+	+	+	+	+	
Sulfadiazine 5% with benzoyl peroxide 1%	+	—	—	—	—	—	—	—	
Sulfadiazine 5% with urea peroxide 1%	+	+	—	—	—	—	—	—	
Sulfadiazine 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+	
Sulfanilamide 5%	+	+	+	+	+	+	+	+	
Sulfanilamide 5% with benzoyl peroxide 1%	+	—	—	—	—	—	—	—	
Sulfanilamide 5% with urea peroxide 1%	+	+	—	—	—	—	—	—	
Sulfanilamide 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+	

In the tables + indicates growth

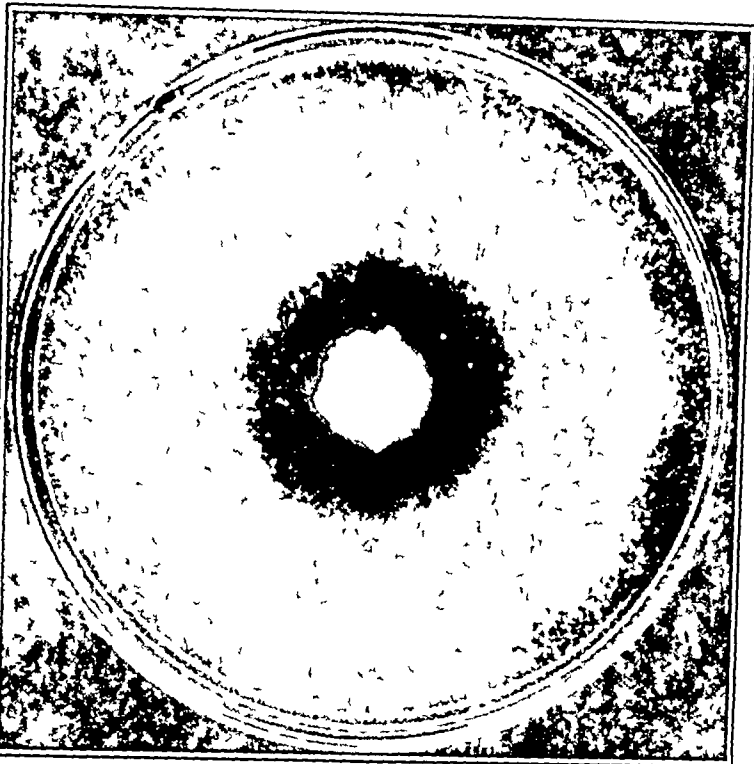


Fig. 1—Zone of inhibition, *Staphylococcus aureus* and 5 per cent sulfathiazole

produce only zones of partial inhibition when *Staphylococcus aureus* is used as the test organism (fig 1). In table 1 are shown the results in vitro of adding

TABLE 2—Effect of Aging at 37 C for Three Months, Agar Cup Plates, *Staphylococcus Aureus* No 209

Sulfonamide	Oxidizing Agent	Zone of Inhibition, Mm			
		Freshly Prepared		After Aging	
		Complete	Partial	Complete	Partial
Sulfathiazole 5%	Urea peroxide 10%	15	17	0	0
Sulfathiazole 5%	Urea peroxide 0.5%	15	17	0	0
Sulfathiazole 5%	Urea peroxide 0.25%	13	0	8	0
Sulfathiazole 5%	Urea peroxide 0.1%	8	10	2	8
Sulfanilamide 5%	Zinc peroxide 10%	1	7	9	0
Sulfadiazine 5%	Benzoyl peroxide 10%	0	3	10	0

various antiseptics to the 5 per cent ointments to supply the lacking bactericidal properties (fig 2)

Clinical and experimental studies have demonstrated the effectiveness of treating wounds with zinc peroxide in combination with sulfonamides⁶ or with zinc peroxide alone.⁷ Benzoyl peroxide⁸ has also been recommended

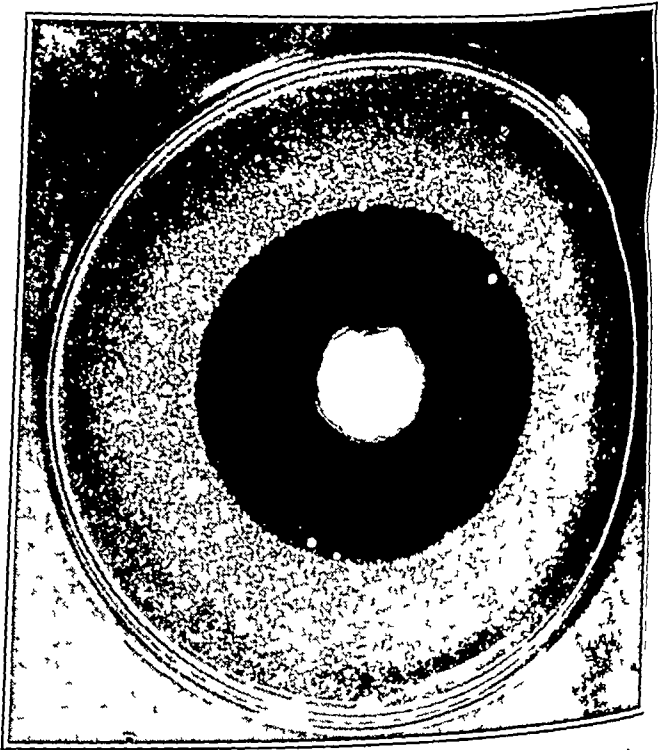


Fig. 2—Zone of inhibition, *Staphylococcus aureus* and 5 per cent sulfathiazole with 1 per cent urea peroxide

The release of oxygen from ointments prepared in a water dispersible base might reduce considerably the efficiency of these sulfonamide preparations.

4 Methods of Testing Antiseptics and Disinfectants, circular 198, Dept of Agric, U S Food and Drug Administration

5 The water dispersible base in which the various sulfonamides were suspended consisted of diglycol stearate, light mineral oil, cetyl alcohol, anhydrous wool fat, white petrolatum and 65 per cent water

6 Meleney, F L, and Harvey, H D. The Combined Use of Zinc Peroxide and Sulfanilamide in the Treatment of Chronic, Undermining, Burrowing Ulcers Due to the Microaerophilic Streptococcus, Ann Surg 110 1067 1094 (Dec) 1939. Goldberger, H A. The Potentiation of the Sulfonamides in the Local Therapy of Wounds and Surgical Infections by the Use of Oxidants, Am J Surg 56 353 374 (May) 1942

7 Meleney, F L. The Important Anaerobic Infections and the Use of Zinc Peroxide in Their Control, U S Nav M Bull 40 53 64 (Jan) 1942. Reed, G B, and Orr, J H. Treatment of Experimental Gas Gangrene with Zinc Peroxide, War Med 2 79 82 (Jan) 1942

8 Leak, C D. Advantages of Benzoyl Peroxide Over Zinc Peroxide or Sulfonamides in Treating Wounds or Burns, J A M A 119 101 (May 2) 1942

9 Holder, H G, and Mackay, E M. The Use of Urea in the Treatment of Infected Wounds, J A M A 108 1167 1169 (Apr 1) 1942. Wound Therapy, Mil Surgeon 90 509 518 (May) 1942. The Action of Carbamide (Urea) Therapy in Wound Healing, Ann Surg 94 99 (July) 1939. Olson, Magnus. Shider, Ethel, Clark, W B. MacDonald, Roger. Effect of Urea in Sulfonamide Paste on Clean Skin Wounds in Rabbits, Proc Soc Exper Biol Med 113 599 (March) 1942. Tsuchiya, H T. Tenenber, D J. Chalk, and Strakosch, E A. Antagonism of Antisulfonamide Methionine and Enhancement of Bacteriostatic Action of Sulfonamides, ibid 50 262 266 (June) 1942

the ointments at 37 C for three months showed little drop in antiseptic activity of the sulfathiazole ointments containing 0.25, 0.5 and 1.0 per cent urea peroxide. The in vitro activity of sulfadiazine with benzoyl peroxide and sulfanilamide with zinc peroxide were improved under the same conditions (table 2).

In order to determine the self-sterilizing properties of (a) ointments of the sulfonamides alone and (b) ointments of the sulfonamides in combination with the vari-

TABLE 4—Contamination of Sulfonamide Ointments with *Streptococcus Hemolyticus*

Sulfonamide with Oxidizing Agent	Period of Contact							
	10 Min	15 Min	30 Min	1 Hr	2 Hr	4 Hr	6 Hr	24 Hr
Sulfathiazole 5%	+	+	+	+	+	+	+	+
Sulfathiazole 5% with benzoyl peroxide 1%	+	+	+	+	+	+	+	+
Sulfathiazole 5% with urea peroxide 1%	+	+	+	+	+	+	+	+
Sulfathiazole 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+
Sulfadiazine 5%	+	+	+	+	+	+	+	+
Sulfadiazine 5% with benzoyl peroxide 1%	+	+	+	+	+	+	+	+
Sulfadiazine 5% with urea peroxide 1%	+	+	+	+	+	+	+	+
Sulfadiazine 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+
Sulfanilamide 5%	+	+	+	+	+	+	+	+
Sulfanilamide 5% with benzoyl peroxide 1%	+	+	+	+	+	+	+	+
Sulfanilamide 5% with urea peroxide 1%	+	+	+	+	+	+	+	+
Sulfanilamide 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+

TABLE 5—Contamination of Sulfonamide Ointments with *Escherichia coli*

Sulfonamide with Oxidizing Agent	Period of Contact							
	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	7 Hr	18 Hr	24 Hr
Sulfathiazole 5%	+	+	+	+	+	+	+	+
Sulfathiazole 5% with benzoyl peroxide 1%	+	+	+	+	+	+	+	+
Sulfathiazole 5% with urea peroxide 1%	+	+	+	+	+	+	+	+
Sulfathiazole 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+
Sulfadiazine 5%	+	+	+	+	+	+	+	+
Sulfadiazine 5% with benzoyl peroxide 1%	+	+	+	+	+	+	+	+
Sulfadiazine 5% with urea peroxide 1%	+	+	+	+	+	+	+	+
Sulfadiazine 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+
Sulfanilamide 5%	+	+	+	+	+	+	+	+
Sulfanilamide 5% with benzoyl peroxide 1%	+	+	+	+	+	+	+	+
Sulfanilamide 5% with urea peroxide 1%	+	+	+	+	+	+	+	+
Sulfanilamide 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+

ous oxidizing agents the following test was devised. Four Gm of the ointments was weighed into sterile glass jars and 1 cc of a twenty hour broth culture of the desired test organism was thoroughly mixed with the ointment. Subcultures consisting of a 4 mm loopful of the ointment-organism mixture into nutrient or defibrinated blood broth mediums were taken at the time intervals indicated in the accompanying tables. In all instances, presence or absence of growth was checked after twenty-four hours incubation at 37 C of the original subcultures by smear, or by plating on nutrient or blood agar plates. Tables 3, 4 and 5 show the results obtained when the ointments were contaminated with *Staphylococcus aureus* No. 209, *Streptococcus hemolyticus* C-203 and *Escherichia coli* (acid lactici strain).

Clostridium tetani (Lister strain)¹⁰ and *Clostridium perfringens* (Barber strain)¹⁰ were selected to determine the ability of these ointments to reestablish sterility.

TABLE 6—Contamination of Sulfonamide Ointments with *Clostridium Tetani* (Lister Strain)

Sulfonamide with Oxidizing Agent	Period of Contact					
	1 Hr	3 Hr	5 Hr	7 Hr	8 Hr	24 Hr
Sulfathiazole 5%	+	+	+	+	+	+
Sulfathiazole 5% with benzoyl peroxide 1%	+	+	+	+	+	+
Sulfathiazole 5% with urea peroxide 1%	+	+	+	+	+	+
Sulfathiazole 5% with zinc peroxide 1%	+	+	+	+	+	+
Sulfadiazine 5%	+	+	+	+	+	+
Sulfadiazine 5% with benzoyl peroxide 1%	+	+	+	+	+	+
Sulfadiazine 5% with urea peroxide 1%	+	+	+	+	+	+
Sulfadiazine 5% with zinc peroxide 1%	+	+	+	+	+	+
Sulfanilamide 5%	+	+	+	+	+	+
Sulfanilamide 5% with benzoyl peroxide 1%	+	+	+	+	+	+
Sulfanilamide 5% with urea peroxide 1%	+	+	+	+	+	+
Sulfanilamide 5% with zinc peroxide 1%	+	+	+	+	+	+

TABLE 7—Animals Injected with Sulfonamide Ointments Contaminated with *Clostridium Tetani*

Sulfonamide with Oxidizing Agent	Total No of Guinea Pigs Injected	Deaths by Days							Deaths	
		1	2	3	4	5	6	7	Total	Per cent age
Sulfathiazole 5%	12	0	0	0	1	0	0	0	12	100.0
Sulfathiazole 5% with benzoyl peroxide 1%	6	0	0	0	1	0	1	2	4	66.6
Sulfathiazole 5% with urea peroxide 1%	12	0	0	0	1	0	0	0	1	8.3
Sulfathiazole 5% with zinc peroxide 1%	12	0	0	2	3	1	2	0	8	66.6
Sulfadiazine 5%	12	0	7	5	0	0	0	0	12	100.0
Sulfadiazine 5% with benzoyl peroxide 1%	6	0	0	1	0	0	0	0	1	16.6
Sulfadiazine 5% with urea peroxide 1%	12	0	0	0	0	0	1	1	3	16.6
Sulfadiazine 5% with zinc peroxide 1%	12	0	0	6	0	0	0	0	6	50.0
Sulfanilamide 5%	12	0	5	4	0	0	0	0	12	100.0
Sulfanilamide 5% with benzoyl peroxide 1%	6	0	0	6	0	0	0	0	6	100.0
Sulfanilamide 5% with urea peroxide 1%	12	0	1	0	0	0	0	0	1	8.3
Sulfanilamide 5% with zinc peroxide 1%	6	0	2	3	1	0	0	0	6	100.0
Control	12	0	10	1	1				12	100.0

TABLE 8—Contamination of Sulfonamide Ointments with *Clostridium Welchii* (Barber Strain)

Sulfonamide with Oxidizing Agent	Period of Contact				
	1 Hr	3 Hr	5 Hr	7 Hr	24 Hr
Sulfathiazole 5%	+	+	+	+	+
Sulfathiazole 5% with benzoyl peroxide 1%	+	+	+	+	+
Sulfathiazole 5% with urea peroxide 1%	+	+	+	+	+
Sulfathiazole 5% with zinc peroxide 1%	+	+	+	+	+
Sulfadiazine 5%	+	+	+	+	+
Sulfadiazine 5% with benzoyl peroxide 1%	+	+	+	+	+
Sulfadiazine 5% with urea peroxide 1%	+	+	+	+	+
Sulfadiazine 5% with zinc peroxide 1%	+	+	+	+	+
Sulfanilamide 5%	+	+	+	+	+
Sulfanilamide 5% with benzoyl peroxide 1%	+	+	+	+	+
Sulfanilamide 5% with urea peroxide 1%	+	+	+	+	+
Sulfanilamide 5% with zinc peroxide 1%	+	+	+	+	+

when contaminated with anaerobic spore forming organisms. A spore suspension of *C. tetani* was prepared according to the method of Bliss, Long and Smith.¹¹

¹⁰ Cultures were obtained through the courtesy of Dr. John C. Torrey, Cornell Medical College, New York City.

¹¹ Bliss, Eleanor A., Long, P. H., and Smith, Dorothy G. Chemotherapy of Experimental Gas Gangrene and Tetanus. In: *Annals of the New York Academy of Medicine*, 1: 799-810 (Nov.) 1941.

One cc of the spore suspension was mixed with 4 Gm of the ointment, and subcultures into thioglycolate mediums were made as described for *Staphylococcus*, *Streptococcus* and *E coli*. The subcultures were incubated for forty-eight hours and growth was checked by smears. Table 6 presents the results of these tests.

To test further the cultural and tinctorial findings, the contaminated ointments were injected into guinea pigs. Serial dilutions of the spore suspension were made. Injections of these into guinea pigs showed that a 1:10 dilution of the suspension was equivalent to approximately 10 minimum lethal doses. Four Gm of the ointments was weighed out and thoroughly mixed with 1 cc of the undiluted spore suspension. After being allowed to stand for twenty-four hours, the ointment-spore suspension mixtures were mixed with 5 cc of a sterile 5 per cent calcium chloride solution, making the final dilution of the spore suspension 1:10. Five-tenths cc of the resultant mixture was injected into the right hind leg muscle of guinea pigs weighing from 250 to 275 Gm (table 8).

Three strains of *Clostridium perfringens* (type I, type II and Barber) which were studied did not sporulate readily. Further studies of this organism were made with vegetative forms grown for twenty hours in thioglycolate mediums, centrifuged, washed and resuspended in 2.5 per cent calcium chloride solution. The minimum lethal dose for the Barber strain was determined to be approximately the same as for *Clostridium*

TABLE 9—Animals Injected with Sulfonamide Ointments Contaminated with *Clostridium Perfringens*

Sulfonamide with Oxidizing Agent	Total No of Guinea Pigs Injected	Deaths by Days							Deaths	
									Total	Per cent age
		1	2	3	4	5	6	7		
Sulfathiazole 5%	5	0	0	0	0	0	0	1	1	20.0
Sulfathiazole 5% with benzoyl peroxide 1%	5	0	0	0	0	0	0	0	0	0
Sulfathiazole 5% with urea peroxide 1%	5	0	0	0	0	0	0	0	0	0
Sulfathiazole 5% with zinc peroxide 1%	5	0	0	0	1	0	0	1	2	40.0
Sulfadiazine 5%	5	0	0	0	0	0	1	0	1	20.0
Sulfadiazine 5% with benzoyl peroxide 1%	5	0	0	0	0	0	0	0	0	0
Sulfadiazine 5% with urea peroxide 1%	5	0	1	0	0	0	0	1	2	40.0
Sulfadiazine 5% with zinc peroxide 1%	5	0	0	0	0	0	0	0	0	0
Sulfanilamide 5%	5	0	0	0	0	0	0	2	2	40.0
Sulfanilamide 5% with benzoyl peroxide 1%	5	0	0	0	0	0	0	2	2	40.0
Sulfanilamide 5% with urea peroxide 1%	5	0	0	0	0	0	0	0	0	0
Sulfanilamide 5% with zinc peroxide 1%	5	0	2	0	0	0	0	0	2	40.0
Control	5	4	1						5	100.0

tetani, so further experiments were limited to that strain. Subsequent studies were carried out as described for tetanus. Results are shown in tables 8 and 9.

SUMMARY AND CONCLUSIONS

1. Five per cent sulfanilamide, sulfathiazole or sulfadiazine ointments in a water dispersible base may become contaminated with disease producing organisms which these sulfonamides are not capable of killing.

2. Addition of small amounts of other chemicals, particularly certain oxidizing agents, strongly increases the self-sterilizing properties of these ointments. Of those

studied, the most practical and generally effective agent to insure safety and therapeutic performance appears to be urea peroxide in up to 1 per cent concentration. Higher concentrations increase the irritant properties to an objectionable degree for certain uses.

3. These findings emphasize the importance of care in the manufacture of sulfonamide products intended for topical application. The addition of an antiseptic to enhance the bactericidal properties and insure sterility of sulfonamide ointments is indicated to be essential as a factor of safety.

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POSTERIOR HERNIA OF THE KNEE

(BAKER'S CYST, POPLITEAL CYST, SEMIMEMBRANOSUS BURSITIS, MEDIAL GASTROCNEMIUS BURSITIS AND POPLITEAL BURSITIS)

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The differential diagnosis of benign and malignant popliteal tumors, aneurysms, varicosities, bursae and posterior perforations of the synovia of the knee joint frequently taxes the ability of the physician. This paper is based on a series of 15 cases in which popliteal cysts produced firm fixed masses and, in some instances, limitation of flexion of the knee and swelling in the popliteal space. Surgical intervention revealed that each of these cysts was connected directly with the knee joint through an opening in the posterior part of the capsule, usually along the lateral side of the medial condyle of the femur. We believe that these cysts are the result of (1) herniation of the synovial membrane through the posterior part of the capsule or (2) the escape of fluid through the normal anatomic connections of the knee joint into the bursae, that is, into the medial gastrocnemius or semimembranosus bursae. In this study we have considered Baker's cyst as an endothelial lined cyst which appears in the popliteal space and is connected with the joint.

Since in 1877, when Baker¹ published an article on synovial cysts of the knee, his name has been associated with these cysts. In 1840 Adams² described cystic swellings associated with chronic rheumatic arthritis of the knee. Gruber,³ who later became professor of anatomy at the university in St. Petersburg, described posterior hernia of the joint in 1845 and later distinguished it clearly from enlarged popliteal bursae not connected with the joint. In the experience of Baker⁴ and others, in the days of laudable pus, surgical intervention on the cysts frequently resulted in septic arthritis and amputation, but with the development of aseptic technic infection became rare and amputation seldom became necessary. The value of injection of air into

From the Section of Orthopedic Surgery, Mayo Clinic.
1. Baker, W. M. The Formation of Synovial Cysts in the Knee Connection with Disease of the Knee Joint, St. Barth. Hosp. Rep. 13: 245-261, 1877.

2. Adams, quoted by Wilson?

3. Gruber, Wenzel. Hygrom von enormer Grosse an der Bursa semimembranosa retro condyloidea interna, Virchows Arch. f. path. Anat. 99: 489-492 (March) 1885.

4. Baker, W. M. The Formation of Abnormal Synovial Cysts Connection with Joints (Second Communication), St. Barth. Hosp. Rep. 21: 177-190, 1885.

the knee in making the diagnosis of Baker's cyst before operation was clearly demonstrated by Cravener⁵ in 1932. In 1938 Haggart⁶ reported several cases of posterior hernia of the knee and Wilson and his associates⁷ reported a number of cases of popliteal bursae connected with the joint.

ETIOLOGIC CONSIDERATIONS

Certain anatomic factors at the knee predispose to posterior hernia. At operation it has been noticed that the capsule is weak along the lateral side of the medial condyle of the femur. Each of the most important bursae of the popliteal space, that is, the semimembranosus, the semitendinosus, the popliteus and the gastrocnemius bursae (fig 1) may communicate with the joint as well as with one another under certain conditions. Synovial diverticula may herniate through the fibers of the oblique posterior ligament.⁸ The communications of these various structures with the joint are in many instances open when the knee is extended and the posterior part of the capsule tense but tend to close with flexion of the knee. Herniation and escape of synovial fluid into these structures thus increase with motion, and therefore the cyst enlarges. In the case of bursae, Wilson and his associates expressed the belief that the overlying muscles close the articular communication of the underlying bursae and distention of the bursae results. Because of the anatomic factors just mentioned we feel that trauma is not an etiologic factor. Rheumatoid arthritis and osteoarthritis have been reported in association with posterior hernia of the knee, and in 7 of our 15 cases rheumatoid and osteoarthritis were associated. The effusion associated with arthritis may perhaps have been of etiologic significance.

THE HERMAL SAC

The hermal sacs are frequently 8 to 10 cm. in length and 5 to 7.5 cm. in width. When they enlarge they follow the path of least resistance and may extend downward as far as the achilles tendon as described by Boyd.⁹ The hermal sac is attached to the joint by a pedicle, which may become firm and thick and attain a length of 1 to 1.5 cm. and also may be densely adherent to the tendons, particularly the gastrocnemius. These bursa-like sacs may be multilocular and contain yellow tinged mucilaginous fluid, which may be either clear or clouded with fibrin. In severe popliteal injuries hemorrhage may occur into the sac or hemarthrosis may result. Occasionally an injury will cause rupture of the cyst, the surrounding structures then form the new wall of the hermal sac.

Microscopic examination of the intact hermal sac reveals an inner layer of endothelium, a subendothelial layer of definite infiltration of round cells and an outer layer of fibrous tissue which measures from 1 mm. to as much as 1 cm. in thickness at the pedicle and narrows distally. This outer layer contains dilated blood vessels. Hyaline and fibrocartilaginous metaplasia and hemosiderin may be present (figs 2 and 3).

SYMPTOMS

Symptoms of posterior hernia are usually not severe. In our experience disability has never been pronounced and symptoms of internal derangement of the knee have not been encountered. This experience is in direct contrast to that reported by Haggart. Our patients usually complained of aching and stiffness of the knee, and of tumor which caused them much concern. Examination usually revealed a tumor of variable size which is not painful or adherent to the overlying skin but may be firm on extension of the knee and softer on flexion. On flexion it may move side to side, but it has a fixed point at the capsule. The bulk of the tumor is usually distal to the flexion crease of the knee. In some cases fluctuation can be demonstrated.

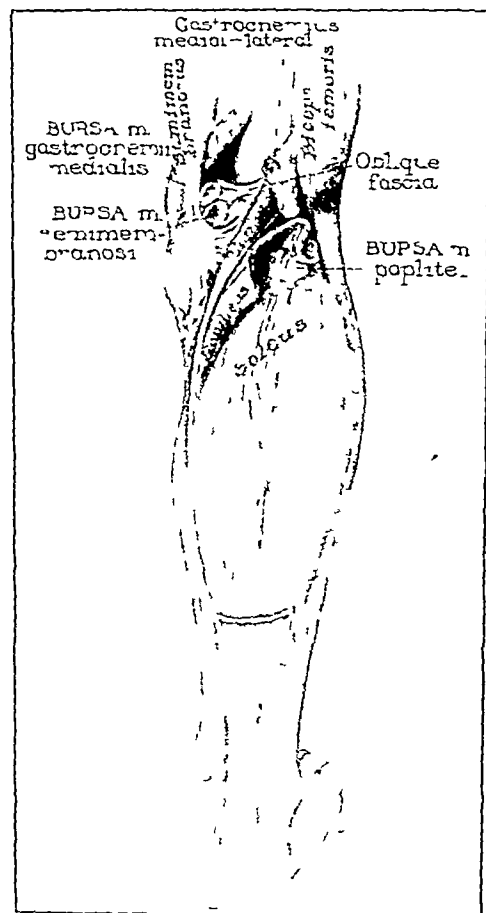


Fig 1—Location of bursae with relation to the muscles of the popliteal space.

locally. Pulsation rarely is present in a distended cyst. Bruit and inguinal adenopathy are absent. The patient can walk and use the leg although there may be some limitation of flexion and rarely some disuse atrophy of the extremity. The popliteal swelling may decrease spontaneously, only to enlarge later and may be secondary to swelling resulting from arthritis or the knee. Although cases of bilateral Baker's cyst have been reported,¹⁰ the majority are unilateral.

In our series of 15 cases the left knee was affected in 9 cases, the right in 6. The age of our patients varied from 2 to 61 years. Eight of the 15 patients

5 Cravener E. K. Hernia of the Knee Joint (Baker's Cyst) *J. Bone & Joint Surg.* 14: 186-187 (Jan.) 1932.
6 Haggart G. E. Posterior Hernia of the Knee Joint. A Cause of Internal Derangement of the Knee. *J. Bone & Joint Surg.* 20: 363-373 (April) 1938.
7 Wilson P. D., Eyre Brook A. L. and Francis J. D. A Clinical and Anatomical Study of the Semimembranosus Bursa in Relation to Popliteal Cyst. *J. Bone & Joint Surg.* 20: 963-984 (Oct.) 1938.
8 Callander C. L. *Surgical Anatomy*. Philadelphia: W. B. Saunders Company, 1933.
9 Boyd William. *Surgical Pathology*, ed. 4. Philadelphia: W. B. Saunders Company, 1938.

10 Jefferson Geo. Irey. Bilateral Baker's Cyst. Recurrence After Operation. *Proc. Roy. Soc. Med. (Sect. for Study of Diseases of Child en)* 12: 162 (June) 1919.

were females. The duration of symptoms varied from four months to twenty years. Results of laboratory tests, including urinalysis, blood count, determination of the value of hemoglobin, Wassermann and the flocculation tests for syphilis were routinely negative. The sedimentation rate was elevated in some cases of arthri-

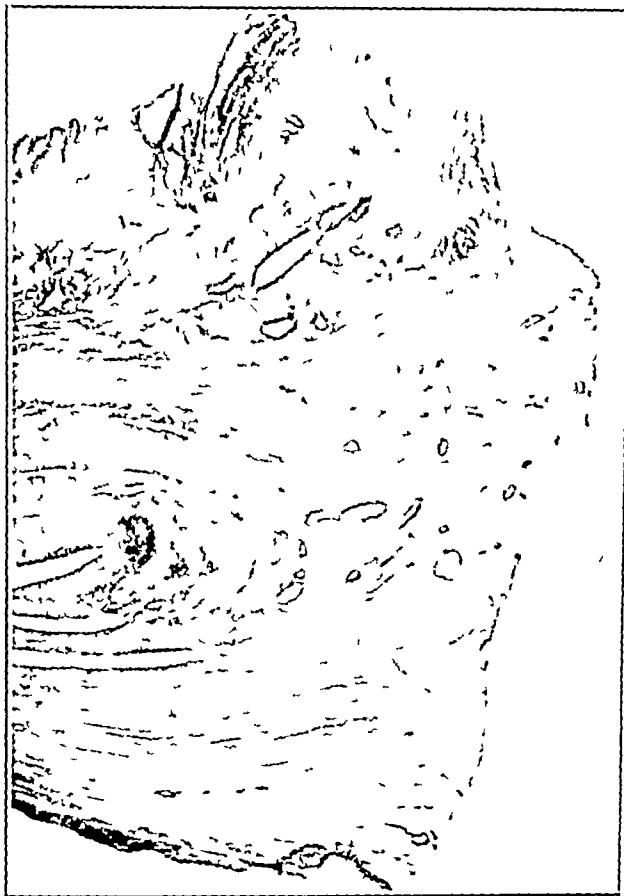


Fig 2—Baker's cyst (X 16)

tis. The roentgenogram revealed a tumor of soft tissue at the posterior aspect of the knee, arthritic changes were frequently present in the knee (fig 4).

DIAGNOSIS

The diagnosis of posterior hernia of the knee is not difficult if the condition is kept in mind. Transillumination reveals the uniform cystic character of the lesion, and aspiration demonstrates the fluid contents. A roentgenogram made after injection of 100 to 150 cc. of air into the knee,¹¹ after aspiration of the synovial fluid, usually will reveal an air bubble in the hernial sac, thus connection is demonstrated with the joint. Wilson and his associates stated that occasionally when this procedure fails a roentgenogram made after aspiration of fluid and injection of air into the sac will reveal air in the joint. Injection of air was not employed in our series of cases. It is advisable to bear in mind the potential dangers of sepsis and pulmonary embolism when this procedure is carried out. The characteristic symptoms and findings, including transillumination are usually sufficient but, when doubt exists, roentgenograms made after injection of air into the joint will establish the preoperative diagnosis.

Benign tumors frequently are confused with the condition under consideration. Lipomas have a characteristic soft consistency, do not transilluminate, are usually painless and do not yield fluid on aspiration and therefore injection of air is not advisable. Lipomas may occur elsewhere in the body as multiple tumors. In contrast, xanthomas are of firm consistency, when they

are present the ratio of cholesterol to the cholesterol esters in the blood plasma is abnormal or the absolute values of each may be elevated. The mass does not transilluminate. Microscopic examination of frozen tissue may be necessary to establish the exact diagnosis. Enlarged popliteal bursae not communicating with the knee may be difficult to distinguish from those which do communicate with the knee, injection of air or surgical exposure may be necessary to establish the diagnosis.

The most common malignant tumor to be distinguished from cysts that communicate with the knee is fibrosarcoma, which is of a firm to hard consistency, is more fixed to the deep structures than a cyst and does not transilluminate. Pain and stiffness of the knee may be associated with progressive increase in size. Examination of frozen tissue may be necessary to establish its exact diagnosis. The vascular tumors of the popliteal space differ in many respects but are occasionally confused with Baker's cyst. Aneurysm, which is rare, is expansile and pulsating. It may increase in size and cause limitation of motion. The pulsations and bruit synchronize with the heart beat and are decreased when pressure is made on the femoral artery. Arteriovenous fistulas, which are rare, may have the same signs as aneurysm and in addition cardiac enlargement may be present. A history of trauma, Branham's brachycardia on compression of the femoral artery and circulatory deficiency distal to the fistula point to the correct diagnosis. Varicose veins are seen as soft, dark, tortuous, fluidlike swellings, varicosities are usually present elsewhere on the extremity. Hemangioma appears as a soft, vaguely defined tumor with

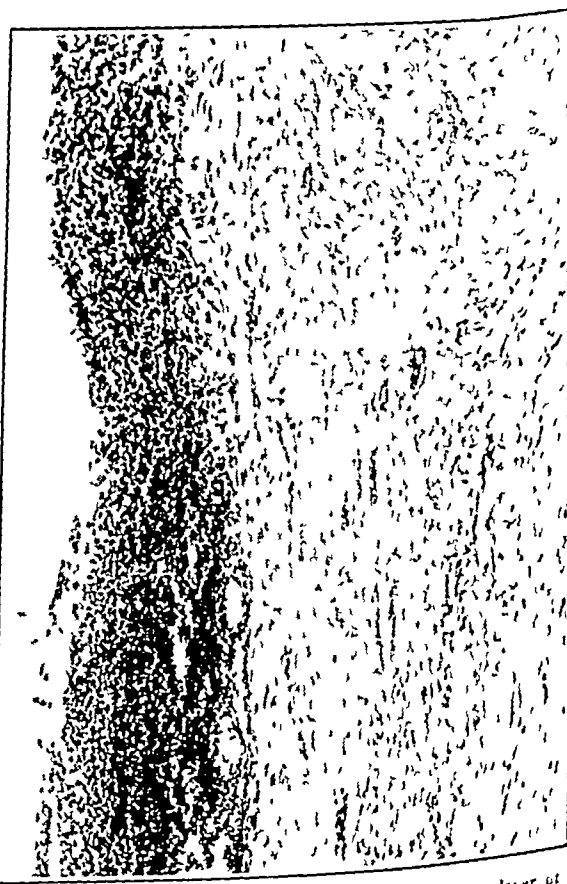


Fig 3—Baker's cyst, same case as figure 2. An inner layer of endothelium, a subendothelial layer in which round cell infiltration is pronounced and an outer layer of fibrous tissue (X 95).

increased local heat, dilated vessels may be seen locally or elsewhere in the body, and the roentgenogram may reveal calcification in the region of the tumor.

With popliteal lymphadenopathy a tender, firm, saucer-shaped enlargement is present which does not transilluminate.

¹¹ Quaintance, P. A. Pneumoro ntgenography of the Knee Joint. An Analysis of Fifty Cases, J. Bone & Joint Surg. 20: 353-362 (April) 1938.

illuminate This subsides with the more distally located causative infection In rare instances popliteal lymphadenopathy may be associated with lymphomas in other parts of the body

Infectious swellings may be of the pyogenic or tuberculous type Pyogenic abscess is characterized by local

remembered that, when arthritis is present, proper measures should be employed in its treatment, in addition to the treatment of the tumor

TREATMENT

Surgical treatment is the method of choice and is indicated whenever symptoms are present After application of a tourniquet an adequate longitudinal incision is made directly over the tumor and parallel to its course The deep fascia then is divided and the hernial sac exposed By means of blunt and later sharp dissection the hernial sac is exposed down to its attachment to the capsule Flexion of the knee will at times facilitate exposure and aid in dissection We have not found it necessary to divide the tendons We feel that it is best to isolate the whole sac down to the pedicle attachment of the capsule clamp with a hemostat and divide, sufficient length is left to invert the pedicle after roughening its outer surface and applying tincture of iodine We prefer to use permanent material, such as silk, for the purse-string suture on the pedicle Simpler methods which may be used in the treatment of the pedicle are ligation alone or wide excision of the pedicle and leaving the capsule open We feel however, that the latter procedure predisposes to recurrence The only known recurrence in our series as well as in that of Wilson and his associates followed excision in which the capsule was not closed After the sac is excised the wound is closed in layers, a firm dressing is applied and a padded posterior splint is used to immobilize the knee in extension (fig 5)

"Quadriceps setting" exercises are begun on the second postoperative day By the end of the first week the patient is allowed up and about the room and ten



Fig 4—Large cystic mass at knee which at the time of operation was found to contain fluid and was connected directly with the joint (lateral view)

evidence of inflammation including tenderness and fluctuation Fever, limited flexion of the knee, edema of the leg and inguinal lymphadenopathy usually are present, and culture of the pus obtained by aspiration usually reveals the causative organism With tuberculous abscesses the signs of inflammation are usually minimal unless the abscess is secondarily infected, there is a history of exposure or evidence of tuberculosis elsewhere, biopsy or aspiration and inoculation of guinea pigs confirm the diagnosis

Charcot's joint is an unstable enlarged joint which may be painful only at the onset of the disturbance Serologic and neurologic studies confirm the diagnosis of syphilis or syringomyelia The roentgenogram may reveal loose bodies posteriorly (simulating tumor), with a loss of joint margins, bony sclerosis and destructive arthritis

PROGNOSIS

The prognosis in cases of Baker's cyst in which treatment is not given usually is unsatisfactory, for progressive enlargement occurs With conservative treatment consisting of aspiration rest and bandaging the prognosis is indeterminate Careful dissection and ligation of the pedicle with the aid of modern aseptic technique is the treatment of choice, and recurrences of the cysts are rare

The presence of arthritis greatly influences the ultimate restoration of normal function and it is to be

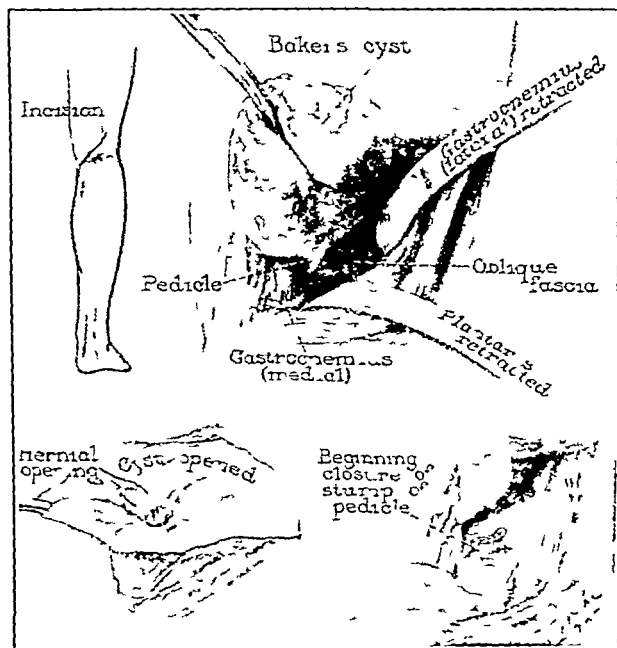


Fig 5—The surgical technique employed the oblique incision over popliteal space and along the course of the cyst the cyst dissected free and pedicle exposed at the point of entrance into the joint cyst opened to show inner surface and hernial opening into the joint and pedicle exposed after excision of cyst

days after operation is walking without crutches The sutures in the skin are removed on the fourteenth postoperative day at which time the splint is discarded Convalescence following operation has been entirely uneventful in our series

FUNCTIONAL FACTORS IN COMMON DERMATOSES

MAXIMILIAN E. OBERMAYER, M.D.

LOS ANGELES

During the past two decades the study of functional disease has been pursued with great energy and enthusiasm in all fields of clinical medicine. The most likely causes for the greater attention paid to the functional factors in disease are the considerably increased incidence of functional disease, the comparatively high stage of knowledge of organic disease that has been reached and the development of psychiatry.

The increased frequency of functional disease is apparent to even the casual observer. Some workers¹ have advanced the theory that nervous tension incident to the pressure and accelerated speed of modern living, especially under the highly artificial conditions in the big cities, is responsible, but this is only a partial explanation. The cause of the phenomenon is far more deeply rooted. The peoples of the Western World have long sensed and attempted to adjust to the approach of fundamental changes in their accustomed ways of living, changes which the present political events are bringing near the point of culmination. The nervous systems of generations which have the doubtful privilege of living through a violent phase of transition are bound to suffer not only from the resulting economic insecurity but from the multiple internal conflicts which necessarily arise when ideologic concepts, moral or otherwise, are subjected to rapid change. This is a neurotic age in which emotional tension has reached a degree probably unparalleled in history. It is no wonder that functional disease is flourishing and will continue to thrive until mankind has again found its balance and equilibrium has been restored, a goal which unhappily seems far distant indeed.

The enormous improvement that has taken place in the methods of diagnosis of organic disease, especially the high development of biologic chemistry, has made it possible to differentiate the organic from the functional symptom in a large majority of cases. An attempt at such differentiation twenty years ago would have been based on little more than guesswork. Not a small part of this progress is due to one of the newest fields of specialized medicine, namely allergy. It is a common misconception that allergy and the study of functional disease are antagonistic. On the contrary, allergy has provided bridges with which to span the apparent ravine between organic and functional disease, as will be illustrated later on.

Without the development of psychiatry and, subsequently, of the study of psychosomatic disorders, the investigation and understanding of functional disease would still be in their infant stage. The results of modern psychiatric progress are not of importance to the field of psychiatry or the study of mental diseases alone. What is of more immediate practical importance is that knowledge gained from psychiatric studies has been widely spread not only among psychiatrists but among the members of the rest of the medical world, including

the trained social worker as well, and the educated lay public has also been inculcated with psychiatric concepts of basic importance. Without this popularization of psychiatric facts, practical large scale application of psychotherapy in the widest sense would encounter far greater difficulties than it does today.

Recognition of the existence of functional factors has been prompt in many fields of medicine, though perhaps most particularly in gastroenterology and otolaryngology. Consequently such disorders as functional colitis and vasomotor rhinitis are familiar not only to the specialists most closely concerned with them but to the general practitioner as well. There is no hesitancy in including a discussion of the concepts of such functional disorders in lectures to students or in papers in medical journals designed for the general practitioner.

Peculiarly enough, the situation in dermatology is different. Whatever the explanation—and some interesting and logical speculations have recently been set forth by Stokes and Beerman²—the fact remains that the existence of functional dermatoses has been maintained only by a few research workers, while the great majority of dermatologists have refused to give it official recognition. The word "official" should be emphasized, because my colleagues and I, both in the Midwest and out here on the coast, have encountered patients who had been told by their physicians that their cutaneous disorders were psychogenic, while the same dermatologists would not support a functional cause of the condition in question on the lecture platform. It appears then that the existence of functional factors in some dermatoses is recognized to a fairly great extent in actual practice while the theory of functional causation is still refused by many. The result of this anomalous situation is that the spread of knowledge of functional disease in dermatology has been very slow. Most of the literature on the subject has been published only in journals designed for the specialist, and some has even appeared in more esoteric mediums available only to physicians who live in cities that are important medical centers. Papers by Klauder,³ Becker,⁴ Stokes,⁵ and Cormia and Slight⁶ are exceptions to the rule. Moreover, this dichotomy of attitude is responsible for the absence of information on functional disease from most dermatologic treatises designed for students and general practitioners.

Such an attitude of withholding information would be justified only if present day knowledge of functional factors in dermatoses were not sufficiently advanced to be of practical use, or methods of treatment based on this knowledge could not suitably be applied by the general practitioner. To dispose the validity of the two conditions is the object of my discussion.

INTERACTION OF MULTIPLE FACTORS

Conservative evaluation based on my own experience and on the published observations of others makes me believe that functional factors play a role in the following

From the Department of Dermatology and Syphilology, University of Southern California School of Medicine.

Read before the Section on Dermatology and Syphilology at the seventy-first annual session of the California Medical Association, Del Monte, Calif., May 3, 1942.

¹ Becker, S. W. Dermatoses Associated with Neurocirculatory Instability, *Arch Dermat & Syph* 25: 655 (April) 1932.

- ² Stokes, John H. and Beerman, Herman. Psychosomatic Conditions in Allergic Conditions, *Psychosom Med* 2: 438 (Oct) 1941.
- ³ Klauder, J. V. Cutaneous Neuroses, *J A M A* 55: 1 (Nov 28) 1925.
- ⁴ Becker, S. W. Eczema. Fundamental Practical Considerations, *J A M A* 97: 983 (Oct 3) 1931.
- ⁵ Stokes, J. H. The Complex of Eczema. A Diagnostic and Therapeutic Analysis, *J A M A* 98: 1127 (April 2) 1932. Functional factors as Complications of Organic Disease. An Office Therapeutic Approach, with Special Reference to the Neurodermatoses, *J A M A* 100: 1007 (Sept 28) 1935.
- ⁶ Cormia, F. E. and Slight, David. Psychogenic Factors in Dermatoses, *Canad M A J* 33: 527 (Nov) 1935.

mg dermatoses which are arranged in descending order according to the degree of demonstrable emotional disturbance

- Acarophobia
- Burning tongue
- Neurotic excoriations
- Dermatitis tactitia (all cases in which self infliction purely for malingering purposes can be excluded)
- Generalized pruritus of nonorganic origin
- Localized pruritus of nonorganic origin
- Chronic recurrent urticaria (cases in which organic causes cannot be detected or in which the removal of supposedly causal organic factors does not result in cure)
- Chronic recurrent dyshidrosis of the hands and feet
- Neurodermatitis or atopic dermatitis
- Alopecia areata
- Rosacea
- Dermatitis herpetiformis and herpes gestationis
- Lichen planus
- Herpes simplex, especially herpes genitalis
- Chronic recurrent stomatitis aphthosa and its less superficial forms, periadenitis mucosae chronica recurrens and ulcus neuroticum mucosae oris
- Lupus erythematoses (some cases)
- Psoriasis (some cases)
- Acne vulgaris (some cases)

As will be seen from this list these dermatoses cover a wide range of causes. Some, such as neurotic excoriations, are evidences of true neuroses. Some, such as urticaria, are considered allergic, in others, such as lupus erythematoses an infectious basis is recognized, and the cause of others, such as psoriasis, is still unknown.

Little need be said about the true dermatoneuroses. That they are psychogenic is generally recognized. But in the majority of dermatoses included in the foregoing list the functional or emotional factor is not solely responsible, it may not even play the most important role, it may form only one link in a chain composed of several causative elements of which the allergic, the bacterial and the toxic are perhaps the best recognized. Thus the etiologic situation in the so-called allergic dermatoses is more complicated. In conditions such as neurodermatitis or in some forms of chronic recurrent urticaria, it is well established that allergic phenomena, exemplified by positive dermal (scratch or intracutaneous) tests, usually polyvalent, are present, and full credit must be given to the allergist, whose studies have made it possible to view the allergic evidence in these cutaneous disorders in a new light. After clinical and experimental studies⁷ had made it clear that the causative role of the discovered allergens was questionable, it became possible to study the problem from a different angle. The results of these studies have substantiated the earlier concepts that patients with such disorders have an inherent, predisposing constitutional background. There is more and more evidence, furnished mainly by British and German observers, which indicates that hypersensitivity to certain allergens is not a constant phenomenon. The threshold of allergic response may be raised or lowered at a given time by the state of emotional tension. A patient may react to an allergen at one time but not at another. Becker and I⁸ have made similar observations. One of our patients with food urticaria could eat a certain food without difficulty while on his vacation but could not

eat it with impunity at home, even if the food had been obtained from the same source and was apparently unaltered. Another example is furnished by a child whose asthma and dermatitis was aggravated by the ingestion of fish, to which he was allergic, the same fish, however, did not elicit any reactions under conditions prevailing in a sanatorium.⁹ The allergic background of such patients is an inherited and therefore unchangeable feature, but the allergic reactivity of the skin can be modified by emotional factors. For example, a patient with food urticaria may be able to eat the food to which he is hypersensitive when he is free from tension and anxiety. Dunbar¹⁰ has shown that symptoms may be eliminated by psychotherapy while the cutaneous reactions to the specific substances remain unchanged. On the other hand, it has been suggested by experiments¹¹ that intense emotional conflict may produce hypersensitivity to substances not generally pathogenic, a phenomenon which may disappear with the restoration of equilibrium. Or such conflicts may produce a chronic state of tension during which an allergen or a purely emotional factor may be responsible for a sudden recurrence or exacerbation of the dermatosis. The autonomic nervous system is the final common path through which the two interacting factors, the allergic and the functional, become effective. It has been pointed out by Wittkower¹² that allergic and functional disorders have in common an overreaction to stimulation, in both the cause is harmless for the healthy person. The reactions produced by a trivial happening in the emotionally tense person and by the allergen in the allergic patient are of the same character. Thus emotional influences can in many ways favor the creation of allergic states and the elicitation of allergic reactions.

A similar interaction of factors this time an allergic reaction to an infectious agent and a functional element, may be causative in lupus erythematoses. Moreover, it may safely be assumed that the dermatoses included in the foregoing list for which the cause is still undetermined but in which a functional element is so often apparent are due to complex interacting factors, not all of which are known so far. This concept of multiple causation and interrelations is most important.

It seems that the predisposition to functional disorder like that to allergic response is constitutional. This diathesis is expressed by a tendency toward excitability and an exaggerated capacity for response to stimuli. Becker has assumed the presence of an inherited protoplasmic instability in patients with such a constitutional background, and psychiatrists have suggested that they have exaggerated hypothalamic responses.¹³ A great deal of systematic investigative work remains to be done. For practical purposes, however, it is sufficient to recognize the presence of functional factors and to know how to deal with them.

PERSONALITY DIFFICULTIES

The basic feature of the personality of the patient with such a diathesis, regardless of age, sex, education or social stratum, is emotional instability. Limitation of space makes it necessary to confine myself to a sketch of the traits commonly encountered in adult

9 Rogerson C H. The Psychological Factors in Asthma-Prurigo Quart. J. Med. 6: 367 (Oct.) 1937

10 Dunbar Helen Flinders. Psychosomatic History and Techniques of Examination. Am. J. Psychiat. 95: 1277 (May) 1939

11 Gillespie R D. Psychological Aspects of Skin Diseases. Brit. J. Dermat. 50: 1 (Jan.) 1938

12 Wittkower Erich. Studies in Hay Fever Patients (The Allergic Personality). J. Ment. Sc. 84: 352 (March) 1938

13 Campbell Douglas Gordon. Personal communication to the author

7 Obermayer M E. and Becker S W. Functional Studies on Patients with Neurodermatoses. Deliberationes Congressus Dermatologorum Internationalis IV. Budapest 2: 1936

8 Becker S W. and Obermayer M E. Modern Dermatology and Syphilology. Philadelphia J. B. Lippincott Company. 1940 p. 105

patients, the personality of the similarly affected child will be omitted from this discussion. Though naturally the group of patients with dermatoses in which functional factors play a role encompasses a large variety of personalities, there are two common varieties of personality patterns.

The patient with the first variety is best exemplified by the obviously tense, "high pressure" type of business man. Such a patient, who is usually overly ambitious and energetic, is inclined to assume unnecessary burdens and to take his responsibilities too seriously. He is active, brisk, persistent and exacting. His intelligence is often above average and frequently he is a perfectionist. His inner instability may be masked by outward calm. Needless to say, such patients are not always men and are not always engaged in business; patients of this type are frequently encountered among government officials and petty officers.

The patient with the second variety of personality, who is more likely to be a woman, often has conscious feelings of insecurity and inferiority. She is inclined to worry unduly and to evaluate incorrectly the essential factors in her life, particularly in the sexual sphere. She is emotionally hypersensitive, easily discouraged and extremely sensitive to criticism. Her personal maladjustment is expressed by shyness and an attitude of detachment and self absorption. Her inner disequilibrium makes social contacts difficult.

Information is often obtained concerning the presence of functional disorders of other organ systems either in the patient or in one of his relatives. Thus a history of functional disturbances of the gastrointestinal system, migraine type of headache, low backache or vasomotor rhinitis aids in establishing the pattern to which the constitutional background conforms. The family history is an important source of information. Excessive nervous tension and instability and allergic disorders are frequently present among the blood relatives, and sometimes—especially in cases of neurodermatitis—the occurrences of such abnormalities in several generations can be ascertained.

THERAPEUTIC MANAGEMENT

In approaching the problem of functional disease, the physician must call on his store of patience, sympathy and tact. Once the suspicion is aroused that the patient's disorder may have a functional basis, every effort should be expended to gain his confidence so that the extent of the nervous disturbance may be determined. Treatment of a full blown neurosis or psychosis is distinctly the province of the psychiatrist who alone has had the specific training and experience necessary to enable him to assume full responsibility for the patient with severe mental disease. Consequently common sense and discrimination must be exercised in deciding which patients must be referred directly to the psychiatrist and which ones will be suitable subjects for the relatively shallow psychotherapy which the practicing physician can administer along with his treatment of the cutaneous disorder. Fortunately the majority of patients with functional dermatoses have only mild emotional disturbances, which can be alleviated by the understanding and interested physician. Therapy of such disorders is not difficult, but not all physicians have the attributes which are essential for carrying it out successfully.

Intelligent sympathy and understanding are the two prime requirements without which no physician can hope to carry out successful psychotherapy. A func-

tional disease is a true disease, its symptoms are very real to the patient, and adopting the attitude that he is "not really sick" will vitiate any attempts to get at the underlying emotional problems. A sympathetic understanding implies not a "hand holding" point of view but a realization that the patient needs assistance in solving his difficulties.

There are two types of physicians who, in spite of interest and sympathy, are unsuited for handling the emotional problems of patients with functional disease. The first is the type of physician whose experience is so limited that he is frequently faced with patients whose personalities, background and life situations he is incapable of understanding. He is likely to blunder in trying to reduce a complex emotional pattern to his own simple formula without taking sufficient cognizance of factors which, though strange to him, are of great importance to the patient's welfare. One must remember that "normal" covers a wide range in sexual, social and moral as well as physical spheres.

The second type is the physician who has unsolved problems of his own which are likely to bias his approach and to distort his therapeutic attempts. He will often do positive damage either by reinforcing abnormal trends in the patient which parallel the course of his own difficulties or by failing to recognize important factors because they play a role in his own problems.

However, the physician who is equipped with the necessary attributes and a good measure of common sense can greatly aid the patient in unraveling his emotional problems. The "high pressure" type of patient needs advice on how to restore balance to the conduct of his life. The sensitive, easily depressed person needs encouragement and help in gaining a perspective toward his needs and interests. In addition to lending a sympathetic ear to the patient's difficulties and giving advice, the physician can utilize several practical means to reinforce the effects of therapy. For instance, he can often help to eliminate causes of friction by interviewing marital partners or relatives and by suggesting alterations in living arrangement. He can assist in outlining a regimen which will provide for adequate rest, including daily naps and regular sleeping hours. He can discourage excessive social striving. He can insist on a daily balance between work and play and point out the value of restful vacations. The relaxing beneficial effects of daily sunbaths have been well established. The acquisition of an ultraviolet lamp to provide artificial sunshine during the rainy or foggy months is a warranted investment. Relaxation may also be achieved by regular daily exercises and by taking walks, preferably in the country. Sedation is often a necessary adjunct to the foregoing therapeutic suggestions.

It has been my experience that such simple measures often aid in restoring the functional stability of the nervous system. If they are applied in addition to well established therapeutic methods, the prognosis of dermatoses in the causation of which emotional factors are operative is considerably improved.

CONCLUSION

A common sense evaluation of complicating or underlying emotional abnormalities by an understanding and sympathetic physician can be an important factor in the patient's recovery from a chronic recurrent dermatosis.

1930 Wilshire Boulevard

MULTIPLE SPONTANEOUS IDIOPATHIC SYMMETRICAL FRACTURES

MILKMAN'S SYNDROME

LOUIS EDEIKEN, M.D.

AND

NORMAN G. SCHNEEBERG, M.D.

PHILADELPHIA

In 1930 and in 1934 Milkman¹ reported a case exhibiting a skeletal osteopathy which he considered unique and which he named "multiple spontaneous idiopathic symmetrical fractures." In the succeeding twelve years we were able to find references to only 3 similar cases in the English literature and to 15 cases in the foreign medical literature. Our purpose in this report is to review briefly the literature and to add a twentieth case.

This syndrome is characterized by pain, disturbances of gait and the radiologic appearance of multiple transparent bands or zones often symmetrically located in various portions of the skeleton usually interpreted as representing fractures. Locomotion eventually becomes so impeded as to render the patient bedfast.

REPORT OF CASE

History.—Mrs. H. S., aged 34, a native American housewife was admitted to Mount Sinai Hospital on July 16, 1942, complaining of weakness, painful lower extremities and inability to walk. She described difficulty on arising from the supine or sitting position, limitation of motion of the right hip and calf and pain in the left thigh on weight bearing which at the time of admission were so severe as to preclude any attempt at locomotion. A peculiar, hesitant, waddling gait had been noted before complete incapacitation had developed.

Past Medical History. The patient had a normal spontaneous birth at term; her birth weight was about 5 pounds (2.3 Kg.). At the age of 6 weeks an illness developed which required rectal feedings for three weeks and produced considerable loss of weight and poor health for two years. At the age of 7 years a fracture of the right tibia resulted from trauma so mild that an osseous defect must have been present at that time. An infection of this fracture required "bone scraping," suggesting that an osteomyelitis had been present. Her only childhood diseases were measles at 6 years and whooping cough at 9 years of age. Trauma to the right knee at 14 years necessitated another "bone scraping." She was ambulatory shortly after this period and recalls that at 17 years of age she weighed 88 pounds (40 Kg.). Intermittent pains in the right thigh and inability to walk without the aid of canes occurred at 21 years and continued until a remission five years later. In 1938 cramplike pains in the left thigh most severe on arising necessitated another hospitalization when only tenderness to deep palpation in the medial aspect of the left thigh could be elicited on physical examination. Roentgenogram taken at that hospital revealed evidence of an osteomyelitis of the lower end of the right tibia, multiple incomplete fractures through the cortices of both femoral shafts, thinning of the femoral necks, flattening of the femoral heads with erosion of both acetabular cavities and a number of old fractured ribs. She was readmitted a year later for similar complaints and was discharged with the tentative diagnosis of a variant of osteogenesis imperfecta tarda. Her symptoms continued without amelioration finally necessitating her present admission.

Systemic Inquiry.—Aside from her main complaints, the patient considered herself in fair health, though weakness and loss of weight occurred after confinement to bed for any appreciable length of time. Her menstrual history was normal. No pregnancies or miscarriages had occurred during her five years of married life.

Family History.—No similar illness had appeared in any member of her family. There was no history of any hereditary or familial disease. The mother was living and well, the father died in 1920 of cancer of the throat. Three siblings were living and well.

Physical Examination.—On admission the temperature, pulse rate and respiratory rate were normal and the blood pressure was 94 systolic and 60 diastolic. The patient was thin, sallow complexioned and dwarfed; she measured 52½ inches (133 cm.) in height and weighed 58½ pounds (26.6 Kg.). Her head was proportionate to her body; there was no tenderness of the skull. The scleras were white, the fundi were normal, vision was 6/6 and the visual fields were normal. The mouth, pharynx and tongue were normal; compensation existed for extracted teeth. There was slight submaxillary adenopathy; the thyroid was not palpable. She had atrophic breasts, generally limited expansion and no rib or sternal tenderness. The heart, lungs and abdomen were normal. Pelvic and rectal examinations were negative. Neurologic examination revealed some disuse atrophy of the leg muscles, generally hyperactive tendon reflexes and unsustained ankle clonus. Babinski, Chvostek and Trousseau's signs were not elicited. Skeletal examination of the trunk and limbs showed that they were in normal proportions. There was mild kyphosis and some limitation of spinal flexion. Rotation and lateral bending were demonstrable but no spinal tenderness or settling. There was moderate deep tenderness to palpation over the left mid thigh and limitation of abduction and flexion at the left hip. No bowing or gross deformities of the long bones could be demonstrated.

Laboratory Studies.—The hemoglobin level was 13.9 to 14.5 Gm. (96 to 100 per cent), red blood cells numbered 4,800,000, white blood cells 6,500 to 7,000 with 50 to 55 per cent segmented cells, 2 per cent nonsegmented cells, 41 to 44 per cent lymphocytes, 2 per cent monocytes, 1 per cent eosinophils and 290,000 platelets.

The urine usually was a pale straw color with a specific gravity of 1.009 to 1.012 and a trace of protein. Sugar showed a faint trace on June 13 and Oct. 5, 1939, was plus 2 on June 17, 1942 and was not present on July 17 and 29, 1942; there was no ketonuria and no appreciable number of red or white cells. Bence Jones protein was not present.

June 16, 1938 the blood sugar was 96 mg. per hundred cubic centimeters, urea 10 mg., calcium 9.6 mg., phosphatase 5.6 Bodanski units, result of the dextrose tolerance test: fasting 75 mg. or sugar, thirty minutes 190 mg., sixty minutes 162 mg. and one hundred and twenty minutes 102 mg.

Oct. 5, 1939 the blood sugar was 87 mg., urea 14 mg., calcium 11.0 mg., basal metabolic rate plus 9 per cent.

July 17, 1942 the blood sugar was 90 mg., urea 15 mg., calcium 9.4 mg., phosphorus 2.0 mg., phosphatase 14.8 units (Kav-Roberts), sedimentation rate 16 mm. in sixty minutes.

August 18 the blood urea was 16 mg., chlorides 520 mg. (plasma).

August 19 the blood calcium was 9.7 mg., phosphorus 2.0 mg., phosphatase 14.1 units (Kav-Roberts).

August 20 the blood cholesterol was 270 mg., cholesterol esters 160, icterus index 8 units, basal metabolic rate plus 8 per cent.

August 24 the blood urea was 17 mg., urea clearance 73 per cent, uric acid 2 mg.

August 28 the Fishberg concentration test showed a specific gravity of 1.012, 1.011 and 1.012; a blood galactose tolerance test revealed a peak level of 83 mg.

September 3 the blood calcium was 9.3 mg., phosphorus 2.6 mg., phosphatase 14.2 units (Kav-Roberts), blood sodium 401 mg., potassium 15.1 mg., total blood proteins 7.8 mg., serum albumin 4.3 mg., serum globulin 3.5 mg., dextrose tolerance test: fasting 94 mg. or sugar (urine negative), thirty minutes 180 mg. (urine positive), sixty minutes 190 mg. (urine

From the Medical Service of Dr. Abraham Trasoff and the Department of Radiology, Mount Sinai Hospital.

1. Milkman, L. A. "Pseudofractures (Hunger Osteopathy). Late Effects of Osteomalacia." Report of Case. *Am. J. Roentgenol.* 24: 293 (July) 1930, footnote 14.

2. Leedham-Creen, I. C., and Campbell-Golding, F. "Osteoporosis Meliorea (Multiple Spontaneous Idiopathic Symmetrical Fractures)." *Brit. J. Surg.* 35: 77 (July) 1947. Milkman, L. A. in discussion on Camp and McCullough.¹²

moderately positive), one hundred and twenty minutes 100 mg (urine weakly positive), one hundred and eighty minutes 65 mg (urine negative)
September 9 the blood chlorides were 610 mg and the carbon dioxide combining power was 47 volumes per cent
Wassermann, Kahn and Kline reactions of the blood were negative
Results of the calcium balance study, bromsulphalein test and gastric analysis are given in table I

TABLE I—Results of Tests

Calcium balance study						
Daily intake of calcium 500 mg orally						
8/31/42—Feces 153 mg	Ca + urine 91 mg	= total 244 mg Ca				
9/1/42—Feces 221 mg	Ca + urine 91 mg	= total 312 mg Ca				
9/1/42—Feces 611 mg	Ca + urine 250 mg	= total 861 mg Ca				
9/15/42—Bromsulphalein test		Retention in 0 Minutes				
5 mg per kg		0%				
10 mg per kg		2%				
9/23/42—Gastric analysis						
	Fastling	30 Min	60 Min	90 Min	120 Min	
Free acid	0	2	20	20	30	
Total acid	15	10	30	35	50	

Cystoscopy revealed a grossly normal urinary tract, normal renal function and no pyuria The electrocardiogram was normal
A provisional diagnosis of osteomalacia was entertained Skeletal roentgenograms were then made which revealed changes strikingly similar to those described by Milkman as being characteristic of the Milkman syndrome The films were submitted to Dr Milkman, who confirmed the diagnosis They

was noted at the site of a pseudofracture, the femurs showed bilateral coxa vara and the pelvis was heart shaped There were no areas of rarefaction in the skull or vertebrae, though the latter exhibited decalcification and a diminution in height, a biconcave appearance of the bodies and some scoliosis
The following fractures were noted (1) symmetrical fractures of both clavicles, (2) symmetrical fractures of the avl



Fig 2—Lesion in right tibia

lary borders of both scapulas, (3) right radius and ulna, (4) left ulna, (5) numerous ribs, (6) both femurs (asymmetrical), (7) right tibia and (8) left fifth and right third metatarsal

COMMENT

No standard nomenclature has been adopted to classify this type of skeletal dystrophy Leedham Green - objected to Milkman's awkward title and suggested the term "osteoporosis melolytica" or "osteoporosis meloclastica," which pertained to an elective affinity of the process for the bones of the limbs and emphasized the doubt as to whether the lesions observed by radiologic examination indicated true fractures or merely areas of decalcification These lesions, however, are not limited to any portion of the skeleton, and it is thus doubtful whether such a nomenclature condensation is justifiable Hopf³ proposed the name morbus Milkman or dysbasia osteolytica dolens Since Milkman first described this syndrome, the use of the patronymic title "Milkman's syndrome" is logical until the pathogenesis of this osteopathy is more completely understood

In Milkman's original description of the disease a woman aged 43 complained of lameness of the back pain on stooping over and difficulty on arising from a supine or sitting position of nine years' duration and exhibited an uncertain duck waddle gait, evidence of



Fig 1—Lesions of forearms

revealed generalized calcium deficiency of the skeleton, small punched out cortical notches and transverse zones of rarefaction traversing part or all of the bone, usually at right angles to the long axis In a number of lesions the surfaces adjacent to the decalcified bands showed a narrow line of condensation, some periosteal proliferation was observed at the edge of the defects In the left scapula the transverse band appeared to be completely filled in with new bone, and two metatarsal pseudofractures were healed In a number of paired bones the lesions were symmetrical A deformity of the right clavicle

3 Hopf, Max Radiol clin 9 74 88 (March) 1940 cited in discussion by Milkman¹⁴

loss of weight, muscle atrophy, diminished stature and pain on pressure over the sternum, ribs and femurs. Forty-three multiple transparent bands or pseudofractures were noted, many of which were symmetrical. In 1934 Milkman published the postmortem findings of this case, which will be described later.

Michaëlis⁴ published a report of a similar case in 1932 concerning progressive skeletal pain in a German soldier aged 18 serving in World War I. Roentgenograms in 1926 revealed widespread lesions similar to those described by Milkman plus pelvic involvement and a small defect in the skull. Several biopsies obtained from the cranium, shoulder and radius served only to eliminate the diagnosis of myeloma; parathyroid tissue obtained for biopsy appeared normal.

In 1933 Debray and his associates⁵ described a woman aged 51 whose symptoms began ten years previously, shortly after a pregnancy, and exhibited a cycle of remissions and exacerbations coinciding with sojourns in the country and return to city life. Walking and finally movement of any kind became sufficiently painful to produce complete incapacitation. Symmetrical fissures of many bones were discovered on x-ray examination. A second report in 1940,⁶ which probably was a further description of the same case, described a functional cure and substantial skeletal recalcification on

In 1936 Duval described the condition of a man aged 35 who complained of leg cramps and difficulty in rising from the recumbent position. Clinical examination revealed only anterolateral symmetrical curvature of the thighs. X-ray examinations of the femurs revealed two symmetrical fractures on the lateral sur-

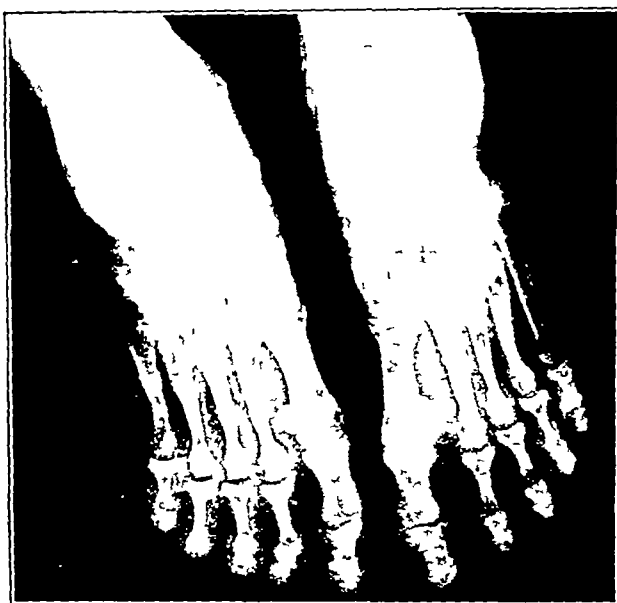


Fig. 4—Metatarsal lesions



Fig. 3—Lesion in femurs (note heart shaped pelvis)

faces apposed by dense bone on the medial surfaces. It was his impression that the pathogenesis was a periosteal dysplasia or osteopsathyrosis. Bone grafts inserted in the fractured areas failed to fill the defects in the femurs completely.

Dall'Acqua⁸ reported the syndrome in a woman aged 43 with a four year history commencing with pain in the lower extremities and progressing to involve many areas. Physical examination revealed only focal areas of deep skeletal tenderness. A great number of transparent striae, as he called them, which were identical with the pseudofractures and bands described in previous reports, were noted on x-ray examination.

Guillain, Lereboullet and Auzepy's⁹ patient was a woman aged 55 presenting a typical clinical and x-ray picture of the Milkman syndrome. Five months of treatment with irradiated ergosterol relieved pain completely, restored normal locomotion and resulted in a gain of 7 pounds (3,175 Gm).

The initial symptoms of a nun aged 58 reported by Garcin, Legrand and Bernard,¹⁰ was difficulty in arising from her knees after prayers. A remarkable improvement followed therapy with parenteral vitamin A and calcium and oral vitamin D. Illustrations included in their report showed progressive repair of the lesions over a period of thirteen months.

phosphorus (phospho-calcique) and an antisiphilitic arsenical. The patient was followed until 1937 and remained well.

⁴ Michaëlis L. Zur Klinik der Systemerkrankungen des Skelets. Fortschr. a. d. Geb. d. Roentgenstrahlen 45: 187-199 (Feb.) 1932 cited by Milkman.¹¹

⁵ Debray M. Andre Thomann and Giraux. A Case of Multiple Spontaneous Fractures Difficult to Classify. Nosologic Discussion. Bull. et mem. Soc. med. d. hop. de Paris 49: 1038-1048 (July 17) 1933.

⁶ Debray M. Chronic Painful Osteopathy with Multiple Symmetrical Pseudofractures. Case. Bull. et mem. Soc. med. d. hop. de Paris 56: 573-576 (Oct. 29) 1940.

⁷ Duval P. and Merle d'Aubigne R. Old Symmetrical Fractures of Both Femoral Diaphyses Incompletely Consolidated and Probably Related to Periosteal Dysplasia (Lobstein's Osteopsathyrosis). Case J. de chir. 47: 248-252 (Feb.) 1936.

⁸ Dall'Acqua V. Levi P. and Bordoli L. Generalized Osteopathy with Multiple Symmetrical Striae Due to Reabsorption (Milkman Syndrome). Radiol. med. 23: 733-749 (Oct.) 1936.

⁹ Guillain G. Lereboullet and Auzepy P. Milkman Syndrome (Multiple Symmetrical Striae of Resorption). Nosographic Considerations. Case. Bull. et mem. Soc. med. d. hop. de Paris 53: 879-889 (June 21) 1937.

¹⁰ Garcin R. Legrand G. and Bernard P. Milkman Syndrome of Unknown Etiology, Clinical Cure and Roentgen Improvement Under Influence of Vitamin and Calcium Therapy. Bull. et mem. Soc. med. d. hop. de Paris 53: 1166-1172 (July 19) 1937.

The only report in the British literature is that of Leedham-Green and Campbell Golding.¹¹ Their patient, a woman aged 24, had presented typical symptoms for six years.

In 1938 6 cases¹¹ were reported in the literature, all so strikingly similar in clinical and radiologic characteristics that a detailed description would be superfluous. Leriche and Jung's report¹² concerned a woman aged 30, and the authors discussed a similar case that had come to their attention through a Dr. Fassin.

In 1940 Max Hopt³ published reports of 3 cases expressing his agreement with Milkman concerning the specificity of the disease and proposing the nomenclature adjustment discussed previously.

INCIDENCE

The majority of reported cases occurred in middle aged women, although Michaelis first noted the condition in a soldier aged 18, and Leedham-Green's patient was a woman aged 24. In view of the rarity of this entity the distribution of 15 of the 19 cases on the

described postmortem findings of increased vascularity of all the involved osseous tissues which, he believed suggested the presence of a trophic disturbance producing intense focal decalcification.

PATHOLOGY

The postmortem findings in Milkman's case represent the only source for the study of the morbid anatomic changes in the disease. The pathologic visceral changes were not distinctive. The fractures appeared as irregular breaks in the continuity of otherwise normal bone. Sections were submitted to several pathologists, whose diagnoses varied from osteomalacia to osteopsathyrosis. Increased vascularity about the fractures was pointed out by Milkman. Bone biopsies obtained by Michaelis⁴ merely served to rule out the diagnosis of myeloma. The parathyroids of the patient at autopsy and the parathyroid biopsy reported by Michaelis revealed normal glandular tissue.

SYMPTOMS AND SIGNS

The clinical picture almost invariably conformed to a readily recognizable pattern. The onset was insidious, with pain developing either simultaneously in several portions of the skeleton or progressively involving many bony parts. Pain in the lower extremities and lower part of the back, cramplike in nature or resembling lumbago, was aggravated by motion, walking or excessive fatigue. Difficulty on arising from a supine sitting or kneeling position was a frequently described early complaint. The gait became awkward and hesitant and resembled a duck waddle. Locomotion soon was impossible without the aid of canes or crutches, and eventually most patients became bedridden invalids. The duration of symptoms when the patient was first seen by the physician who recognized the syndrome usually was four to five years, interspersed with many episodes of remissions and exacerbations. The general health was preserved except for loss of weight and weakness in patients confined to bed for prolonged periods of time.

Physical examination revealed little beyond focal areas of skeletal tenderness, often not corresponding exactly to the roentgenologic location of the lesions. None of the usual signs of fracture such as fragment mobility, pseudoparalysis or crepitus existed.

LABORATORY STUDIES

The laboratory is of no help in establishing or eliminating the diagnosis. Some of the findings recorded in various case reports are included in table 2.

The blood calcium may be normal or elevated and the phosphorus low, normal or elevated, the phosphatase may be normal but is usually high. The degree of calciuria is inconstant. Important information concerning calcium-phosphorus metabolism will be forthcoming when more calcium balance studies are reported. One patient was in normal balance,² whereas our patient exhibited negative balance. Repetition of our balance studies when the calcium was administered intravenously failed because of technical difficulties. The basal metabolic rate was normal in 4 cases, plus 22 per cent in 1 and plus 41 per cent in another. Milkman's patient and ours exhibited occasional glycosuria. A dextrose tolerance test performed on our patient revealed a slightly elevated dextrose peak and glycosuria in two urine specimens. Several fasting blood sugars have always been low normal.



FIG. 5—Lesions in clavicles, axillary border of both scapulas and ribs.

European continent probably is not a significant finding but may represent unfamiliarity with this syndrome among American and British physicians.

ETIOLOGY

Any discussion of the cause of this unusual condition must remain speculative. There has been no evidence to indict nutritional deficiency, parathyroid dysfunction, endocrinopathies or trauma as the cause of the skeletal striae. Camp and McCullough's¹³ theory that the occurrence of all such lesions may be ascribed to the action of conditions which impose stress and strain on bones seems unlikely to us in view of the absence of any objective demonstration of strain in our case or the cases reported in the literature and the peculiar location of many of the transparent zones (i.e. axillary border of scapula, pubic ramus). Milkman¹⁴

¹¹ Lombard, P., and Tillier, H. Spontaneous Fissuration of the Skeleton, *Mem Acad de chir* 64: 336-351 (March 2) 1938. Ravault, P. P., Girard, M., and Didierlaurent. Symmetrical Spontaneous Fissuration (Milkman Syndrome), *Lyon med* 162: 189 (Aug 21), 217 (Aug 28) 1938. Halbrun and Bernard. *Soc franç d'électrothérapie* Feb 27, 1938, cited by Ravault, Girard and Didierlaurent. Leriche and Jung.¹² Roger and Huguet.¹⁰

¹² Leriche, R., and Jung, A. Spontaneous Nontraumatic Osseous Fissures of Undetermined Origin, *Case*, *Lyon chir* 35: 47-52 (Jan-Feb) 1938.

¹³ Camp, J. D., and McCullough, J. A. L. Pseudofractures in Diseases Affecting the Skeletal System, *Radiology* 36: 651-663 (June) 1941.

¹⁴ Milkman, L. A. Multiple Spontaneous Idiopathic Symmetrical Fractures, *Am J Roentgenol* 32: 622-634 (Nov) 1934.

X-RAY APPEARANCES

The diagnosis must necessarily be made by the roentgenologist. Focal osteoporotic areas progress to form translucent bands, zones or striae of intense local decalcification which appear to spread across the bone or around its circumference, varying in size from several millimeters to a centimeter or more. Eventually a complete transverse solution of bone continuity resembling a fracture may be produced. The bone edges are usually irregular. The bone above and below this transparent zone may appear relatively normal or may exhibit evidence of deficient calcium content. Involvement of paired bones may be exactly symmetrical, though this is not necessarily so. Early there is no osseous deformity produced but in cases followed for protracted periods certain changes have been described. Milkman¹⁴ reported separation, displacement and overlapping, Milkman¹⁴ and Debray¹⁵ noted settling of the vertebral column, dall'Acqua⁵ described a heart shaped pelvis which was present in our case, Michaëlis⁴ and Debray¹⁵ described coxa vara, which was present in our case, Milkman¹⁴ also described rib and ulnar angulation, unilateral clavicular angulation was present in our case. Though Milkman believed that the disease

TABLE 2—Findings in Various Cases

Author	Calcium Mg per 100 Cc of Blood	Phos- phorus Mg per 100 Cc of Blood	Phos- phate	Calcemia Mg per 24 Hrs	Calcium Balance
Milkman	10-15	2-6.8		400	
Michaëlis	11.6-12.7	1.6			
Debray	10.8-11.4	6.7		500	
dall'Acqua	8.9-9.5	10.3	48.6 units		
Guillain	11.1-11.3	4.8	3.7 units		
Garcin	10.4		3.5 Bodanski units		
Leedham Green	9.6	2.2-2.8	30 units		Normal
Our case	9.3-11	2.0-2.6	14.1-14.8 Bodanski units	91-250	Negative

was characterized by the absence of callus formation, Guillain and his associates,⁹ Debray and his group¹ and Garcin and his associates¹⁰ demonstrated recalcification of the striae and fractures after suitable therapy, and other authors, including ourselves, have noted attempts at callus formation in isolated lesions.

DIAGNOSIS

The diagnostic criteria have been summarized by Leedham-Green and Campbell Golding² and are listed, with modifications, as follows:

- I Symptoms and signs
 - 1 Pain across the lower part of the back
 - 2 Pain in the lower extremities
 - 3 Awkward hesitant duck waddle gait
 - 4 Difficulty in arising
 - 5 Physical examination negative or reveals focal tender areas
- II Radiographic features
 - 1 Circular areas of calcium deficiency or translucent transverse bands or irregular pseudofractures
 - 2 Lesions usually symmetrical
 - 3 Little or no callus formation before therapy
 - 4 Osseous deformities noted only late

DIFFERENTIAL DIAGNOSIS

A variety of diagnoses have been confused with this syndrome and probably many cases have gone unrecognized for this reason. Osteomalacia is the most frequent diagnosis entertained in these patients, and it is entirely possible that the syndrome represents a variant or subgroup of the osteomalacias. Females comprise

the majority of the cases in both conditions and multiple fractures are common to both osteomalacia and Milkman's syndrome. At least two thirds of osteomalacic patients are women who have had numerous and frequent pregnancies. Undernutrition as an etiologic factor is frequently observed, and many students of the disease look on it as a form of adult rickets. Early osseous deformities are characteristic of osteomalacia, and adequate therapy almost invariably will produce x-ray evidence of recalcification. The early production of kyphoscoliosis, lordosis and bending of long bones occurs in osteomalacia but has not been noted until the very late stages of Milkman's syndrome.

Fragilitas ossium is characterized by a familial tendency, blue sclerae, bilateral deafness and cortical thinning of long bones with the production of multiple, irregular sharply angulated fractures followed by adequate callus formation often exhibiting a series of annular rings of callus. Fractures in such patients who live beyond adolescence are rare.

Osteitis fibrosa cystica presents x-ray evidence of bone cysts. The high blood calcium, low phosphorus, elevated phosphatase and hypercalciuria should establish the diagnosis without difficulty.

Hunger osteopathy, described mainly during and shortly after World War I¹⁴ was considered to represent a form of osteomalacia and may be differentiated from Milkman's syndrome by the presence of dietary deficiencies, early osseous deformities and healing with calcification.

Pathologic fractures may occur in Albers-Schonberg disease (marble bones) and transverse bands have been noted in the shafts of long bones.¹⁶ These fractures heal readily, and the x-ray finding of diffuse osteosclerosis is diagnostic. Pseudofractures have been observed in a great variety of unrelated diseases¹³ which should be differentiated from the Milkman syndrome without difficulty. These include rickets, celiac disease, steatorrhea, sprue, hyperthyroidism, osteitis deformans, congenital syphilis, states of overloading bone (march fracture and the like), adrenal pituitary bone dystrophy and severe chronic acidosis or hyperglycemia.

TREATMENT

The aim of therapy has been directed to the production of calcification of the osseous lesions. Phosphorized cod liver oil, viosterol, sunlight and ultraviolet irradiation failed to improve Milkman's patient¹⁴. A functional cure and substantial skeletal recalcification was produced by the use of phospho-calcique and an anti-syphilitic arsenical by Debray.⁶ Bone grafts surgically placed in the symmetrical femoral fractures reported by Duval and Merle d'Aubigne⁷ failed to fill in the osseous defects adequately. The case reported by Guillain⁹ showed a striking amelioration of symptoms and recalcification of bone lesions by the use of irradiated ergosterol. Garcin's patient¹⁰ improved following a course of therapy with parenteral vitamin A and calcium and oral vitamin D. Leedham-Green's patient² was being treated with a preparation containing vitamins A and D and calcium lactate at the time of their report. Our patient has shown some clinical improvement on a regimen of oral vitamin D (50,000 units daily) and calcium lactate, ultraviolet irradiation of the torso and diathermy to the painful areas. She is now able to walk short distances with the aid of a cane, but her roentgen picture is unchanged.

15 Debray, Andre, Thomann and Gireaux.³ Debray.⁶

16 Roger H. and Huguet J. Milkman Syndrome. Case. Bull. et mem. Soc. med. d. hop. de Paris 54: 1434-1437 (Aug. 1) 1938.

SUMMARY

1 Nineteen cases of multiple spontaneous idiopathic symmetrical fractures (the Milkman syndrome) have been collected from the literature and a similar case has been added

2 The skeletal osteopathy of this condition is characterized by pain, disturbances of gait and the radiologic appearance of spontaneous multiple symmetrical transparent bands or pseudofractures exhibiting little or no callus formation which progress to render the victim bedfast

3 The disease appears mainly in middle aged women

4 There are no distinctive laboratory findings

5 The etiology and pathogenesis are unknown The syndrome may represent a variant or an atypical form of osteomalacia

6 In the 1 case which came to autopsy increased vascularity about the osseous lesions represented the sole distinctive pathologic change

7 Several reported cures have resulted from treatment with calcium, vitamin D, arsenicals and vitamin A

ADDENDUM—After twenty-five weeks of therapy with 50,000 U S P units of vitamin D orally and 3 Gm of calcium lactate daily our patient has gained 19 pounds (8.6 Kg), is free of pain, is ambulatory, although her bizarre duck waddling gait persists, and is able to earn her living Complete skeletal roentgenograms were repeated on April 5, 1943 and revealed excellent healing of all pseudofractures previously enumerated, no new lesions were noted

Fifth and Reed streets

Clinical Notes, Suggestions and New Instruments

A TWENTY EIGHT YEAR FOLLOW UP ON A SPLENECTOMY FOR HEMOLYTIC ANEMIA

PERSISTENCE OF HOWELL JOLLY BODIES

O H PERRY PEPPER, M D, AND J HAROLD AUSTIN, M D
PHILADELPHIA

In 1915 a man aged 40 (J L) with severe hemolytic anemia was studied by us in the Hospital of the University of Pennsylvania His presenting symptoms were weakness, dizziness, dyspnea and edema, which had been increasing for two years The metabolism studies, before and after splenectomy, which were reported in 1916,¹ revealed that soon after splenectomy there occurred a retention of nitrogen, a decrease in the output of uric acid and iron and a pronounced decrease in the definitely elevated excretion of urobilinogen and urobilin

On admission in 1915 the patient's blood counts showed a hemoglobin varying from 20 to 26 per cent, a red count between 1,100,000 and 1,700,000 per cubic millimeter, a low white cell count and, in addition, all the morphologic picture which in those days established the diagnosis of pernicious anemia, there were many normoblasts and typical megaloblasts The coagulation time was normal, as was the hemolytic range in hypotonic salt solution, platelets were approximately 100,000 per cubic millimeter No Howell-Jolly bodies were seen before operation Achlorhydria was found

The physical examination revealed a yellowish pallor and an enlarged spleen No changes were noted in the tongue and no changes in the nervous system In the light of our present day knowledge, this case might well not be accepted as one of pernicious anemia, but in 1915 we had little doubt of the correctness of our diagnosis of "pernicious anemia of the hemolytic type" It is true that there is a hemolytic element in most cases of pernicious anemia but seldom, if ever, to this

degree Some today would undoubtedly term this simply an acquired hemolytic anemia—but such cases are usually more acute There was no familial history to support a diagnosis of the congenital type

Transfusions improved the blood count and the patient's general condition sufficiently for splenectomy to be performed successfully The spleen weighed 340 Gm and showed "chronic diffuse and follicular splenitis, with passive congestion and excessive pigmentation, probably hemosiderin" Following operation there was steady improvement, within ten weeks the hemoglobin had risen to 70 per cent, the red cell count to 3,580,000 and the white cell count to normal Morphologically the blood picture was normal except for the usual postsplenectomy appearance of Howell-Jolly bodies All evidences of increased blood destruction disappeared The patient was without symptoms and in excellent health

Reports of continued good health and normal blood counts were received for four years and then the patient was lost sight of for twenty-four years On March 25, 1943, just three days short of twenty-eight years since his first admission, the patient stopped in to report He is now 68 years of age and has been in excellent health ever since his operation except for a "touch of diabetes easily controlled by diet" and a little lumbago His appearance was that of an elderly man in peculiarly good physical condition His blood count was normal with a hemoglobin of 99 per cent The stained blood spread revealed healthy erythrocytes, a normal number of white cells and platelets and a normal differential white count A small number of Howell-Jolly bodies were present

Survival for twenty-eight years after splenectomy for hemolytic anemia is by no means unknown, in fact, Dawson² refers to a patient, the first ever to be splenectomized for hemolytic anemia, who survived the operation for forty-five years On the other hand, it is probable that the present report of the finding of Howell-Jolly bodies twenty-eight years after splenectomy is unique Most of the reported series of cases followed up years after splenectomy have been recorded from the surgical point of view, and, unfortunately, not one has been found in which any observation on Howell-Jolly bodies has been mentioned (Diamond,³ Pemberton,⁴ Rousselot,⁵ Eliason and Stevens⁶)

Our case, therefore, may well be the longest reported persistence of these peculiar bodies after splenectomy First described by Howell⁷ in 1890, later by Jolly,⁸ Schmauch,⁹ Morris¹⁰ and others, these bodies have come to be called Howell-Jolly bodies Again an eponym reveals our ignorance Nothing is known as to the origin or significance of these bodies It is usually assumed that they represent a residual particle of nuclear material remaining after the breakup of the nucleus of the erythroblast Undoubtedly their staining reactions are those of nuclear material, but the constancy of size, eccentric position in the red cell and the fact that only one is usually found in an erythrocyte seem to argue for their being a definite structure Also they may be found in nucleated red cells in which the nucleus is still round and unbroken

The Howell-Jolly body is found in man in small numbers in some cases of pernicious anemia, acute severe secondary anemia, hemolytic icterioanemia, sickle cell anemia and leukemia in most cases of which diseases there is active red cell production going on In none of these conditions are Howell Jolly bodies apt to be as numerous as after splenectomy It is known that they persist after erythropoiesis has returned to normal,

2 Dawson, Lord of Penn Indications for and Result of Removal of the Spleen, Brit M J 2 699, 1932

3 Diamond, L K Indications for Splenectomy in Childhood, Results in 52 Operated Cases, Am J Surg 39 400 (Feb) 1938

4 Pemberton, J deJ Splenectomy Indications and Results, South Med & Surg 102 46 (Feb) 1940

5 Rousselot, L M Role of Congestion (Portal Hypertension) in So Called Banti's Syndrome Clinical and Pathologic Study of 31 Cases with Late Results Following Splenectomy, J A M A 107 17-8 (Nov 28) 1936

6 Eliason, E L, and Stevens, L W Surgery of the Spleen in Blood Dyscrasias, Surgery 13 177 (Feb) 1943

7 Howell W H The Life History of the Formed Elements of Blood, Especially the Red Corpuscles, J Morphol 1 57, 1890

8 Jolly, J Sur la formation des globules rouges des mammiferes Compt rend Soc de biol 18 528 and 593 1905

9 Schmauch, G Ueber endoglobuläre Körperchen in den Erythrocyten der Katze, Virchows Arch f path Anat 156 201, 1899

10 Morris, R S Note on the Occurrence of Howell's Nucleated Bodies in Experimental Anemia of the Rabbit and in Human Blood, Johns Hopkins Hosp 18 198, 1907

but the reason for their occurrence is not known. Probably identical bodies are found in the erythrocytes of many animals during periods of active blood regeneration and especially after phenylhydrazine or pyridine poisoning.

It may be said that the finding of Howell-Jolly bodies in an otherwise normal blood is a very strong indication of the absence of the spleen. Some day a case should be discovered in which splenic destruction, perhaps by traumatic intracapsular hemorrhage, has taken place. It will be interesting to learn whether Howell-Jolly bodies will appear in such a case just as they do after removal of the spleen. In the present state of our ignorance concerning the functions of the spleen we may conclude that in man, in whom the reservoir function of the spleen is almost negligible, the occurrence of Howell-Jolly bodies is the only evidence commonly demonstrable of a loss or splenic function.

BILATERAL CORTICAL NECROSIS OF THE KIDNEYS FOLLOWING SEVERE BURNS

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GEORGE L. CRANE, MD, DURHAM, N. C.

When Duff and Murray¹ collected 71 instances of bilateral cortical necrosis of the kidneys in 1939 they encountered no patient in whom burns had been a predisposing factor. In most deaths from burns pathologic condition of the kidneys has been described as tubular degeneration and intense vascular stasis. Necrotic foci in the kidney presumably from direct action of a toxin, and hemoglobin deposition in the tubules from erythrolysis are also described as evidence of more severe damage.² Evidence of still greater renal involvement of a vascular nature is embodied in the following report of bilateral symmetrical cortical necrosis of the kidneys following extensive cutaneous burns.

REPORT OF CASE

History.—A woman aged 32, a housewife, was admitted to Watts Hospital immediately after suffering severe burns when her nightgown caught on fire. No further history was available except that she had three children, the youngest child 1 year old. Her pregnancies and deliveries were uneventful.

Physical Examination.—On admission the temperature was 99.6 F, the pulse rate 84 and the respiratory rate 20 per minute. The patient was in profound shock but was conscious. The blood pressure was imperceptible. Burns of second and third degree involved the skin over the anterior surface of both thighs, the anterior and right lateral aspect of the abdomen, portions of the chest anteriorly and the inner aspects of the arms, forearms and hands. Burns of this degree comprised about 30 per cent of the total body surface while about them an additional 10 per cent was the site of first degree burns. A detailed physical examination was not carried out because of the obvious nature of the injury and the critical condition of the patient. The extent of the burns on the extremities discouraged the intern from taking numerous blood pressure readings. Her general appearance was one of good nutrition.

Laboratory Examination.—On the day of admission the red blood count was 6,350,000 with 17.5 Gm of hemoglobin per hundred cubic centimeters (101 per cent). The white blood cell count was 3,300 with 87 per cent neutrophils, 11 per cent lymphocytes and 2 per cent monocytes. The hematocrit reading was 61 volumes per cent. The urine contained a trace of albumin. Catheterized urine specimens on the third, fourth and fifth days contained a cloudy to semisolid albumin, were loaded with white blood cells and had from a few to 45 red blood cells per high power field. On one occasion there were a few leukocytic casts. No crystals were found in any specimen. On the fourth hospital day the blood nonprotein nitrogen was

165 mg per hundred cubic centimeters, urea nitrogen 100 mg, urea 214 mg, creatinine 4.2 mg, uric acid 5.7 mg, dextrose 153 mg, chlorides 450 mg and sulfadiazine 20 mg per hundred cubic centimeters. The hematocrit reading at this time was 38 volumes per cent.

Course.—The patient was given 500 cc of blood plasma in the emergency room and another 250 cc about twelve hours later. The burned areas were debrided and sprayed with a 2.5 per cent solution of sulfadiazine in triethanolamine. Throughout the first twenty-four hours the areas were sprayed with the sulfadiazine solution every hour and then every two hours for the next forty-eight hours. On the day of admission she received 6,600 cc of fluid by mouth and 1,400 cc by vein in addition to the plasma. One hour following admission 300 cc of urine was removed by catheter and no more urine was passed that day. She lost approximately 300 cc by emesis. On the second day the fluid intake was 5,200 cc and the urinary output was only 40 cc by urethral catheter. The third day intake was 3,500 cc and the output was 35 cc of urine. The fourth day intake was 3,000 cc and the output was 15 cc. The fifth day intake was 2,300 cc and the output was 35 cc. General treatment consisted of symptomatic use of opiates for pain and various stimulants. On the fourth day a transfusion of 500 cc of citrated blood was given without reaction. The temperature rose to 102 F on the second day, dropped to normal on the third day and then gradually rose again to 101 F on the sixth day. The pulse climbed steadily from 84 beats per minute on admission to 154 on the sixth day. The respirations increased during the fifth and sixth days to 28 per minute. The blood pressure could not be obtained on three attempts during the first day. On the second day the only pressure obtained was 70 mm of mercury systolic and zero diastolic. No further recordings were made, but after the second day the patient did not appear to be in shock and was fully conscious, cooperative and reasonably comfortable. During the ensuing three days it became apparent that she was developing progressive renal insufficiency and on the night of the fifth day she became irrational and semicomatose. On the sixth day respirations became very labored, dark frothy fluid appeared at the nose and mouth and she died.

POSTMORTEM EXAMINATION

The burns appeared as previously described. They were covered by a thick crust which was dry, clean and apparently free of infection. The body was opened with the usual Y incision.

The pleural cavities were normal. The right lung weighed 500 Gm and the left 410 Gm. Each on cut section was moderately congested.

The pericardial cavity was negative. The heart weighed 275 Gm and appeared grossly normal. The aorta was of good elasticity and showed only a few atheromatous plaques in the abdominal portion.

The abdominal cavity was normal. The stomach was much distended with dark fluid and gas. The gastrointestinal tract was congested throughout but was otherwise not remarkable. The liver weighed 1,885 Gm and the cut surface appeared slightly opaque. The gallbladder wall was thin and the bile ducts were patent. The spleen weighed 170 Gm and was moist and dark. The right kidney weighed 180 Gm and the left kidney 175 Gm. The appearance of the two kidneys was similar. The capsule was thin and stripped with ease. The surface was mottled with confluent large and small reddish gray opaque areas. These constituted about one half the surface of the kidney. The intervening tissue was pale grayish pink and glistening. The cut surface showed the same confluent grayish yellow opaque foci with hemorrhagic edges limited to the cortex and columns of Bertini (fig 1). The medulla contained distinct striations. The pelvis of the kidneys were not remarkable and contained no crystals or concretions.

Microscopic Examination.—Sections of the lung revealed pronounced capillary engorgement with dilatation of the arteries and veins. The alveoli contained a few pigment bearing phagocytes.

The heart appeared normal except for capillary engorgement and numerous small areas of interstitial hemorrhage.

From the Department of Laboratories, Watts Hospital, Durham, N. C. and the Department of Pathology, University of North Carolina, Chapel Hill.

¹ Duff, G. L. and Murray, E. C. D. Bilateral Cortical Necrosis of the Kidneys. *Am. J. M. Sc.* 201: 428 (March) 1941.

² Voet, W. Ueber histologische Befunde beim Verbrennungstod. *Virchows Arch. f. path. Anat.* 237: 140 1929.

³ Pack, C. T. The Pathology of Burns. *Arch. Path. & Lab. Med.* 1: 67 (May) 1926.

Section of the stomach showed engorgement and dilatation of the arteries, veins and capillaries.

Several sections of liver showed only one minute circumscribed area of early necrosis of the hepatic cells with pyknotic nuclei and loss of cell outline. Elsewhere numerous mitoses were observed in many of the liver cells. Some of the large branches of the portal vein were filled with an amorphous material consisting chiefly of fibrin and red blood cells.



Fig. 1—Gross appearance of kidney showing alternating zones of necrosis and hemorrhage limited to the cortex.

The spleen showed severe congestion of the sinusoids. The arteries and veins were dilated and engorged. One large vein contained a thrombus of fibrin, red blood cells and leukocytes. This did not fill the vessel, and free blood was seen in the lumen.

Sections of the kidneys revealed a widespread patchy necrosis involving almost the entire cortex. The necrosis in some areas appeared to be further advanced than in others. There was a thin strip of apparently normal tissue just beneath the capsule. In the most severely affected regions almost complete necrosis of the glomeruli and tubular epithelium with loss of the nuclei and blurring of the cell outlines was the outstanding feature. The structures, however, maintained a shadowy characteristic architecture. Hemorrhages and numerous polymorphonuclear leukocytes were scattered through the parenchyma. Most of the interlobular arteries and the arterioles were altered to an advanced degree. The muscular and elastic fibers of their distended walls were fragmented and opaque and were penetrated by minute hemorrhages. Platelet thrombi frequently filled portions or all of the dilated and sagging arteriolar lumens. These thrombi sometimes could be traced from an afferent arteriole into an engorged or necrosing glomerulus (fig. 2). Glomeruli in involved areas stained poorly, contained thrombi, were sometimes filled with masses of red cells in varying degrees of dissolution or were collapsed from apparent rupture. In regions adjoining the infarcted zones the arterioles and glomeruli were engorged but otherwise normal. The epithelium of the convoluted tubules was swollen, granular and in many places vacuolated. Larger arteries showed no changes similar to those noted in the smaller vessels. In many of them, however, there was thickening and reduplication of the internal elastica and fibrous thickening of the intima, a condition obviously antedating the present injury. Evidence of progressive renal circulatory stasis was adduced from the margination of the cellular elements of the blood. In the veins, partially occluding fibrin thrombi were noted. The collecting tubules were normal and contained no crystals. The intertubular capillaries were engorged. The picture was one of extensive vascular damage, infarction and tubular nephrosis.

The arteries and capillaries of the pancreas were dilated and packed with red blood cells. There were numerous areas of hemorrhage and fibrinous exudate in the interlobular connective tissue.

All the blood vessels of the adrenals were dilated and engorged, and there were several small areas of hemorrhage. Several veins contained nonoccluding fibrin thrombi. Sections of the thyroid and ovary revealed dilated arteries packed with red blood cells.

The bone marrow showed moderate hyperplasia of the myeloid elements and numerous megakaryocytes.

The burned areas of the skin showed complete loss or coagulation of the epidermis with extension in some areas for the full depth of the dermis. The blood vessels throughout this burned area and beneath it were dilated and packed with red blood cells. In none of numerous sections was a leukocytic exudate observed.

COMMENT

Urinary suppression in this patient can be taken to indicate the onset of severe renal vascular alterations, these changes are seen to coincide with the period of deep shock the first forty-eight hours after the burn. In fact Moon⁴ considers that "the congestive, hemorrhagic and edematous visceral appearances after extensive burns are of the same pattern as those found after traumatic shock." This author also notes that massive necrosis of the liver and renal cortex have been observed as unexplained secondary effects of shock. The focal necrosis observed in the upper gastrointestinal tract (e.g., Carling's



Fig. 2—Section showing arteries dilated and their walls necrotic, thrombus in one artery and in an afferent arteriole, glomerulus necrotic.

ulcer) in patients in severe shock have been attributed to arteriolar spasm by Penner and Bernheim.⁵ It is an interesting coincidence that Duff and Cooper implicate spasm of the interlobular arteries and arterioles followed by atony as the etiological mechanism compatible with the majority of cases of bilateral cortical symmetrical necrosis of the kidneys reported in

⁴ Moon, V. H. Shock, Its Dynamics, Occurrence and Management. Philadelphia: Lea & Febiger, 1942.

⁵ Penner, Abraham, and Bernheim, Alice C. Acute Focal Esophageal, Gastric and Duodenal Ulcerations, Arch. Path. (Aug.) 1939.

literature. The stimulus for this spasm might be a physiologic compensatory factor against shock acting either directly on the vessel wall (hyperadrenalismia) or via nerve elements or might be a substance elaborated at the burn site. It is however, beyond the scope of 1 case report to decide whether these renal changes developed according to the foregoing explanation or as the result of a direct toxic (necrotizing) action of a burn product on the vessel wall.

The formation of thrombi is probably not the first step in the process although vascular injury from anoxia stasis and the likely increase in circulating platelets and burned tissue products may act to favor this. The process does not appear to be embolic, since well defined thrombi cannot be seen in the engorged vessels at the burn site nor are emboli seen in the lung capillaries. Moon states that the coagulation time of the blood in shock is prolonged and in burns is shortened at first, then lengthened. Zinck⁶ in summarizing the vascular changes in 8 cases of burns emphasizes endothelial damage with fibrin thrombus formation and mentions renal panarteritis.

The use of sulfadiazine sprays in our case deserves some comment. The prompt elevation of the blood level to 20 mg per hundred cubic centimeters after dermal application indicates that burned skin is no barrier to its absorption. It also introduces the possibility that the drug may have caused the anuria, although it is much more likely that the anuria antedated the time when an effective concentration of sulfadiazine was reached. The renal changes described by Hellwig and Reed⁷ in a fatal case of sulfadiazine anuria include advanced tubular damage and the deposition of sulfadiazine crystals in the tubules. Coexistent vascular changes were not noted. Other elements in the therapy of our patient such as plasma blood transfusion without obvious reaction and triethanolamine have not been shown to produce similar renal pathologic condition.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

ALSTON E. SMITH, M.D., Secretary

SULFATHIAZOLE (See New and Nonofficial Remedies 1942 p 150)

The following dosage form has been accepted
THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO
Tablets Sulfathiazole 0.5 Gm (77 grains)

PITRESSIN TANNATE IN OIL—A suspension in vegetable oil of a water insoluble tannate of the pressor and diuretic antidiuretic principle of the posterior lobe of the pituitary gland (beta-hypophammine) standardized to contain five pressor units in each cubic centimeter (one unit representing the pressor activity exhibited by 0.5 mg of standard powdered pituitary U. S. P.). It is standardized by the method of Hamilton and Row (*J Lab & Clin Med* 2:120 [Nov.] 1916).

Actions and Uses—Pitressin tannate in oil is recommended for use where the prolonged action of pitressin is desired particularly for the treatment of patients suffering from diabetes insipidus.

Dosage—From 0.3 to 1 cc (3 to 5 pressor units) intramuscularly or intravenously at intervals of from thirty-six to forty-eight hours.

PARKER DAVIS & COMPANY, DETROIT

Ampoules Pitressin Tannate in Oil 1 cc. Each cubic centimeter contains pitressin tannate equivalent to 5 pressor units in peanut oil suspension.

U. S. patent 1,960,493 (May 29, 1934, expires 1951) U. S. trademark 254,307

⁶ Zinck, H. H. Burns: Vascular and Organic Changes. *Klin Wchnschr* 17:275 (Feb. 19) 1933.
⁷ Hellwig, C. A. and Reed, H. L. Fatal Anuria Following Sulfadiazine Therapy. *J A M A* 119:261 (June 13) 1942.

THEOPHYLLINE WITH ETHYLENEDIAMINE (See New and Nonofficial Remedies 1942, p 332)

The following additional dosage forms have been accepted
THE SMITH-DORSEY COMPANY, LINCOLN, NEB
Ampoule Solution Aminophyllin 0.25 Gm (3¼ grains) in 10 cc
Ampoule Solution Aminophyllin 0.5 Gm (7½ grains) in 2 cc

NICOTINIC ACID (See New and Nonofficial Remedies, 1942 p 561)

The following dosage forms have been accepted
BURROUGHS WELLCOME & CO., INC., NEW YORK
Tablet Nicotinic Acid 50 mg and 100 mg

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies 1942 p 555).

The following dosage forms have been accepted
BURROUGHS WELLCOME & CO., INC., NEW YORK
Tablet Thiamine Hydrochloride 1 mg, 5 mg and 10 mg

Hypoid Solution Thiamine Hydrochloride, 10 mg per cc 25 cc vials Preserved with phenol 0.5 per cent

Hypoid Solution Thiamine Hydrochloride, 50 mg per cc 5 cc and 25 cc vials Preserved with phenol 0.5 per cent

ASCORBIC ACID (See New and Nonofficial Remedies, 1942 p 564)

The following dosage forms have been accepted
BURROUGHS WELLCOME & CO., INC., NEW YORK
Tablet Ascorbic Acid 25 mg and 100 mg

COD LIVER OIL (See New and Nonofficial Remedies, 1942 p 572)

The following dosage form has been accepted
BAY STATE LABORATORIES, INC., BOSTON
Cod Liver Oil 4 ounce bottles. Each gram contains 2,500 U. S. P. units of vitamin A and 125 U. S. P. units of vitamin D.

DIETHYLSTILBESTROL (See Supplement to New and Nonofficial Remedies, 1942 p 26)

The following dosage forms have been accepted
THE W. S. MERRELL COMPANY, CINCINNATI
Diethylstilbestrol (in corn oil), 1 mg per cc 20 cc vial containing 0.5 per cent chlorobutanol

Tablets Diethylstilbestrol 10 mg and 0.2 mg
THE SMITH-DORSEY COMPANY, LINCOLN, NEB

Tablets Diethylstilbestrol 0.1 mg, 0.5 mg and 1 mg
Ampuls Diethylstilbestrol (in peanut oil), 0.5 mg per cc 1 cc
Ampuls Diethylstilbestrol (in peanut oil), 1 mg per cc 1 cc

EPHEDRINE HYDROCHLORIDE (See New and Nonofficial Remedies 1942 p 234)

The following dosage forms have been accepted
BURROUGHS WELLCOME & CO., INC., NEW YORK
Ephedrine Hydrochloride (*Powder*) ½ and 1 ounce bottles

Tablet Ephedrine Hydrochloride 0.016 Gm (¼ grain) and 0.032 Gm (½ grain)

Hypoid Ephedrine Hydrochloride Injection 30 mg (approximately ½ grain) in 1 cc

THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO
Capsules Ephedrine Hydrochloride 25 mg (¾ grain) and 50 mg (¾ grain)

EPHEDRINE SULFATE (See New and Nonofficial Remedies 1942 p 235)

The following dosage forms have been accepted
BURROUGHS WELLCOME & CO., INC., NEW YORK
Ephedrine Sulfate (*Powder*) ½ and 1 ounce bottles
Hypoid Ephedrine Sulfate Injection 0.049 Gm (¾ grain) in 1 cc

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY JULY 24 1943

TREATMENT OF SURFACE BURNS

The treatment of burns is directed toward prevention of shock and care of the surface wound. Probably overemphasis has been placed on surface treatment to the neglect of shock and anoxia. Cope suggests that improvement in results which came with the introduction of tannic acid treatment was probably due to better care of early shock rather than to the ability of tannic acid to fix in situ tissue toxins produced by burns. Cope¹ reports the treatment of 39 patients brought to the emergency ward of the Massachusetts General Hospital from the Coconut Grove night club fire. A trial was given to the method in which treatment of shock and anoxia received first consideration, while treatment of the burned surface was simplified to the point of omission of debridement and cleansing. The treatment of the 39 patients consisted in application to the burned surfaces, without any preliminary débridement or cleansing, of sterile boric acid ointment strips secured in place by pressure bandages. Intravenous administration of plasma was begun as soon as possible, in many instances while the patient was still on the stretcher. Two Gm of sodium sulfadiazine was administered at once through the cannula or the needle already in place for plasma transfusion. The dressings were not changed until the fifth to the tenth day. Debridement was not practiced because it was believed that the intact epidermis over the blebs protects against the entrance of bacteria and because bleb fluid does not become contaminated by virulent organisms harbored in gland crypts. Cleansing was considered undesirable because it does not reduce significantly the number of contaminated organisms present unless vigorous scrubbing is resorted to, in which case viable epithelium is injured. The procedure of débridement and cleansing, it is pointed out, involves increased manipulation of

the patient, prolonged exposure of the wounds and a general anesthetic, all of which are conducive to shock.

Cultures of fluid removed under sterile precautions from blebs twenty-four hours to fourteen days old were taken in the laboratory of Dr. Lyons. In a few instances nonpathogenic saprophytes of normal skin were recovered. It was the clinical impression that the healing beneath the ruptured blebs occurred as rapidly as under any of the other agents commonly recommended for the burned surfaces. Another argument in favor of non-debridement of the burned wound is the availability to the wound of chemotherapeutic agents administered internally. Thus the level of the sulfonamides in the bleb fluid of unruptured vesicles followed closely that of the blood plasma, at least on the first few days. The sulfonamide treatment adequately controlled invasive infection. According to Lyons² there was no evidence in these cases of cellulitis, lymphangitis, lymphadenitis or bacteremia. Superficial burns healed in the usual ten to fourteen day period.

The striking feature of the infection which occurred in all the deep burns was its limitation to the tissue devitalized by the original thermal injury. The treatment appeared sufficient to confine the bacterial infection to the devitalized tissue and to protect the living cells from invasive infection or pronounced local necrosis. The advantage of the treatment is its simplicity. The available personnel in an emergency of this type is freed for the care of shock and anoxia.

THE SHOCK THERAPY OF MENTAL DISEASE

For some time shock therapy has occupied the center of psychiatric interest. It is practiced to greater or lesser extent in three hundred and five hospitals for mental diseases, public and private.¹ Many questions with regard to its therapeutic values under various conditions are still to be answered, in fact, psychiatrists are far from agreement as to its methods, indications and results. Lewis² points out that the facts needed to evaluate shock therapy properly are not yet available in spite of its extensive clinical use. The results published appear to be discordant. The statistics reveal a rather chaotic state of affairs. To quote Lewis, "there is as yet no consensus of the basic value of any of these treatments [insulin, metrazol, electric current, and other shock producers], some authors being very enthusiastic over their results, others being unconvinced."

¹ Lyons, Champ. Problems of Infection and Chemotherapy. Surg. 117: 894 (June) 1943.
² Kolb, Lawrence, and Vogel, V. H. The Use of Shock Therapy in 305 Mental Hospitals. Am. J. Psychiat. 99: 90 (July) 1942.
³ Lewis, N. D. C. The Present Status of Shock Therapy of Mental Disorders. Bull. New York Acad. Med. 19: 227 (April) 1943.

¹ Cope, Oliver. The Treatment of the Surface Burns, Ann. Surg. 117: 885 (June) 1943.

of favorable results, and still others expressing frank opinions on the inadequacy and even harmfulness of such procedures."

Lewis, however, does not hesitate to admit that insulin, metrazol and electric shock are all valuable in proper hands when supplemented with systematic psychotherapy and other measures available in psychiatric clinics. The discordant reports on the results of shock therapy seem to be explainable as due, at least in large part to lack of uniform standards in the selection of patients for treatment, in the technique of treatments and in the interpretation of the results. Thus, statistics on the results of insulin treatment of schizophrenia, to be of value for comparative and other purposes, must be based on accurate information as to the form of the disease in each case—there are different forms of this disease—as to the special characteristics of the individual patient and as to the criteria used in recording the results as "recovered," "socially recovered," "improved," "unimproved" and so on. Considerations of this kind apply to other forms of mental disease subjected to shock treatment.

Lewis also admits that the many published reports as well as the survey by Kolb and Vogel¹ on shock practices in three hundred and five mental hospitals and clinics, do indicate approaches toward agreement as to the kind of shock treatment best suited for different types of amenable mental disease. Insulin appears to be the choice for schizophrenia or dementia precox and convulsive methods (metrazol and electric current) for affective disorders and involutional melancholia. The field of usefulness of electrically induced convulsion therapy "a safe and convenient method of treatment in mental diseases," appears to be extending. Selinsky² emphasizes its value in making the patient more accessible to psychotherapy. He states that "there can be no doubt of the empirical fact that electroshock therapy is an important contribution to the art and science of mental healing."

Shock therapy has been, and is, a mighty stimulus to psychiatry. As Lewis says "the whole realm of psychiatry has been vitalized with renewed interest." While no explanation of the fundamental nature of shock reactions can be offered now, has not the time come when their therapeutic actions need to be studied on a well organized, cooperative, national and later perhaps international basis in order that shock therapy may be used to the best advantage in the treatment of mental disease?

Current Comment

VITAMINS AND HUMAN GRAY HAIR

The production of achromotrichia in animals by dietary means and the alleviation of the experimentally produced condition by inclusion in the diet of pantothenic acid or some other vitamin of the B complex led to the hope that similar factors might be effective in restoring the original color to gray hair in man. Some studies have suggested that administration of para-aminobenzoic acid or a preparation containing pantothenic acid is followed by darkening of previously gray hair in man.¹ In view of the widespread publicity given to so-called anti-gray hair factors and of newspaper advertising promoting the sale of calcium pantothenate to persons with gray hair, a recent report by Brandaleone, Main and Steele² is of particular interest. These workers carried out an investigation designed to determine more carefully the degree of change in gray hair to be expected after prolonged administration of calcium pantothenate and para-aminobenzoic acid. Vitamin preparations were administered for eight months to a group of elderly men and women with white or graying hair who were confined to the hospital with chronic diseases such as rheumatoid arthritis, general arteriosclerosis and parkinsonism. Of the group of 19 patients 7 received 100 mg of calcium pantothenate, 200 mg of para-aminobenzoic acid and 50 Gm of brewers' yeast daily, 5 received yeast and para-aminobenzoic acid, and 7 yeast and calcium pantothenate. Three methods for judging change in hair color were used: (1) photographs were taken before, during and at the end of medication, (2) samples of hair were clipped from a given area at the time the pictures were made and (3) all patients were seen by the same two observers at least twice a month and notes taken of any change observed. Photographs were found to be useless, slight changes in distance or lighting made considerable difference in the apparent color of the hair. The subjective opinions were claimed to be more accurate than photographs and less discouraging than hair samples. Several changes were noted in the hair of the treated subjects. The most common was the appearance of a yellow or greenish cast to the gray hair. Growth of scattered wavy black hair also became apparent. In several patients there was thought to be greater luster without change in color. In only 2 patients however was there unequivocal change in color. Both were men with brown hair and the change tended toward a return to the original color. This change became apparent after the drugs (the subjects received both calcium pantothenate and para-aminobenzoic acid) had been administered daily for a period of two to three months and increased slowly in intensity until the experiment was terminated. Whether or not comparable observations will be made when younger people with gray or graying hair are studied remains

¹ J. Selinsky, Herman. The Selective Use of Electro-Shock Therapy as an Adjuvant to Psychotherapy. Bull. New York Acad. Med. 19: 43 (April) 1943.

¹ Sieve B. F. Clinical Achromotrichia. Science 94: 257 (Sept. 12) 1941.

² Brandaleone Harold, Main Elizabeth and Steele, J. M. Effect of Calcium Pantothenate and Para-Aminobenzoic Acid on the Gray Hair of Humans. Proc. Soc. Exper. Biol. & Med. 53: 47 (May) 1943.

to be determined. It is already apparent, however, that much of the publicity concerning anti-gray hair factors has left a distorted impression with regard to the ability of compounds to restore the original color to gray hair in man.

THE QUINACRINE-CALCIUM THERAPY OF TYPHUS

The April 1942 issue of the *Deutsche Militararzt* contained a communication by van Meerendonk¹ concerning his experience with quinacrine therapy in 80 cases of spotted typhus. The effect of this therapy was superior to that which he had observed in a group of 300 cases of typhus treated variably with azosulfamide, aminopyrine neosalicylamine and convalescent serum. Under quinacrine therapy a lytic fall in temperature took place in from three to five days, and in typical cases the temperature returned to normal in from eight to ten days. The eruption showed little tendency to spread or to assume a hemorrhagic character. Quinacrine was especially effective for patients past 40 years of age. The author was particularly impressed with the results in 7 cases in which a combination of quinacrine and plasmochin was employed. Occasional failure to reduce the fever within several days was usually due to complicating bronchopneumonia, which was readily controlled by intravenous administration of sulfapyridine. However, in a subsequent report van Meerendonk² stated that his results with quinacrine and plasmochin in a group of 225 cases were rather disappointing, in fact, he has gained the impression that quinacrine therapy aggravated the cerebral symptoms, such as the delirium, the epileptiform attacks and the chorea-like and pseudobulbar paralytic manifestations. All these symptoms suggested a state of tetany. Patients became atebrie under the treatment but died three to four days later with symptoms of cerebral involvement. Postmortem examinations revealed in most cases the usual picture of encephalitis of spotted typhus. Estimation of the blood calcium content of typhus patients revealed values as low as 6 mg per hundred cubic centimeters. Van Meerendonk therefore concluded that calcium deficiency was an important factor in the morbidity of typhus and that there was a definite relationship between the low blood calcium and the lesions of the vascular and capillary systems. The fall in the blood pressure, so characteristic of this disease, is probably likewise dependent on the fall in the blood calcium. Quinacrine-calcium therapy of a group of typhus patients aged between 20 and 40 resulted in a prompt fall in the temperature, limitation of the eruption and maintenance of normal blood pressure. Restlessness and tremors were not observed and there were no fatalities. The author is under the impression that the quinacrine-calcium therapy acts as a specific. The treatment consisted in the administration of one tablet of quinacrine

hydrochloride 0.1 Gm three times daily and of the daily injection of 10 to 20 cc of a 20 per cent solution of calcium gluconate or of a 10 per cent solution of calcium chloride. In severe cases as much as 40 cc of one of these solutions was given daily. The number of cases in this last group is not stated, the communication being in the nature of a preliminary report. No definite opinion, therefore, as to the specificity or, indeed, the effectiveness of this therapy can be ventured until further experiences with it are reported.

PUBLICATIONS OF COUNCIL ON PHARMACY AND CHEMISTRY

The Council on Pharmacy and Chemistry has just issued new editions of four books, *New and Nonofficial Remedies*, *Epitome of the U. S. Pharmacopoeia and National Formulary*, *Useful Drugs and Reports of the Council*. Each of these is a valuable aid to the physician. *New and Nonofficial Remedies 1943*, an official annual publication of the Council, contains descriptions of proprietary and nonproprietary preparations acceptable under the Council's rules with information concerning composition, actions, indications, dosage and cautionary measures. This volume also sets forth the rules of the Council on which acceptability of products is determined and includes a bibliographic index to unaccepted preparations considered by the Council. The seventh edition of the *Epitome* is designed to include information from the U. S. Pharmacopoeia and National Formulary which may be useful to physicians. It contains a brief discussion of the actions, uses and dosage of each drug in U. S. P. XII and N. F. VII. Items that are considered to be without therapeutic value are commented on adversely in the *Epitome*. *Useful Drugs*, now in its thirteenth edition, was prepared to supply the demand for a selected materia medica. The present volume brings the selection up to date. It is composed of a list of drugs of proved efficacy with a discussion of pharmacologic action, therapeutic uses, dosage and methods of administration. A cross section of a year's work of the Council on Pharmacy and Chemistry is available from the 1942 annual reprint of its reports. Many of the functions of this group are well known, but this book brings out details of some of the more inconspicuous but equally meritorious activities of the Council and supplies a more thorough understanding and new appreciation of the Council's progress and accomplishments. It contains reports originally published in *THE JOURNAL* such as preliminary discussions of new developments in therapeutics and timely articles on the status of recognized agents and reports of omission or rejection of products from *New and Nonofficial Remedies*. It also offers a record of current decisions on matters of Council policy. Each one of the publications of the Council has its own distinct purpose. All have the single aim of developing the standards of medical education and the practice of medicine to their highest levels. With the appearance of these publications the Council again makes a valuable contribution to rational therapeutics.

¹ van Meerendonk, Piet. Erfahrungen über Fleckfieberbehandlung mit Atebrin und Plasmochin, *Deutsche Militararzt* 7: 283 (April) 1942.

² van Meerendonk, Piet. Erfahrungen über Fleckfieberbehandlung mit Atebrin und Calcium, *Deutsche Militararzt* 7: 541 (Sept.) 1942.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession

ARMY

MEDICAL OFFICER BAILS OUT AT 40,000 FEET

A parachute jump from 40,200 feet was made by Lieut. Col. William Randolph Lovelace 2d near Ephrata, Wash., on June 24 to test oxygen equipment developed under his supervision for the Office of the Air Surgeon, Army Air Forces. The War Department announced on June 30. It was his first parachute jump.

Colonel Lovelace, 35-year-old chief of the aeromedical laboratory at Wright Field, Dayton, Ohio, bailed out into air registering a temperature of 50 degrees below zero. He landed in a wheat field.

The bail-out equipment consists of a small cylinder containing about twelve minutes' supply of oxygen sewn in the flier's clothing and connected to his mask by a tube. Fliers bailing out of a plane must disconnect their masks from the plane's regular oxygen supply. Since unconsciousness occurs within fifteen seconds without oxygen at 40,000 feet, the bail-out equipment is necessary even to get out of the plane. Colonel Lovelace donned two parachutes and was clad in garments developed

EVACUATION OF WOUNDED AND TRANSPORTATION OF HOSPITALS BY AIRPLANE

The Army Air Forces School of Air Evacuation at Bowman Field, Kentucky, has now been established as a permanent installation. The War Department announced on July 8. This paves the way for expansion of the program for training nurses, enlisted men and flight surgeons for air evacuation duty. About 50,000 men who were disabled by wounds or illness have been transported in air ambulances.

The first class of air evacuation nurses was graduated from the school at Bowman Field on February 18 and three additional classes have since completed the course.

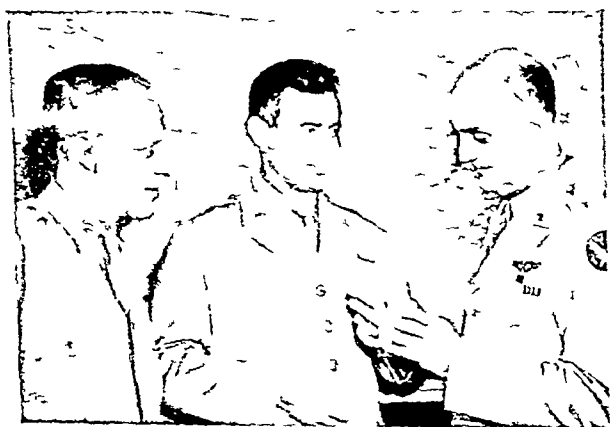
The program planned by Brig. Gen. David N. W. Grant, the Air Surgeon, has proved that all types of wounded men can be carried by air. Aboard each of the airplane ambulances is either a flight surgeon or an army nurse and also one non-commissioned officer of the Medical Department. The Army transports are easily converted from troop planes to flying hospitals and some carry as many as 24 patients.

In New Guinea, 7,000 disabled men were evacuated in one month from Buna across the Owen Stanley Mountains to Port Moresby. Another 7,000 men were flown in, as well as a field hospital of 250 beds. A complete 25-bed hospital, including surgical equipment, supplies, beds and medicine, was flown from St. Louis to a base in Alaska in arrangement with the Air Transport Command, Army Air Forces, when fire destroyed a base hospital. In less than six days the hospital was completely installed and in operation.

AWARDED LEGION OF MERIT

The War Department announced on July 9 an award of the Legion of Merit to Brig. Gen. Paul R. Hawley, M. C. U. S. Army, for conspicuously meritorious conduct in the performance of exceptional service. As surgeon of the Special Army Observers Group, London, England, and later as chief surgeon of the European Theater of Operations from September 1941 to June 1942, General Hawley displayed remarkable professional ability, keen judgment and devotion to duty and rendered service of exceptional value to the government by planning all hospitalization and evacuation of United States Army Forces in the United Kingdom and maintaining supervision over the medical situation in the European theater of operations. General Hawley graduated from the University of Indiana and from the University of Cincinnati School of Medicine in 1914 from the Army Medical School in 1917 and received the degree of doctor of public health at Johns Hopkins University in 1923. He was commissioned first lieutenant in the medical corps of the regular army in 1917 and later was on the general staff corps eligible list.

The War Department announced on July 8 that Lieut. Col. John P. Bachman of the Army Medical Department has been awarded the Legion of Merit for exceptionally meritorious service in the Hawaiian Department. Colonel Bachman was cited for having operated continuously on casualties from the beginning of the Japanese attack on Pearl Harbor until 4:30 the next morning and then after only a brief rest resuming his surgical work. Colonel Bachman graduated from the University of Buffalo School of Medicine in 1926 and from the Army Medical School in 1928. Col. Malcolm C. Grow, chief surgeon of the U. S. Army Eighth Air Force in England, has been awarded the Legion of Merit for having added a steel helmet to the flak vest which he developed to protect Ameri-



Col. Walter S. Jensen, M. C. (left), executive officer, Office of the Air Surgeon; Brig. Gen. David N. W. Grant, M. C. (right), air surgeon, Army Air Corps; and Lieut. Col. William Randolph Lovelace 2d, M. C. (center).

at the parachute and clothing laboratory at Wright Field. The parachute on his back would open automatically as he jumped by a device attached to the plane. He wore an emergency parachute on his chest. The blast of air and sudden jerk of the parachute tore the thick outer gloves from both hands and snapped off the thin inner glove on his left hand, leaving it bare in quickly freezing temperature.

The parachute's opening jerk caused him to black out. He was fully revived by the time he reached 8,000 feet and landed down with no injury except the frozen left hand. The present bail-out equipment was found to be highly efficient.

Colonel Lovelace graduated from Washington University, St. Louis, in 1930 and from Harvard Medical School in 1934. He received the degree of master of science in surgery from the University of Minnesota and was a member of the surgical staff of the Mayo Clinic before coming on duty with the Army Air Forces on Feb. 15, 1942. He is president of the Aero Medical Association of the United States and a co-winner of the Collier trophy for research in aviation medicine in 1941. He has engaged in research in high altitude flying since 1936.

can fliers in combat. Colonel Grow graduated from Jefferson Medical College of Philadelphia in 1909, served in the national army during the first world war, and was commissioned in the regular army Medical Corps on July 1, 1920. He is also a graduate of the School of Aviation Medicine.

SPECIALTY TRAINING FOR MILITARY OFFICERS AT COLUMBIA

The War Department, Washington, D. C., has selected Columbia University as one of the universities to present intensive courses in the surgical specialties for the training of army medical and dental officers. The special courses at Columbia University vary from four to twelve weeks, and succeeding courses will be offered at least until Dec. 18, 1943, each course being given to from ten to thirty officers. The courses are in anesthesiology, neurosurgery, plastic surgery, surgery of the extremities and thoracic surgery. For Medical Corps officers only those are selected to enter the special courses in surgery who have had a minimum of one year's surgical residency following an internship or equivalent practical training; officers of the Dental Corps assigned to plastic surgery courses should have had a minimum of two years' training or practical experience in oral surgery. During the past academic year two hundred and forty-two medical and dental officers of the Army were assigned through the Surgeon General's Office, Army Air Forces, Army Ground Forces and the various service commands for training under the auspices of Columbia University College of Physicians and Surgeons.

WOMEN DOCTORS COMMISSIONED

At a ceremony on June 19 at First WAAC Training Center, Fort Des Moines, Iowa, Dr. Eleanor Gutman and Dr. Elizabeth Garber became officers in the Medical Corps of the Army of the United States, Dr. Gutman as a captain and Dr. Garber as a first lieutenant. They are the second and third ranking women in the corps, Major Margaret Craighill being the first (THE JOURNAL, May 22, p. 236). Serving with the Women's Army Auxiliary Corps at First WAAC Training Center, first in the capacity of contract surgeons and then as Women's Army Auxiliary Corps officers, the women physicians have been associated closely with the WAAC almost since its beginning. The bill allowing women doctors to serve in the Medical Corps of the Army passed Congress in May (THE JOURNAL, May 8).

Captain Gutman is the daughter of Dr. Abraham Gutman of New York. She received her B. A. degree at Smith College and her doctor of medicine degree at Yale University and served an internship and residency in the New Haven Hospital, New Haven, Conn. She maintained a private practice in internal medicine and gynecology in New York for eight years.

Lieutenant Garber is the daughter of Mr. and Mrs. E. C. Garber of Dunkirk, Ind. She received both her B. S. and M. D. degrees from the University of Indiana. She served a two and one-half years' internship and residency in pediatrics in the City Hospital at Indianapolis and then specialized in pediatrics at the University of Chicago for six months and was a resident at the Children's Memorial Hospital in Chicago when appointed a contract surgeon to practice at the Fort Des Moines Post Hospital. Both officers later were commissioned second officers in the WAAC. When the bill passed allowing women to serve officially in the Army Medical Corps, each applied for a commission.

CAPTAIN MILLER A PRISONER OF THE JAPANESE

Capt. Edward S. Miller, M. C., U. S. A., has recently been reported a prisoner of war of the Japanese government in the Philippine Islands. Captain Miller graduated from Emory University School of Medicine, Atlanta, Ga., in 1938, and was stationed at Fort William McKinley in the Philippine Islands when the Japanese attacked and later was on Bataan. His home is in Murphy, N. C.

HONORABLY DISCHARGED

The Westchester (New York) Medical Bulletin for July notes that Dr. Lester Wartels of New Rochelle was recently retired from active service as a captain in the Army Medical Department following a surgical operation and has been appointed assistant city physician to succeed Dr. Raymond Shea, who is on active duty in the Army. The position of assistant city physician is actually held, it is said, by Lieut. Col. Robert Latimer, who is on leave for service with the Army.

As a result of an operation performed last fall, Dr. Frank D. Carroll of Rye has received an honorable discharge from the Army Air Forces, having held a commission as captain in the Medical Corps.

Dr. Hyman Millman of Mohegan Lake was retired from the Army, it is said, effective June 29, after having suffered an injury to his spine in line of duty.

Dr. Jerome Engle of Yonkers, who has been honorably discharged, has returned to private medical practice after two years' service with the Army. He was given a dinner recently by a number of his colleagues in Yonkers.

THE WINTER GENERAL HOSPITAL

The 1,777 bed U. S. Army Winter General Hospital at Topeka, Kan., was dedicated on May 22. Among the speakers at the ceremonies were the governor of the state, Hon. Andrew F. Schoepel, Major Gen. Frederick E. Uhl, commanding general of the Seventh Service Command, Lieut. Col. Waldo B. Farnum, chief of the Medical Service of Winter General Hospital, and Major Samuel T. Whitebread of the United States Corps of Engineers, who formally delivered the hospital to the medical department.

The hospital, which is of the one story type in which the units are joined by enclosed runways, has the finest equipment obtainable for the care of the sick and wounded. The standard wards have 33 beds and the combination wards ten private rooms and 16 ward beds. There are four closed wards for patients with mental disturbances. The dining rooms are of the cafeteria style. The hospital has a beautiful chapel and auditorium and an automatic fire alarm and sprinkler equipment in each building in addition to the usual manual fire control system. At present there are three hundred civilian, five nurses, thirty medical officers, fifteen medical administrative officers, five dental officers, two sanitary corps officers, two chaplains and others in addition to seven hundred medical detachment men and forty quartermaster soldiers comprising the personnel.

The hospital is named in honor of the late Brig. Gen. Francis Anderson Winter of Louisiana, who served in the first world war as surgeon in the lines of communication in France and later as chief surgeon of our forces in England. His wife was present at the dedication ceremonies.

A plan of naming the important clinics, buildings and streets after distinguished deceased officers of the Army has been followed. There is the Woodward Laboratory, named in honor of Lieut. Col. Joseph J. Woodward (1833-1884) of Pennsylvania, a pioneer in photomicrography and a former President of the American Medical Association; the Fletcher Medical Library, named in honor of Col. Robert Fletcher (1823-1917) of the District of Columbia, first editor of the *Index Medicus*; Eustis Road, named in honor of Surgeon William Eustis (1753-1825) of Massachusetts, who served as a medical officer during the Revolution and became Secretary of War in President Jefferson's cabinet and member of Congress and governor of Massachusetts; Myer Road, named in honor of Brig. Gen. Albert James Myer (1828-1880) of New York, distinguished field surgeon and student of military communication; the founder of the Signal Corps and first chief signal officer of the Army and father of the Weather Bureau, and the William Brown Pharmacy, named in honor of Physician General William Brown (1748-1792) of Virginia, author of the first *U. S. Pharmacopeia*.

The commanding officer is Col. John W. Sherwood, medical corps, a native of Maryland, who was commissioned in the Army in 1909 and before coming to the War General Hospital

Hospital was department surgeon in the Panama Canal Zone. The executive officer is Lieut Col Mildred T. Rubin of the Army Medical Department, who formerly lived in McPherson, Kan. The chief of the medical service is Lieut Col Waldo B. Farnum, formerly of New York of the surgical service. Lieut Col Daniel L. Yancey, formerly of Springfield, Mo., chief of the laboratory service, Major Hugh G. Grady, formerly of Drexel Hill Pa., chief of the x-ray service, Major Raphael Pomeranz formerly of Newark, N. J., chief of the dental service, Lieut Col Henry R. Sidenham formerly of Coleman Texas, and the hospital surgeon is Major Glen A. Rogers formerly of Tahmina Okla. The following officers are assigned to the various services:

MEDICAL SERVICE

Major Forrest Anderson Van Nuys Calif
Major Sam Phillips Little Rock Ark
Major George Robson San Francisco
Major Nathaniel Uhr New York
Capt. Max Berkovich New York
Capt. Henry Gahan Winchester Mass
Capt. Max Magnus Sea Gate N. Y.
Capt. Meyer G. Miller Wilmington N. C.
Capt. Willard T. Peterson Atlantic Iowa
Capt. Isadore Schapiro Brooklyn
Capt. George Skura Brooklyn
1st Lieut. Thomas G. Ahearn Chicago

SURGICAL SERVICE

Major Charles Alexander Houston Texas
Major Sidney Bernstein Brooklyn
Major Ralph B. Mullen San Diego Calif
Major Matthew Peelen Kalamazoo Mich.
Major Walter A. Reese Middletown Ohio
Capt. Orrin Anderson Clinton Springs N. Y.
Capt. William Ellett Appleton City Mo.
Capt. Henry Mosher Dayton Ohio
Capt. Conrad I. Karlsen Tracy Minn.
Capt. Joseph Lovering New York

DENTAL SERVICE

Major Claire J. Wilson Haas Kan.
Capt. Robert E. Brown West View Pa.
1st Lieut. Edwin H. Getz Forest Hills Long Island N. Y.
1st Lieut. Arthur H. Walden Colorado Springs Colo.

DENTAL HYGIENISTS NEEDED FOR ARMY DISPENSARIES

To supply the Army with dental hygienists, the U. S. Civil Service Commission has eliminated the experience requirement for such personnel. Many hygienists are in demand for army hospitals and dispensaries throughout the country, particularly in the West and Southwest. Dental hygienists are under federal civil service regulations and are stationed only within the United States. They receive \$1,970 a year entrance salary including overtime pay. The work week of forty-eight hours includes eight hours of overtime.

Completion of a course in a recognized school of oral hygiene and registration as dental or oral hygienist is all that is necessary to qualify for the positions. There are no age limits and no written tests. Standard application forms must be filed with the United States Civil Service Commission, Washington, D. C. Persons studying oral hygiene may also file receive provisional appointments and enter on duty after completion of their courses and registration. Persons who are willing to work in any part of the country have the greatest chance of receiving appointment within a short time. Applicants who desire information about living conditions in areas where army hospitals and dispensaries are located should on receiving offer of appointment get in touch with the appointing officer for such information. It is possible that vacancies will occur in the Public Health Service and the Veterans Administration. Persons already being utilized to their fullest capacity in war work should not apply. Federal appointments are made in accordance with War Manpower Commission policies and employment stabilization plans. Persons selected for appointment may be required to secure statements of availability but these need not be secured until offer of appointment is received.

Application forms may be obtained at post offices at Civil Service regional offices and at the U. S. Civil Service Commission in Washington, D. C.

REQUEST FOR PATHOLOGIC MATERIAL FOR ARMY MEDICAL MUSEUM

The Committee on Pathology of the Division of Medical Sciences of the National Research Council has requested publication of the following statement:

In view of the need for pathologic material in undergraduate and graduate education, the Committee on Pathology of the National Research Council urges that all who have suitable anatomic specimens forward them to the curator of the Army Medical Museum, Washington, D. C., for correlation and distribution to other central agencies and to teaching institutions. Material from the following is particularly wanted: the malarial diseases, bacillary dysentery, endamebiasis, the schistosomiasis, filariasis, the trypanosomiasis, the relapsing fevers, the leishmaniasis, the rickettsial diseases, yellow fever, cholera, plague and vaws. On application to the curator, arrangements for transportation will be made.

MAJOR MARGARET JANEWAY IN NORTH AFRICA

Dr. Margaret Janeway of New York City was sworn in as a major in the Army Medical Corps on July 1 according to the New York Times after she had been discharged as a first lieutenant in the Women's Army Corps. She thus became the first woman doctor in the United States Army in the North African theater of operations.

Dr. Janeway became an Army contract surgeon in 1942 and was assigned to the WAAC. She was commissioned a first lieutenant last December 23 and landed in Africa on January 26. Her grandfather was a surgeon in the Union Army in the Civil War and she left her practice in New York to follow in his footsteps.

RECORD LOW DEATH RATE IN EVACUATION HOSPITALS

The Surgeon General of the Army, Major Gen. Norman T. Kirk, is reported to have said in New York on July 8 that the death rate in the army's evacuation hospitals during the African campaign was the lowest rate of any army at any time and was between 25 and 35 per cent of admissions in comparison with a mortality rate during the last war in such hospitals of 15 per cent. General Kirk ascribed the recent low record to the use of plasma, excellent surgery and sulfonamide drugs. He said that blood plasma given at the front lines saved lives which would have been lost if not available for the treatment of cases in shock, he added that the cream of surgery in America, the middle aged and the younger men who have been teaching "have been stationed at evacuation hospitals at the front."

MEDICAL INSPECTORS GRADUATE

Forty officers of the Medical Department, United States Army, were graduated on June 26 from a special one month training course at the Medical Field Service School Carlisle Barracks, Pennsylvania. They comprised the seventh class of medical inspectors to receive diplomas at this historic "West Point" of the Medical Department. The duties of medical inspectors are to supervise sanitation and other medical preventive measures in army camps and to make recommendations for the correction of any insanitary conditions. Thirteen of the officers in the class previously attended a basic course at this school. The class was composed of twenty-eight physicians and twelve sanitary engineers.

MISSING IN ACTION

The War Department has listed as missing in action since May 24 Major Jay E. Tremaine of the Medical Department of the Army. Major Tremaine sailed from San Francisco for the Philippines on April 21, 1941 and after a few months' service in Manila was transferred to Fort Pilar Pettit Barracks Zamboanga Mindanao. Major Tremaine graduated from Rush Medical College in 1930. His former home was at Ajo, Ariz.

CIVILIAN DEFENSE

EMERGENCY AMBULANCES FOR CITIES
IN TARGET AREAS

The director of civilian defense, James M. Landis, announced plans on July 12 for the distribution of eight hundred and four stretcher ambulance bodies to various cities in target areas in the United States. These ambulance bodies when mounted on the chassis of used passenger cars to be provided by the city will strengthen the civilian defense measures in American cities. They are made of noncritical materials and designed to be mounted on the rear portion of the chassis of a Chevrolet, Ford or Plymouth four door sedan, models 1939-1941, after the part of the body behind the front seat has been removed. They have been approved by the Army corps of engineers. These ambulances can carry four stretchers or built in racks and in addition an attendant who rides with the patients.

Ambulance bodies will be distributed to selected communities in the exposed areas only after the city has provided the chassis on which to mount them. Mr. Landis pointed out that thousands of idle cars throughout the country are in dead storage for the duration of the war and that cities may acquire the used four door sedans either by purchase or by gift. He suggested painting the name of the patriotic donor on the ambulance door when a chassis is donated for this purpose.

NEW HOSPITAL UNITS OF CIVILIAN
PHYSICIANS FOR EMER-
GENCY SERVICE

Thirty-seven hospitals and medical schools have substantially completed the formation of affiliated hospital units of civilian physicians under the program of the Office of Civilian Defense and the U. S. Public Health Service to provide supplementary staffs for emergency base hospitals and to assist the Army in extemporized hospitals in a serious military emergency, the Medical Division of the Office of Civilian Defense announced, June 22. Fifteen hospitals have completed units since the first list of completed units was announced, April 15. The recent additions are:

Delaware Hospital, Wilmington, Del.
Elizabeth General Hospital, Elizabeth, N. J.
Goddard Hospital, Brockton, Mass.
Greenville General Hospital, Greenville, S. C.
Hillman Hospital, Birmingham, Ala.
Macon Hospital, Macon, Ga.
Medical College of Virginia, Richmond
Methodist Hospital, Dallas, Texas
Millard Fillmore Hospital, Buffalo
Mississippi Baptist Hospital, Jackson, Miss.
Mount Sinai Hospital, New York
Queens General Hospital, Jamaica, L. I., N. Y.
Rhode Island Hospital, Providence
Santa Clara County Hospital, San Jose, Calif.
Waterbury Hospital, Waterbury, Conn.

Members of these units receive inactive commissions in the U. S. Public Health Service and will be called to active duty by the Surgeon General only on the recommendation of the chief medical officer of the Office of Civilian Defense.

As a result of the request by the Army for temporary assistance of the Office of Civilian Defense-U. S. Public Health Service affiliated hospital units for emergency service in extemporized army hospitals in the event of military need, invitations to form units have now been extended to institutions in interior states. In the beginning of the program, invitations were limited to hospitals and medical schools in coastal areas. Up to June 15 a total of 251 institutions had been invited by the Surgeon General to form units. Unit directors had been nominated by 161 hospitals, and of this number 105 have taken their oaths for commissions in the U. S. Public Health Service. In addition, applications had been received from 649 members of units, of whom 303 have taken their oaths.

The institutions that are named in the adjoining column have received invitations since the original list of 191 was announced as of April 15.

HOSPITALS AND MEDICAL SCHOOLS INVITED TO
FORM AFFILIATED UNITS AS OF
JUNE 1, 1943

REGION II

New York City New York Polyclinic Hospital

REGION V

Indiana
Protestant Deaconess Hospital, Evansville
St. Joseph Hospital, Fort Wayne
Methodist Hospital, Indianapolis
St. Vincent's Hospital, Indianapolis

Kentucky

Louisville City Hospital, Louisville
St. Joseph Infirmary, Louisville

Ohio

Christ Hospital, Cincinnati
Good Samaritan Hospital, Cincinnati
Mount Carmel Hospital, Columbus
White Cross Hospital, Columbus
Miami Valley Hospital, Dayton
St. Vincent's Hospital, Toledo
Toledo Hospital, Toledo
St. Luke's Hospital, Cleveland
University Hospitals, Cleveland
St. Elizabeth's Hospital, Dayton

West Virginia

Charleston General Hospital, Charleston
St. Mary's Hospital, Huntington
Ohio Valley General Hospital, Wheeling

REGION VI

Illinois

Loyola University School of Medicine, Chicago
Michael Reese Hospital, Chicago
Northwestern University Medical School, Chicago
University of Chicago School of Medicine, Chicago
University of Illinois College of Medicine, Chicago
St. Luke's Hospital, Chicago
Springfield Memorial Hospital, Springfield

Michigan

University of Michigan Medical School, Ann Arbor
Grace Hospital, Detroit
Wayne University College of Medicine, Detroit
Harper Hospital, Detroit

Wisconsin

Madison General Hospital, Madison
Methodist Hospital, Madison
St. Mary's Hospital, Madison
University of Wisconsin Medical School, Madison
Marquette University Medical School, Milwaukee

REGION VII

Colorado St. Luke's Hospital, Denver

Iowa

Iowa Methodist Hospital, Des Moines
Methodist Hospital, Sioux City

Kansas

The University of Kansas Hospitals, Kansas City
The University of Kansas Medical School, Kansas City

Minnesota

Minneapolis General Hospital, Minneapolis
Ancker Hospital, St. Paul

Missouri St. Louis City Hospital, St. Louis

Nebraska

Creighton Memorial St. Joseph's Hospital, Omaha
University of Nebraska Hospital, Omaha

South Dakota McKennan Hospital, Sioux Falls

REGION IX

Arizona

St. Joseph's Hospital, Phoenix
St. Mary's Hospital and Sanatorium, Tucson

California

Hospital for Children, San Francisco
Mount Zion Hospital, San Francisco
St. Francis Hospital, San Francisco
St. Joseph's Hospital, San Francisco
California Hospital, Los Angeles
Kern County Hospital, Bakersfield

Idaho

St. Alphonsus Hospital, Boise
St. Luke's Hospital, Boise

Montana

Columbus Hospital, Great Falls
Montana Deaconess Hospital, Great Falls

Nevada Washoe County General Hospital, Reno

MISCELLANEOUS

PUBLIC HEALTH UNDER HITLER

According to the Netherlands Intelligence Service, a copy of Reichs Commissioner Seyss-Inquart's order, by which Dutch physicians, dentists, pharmacists and veterinary surgeons have been frozen in their professions has reached Allied territory. The text of the decree makes it clear that the dropping of titles and the removal of professional diplomas will be punishable by penal servitude or in extreme cases even with death. Those desiring to leave their professions for any reason even practitioners ready to retire because of old age must secure specific permission from the proper official. Until such permission is received they must continue in their professions. Powers previously held by the heads of the Nazi sponsored Physicians Chamber, Dentists Chamber and so on whereby they could authorize members to stop practicing, were abolished under the decree.

According to the Netherlands Intelligence Service lack of materials and the insoluble lubrication problem have caused a gradual collapse of the Dutch transportation system, according to an underground report. Symptoms of deterioration are visible throughout the Netherlands but effective overhauling of railway equipment is impossible. Automobiles have become a rare sight and those which are still moving are using illuminating gas as fuel and some even wood elements.

According to *L'Effort* France of May 10 publicity regarding medical articles will from now on be controlled unless it contains only a mention of the name and of the article's composition, with the makers' or sellers' name and address and commercial or technical information without advertising the character. All other publicity will be submitted to a special committee to be appointed later responsible for the examination of pamphlets, leaflets and all advertising literature generally. Any direct or veiled promise of recovery and any fallacious indication likely to mislead the public is from now on strictly prohibited.

Transocean Bulgaria May 12 reports from Sofia that the Public Health Directorate has concluded an agreement with Germany for the delivery of German drugs in return for Bulgarian medicinal herbs and other raw materials. The first consignment of drugs sent to Bulgaria will be medicaments for use against malaria.

The number of women doctors according to NPD, Germany May 13 is today 40 per cent higher than in 1939. There are 9,246 women doctors as compared with 5,843 in 1939.

SBT reports from Oslo in the *Svenska Dagbladet* May 13 that fourteen medical students from Oslo University, who were conscripted in Hungary at the beginning of May for compulsory labor have now been released to enable them to continue their studies.

Eskilstuna Kuriren May 10 reports that ill health among Norwegians deported to Germany is catastrophic and several deaths have been reported. Epidemics are raging in the Oranienburg concentration camp where the treatment of Norwegian prisoners is beneath criticism.

L'Effort France of April 13 states that owing to the scarcity of certain drugs the Chambre syndicale have decided that chemists are entitled to refuse to deliver drugs to customers. The newspaper does not specify when.

The March 26 issue of the *Deutsche medizinische Wochenschrift* Leipzig contains a description of the chronic poisoning by arsenic of 170 soldiers. The soldiers were serving in an AA battery stationed near a village where in 1919 containers with poison gas from a nearby munitions depot had been buried. The poison is supposed to have leaked into the water supply

which the soldiers used and this is thought to have been responsible for the reported mass poisoning. Most of the men recovered after a short treatment, only a few being still unfit for military duty.

MEDICAL AND PSYCHIATRIC SOCIAL WORK SCHOLARSHIPS

Seventy-five scholarships in medical and psychiatric social work will be made available to eligible candidates between July 1 1943 and July 30 1944 by the American Red Cross. These are a continuation of the program initiated last December. On successful completion of the scholarship training, students will be assigned to positions on Red Cross staffs in military hospitals where the need for qualified personnel has rapidly expanded because of the war. Candidates may designate the school of their choice from a list of social work schools offering an approved course in medical and psychiatric social work. Educational requirements include successful completion of one year of graduate work in an accredited school of social work, and it will be necessary for each applicant to apply directly to the school of his choice to obtain approval for admission. Awards of full tuition and \$65 a month for maintenance will be made according to the individual qualifications of the applicant in order of receipt of the applications by the assistant director of Red Cross Military and Naval Welfare Service, Hospital Service in the four following Red Cross area headquarters: North Atlantic Area 300 Fourth Avenue New York City; Eastern Area 615 North St Asaph Street Alexandria, Va.; Midwestern Area 1709 Washington Avenue St. Louis; Pacific Area Civic Auditorium San Francisco.

RESTRICTION ON STERILIZER EQUIPMENT

A shortage in the supply for defense for private account and for export, has made it necessary for the War Production Board to amend general limitation order L-266 restricting the sale and delivery of sterilizer equipment except as provided in subparagraph 2 of paragraph D of the order. No person shall sell or deliver sterilizer equipment except for the account of (1) the Army or Navy of the United States (2) any agency of the government for delivery to or for the account of the government of any country pursuant to the act of March 11, 1941 (the Lend-Lease Act) (3) any person to whom an export license covering the specific equipment has been issued by the Board of Economic Warfare provided, however that delivery shall not be made to any person holding an export license issued prior to Feb. 24 1943 unless it has been revalidated by the Board of Economic Warfare (4) any other person who has filed form PD-556 pursuant to paragraph (e) of this order and has been authorized by the War Production Board to receive sterilizer equipment and has furnished to his supplier one copy of such form signed in the name of the War Production Board.

RESTRICTIONS ON DELIVERY OF CAFFEINE AND THEOBROMINE

The War Production Board has amended conservation order M-222 to provide that no supplier shall deliver caffeine or theobromine to any person except as specifically authorized or directed in writing by the War Production Board and no person shall accept delivery of caffeine or theobromine which is delivered in violation of this order. However specific authorization in writing of the War Production Board is not required for the (1) delivery of these drugs for medicinal purposes by any supplier to any person for compounding into standard dosage forms (2) delivery of caffeine or theobromine by any person to any other person for compounding into standard dosage forms for medicinal purposes pursuant to toll agreement or (3) delivery by any supplier to any person in any calendar month of not more than 2 pounds of theobromine and not more than 2 pounds of caffeine. These and other amendments to conservation order M-222 were published by the War Production Board Washington D. C. on July 6.

ORGANIZATION SECTION

MEDICAL LEGISLATION

STATE MEDICAL LEGISLATION

Alabama

Bills Enacted—S 22 has become Governor's No 425 of the Laws of 1943. It requires the state board of health, with the assistance of the committee on cancer control of the Medical Association of the State of Alabama, to formulate a plan for the care and treatment of indigent persons suffering from cancer and to establish and designate standard requirements for the organization, equipment and conduct of cancer units or departments in general or private hospitals or private clinics of the state. The board is also required to formulate and put into effect an educational plan for the purpose of preventing cancer throughout the state, aiding in the early diagnosis of cancer and informing hospitals and cancer patients of the proper treatment. S 64 has become Governor's No 529 of the Laws of 1943. It requires all persons between the ages of 14 and 50 residing or living in the state of Alabama to have their blood examined for syphilis by an approved laboratory test. Any person sick or injured at the time of the official testing, however, may present a certificate from a physician duly licensed in the state of Alabama temporarily exempting him from the test, but it shall be the duty of the physician to secure the necessary specimen when such person is able to have the test made.

Connecticut

Bill Enacted—H 1383 has become chapter 385 of the Laws of 1943. It provides that any graduate of an approved medical school may serve as a resident physician in any state-aided hospital for the duration of the war and for not more than six months thereafter if the written consent and approval of the Connecticut medical examining board has been obtained.

Florida

Bills Enacted—S 5 has become chapter 21841 of the Laws of 1943. It provides for the creation and establishment of a state venereal hospital to be used for the care, treatment and hospitalization of persons afflicted with venereal disease under such rules and regulations as may be prescribed by the board of commissioners of state institutions of the state. S 306 became law without approval on June 14. It provides for the establishment and creation of an institution of higher learning to be known as the University of South Florida, which shall be a state university and shall have as its primary purpose a school of medicine, a school of pharmacy and a school of dentistry. The law further provides that the school of medicine and the school of dentistry shall be first class medical and dental schools and shall be maintained and operated in accordance with the standards of education approved by the American Medical Association and the American Dental Association.

Illinois

Bills Enacted—S 244 was approved, July 10, 1943. It provides for the establishment and maintenance of county and multiple county public health departments. S 525 was approved, July 10, 1943. It amends the medical practice act by providing

that students matriculating or entering on a medical course during the years 1942, 1943 and 1944 may take a course the elapsed time of which is not less than thirty-six months rather than forty months as previously required. The purpose of this proposal is to enable graduates of accelerated medical schools to obtain licensure in Illinois.

Massachusetts

Bills Enacted—S 544 amends the premarital examination law so as to authorize the execution of the required certificate by a physician registered or licensed to practice in any other state of the United States, in addition to Massachusetts practitioners and commissioned medical officers as now provided. H 1655 has become chapter 506 of the Laws of 1943. It authorizes expenses for medical, hospital and other services rendered to aged persons which remain unpaid at the time of such person's commitment to an institution or at the time of such person's death to be paid directly to the person furnishing such service.

Wisconsin

Bills Enacted—S 313 has become chapter 372 of the Laws of 1943. It provides that no person shall practice medicine, surgery or osteopathy or any other system of treating bodily or mental ailments or injuries of human beings under any other Christian or given name or any other surname than that under which he was originally licensed or registered to practice in Wisconsin or any other state. This law does not apply to a change of name resulting from marriage or divorce, however. S 347 has become chapter 375 of the laws of 1943. It creates a new section of the statutes to make uniform the law with relation to administrative procedure and judicial review of various agencies and boards within the state exercising state wide jurisdiction. This would include the board of medical examiners. A 73 has become chapter 484 of the Laws of 1943. It amends the income tax law by authorizing the deduction therefrom of payment for expenses for hospital, nursing, medical, surgical, dental and other healing services and for drugs and medical supplies incurred by the taxpayer on account of sickness or of personal injury to himself or his dependents in excess of \$50 but not more than \$500. A 665 has become chapter 480 of the Laws of 1943. It amends the law relating to the practice of nursing by authorizing a licensed nurse in another state to be granted a certificate in Wisconsin without examination if her credentials of general and professional educational qualifications are equivalent to those required in Wisconsin.

OFFICIAL NOTES

SUMMER HEALTH HINTS

The next three programs for the series of broadcasts on WLS on Thursdays at 2:45 p. m. under the title "Summer Health Hints" will be as follows:

July 29 'Light Summer Meals'
Aug 5 'Picnic Lunches'
Aug 12 'Hiking'

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

ALABAMA

Outbreak of Anthrax—An outbreak of anthrax in western Mobile County involved the illness of 2 men and the death of 12 animals, newspapers reported on June 23. It was believed that the men contracted anthrax while removing the hide of an infected animal.

CALIFORNIA

Psychiatrist Wanted—The California State Personnel Board announces an examination for psychiatrist for the California Youth Authority. The position, which provides a monthly salary of \$425 offers opportunity and responsibility for diagnostic and therapeutic work in juvenile delinquency and youth problems. Applications should reach the state personnel board at Sacramento on or before August 16.

Changes in Industrial Hygiene Personnel—Dr. Clifford Kuh has resigned as director of the state bureau of industrial health to join the Permanente Foundation in California according to *Industrial Hygiene*. Dr. Edward E. Dart, director of the division of industrial hygiene in the Los Angeles Department of Health has resigned to become physician in charge of the Dodge Chicago Plant of the Chrysler Corporation, and Yale Rosenfeld, assistant sanitary engineer U. S. Public Health Service, has been named acting director.

COLORADO

Resignations at the University—Dr. Philip Work recently resigned as professor of neurology and head of the department at the University of Colorado School of Medicine, Denver. Dr. Work is now a lieutenant colonel in the Medical Corps of the Army. Dr. Clough T. Burnett has resigned as associate professor of medicine.

CONNECTICUT

State Medical Election—Dr. H. Gildersleeve Jarvis, Hartford, was chosen president-elect of the Connecticut State Medical Society at its meeting in May and Dr. George M. Smith, Pine Orchard, was inducted into the presidency. Dr. Creighton Barker, New Haven, is the secretary. The next annual meeting will be held in Bridgeport in May.

Memorial to Dr. Steiner—A room adjoining the historical library at Yale University, New Haven, will be furnished as a memorial to the late Dr. Walter R. Steiner, Hartford, a specialist in internal medicine, through the generosity of Mr. Elisha H. Cooper, New Britain. The room will be used as a student reading room and will also house Yale medical memorabilia which include items of historical interest given by Dr. Steiner during his lifetime and others which have been added from his collection by his sisters since his death. Dr. Steiner was a classmate of Mr. Cooper in the class of 1892 of Yale.

Promotions at Yale—William U. Gardner, Ph.D., assistant professor of anatomy at Yale University School of Medicine, New Haven, has been appointed professor of anatomy and chairman of the department. He succeeds Edgar Allen, Sc.D., who died on February 5 while on active duty with the U. S. Coastguard Reserve. Dr. Harry S. N. Greene, associate professor of pathology and surgery at Yale, has been named professor of pathology. Cornelius Osgood, Ph.D., associate professor of anthropology and curator of anthropology in the Peabody Museum, has been appointed chairman of the department of anthropology.

ILLINOIS

Parking Problems of Physicians—At a meeting of the Salem city council on June 21 consideration was given to the complaint of Salem physicians that the two hour parking law would cause them serious inconvenience. The physicians requested that parking spaces be reserved for them. The council decided that an exception could not legally be made for physicians but asked the police commissioner and city attorney to study the problem in order to find a practical solution.

CHICAGO

Promotions at Northwestern—Promotions on the faculty of Northwestern University Medical School include Drs. Mark T. Goldstone to professor of obstetrics and gynecology, Garwood C. Richardson to assistant professor of obstetrics, William B. Serbin to assistant professor of obstetrics, George L. Apfelbach to associate professor of bone and joint surgery, Earl O. Latimer to assistant professor of surgery and George K. Yacorzynski, Ph.D., to assistant professor of nervous and mental diseases.

IOWA

Three Cases of Spotted Fever—Three cases of Rocky Mountain spotted fever with one death had been reported to the state health department up to June 22. One patient was a 14 year old boy in Warren County who first complained of illness on May 26. The patient gave no history of tick bite but had removed ticks from a dog and had worked under a tractor in a swampy area several days before taking sick. The other 2 cases were recorded from Ottumwa in Wapello County, one a boy 2 years of age who had onset of disease June 6 and who died June 16. The third patient was the mother of the 2 year old child who had sudden onset on June 11. Members of the household live in a wooded area at the edge of the city. Two small dogs belonging to the family were tick infested. The mother knew of no tick bite but had removed ticks from the child shortly before the illness.

MAINE

State Medical Election—Dr. Raymond V. N. Bliss, Blue Hill, was chosen president-elect of the Maine Medical Association at a business meeting in Augusta on June 20 and Dr. Oscar F. Larson, Machias, was inducted into the presidency. Dr. Frederick R. Carter, South Portland, is secretary-treasurer.

MICHIGAN

Student Loan Fund Created—A scholarship and loan fund amounting to \$4,000 has been established at Wayne University, Detroit for the use of students in medical technology under a grant from the W. K. Kellogg Foundation. Of the total grant \$2,000 will be used as a loan fund. The other half will be used to furnish scholarships to students in the clinical period. The medical technology curriculum is sponsored jointly by the college of liberal arts and the college of medicine.

Personal—Miss Mary P. Connolly, director of health education for the Detroit Department of Health, is retiring after twenty-five years' service. Dr. Duncan J. McColl, Port Huron, was honored at a dinner, May 25, given by the St. Clair County Medical Society in recognition of his completion of fifty years in the practice of medicine. He was presented with a desk set and a portfolio by members of the society. Dr. Roger V. Walker, Detroit, has been appointed a member of the Michigan Crippled Children's Commission, his term to expire on March 23, 1946.

Special Appropriation for Tuberculosis Care—Effective July 1 the state administrative board will approve increased payments to counties whose hospital bills for care of residents with tuberculosis are out of line with tax incomes. A special \$250,000 appropriation will be available for the purpose in the fiscal year. Benefiting will be counties that are called on to furnish hospital care in excess of forty patient days each year for each \$100,000 assessed valuation. Twenty-five counties qualify for such additional assistance now. Heading the list is Houghton County whose present hospital load is 203 patient days a year per \$100,000 assessed valuation. Also beginning July 1 the state increases its payments to all counties to \$2 per hospital day as against the \$1.50 paid at present, the last legislature having increased the appropriation for the purpose to \$265,000. In no case will the state pay more than \$3.50 for one day's hospital care.

MINNESOTA

Special Unit for Study of Infantile Paralysis—The National Foundation for Infantile Paralysis has approved a five year grant of \$175,000 to the University of Minnesota to set up a special unit to study infantile paralysis. The grant is for the five year period ending June 30, 1948. Building space and basic laboratory facilities are already available at the University of Minnesota. The new unit will be under the general direction of a committee composed of members of the departments of physiology, neuropsychiatry and pediatrics of the medical school. Dr. Maurice B. Visscher, professor and head of the department of physiology will be in charge of administration. An advisory committee will be appointed by

Mr. Basil O'Connor, president of the foundation, to assist in directing the committee from time to time. The different departments of the medical school will set up a coordinated medical program which will investigate the mechanics involved in the effects of various treatment procedures, the disturbances in the nervous system which produce the many different kinds of symptoms found in infantile paralysis, the nature of the chemical changes produced in the cells by the infantile paralysis virus and other related problems.

NEW JERSEY

Award to Dr. Martland—The Edward J. Ill Award of the Academy of Medicine of Northern New Jersey was presented on May 20 to Dr. Harrison S. Martland, Newark, since 1925 chief medical examiner of Essex County. The inscription on the plaque reads "renowned pathologist, dynamic teacher, eminent civic benefactor." Dr. Martland graduated at the Columbia University College of Physicians and Surgeons, New York, in 1905. He is a past president of the Essex County Anatomical and Pathological Society, which in 1935 established the Harrison S. Martland Lecture in his honor. Dr. Martland has also served as director for the Graduate Fortnight of the New York Academy of Medicine. He is professor of forensic medicine at the New York University College of Medicine and in 1936 reorganized the department. For a number of years he has been associate editor of the *American Journal of Surgery*. Speakers at the presentation included Dr. Francis Carter Wood, director emeritus of the Institute for Cancer Research, Columbia University, and Dr. Edward W. Sprague, president of the Academy of Medicine of Northern New Jersey.

NEW YORK

Fund for Research in Internal Medicine—The University of Rochester ultimately will receive an estimated \$1,784,275 for use as a research fund under the will of Mrs. Bertha H. Buswell, Buffalo. According to *Science*, the will directed that the money be used to establish the "Bertha H. Buswell and Dr. Henry C. Buswell Memorial" for research by the department of internal medicine in the school of medicine. The amount represents the residue of the estate and is subject to a life interest by Mrs. Buswell's brother. The late Dr. Buswell bequeathed \$900,000 for the use of the department of urology in the medical school.

Typhoid Carriers—A total of 437 typhoid carriers, exclusive of those in state institutions, were under supervision in upstate New York at the close of 1942. Thirty new carriers were added to and 25 were removed from the register during the year. Twenty-two were discovered as a result of epidemiologic investigation of sporadic cases of typhoid, 7 by means of release cultures, and 1 was discovered accidentally while hospitalized with a diagnosis of bronchopleural fistula. Of the 25 carriers whose names were removed from the register, 18 died. One was considered cured following cholecystectomy, and 6 others were removed from the register because of change of residence of the carrier to a community outside the jurisdiction of the state health department.

New York City

Industrial Physicians Register—The Long Island College of Medicine announces the creation of a register of more than one hundred and fifty physicians of the metropolitan New York area with experience in industrial medicine and surgery. The register was established as a service to business concerns with health problems or in need of additional medical personnel; it is open for consultation by authorized representatives of business firms who make contact direct with the candidates. The college takes no responsibility beyond making the information available. The file includes names of physicians in all five boroughs of New York, Long Island, Westchester and New Jersey. The register was established after a number of industrial and other types of firms inquired as to whether the college could recommend medical personnel and resulted from the postgraduate course in industrial medicine conducted by the college in November 1942.

Diagnostic Service in Tropical Diseases—On June 18 the laboratory of the city health department in the Meinhard Health Center was moved to enlarged quarters in the Washington Heights-Riverside District Health Center to provide the "tropical diseases diagnostic service of the New York City Health Department." The move was made in anticipation of an increased demand for laboratory service and special information on parasitic and other tropical diseases. For the past eight years the service has been available at the Meinhard Health Center, but it is expected that the service will be more

accessible from all parts of the city in its new location. According to the *Journal of the Medical Society of the County of New York*, physicians, clinics and hospitals may refer specimens or inquiries concerning diagnosis or treatment to the diagnostic service. Information will be furnished by the physician in charge, who is especially trained in tropical medicine about the proper collection and submission of feces, blood and urine and about clinical diagnosis or treatment with regard to cases of a possible parasitic or tropical nature. Reports will be sent directly to the referring physician, clinic or hospital.

Courses in Physical and Occupational Therapy—Columbia University announces special courses to prepare personnel in physical therapy and occupational therapy for immediate and postwar rehabilitation. Both programs are planned to meet the requirements designated by the Council on Medical Education and Hospitals of the American Medical Association and are conducted within the university in close relationship with the College of Physicians and Surgeons, the department of nursing education and the health and physical education of Teachers College. Clinical practice will be given in the Columbia-Presbyterian Medical Center and other hospitals in the New York area. Admission requirements for the nine-month course for physical therapy technicians include two years or sixty semester hours of college work including courses in physics and biology or graduation from an accredited school of nursing or an accredited school of physical education. For the occupational therapy course at least one year of college is required and preferably two years. A certificate of proficiency will be granted by the university following the satisfactory completion of either of these courses. Additional information may be obtained from the physical and occupational therapy office, room 312, School of Business, Columbia University.

NORTH DAKOTA

Dr. Hill Appointed State Health Officer—Dr. Frank I. Hill, Bismarck, who has been acting state health officer for North Dakota for the past eighteen months, has been appointed state health officer by the North Dakota Public Health Advisory Council for a term of four years. He graduated at Jefferson Medical College of Philadelphia in 1930. Dr. Hill also has a degree of master of public health.

PENNSYLVANIA

Isolation Hospital for Venereal Patients—An isolation hospital will be operated by the state department of health at Lancaster for girls and women found infected with a venereal disease. The proposed hospital will be located in a building formerly occupied by the Home for Friendless Children, which has been leased to the state department of health by the commissioners for one year. The hospital, which will accommodate 75 girls, is expected to be in operation by the end of the summer.

Philadelphia

Signing Health Certificates for Motorists—The Office of Price Administration announced on July 2 that it would report to county medical societies the names of physicians who had signed health certificates which appeared to be unnecessary, according to the *New York Times*. Agents of the OPA assigned to two bridges between Philadelphia and points across the Delaware River said that "up to 50 per cent" of the drivers they stopped had doctors' certificates stating that their holiday trips were necessary for their health. The OPA attorney said that the only excuse for nonbusiness motoring would be a certificate signed by a doctor stating that a person's health would be undermined or his recovery retarded if he could not make a trip and that public transportation would be inadequate. It would be injurious to the patient's health.

Pittsburgh

Harry Meller Dies—Harry B. Meller, head of air pollution investigation at Mellon Institute since 1923 and former chief of the bureau of smoke regulation in the city of Pittsburgh, died on June 27, aged 65. Dr. Meller had been director of the Industrial Hygiene Foundation of America from its founding in 1935 to last September, when he resigned on account of poor health.

SOUTH CAROLINA

Physicians Retire from Teaching Positions—The retirement of Dr. Robert S. Cathcart, head of the department of surgery, Medical College of the State of South Carolina, Charleston, and Dr. John van der Horst, head of the department of physiology, has been announced. Both physicians reached the retirement age and will become professors. Dr. Frederick E. Kredel, professor of surgery, has been

acting head of the department. Dr Cathcart graduated at South Carolina in 1893. He joined the medical college faculty in 1913, when it was reorganized as a state institution as professor of abdominal surgery. He later became head of the department and chief surgeon at Roper Hospital, for which in 1905 he had been instrumental in obtaining a new building. He is a past president of the South Carolina Medical Association, Southern Surgical Association and the Tri-State Medical Association. Dr van de Erve is also pastor of the French Protestant (Huguenot) Church. He graduated at Rush Medical School Chicago in 1911. Before joining the South Carolina faculty in 1919 as professor of physiology he had been associate dean of the Marquette University School of Medicine, Madison Wis., and head of the physiology department at the University of Alabama School of Medicine, University, Ala.

WEST VIRGINIA

Personal—Dr Guy Hurdale, formerly medical director at the Greenbrier Hotel White Sulphur Springs and lately located at Lewisburg has moved to Ogunquit Maine.—Dr Roy R Summers Morgantown who has served as head of the West Virginia University health center for several years has resigned effective August 1. After completing a postgraduate course in surgery, he plans to locate at Charleston.

New Head of Vital Statistics—Dr Martin B Woodward, registrar, state board of health Columbia, S C, has been named as director of the bureau of vital statistics. He succeeds Dr Franklin H Reeder, who is in the military service. Dr Woodward has served as director of a like bureau in the South Carolina Health Department for the past several years. He has been engaged in public health work since 1926.

Dr Offner Named State Health Officer—Dr John E Offner, medical superintendent of the Western State Hospital for the Insane Weston has been appointed state health commissioner by Governor Matthew M Neely for the term ending May 31 1947. He succeeds Dr Clifton F McClintic Charleston who held the office since March 17, 1941 but whose term expired on May 31, 1943. Dr Offner graduated at Maryland Medical College Baltimore in 1904. Dr Offner was located for a number of years at Fairmont, prior to his appointment as superintendent of the Weston Hospital in October 1933.

GENERAL

Quinine Research—Cinchona Products Institute New York, announces the following research projects on quinine and other alkaloids of cinchona. Cornell University Medical College, New York. The action of Cinchona alkaloids on experimental infections, under the direction of Drs Harry Gold and McKen Cattell. New York University, a threefold investigation on (a) quantitative study of intestinal absorption and subsequent distribution of the alkaloids between blood brain and body fluids, (b) mode of action on myoneural systems and micro-organisms and (c) action of the alkaloids on isolated enzyme systems, under the direction of Dugald E S Brown Ph.D. New York. Johns Hopkins University School of Medicine Baltimore a study of quinine and malaria in the Upper Mississippi Valley by Dr Erwin H Ackerknecht, under Dr Henry E Sigerist or the Institute of the History of Medicine. Battelle Memorial Institute Columbus, Ohio a preliminary study of the industrial uses of Cinchona alkaloids, under the direction of Maynard M Baldwin, Ph.D. and Frank C Croton Ph.D. It was also announced that two research fellowships for graduate workers in this field are now available.

Patents on Manufacture of Vitamin D Held Invalid—The U S Circuit Court of Appeals at San Francisco according to press association reports has declared invalid the patents owned by the University of Wisconsin Alumni Research Foundation governing the manufacturing of vitamin D which are said to have brought to the foundation more than \$7,500,000 in royalties. A licensing system for commercial users of the formula according to briefs in the case had been set up by the foundation and 250 licenses issued all under the control of the foundation. Harry Steenbock, Ph.D. Madison of the university, did the research and obtained the patents on the formula. The ruling of the court or appeals followed an appeal by Vitamin Technologists Inc. Los Angeles from a ruling by the federal court at Los Angeles favoring the foundation which had sued for an injunction against and an accounting from the Los Angeles firm on the allegation of infringement of patent. According to the ruling by the court or appeals, all vitamin D patents held by the university and the foundation are invalid and therefore could not be infringed on. It was noted by the court that the patents involved the production of vitamin D for the cure of rickets by means of subjecting

foods to the radiation of ultraviolet rays as produced by a quartz mercury lamp. It was pointed out in the ruling that it had been known for many years that the sun's rays on cut alfalfa hay cured in the field results in an antirachitic food for pigs and that prior to 1923 the effects the rays had on coconut and on milk were known. The decision was written by Federal Judge William Denman. It stated that Dr Steenbock himself had verified these facts with respect to alfalfa and that we thus have the claimed inventor proving that it is from the ultraviolet rays of the sun that the alfalfa acquires its vitamin. That is by the process claimed by him as patentable. Press dispatches also stated that George I Haight LL.D. Chicago president of the foundation, has announced that it would appeal the ruling by the San Francisco Court of Appeals.

Tuberculosis Case Registers—As a postwar activity the National Tuberculosis Association plans an intensive campaign to establish central tuberculosis case registers in all centers of the country where health administration is maintained on a sound basis. To this end a manual outlining methods of organizing and maintaining such a central record file has been prepared and will shortly be printed under the direction of Dr Edward X Nikol, a member of the bureau of tuberculosis of the New York State Department of Health Albany. In addition the National Tuberculosis Association is developing a consultant service in connection with the establishment of central registers. Martha Carr Jones statistical assistant in the association has recently been assigned as consultant. The principal objectives of the new central registers will be:

- To record the location and movement of patients at all times
- To aid in determining the need for the number, frequency and location of clinics as well as the need for hospital facilities.
- To indicate deficiencies in the examination and supervision of individual patients and contacts.
- To provide information for the education of physicians, nurses, health agencies and the public.
- To aid in the appraisal of the tuberculosis problem in a community.
- To aid in the evaluation of the effectiveness of control measures.
- To aid in the planning and organization of suitable health activities.
- To aid in the supervision of public health nurses.
- To provide information to justify requests to appropriating bodies for additional personnel or facilities.

Government Services

Consultation Service in Health Education

The division of industrial hygiene, National Institute of Health, Bethesda, Md, in cooperation with the division of sanitary reports and statistics, is developing a consultant service to stimulate health education programs for industrial workers. Miss Elma I Perkins was appointed recently to the position of associate health education specialist in the division to assume responsibility as liaison in the development of this much needed service.

Physicians Needed for Civilian War Service

The U S Civil Service Commission has liberalized its civil service examination for medical officers in view of the continuing critical shortage of physicians to engage in war work in the civilian branches of the government. There are no written tests and no age limits. Before a definite offer of appointment is made, eligible physicians are cleared through the Procurement and Assignment Service for Physicians, Dentists and Veterinarians of the War Manpower Commission.

The twenty optional branches under which doctors may apply range from general practice to aviation medicine. Those appointed will perform professional duties as doctors of medicine in active practice in hospitals, in dispensaries or in the field or in rural areas or in bureaus of the government such as the Veterans Administration, Civil Aeronautics Administration, Public Health Service and Food and Drug Administration. Doctors will also be used in industrial establishments under direction of the War Department. Applicants for all grades must have received the degree of M.D. from an accredited medical school. Applicants for the senior medical officer grade (\$5,228 a year) must have had at least five years of appropriate medical experience for the medical officer grade (\$4,428 a year) three years of experience in addition to a required internship and for the associate medical officer grade (\$3,828) one year of internship. The salaries quoted include overtime pay.

Information and application forms may be obtained at first and second class post offices, Civil Service Regional Offices and the commission in Washington, D C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 12, 1913

Salt and Water Requirements in Hot Climates

The war has made important the question of the salt and water requirements of troops in hot countries. The *Army Medical Department Bulletin* states that in order to reduce heat casualties they must be acclimatized and receive the necessary amount of salt and water. Efficient work in hot climates depends on physiologic adaptation—decrease in heat production and increase in sweating. When the body reaches a certain critical temperature, just below 102° F., work becomes inefficient and hyperthermia threatens. Acclimatization is marked by a progressively smaller rise in body temperature for performing a standard piece of work, until those completely acclimatized can work for long periods without rise to the critical level, provided the intake of salt and water is adequate. For troops going to the tropics a month or two of vigorous work in summer heat (about 80° F.) is a good preparation and should be continued during the voyage by exercises.

It has been found experimentally that men properly acclimatized and receiving an ample supply of water require 2 Gm. of salt per hour of work and 0.5 Gm. per hour of rest. Those in sedentary occupations require 12 Gm. daily, those working hard for eight hours daily require 24 Gm. The fresh ration scale in the Middle East, including culinary salt, is 17 to 20 Gm. daily, the canned ration, 22 to 25 Gm. These amounts are sufficient when the water intake does not exceed 2 gallons. Only when this is exceeded is an issue of extra salt necessary.

Adequate water is as important as salt in preventing the effects of heat. Under tropical conditions with a day temperature of 94° F. and a relative humidity of 80 to 85 per cent, the daily excretion of sweat in men on moderate work is 5 to 6 liters. In desert conditions, with a day temperature of 100 to 120° F. and a relative humidity of 25 to 30 per cent, one may excrete as much as 8 liters. For the former a fluid intake of at least 6.5 liters and for the latter up to 9 liters is necessary to maintain the water balance. Some of this intake can be obtained from the water content of food and from the oxidation of foodstuffs, but the daily intake of water should not be allowed to fall below the figures given. For hard work considerably more is required.

It is recommended that men should be encouraged to drink as much water as they want, and preferably more, whenever thirsty, as this increases efficiency and prevents heat symptoms. When extra salt is given it should not be consumed during work but at meals or in rest periods, especially at night. Tablets of 10 grains are supplied and one is to be taken with each pint of water. Taken alone they nauseate.

Labor Party's Plan for a State Medical Service

The labor party has produced a plan for a state medical service similar to that of the Beveridge plan. It urges the establishment of a state medical service and the insurance of the health of all by the entire nation. While admitting that the country's health has substantially improved, it asserts that the physical standard of a great part of the nation remains deplorably low. The annual cost of illness in payments to the sick and in medical services is estimated at \$1,500,000,000. The labor plan is that there should be a central authority to arrange the health services as a whole, including the medical service, subject to the control of Parliament. This authority should be the Ministry of Health, with its accumulated knowledge of national health conditions. Its powers should be extended to cover all the health services, including those now controlled by

other departments, such as the school medical services and the services in factories.

The division of the country into regions, each with its own authority for local government, democratically elected, is recommended. Each regional authority is to appoint its health committee. Within the region there should be a series of divisional hospitals, associated with divisional health centers. The divisional units should be large enough for one fully equipped hospital with specialists of every kind. Experience shows that an economical size for such units is a population of 100,000, which requires a hospital of 1,000 beds.

THE PHYSICIAN'S PART

Changes in the financial status of the physician are advocated. It is argued that the present system of payment is unsatisfactory from the standpoint of the nation, the patient and the physician. The medical profession should be organized as a national full time, salaried and pensionable service. Physicians and nurses should have fixed hours of service, which must be full time, not part time. To the suggestion that some physicians may prefer to retain their private practice and remain outside the scheme, it is replied that the new service should be made so efficient and complete that no patient could desire a better

THE FINANCE

The necessary expenditure should be drawn partly from national taxation and partly from rates payable to the regional authorities. An estimate is given for a comprehensive service for the treatment of the sick (not including cash benefits) of \$700,000,000 annually. This is less than that given in the Beveridge plan, which amounted to \$850,000,000, and it is claimed that the labor plan gives more benefits and greater facilities.

Warning Against Overuse of Warmth in Treatment of Shock

In the *Army Medical Department Bulletin* the War Office has given a warning against overdoing the use of warmth in the treatment of shock. "Keep the patient warm" is an axiom in the treatment of the injured. The harm due to cold was recognized in the last war, when casualties were found to be worse in winter than in summer and the therapeutic value of warmth was readily demonstrated. But one can have too much of a good thing, and apart from accidental burning or unconscious or drowsy patients the enthusiastic application of heat has risks.

After severe injuries the blood volume nearly always diminishes, because fluid has left the blood vessels either from hemorrhage or from oozing into damaged tissues or both. The consequent fall in blood pressure brings into play a vasoconstrictor mechanism which raises pressure by reducing the capacity of the vascular bed. It is not yet certain which parts of the vascular system are affected by this vasoconstriction, but undoubtedly the cutaneous circulation is much diminished. And the capacity of the cutaneous vessels is considerable. Even in a normal person warming may increase the blood content of the skin by as much as a pint. In shock in which the superficial vessels have been constricted and depleted, warming might well bring far more than a pint to the surface, diverting it from its vital functions.

Thus excessive warming may interfere with nature's attempt to restrict its total vascular capacity—the physiologic order, to make a little go a long way. It may accelerate loss of heat from the surface by evaporation and sweating, it may interfere with the metabolism of skin and muscle and thus jeopardize structures whose blood supply is impaired by local injury. It may promote autolysis of damaged tissues and absorption of the products. Experimentally it has been shown that excessive and vigorous heating of injured animals decreases the rate of recovery.

Theory and experiment therefore agree that war casualties should be warmed in a conservative manner, e.g. with blankets and hot water bottles after removal of wet clothes. More potent methods, such as the hot cradle, may be used when the blood volume is being, or has been, restored by transfusion. But the heat should never be so great as to cause sweating and limbs with injured vessels or gangrene should not be warmed at all. As far as the cold of shocked patients is compensatory, it is a symptom which should not be treated energetically unless its basic cause (reduction of blood volume) can be treated at the same time. While warming plus transfusion give excellent and prompt results, warming alone may be carried too far and lead to vasodilatation, circulatory collapse and death.

Publicity Campaign Against Venereal Diseases

The Ministry of Health is continuing the publicity campaign against venereal diseases described in previous letters to THE JOURNAL. The problem has been brought into the open and is freely publicized in broadcasts, newspapers, cinemas, theaters and elsewhere. Posters suitable for both indoor and outdoor display entitled 'Delay Is Dangerous' 'Treatment Must Be Continued and Quack Cures Are Useless' have been sent to the local health authorities by the Central Council for Health Education. The ministry requests these authorities to arrange for a comprehensive and continuing display of the posters in conjunction with a poster giving particulars of local treatment facilities. All health officers have received from the council particulars of the facilities—pamphlets, films and lectures—provided by that body. On application the council will suggest the names of lecturers. In the newspapers advertisements to be continued for at least six months advise readers that information and advice regarding venereal diseases may be obtained from the local health department.

South African Camp for the Wounded

There is in Natal, South Africa, what a woman dietitian working there has described as the largest convalescent depot in the world. It collects empire convalescents from all the hospitals in South Africa and keeps them until they can be returned to their units or sent to England. It can accommodate 4,000 patients, and with staffs of all kinds there are nearly 5,000 persons living in the camp. The hospital is well built and splendidly equipped and will be turned into a civilian hospital after the war. It is 3,500 feet above sea level, in the mist belt, and has a wonderful climate. English fruits grow around it. The depot buildings are mostly made of wattle and daub. Each of the two kitchens has messes which seat 800, and they have a staff of 23 European women and 23 Bulu boys to do the rough work. There is a picture house and a swimming bath. Games—tennis, bowls and football—are provided.

The British Medical Bulletin

A British council has been in existence for some years for the purpose of correcting a belief sedulously propagated by the Nazis that Britain no longer has anything in art, literature or science worthy to be offered to the world. The council has added to its activities a medical bureau. This is in charge of Dr. Howard Jones and prepares abstracts of British medical papers which it circulates throughout the world. These are sent in the language of the receiving country and have been widely reproduced abroad. To supplement this service the council now issues a periodical, the *British Medical Bulletin*, with the object of providing a guide to medical thought in Britain. It consists mainly of summaries of recent papers grouped according to subject. The *Bulletin* is not for general distribution to the medical profession but other journals are invited to reproduce its abstracts. The address of the *Bulletin* is 3 Hanover Street, London W. 1.

BRAZIL

(From Our Regular Correspondent)

June 21, 1943

Number of Practicing Physicians in Brazil

According to available information for 1942 there are in this country 18,213 practicing physicians. As the area of the country is 3,287,595 square miles and the population just a little above 43 million, there are therefore an average of about 180 square miles and 2,361 persons to be served by each physician, which corresponds to the rate of 42.35 per hundred thousand of population. But as the density of population varies widely from one state to another (there are twenty states, the Acre Territory and the Federal District), and as the economic development of the several regions of the country is different, the rate of physicians per hundred thousand of population varies also significantly. The highest density occurs in the Federal District (Rio de Janeiro city and its suburbs and rural environs with a total of about 450 square miles), where there are 2,995 physicians, corresponding to a rate of 161 per hundred thousand, or 0.15 square mile per physician. Of course, in the city proper the concentration is much higher, the largest part of these physicians serving in the 60 square miles of the urban area. Next to the Federal District comes the state of São Paulo, the richest section of the country, where there are 6,316 physicians corresponding to the rate of 83.1 per hundred thousand, or about 15 square miles per physician for a state population of 7.6 million. In the city of São Paulo, capital of the state, there are about 1,800 physicians for the population of 1.4 million, scattered over an area of about 40 square miles. In the third, fourth and fifth places stand Rio Grande do Sul, Bahia and Rio de Janeiro, states respectively with 1,785, 1,736 and 772 physicians, or the rates of 51.0, 43.4 and 40.0 per hundred thousand. In the last three places stand the Acre Territory and the states of Piauí and Maranhão, which have respectively 10.96 and 8.3 physicians, corresponding to the rates of 12.0, 9.9 and 7.5 per hundred thousand. The equatorial Amazon basin, where rubber is extracted and where malaria is intensely prevalent, includes the Acre Territory and the states of Pará and Amazonas with the huge aggregate of 1,288,500 square miles and a population of only 1,520,000. In this vast area there are but 241 physicians or a rate of 15.9 per hundred thousand and 5,346 square miles per physician.

Tuberculosis in Southern Brazil

The 1941 annual report of Dr. Bonuacio Costa as commissioner of health for Rio Grande do Sul, the southernmost state of Brazil, gives information concerning the incidence of pulmonary tuberculosis in that state, which has a temperate climate. In Porto Alegre, the largest city of the state, with a population of 275,000, the percentages of cases of active pulmonary tuberculosis have been found with the aid of both clinical and X-ray examinations to be 1.45 among 8,893 state officers and employees, 0.60 among 26,294 commercial clerks and food-handlers, 1.55 among 1,289 pregnant women visiting antepartum clinics, 1.8 among 1,374 school children and 4.20 among 333 workers of the cotton textile industry. In Pelotas (population 105,000) the percentages of active cases of pulmonary tuberculosis have been found to be 0.22 among 2,671 school children, 1.08 among 460 police officers, 0.46 among 4,064 food-handlers, 2.60 among 244 school teachers, 1.61 among 558 pregnant women visiting antepartum clinics and 1.08 among 463 industrial workers of several kinds. In reference to the city of Rio Grande (population 62,000) the report states without giving the absolute numbers the percentages are 0.80 for food-handlers and 2.50 for school children. The Pirquet reaction has given the following percentages of positivity in Porto Alegre: 17.5 among 525 children from 0 to 24 months of age, 41.2 among 342 children from 2 to 6 years of age and 53.7 among 374 children from 7 to 14 years. The examination of

large groups of persons only with the aid of the miniature 35 mm film as suggested by De Abreu, which as a rule furnishes higher percentages, has given 7.40 per cent of positivity in Rio Grande and 4.70 per cent among 14,803 persons in Pelotas. In seventy of the eighty-eight counties of the state, the mortality from tuberculosis is considered moderate (below 100 per hundred thousand) but varies between 100 and 300 per hundred thousand in the rest of the state. In Porto Alegre it stays at the average level of 250 per hundred thousand. These figures contrast with those for the northern section of Brazil, where the incidence of tuberculosis is generally higher.

Improvements in the Misericordia Hospital

A new annex to the great old hospital of the Santa Casa de Misericórdia in the downtown section of Rio de Janeiro was opened not long ago. The annex, built with money donated by the Associated Duties of Brazil under the presidency of Mr. Assis Chateaubriand, has a large surgical unit, sixteen outpatient clinics, a pathologic institute and a physical therapy institute. The surgical unit is under the direction of Dr. Paulo Cesar de Andrade. The outpatient clinics are under the direction of Dr. A. Almeida Silva to give free and low cost medical care. The pathologic institute, under the direction of Dr. Oswaldo Penna, is provided with all the facilities to perform chemical, bacteriologic, parasitologic, anatomicopathologic and endocrinologic examinations. The section of necropsies and histopathologic examinations is considered one of the best in South America. The physical therapy institute is equipped with a powerful x-ray apparatus and 500 mg. of radium.

The sum donated by the Associated Duties of Brazil will permit also the granting every year of several fellowships to physicians of the interior of the country to come to Rio de Janeiro to take postgraduate courses in the different specialties of medicine and surgery.

Four New Cases of Quartan Malaria

Dr. Firmino O. Lima of the Malaria Division of the State Department of Health of São Paulo described 4 new typical cases of quartan malaria in patients of that state. Cases of quartan malaria, although relatively rare, are found everywhere, but the prevalence of the disease varies in different regions of the globe depending on favorable influences, perhaps convenient vectors, not yet well recognized. This is particularly true in the case of Brazil, where the quartan type is very rare despite the large importation of the quartan parasite in Italian, Spanish and Portuguese immigrants. Four cases from the state of São Paulo had been previously described by A. Guimarães and M. Cortez, by Prado and Carvalho and by Amaral, Coutinho and Quaglia. The 4 new cases described by Dr. Lima are from the same Itaporanga County where Amaral, Coutinho and Quaglia in 1942 found 2 of the previous cases from the state of São Paulo. For Brazil as a whole, perhaps less than 0.5 per cent of the cases of malaria are of the quartan type.

Prices of Pharmaceutic Preparations

The Division of Prices of the Administration of Economic Mobilization has begun to study the problem of controlling the prices of the pharmaceutic preparations, as they are rapidly rising since a short time ago. All the manufacturers of therapeutic preparations of any kind are obliged to present within thirty days a roster of the respective products, with the description of their characteristics and particulars about their manufacture and distribution. Regarding the products of foreign origin, the authorized representatives of the manufacturers in Brazil are also obliged to file the same information as well as the prices at the country of origin, the existing stocks and other pertinent particulars. The products concerning which information is incomplete or misleading will not be sold until correct information has been filed. The manufacturer who furnishes misleading or untruthful information will be prosecuted according to law.

AUSTRALIA

(From Our Regular Correspondent)

June 8, 1943

Emergency Rations in the New Guinea Campaign

The lives of many soldiers in the New Guinea campaign have been saved by army emergency rations. The ration tins, 12 ounces in weight, are dropped by planes over isolated areas, many of which are cut off for protracted periods from other sources of supply. The ration consists of a canned meat and vegetable food which increases its bulk fourfold when mixed with water, and a compressed fruit block consisting of apricots, sultanas, currants, sugar and peanuts. Malted milk tablets and tablets of tea, sugar and salt are also included.

Earlier in the Papuan campaign our men were forced to eat unheated food. They could not light a fire because the ground was too damp or because the smoke would have invited attention from enemy snipers. Now they are being supplied with "solidified alcohol" tablets and crown ring cookers. These cookers, which do not rattle and are small enough to fit into mess kits, give off no smoke and are not put out by wind and rain. They are proving of inestimable benefit to men on service in forward areas.

Army Ration on Nutritional Basis

Today the army receives an expertly balanced ration. When Allied soldiers first arrived here they had a separate diet chart from the Australians. The two were soon brought to a common basis by officials of the Council for Scientific and Industrial Research collaborating with the Australian director of army catering (Lieut. Col. Sir Stanton Hicks) and United States Army officials. For the past year the Royal Australian Air Force has been placed on the same catering basis as the army.

The chart for Allied Forces in the Southwest Pacific allows for certain differences in taste—Americans have been found to drink more coffee and Australians more tea, Americans have a wider range of condiments and show a greater preference for ham. It is not always possible to get fresh meat to men in the forward areas, but the preserved lines include canned sausages, dehydrated mutton, bacon and pork packs in addition to the popular meat and vegetable ration. Egg powder, tomato juice and fresh or canned fruits form part of the regular army diet for the forward areas.

Control of Proprietary Medicines

Rigid control of the sale of proprietary medicines has recently been instituted by National Security (Proprietary Medicines) Regulations. The principal objects of the regulations are the prohibition of the manufacture or sale of any medicines which fail to justify their claim, and the compulsory variation of formulas when this is deemed necessary to conserve essential drugs. Advertising of proprietary medicines is virtually prohibited, the only particulars which may be exhibited or published in any form to promote the sale of a proprietary medicine being its trade name, description of the article in not more than ten words, the price, and the name of the manufacturer or distributor. The limitation applies to all written statements concerning proprietary medicine, including advertisements in the press, handbills, window displays and broadcast advertisements. Another section has the effect of prohibiting the employment of travelers or detailists. The definition of "proprietary medicines" given in the regulations is extremely broad and includes any medicines to be held out by advertisement or otherwise in writing, to be efficacious for the prevention, cure or relief of any malady, ailment, infirmity or disability affecting human beings, or for increasing height, mental capacity or reducing weight or increasing personality or reproductive capacity.

Deaths

Lewellys Franklin Barker † Baltimore, emeritus professor of medicine at Johns Hopkins University School of Medicine, former professor of anatomy at the University of Chicago, former Vice President of the American Medical Association and medical leader died on July 13 at Baltimore at the age of 75 after a long illness.

Dr Barker was born in Norwich, Ontario, Canada, on Sept 16 1867. He studied at the University of Toronto and the Universities of Leipzig, Munich and Berlin. After work in anatomy and pathology in Johns Hopkins from 1894 to 1899, Dr Barker became associate professor of anatomy at the University of Chicago, returning to Johns Hopkins for a year in pathology and then became professor and head of the department of anatomy at Rush Medical College, Chicago 1900-1905. Dr Barker was professor of medicine at the Johns Hopkins University and chief physician at the Johns Hopkins Hospital from 1905 to 1913. He then became emeritus professor of medicine at Johns Hopkins University and visiting physician to the Johns Hopkins Hospital.

A long and eminent career as an investigator and clinician resulted in many contributions to the medical literature. Dr Barker's early books were principally in the field of anatomy and included a book on the nervous system published in 1899, a translation of Spalteholz's *Hand Atlas of Human Anatomy* in 1900 and a *Laboratory Manual of Human Anatomy* in 1904. In 1896 Dr Barker described a unique case of circumscribed unilateral and elective sensory paralysis analogous in its bearings to the observations of Head. In 1909 with Hanes he described the eye signs in chronic nephritis. With Sladen he made interesting clinical and pharmacologic studies of the autonomic nervous system. He published an exhaustive treatise on clinical diagnosis in 1916. In more recent years he has been the author of several popular works on medical subjects. With N. B. Cole he wrote a book for the public on blood pressure in 1924. His book *The Young Man and Medicine* was written primarily for medical studies. A monograph on psychotherapy appeared in 1940. Dr Barker's autobiography *Live Long and Be Happy* Time and the Physician appeared in 1942.

The recipient of many honorary degrees including the honorary M.D. from the University of Toronto and the LL.D. by Queen's University at Kingston, Ontario and McGill University at Montreal. Dr Barker was also much in demand as a special lecturer. His lectures included the Beaumont Lectures of Wayne County Medical Society, Detroit 1935, the annual Alpha Omega Alpha lecture at Jefferson Medical College in 1932 and the first M. L. Rhein Memorial Lecture of the First District Dental Society of the State of New York in 1933.

Dr Barker was First Vice President of the American Medical Association 1916 to 1917, chairman of the Section on the Practice of Medicine 1921 to 1922 and member of the House of Delegates in 1909. He has been president of the Association of American Physicians, the American Neurological Association, the Southern Medical Association, the Association for Study of Internal Secretions and was one of the vice presidents of the Pan American Medical Association in 1933. He has been in addition an active or honorary member of many other medical societies in this and other countries.

Dr Barker was a man of strong personality whose interests extended beyond pure medical science into all the aspects of medical life and his community. Only a man of tremendous energy as well as ability could have accomplished so much.

Charles Francis Gormly † Providence, R. I., Tufts College Medical School, Boston, 1909, immediate past president, in 1941 vice president and chairman of the committee on industrial health of the Rhode Island Medical Society, president of the Providence Medical Association 1934-1935, at one time chairman of the Rhode Island Board of Examiners in Medicine, fellow of the American College of Physicians, member of the American Heart Association and the New England Heart Association, specialist certified by the American Board of Internal Medicine, served with the American Expeditionary Forces in France during World War I with the rank of lieutenant colonel, lieutenant colonel in the medical reserve corps of the U. S. Army not on active duty, had been deputy director of the state medical and division of civilian defense as physician in chief at the Rhode Island Hospital, organized Evacuation Hospital number 48 now serving abroad, consulting physician to the Butler Charles V. Chapin and Providence Lying-In hospitals, Providence State Hospital for Mental Diseases and State Infirmary, Howard appointed by the governor a member of the advisory council to the state department of health.

delivered the George W. Gay Lecture on Medical Ethics on the Measure of a Physician's Greatness at the Tufts College Medical School in 1941. At the annual meeting of the state medical society in June 1943 a portrait of him was presented to the society. The faculty of the school of nursing of the Rhode Island Hospital established in 1943 the Charles F. Gormly Award to be given to the outstanding senior student nurse for the furthering of her professional interest. In January 1943 was presented with the medal of award and accompanying citation of the Rhode Island State Dental Society in acknowledgment of many services to the medical and dental professions. Aged 57, died June 26 of carcinoma of the lung.

James Gibson Logue † Williamsport, Pa., University of Pennsylvania School of Medicine, Philadelphia 1914, specialist certified by the American Board of Pediatrics, Inc., member of the American Academy of Pediatrics, past president of the Lycoming County Medical Society, served as president of the Lycoming County Tuberculosis Society and director of the Lycoming County Crippled Children's Society, served in the medical corps of the U. S. Army during World War I, medical director of the South Williamsport Office of Civilian Defense, physician to the Pennsylvania Children's Aid Society,

chief of the pediatric staff and member of the board of managers of the Williamsport Hospital where he died March 25 of aplastic anemia, aged 53.

Clifford U. Collins † Peoria, Ill., Peoria Medical College of Indiana, Indianapolis 1891, Marion-Sims College of Medicine, St. Louis 1892, member of the House of Delegates of the American Medical Association in 1912, specialist certified by the American Board of Surgery, member and formerly vice president of the Western Surgical Association, served as president of the Peoria Medical Society, one of the members of the advisory board of the state department of health under three different governors, organized the Collins Clinic, past president of the Peoria Association of Commerce and the Rotary Club, aged 75, on the staff of St. Francis Hospital where he died May 26.

Arthur Augustus Spoor, Muskegon, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1901, member of the Michigan State Medical Society, state bacteriologist and director of the laboratory of the Michigan State Board of Health from 1914 to 1918, at one time instructor in clinical microscopy and clinical pathology at the Creighton University College of Medicine and pathologist at St. Joseph's Hospital, Omaha, served as pathologist on the staff of the



LEWELLYS FRANKLIN BARKER M.D. 1867-1943

Meary Hospital, formerly a member of the city board of health, aged 69, died recently of heart disease at Orizaba, Mexico

William Calvin Kennerdell Berlin, Denver, University of Wooster Medical Department, Cleveland, 1895, member of the Colorado State Medical Society served during the Spanish-American War, member of the staff of St Anthony's Hospital, aged 71, died, April 28

Bertha Breeze Brainard, Jamestown, N D, Rush Medical College, Chicago, 1932, member of the North Dakota State Medical Association, diplomate of the National Board of Medical Examiners, in 1940 appointed in charge of the student health service at Oregon State College, Corvallis, served as health officer of Jamestown, state president of the American Association of University Women, aged 49, died, March 12, in Rochester, Minn, of hepatic abscesses and thrombosis of the portal vein

Louis Cohen, New York, Eclectic Medical College of the City of New York, 1903, formerly on the staff of the New York Hospital, aged 74, died, April 26, of coronary occlusion and arteriosclerosis

Ora O Dawson, Wayne, Okla, University of Oklahoma School of Medicine, Oklahoma City, 1912, member of the Oklahoma State Medical Association, aged 58, on the associate staff of the Wesley Hospital, Oklahoma City, where he died in April of coronary thrombosis

John Walter Dennis, Chicago, Loyola University School of Medicine, Chicago, 1922, formerly health officer of Hamilton County, Tenn, served on the staff of St Elizabeth Hospital, aged 47, died, May 24, of bronchopneumonia

Patrick John Donahoe, Utica, N Y, Albany (N Y) Medical College, 1905, member of the Medical Society of the State of New York, for many years a member and at one time president of the staff of St Elizabeth Hospital, attending physician at St John's Orphan Home, city physician, aged 63, died, May 4, of coronary thrombosis

Frederick Leslie Ecker, Parkers Prairie, Minn, Chicago College of Medicine and Surgery, 1913, aged 68, died, May 3, in Dalton, Ga, of acute coronary thrombosis

Marvin D Fitch, Columbus, Ohio, Medical College of Ohio, Cincinnati, 1897, aged 73, died, April 8

James Thomas Gaines, Crossville, Ala, University of Alabama School of Medicine, 1913, member of the Medical Association of the State of Alabama, president of the De Kalb County Farm Bureau, chairman of the board of trustees of the Crossville High School, aged 54, died, April 17, of coronary thrombosis

Archibald G Henderson Ⓢ Leonardville, Kan, Missouri Medical College, St Louis, 1899, aged 78, died, March 14, of heart disease

John Herbert Johnson, Cambridge, Mass, Harvard Medical School, Boston, 1901, served on the staffs of the McLean Hospital, Waverly, Boston Floating Hospital and the Medford (Mass) Hospital, aged 71, died, April 30, of cardiorenal disease

Christ William Kanne, Faribault, Minn, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1900, member of the Minnesota State Medical Association, aged 67, died, March 18, at Minneapolis of thrombophlebitis, pulmonary embolism and pulmonary infarction

Albertus L Lloyd, Rapid City, S D, Baltimore Medical College, 1898, served on the staffs of St Joseph's Hospital, Deadwood and St John's Hospital, aged 76, died, March 27, of cerebral hemorrhage

Joseph Charles McFate Ⓢ Meadville, Pa, Western Reserve University Medical Department, Cleveland, 1905, past president of the Crawford County Medical Society, a captain in the medical corps of the U S Army during World War I, served on the staff of the Meadville City Hospital, aged 66, died, April 27, of hypertensive heart disease

Edward George Meter Ⓢ Reading, Pa, Medico-Chirurgical College of Philadelphia, 1897, specialist certified by the American Board of Radiology, Inc, member of the American Roentgen Ray Society and the American College of Radiology, aged 67, chief, radiology department, Reading Hospital, where he died, March 20, of acute coronary occlusion

William Sawyer Newell, Washington, D C, Columbian University Medical Department, Washington, D C, 1895, member of the Medical Society of the District of Columbia, fellow of the American College of Surgeons, ophthalmic surgeon to the Central Dispensary and Emergency Hospital, aged 69, died, June 22, in the Garfield Memorial Hospital

Myron E Osterhout, Cornwall, N Y, New York Homeopathic Medical College and Flower Hospital, New York, 1922, member of the Medical Society of the State of New York, a member of the board of education, on the staff of the Cornwall Hospital, aged 49, died, April 16, of coronary thrombosis

John David Pate, Duncan, Okla (licensed in Oklahoma under the Act of 1908), aged 75, died, April 23

Arthur Colby Robbins Ⓢ Garden Grove, Calif, College of Medical Evangelists, Los Angeles, 1923, aged 50, died, April 21

Reginald W H Rollings, New York, New York Homeopathic Medical College and Flower Hospital, New York, 1910, aged 57, on the staff of the Flower and Fifth Avenue Hospitals, where he died, April 27, of carcinoma of the pancreas

Herman Schlaff Ⓢ Philadelphia, Medico-Chirurgical College of Philadelphia, 1912, served on the staffs of the Jefferson and the Northern Liberties hospitals, aged 61, died, March 6, of acute cardiac dilatation

Walter Henry Scudder, Litchfield, Ohio, Western Reserve University Medical Department, Cleveland, 1891, member of the Ohio State Medical Association, aged 82, died, April 30

William Alexander Sim, Quincy, Ill, Rush Medical College, Chicago, 1902, member of the American Psychiatric Association, served on the staffs of the Veterans Administration Facility in Sheridan, Wyo, and St Cloud, Minn, aged 65, died, April 21, of chronic leukemia

Edwin M Snyder, Roscommon, Mich, Michigan College of Medicine and Surgery, Detroit, 1889, aged 76, died, April 2, of arteriosclerotic heart disease

William Kenney Terriberry, Binghamton, N Y, Columbia University College of Physicians and Surgeons, New York, 1907, formerly instructor of physiology at his alma mater, at one time medical examiner for the Mutual Life Insurance Company and associated with the Standard Oil Company at Bayonne, N J, aged 62, died, April 22, in the Binghamton City Hospital of pneumonia and heart disease

James Harvey Van Buren, Elmira, N Y, Albany Medical College, 1905, aged 63, died, April 23, of chronic pulmonary tuberculosis and toxemia

Isidore S Zimmerman Ⓢ Brooklyn, Long Island College Hospital, Brooklyn, 1926, on the staffs of the Israel Zion, Kings County and Jewish hospitals, examiner for the local draft board, aged 41, died, April 21

DIED WHILE IN MILITARY SERVICE

James Morgan Minter Ⓢ Medical Director, Rear Admiral, U S Navy, Washington, D C, University of the South Medical Department, Seawanee, Tenn, 1903, appointed an assistant surgeon in the medical corps of the U S Navy in 1906, became a captain in 1927 and a rear admiral in 1941, served during World War I, formerly sanitary engineer to the republic of Haiti, in command of naval hospitals at Pearl Harbor and San Diego, senior medical officer at the Great Lakes Naval Training Station and at the Naval Academy at Annapolis, held the Victory Medal and the Navy Expeditionary Medal, fellow of the American College of Surgeons, aged 60, died, May 11 in the U S Naval Hospital, Bethesda, Md, of arteriosclerotic coronary heart disease

Theodore Leroy Chamberlin Ⓢ Assistant Surgeon U S Public Health Service, Hartford, Conn, Yale University School of Medicine, New Haven, 1940, diplomate of the National Board of Medical Examiners, commissioned assistant surgeon in the reserve corps of the U S Public Health Service in April 1942, assigned to U S Maritime Training Station, New London, Conn, commissioned assistant surgeon in the regular corps in July 1942 and assigned to U S Marine Hospital, Chicago in January 1943 was assigned to Curtis Bay, Baltimore aboard Coast Guard Cutter *Modoc*, aged 28, was killed May 1, in an airplane accident overseas

Walter Jackson Lackey Ⓢ Fallston, N C University of Virginia Department of Medicine, Charlottesville, 1928, on the staff of the Shelby (N C) Hospital, lieutenant in the medical corps, Army of the United States, stationed at Fort Jackson, S C, aged 36, burned to death May 1, at his home in Columbia, S C when the mattress of his bed caught fire from a lighted cigarette

Correspondence

TYPHUS FEVER IN EUROPE

To the Editor—Since reading your editorial of June 5 I have received from Geneva the report of Yves M Biraud on "The Present Menace of Typhus Fever in Europe and the Means of Combating It." One fully realizes the great difficulty in summarizing this work in a short article or editorial. It however, would seem advisable to comment on one statement of Dr Biraud which you quote in your editorial to the effect that "As regards live vaccines the new method of Blanc (biliated flea virus) and that of Laigret-Durand (mouse brain) are the only ones that can be considered for the preparation of vaccine intended for Europeans."

Biraud gives much reported evidence of the value and earlier use of the Blanc vaccine, which consists of a dried murine virus in feces of infected fleas to which ox bile is added before inoculation. Among these he states, "mention should be made of the observations reported by Gonnet (1942), who in the Oujda region, where a vaccination campaign with the dried vaccine had been carried out in May 1941, saw cases (115) of benign typhus about mid-July in the tribes vaccinated. Some of these cases were of very short duration and suggested to him late vaccinal reactions. In 6 cases admitted to hospital, 5 of which were military cases he diagnosed vaccinal murine typhus." Biraud adds "it is hoped, therefore, that many and precise observations will be published to verify its innocuousness for Europeans." Owing to present circumstances he is not in possession of the most recent observations concerning the use of live vaccines in North Africa during the last epidemic year."

Some of these very recent reports reveal that many individuals inoculated with the Blanc live vaccine have developed typhus fever following the vaccination.

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SULFADIAZINE CRYSTALLURIA AND THE INFLUENCE OF p_H ON THE THERAPEUTIC EFFICIENCY OF SULFONAMIDES

To the Editor—In the editorial comment "Prevention of Sulfadiazine Crystalluria" (THE JOURNAL, May 29) the question is raised whether alkalization modifies the therapeutic efficiency of sulfadiazine.

The relationship between p_H and sulfonamide activity has been described in a paper by Fox and Rose entitled "Ionization of Sulfonamides" (Proc Soc Exper Biol & Med 50 142 [May] 1943). Experimental data were presented showing that antibacterial activity resided in the sulfonamide anion rather than the unionized molecule and that raising the p_H increased the activity of the sulfonamides in proportion to the increased ionization that resulted. In addition, the greater potency of sulfadiazine and sulfathiazole as compared to sulfapyridine and sulfanilamide was shown to be a consequence of the fact that at physiologic p_H sulfadiazine and sulfathiazole are far more extensively ionized than sulfapyridine and sulfanilamide.

Similar results have been reported by Schmelkes and his co workers (Proc Soc Exper Biol & Med 50 145 [May] 1942) and by Cowles (Yale J Biol & Med 14 599 [July] 1942). The importance of these studies to the mechanism of sulfonamide action has been commented on in an editorial

"Basicity and Drug Action" (Lancet 2 648 [Nov 28] 1942). Subsequently Bell and Roblin extended these observations to a variety of sulfonamide derivatives (J Am Chem Soc 64 2905 [Dec] 1942).

These studies have now been applied to the problem of the local use of soluble sulfonamides in war wounds and burns (work done under a contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and Columbia University). Bedside p_H measurements (with the glass electrode) of infected wounds have shown values ranging from p_H 5.5 to 6.5. In this acidic range from 10 to 100 times more sulfanilamide is needed for bacteriostasis but only 1 to 4 times more sulfathiazole or sulfadiazine is required. Since the solubility of these drugs is likewise reduced in acidic exudates, their sodium salts have been used locally with salutary results. I.e., prompt control of infection with no tissue irritation (Fox, C L Sodium Salts of the Sulfonamide Compounds Arch Surg 45 754 [Nov] 1942, THE JOURNAL, Dec 26, 1942, p 1401, Bull New York Acad Med to be published).

This principle of increasing ionization (soluble salt formation) with increasing p_H has been applied clinically to the prevention of renal precipitation and full details have previously been reported from this laboratory. Hydrogen Ion Concentration and the Solubility of Sulfonamides in Urine (with Dr Jensen, J Urol 49 334 [Feb] 1943), The Prevention of Renal Obstruction During Sulfadiazine Therapy (with Dr Jensen and Lieutenant Mudge, THE JOURNAL, April 3, 1943 p 1147).

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College of Physicians and Surgeons

WELFARE OF LABORATORY ANIMALS

To the Editor—As a result of recent correspondence with a number of workers engaged in experiments on animals I have become aware that there is a strong and widespread desire for experience to be pooled so as to enable the maximum of consideration to be shown for the feelings of laboratory animals. With the view of helping to give effect to this desire we have supplied to 130 laboratories on request, a copy of the recent book Veterinary Anaesthesia by Prof J G Wright, FRCVS.

At the suggestion of a number of research workers we are proposing further to compile information relating to (1) anaesthesia of rats, rabbits, guinea pigs and other animals not covered by Professor Wright's book, (2) methods of killing laboratory animals, (3) living conditions housing, diet and so on and to invite a small number of experienced men to act as a panel for approving or amending the resulting compilation. We should be most grateful to any readers of THE JOURNAL who would get into touch with us with a view to communicating to us any views or suggestions they may be able to offer.

The breeding of laboratory animals is regularly discussed among research workers and many of them think it would be desirable to put it as far as possible into the hands of trained personnel. We consider that this plan is likely to benefit the animals since it will offer an opportunity of bringing their living conditions under the supervision of responsible persons whose interest is not purely mercenary.

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Secretary, UFAW (The Universities
Federation for Animal Welfare)

HYPERTENSIVE TOXEMIA OF PREGNANCY

To the Editor —Dr Lewis Dexter and his associates in a paper published in *THE JOURNAL*, May 15, enumerate a considerable number of factors which "toxemia is not primarily due to," among them overactivity of the posterior pituitary gland. The past three years have witnessed great clarification in this problem.

Since 1918 I have advocated the tenet that, in the causation of the syndrome termed late toxemia of pregnancy, consideration of hyperdynamic posterior pituitary principles may bring us within measurable distance of the realities of the situation. In 1933 it was argued that a number of seemingly unrelated investigations have converged so that it may be reasonably concluded that toxemia represents disordered autonomic physiology as the result of undue posterior pituitary (pitressin) stimulation (*Am J Obst & Gynec* 26:311 [Sept] 1933). Efforts to identify in the blood an excess of the pressor-antidiuretic pituitary principle stirred much comment with denials of positive findings in late toxemia in preponderance. Reference to such negative findings and the failure in their investigations to reproduce in rabbits and rats hypertension and specific kidney lesions by posterior pituitary injection are the premises on which Dr Dexter and his associates negate the etiologic importance of the postpituitary gland. Opposed to their position is an array of facts in favor of my view. The striking similarity between the cardinal features of blood chemistry in eclampsia and in experimental hyperpituitarism in dogs, the consistently present melanophore expanding principle in the blood in toxemia, as well as the corroborated clinical evidence of an increased susceptibility of toxemic individuals to pitressin, had first call. In extensive studies Knepper found changes in various organs as the result of repeated use of posterior pituitary injection yet was able faithfully to reproduce the well known lesions in vital organs in eclampsia by first parenterally administering proteins and subsequently posterior pituitary injection to laboratory animals. The biologic significance of the well known detachment into the maternal circulation of chorionic tissue, fetal proteins, thus apparently paving the way for the susceptibility of vital organs to the effect of pitressin was illustrated. Finally, atony and dilatation of the ureter, known to be constant concomitants of gestation and amenable to the influence of the posterior pituitary principle (*Bull Johns Hopkins Hosp* 42:118 [March] 1928, *J Urol* 20:413 [Oct] 1928), are unusual in preeclamptic toxemia, suggesting the effect of the pituitary factor. Churnikal Mukherjee recently elaborated on these aspects of the problem and demonstrated in the blood the principles responsible for the vasopressor, antidiuretic and melanophoric effect in toxemia (*J Obst & Gynaec Brit Emp* 48:586 [Oct] 1941), while Griffith produced in rats permanent hypertension by small repeated doses of pitressin injected intraperitoneally. The most recent experimental studies of Netzel shed further light on the transcendent importance of pitressin in the origin of liver and kidney lesions in eclampsia (*Vascular Spasm*, University of Illinois Press, 1943).

Current interest attaches to the recent discovery of the existence during normal gestation of a delicately balanced equilibrium between a set of factors effecting arteriolar hypertonicity and placental acetylcholine, and the dislocation of this equilibrium in toxemia resulting in the unopposed action on the vascular tree of naturally secreted vasopressin (*West J Surg* 49:615 [Nov] 1941). The investigations of C Heymans revealing the automatic regulation of blood pressure by the action of pressoreceptors and their ready response to pressor changes and to acetylcholine serve to supply an additional key consistent with these views, which aim to convey a unifying and constructive concept of the pattern of the hypertensive toxemia of pregnancy.

J I HOFBAUER, M.D., Cincinnati

RED CELL TRANSFUSIONS

To the Editor —I read with interest the report of Dr Howard L. Alt on "Red Cell Transfusions in the Treatment of Anemia" (*THE JOURNAL*, June 12, p. 417). I fully agree with the author regarding the usefulness of red cell transfusions but would like to point out the desirability of utilizing red cells in the form of concentrated suspensions rather than suspensions diluted with isotonic solution of sodium chloride. After a considerable trial we abandoned the addition of saline solution following aspiration of plasma both on account of technical disadvantages as well as because the addition of isotonic solution of sodium chloride to the red cells which have been stored in citrate-saline solution results in increased erythrocytic fragility and often detectable hemolysis. But we add, preferably at the time of collection of blood, 25 cc of a 50 per cent dextrose solution for a better preservation of red cells. The method in use at our hospital has been described elsewhere (Blum, Leon L. The Present Day Status of Combined Blood-Plasma Bank, with Reference to the Use of Concentrated Red Cell Suspensions, *J Indiana M A* 36:187 [April] 1943). We have used concentrated red cell suspensions (erythrocyte concentrates) in various anemic states after three weeks of preservation with dextrose with fully satisfactory clinical and hematologic results. There were no untoward reactions whatever. It is my impression that the percentage of reactions following red cell transfusions is even lower than that following whole blood, but a larger series of observations is needed to justify any definite conclusions.

Quantitative fragility tests performed on preserved red cell suspensions revealed a satisfactory state of preservation after three weeks.

In spite of the fact that these concentrated red cell suspensions are of rather heavy consistency, a satisfactory flow can be insured in most cases with an increase in height in the level of the bottle. We did not find it necessary to incorporate a Riddell's pump for administration of suspensions, as suggested by Watson (*Lancet* 1:107 [Jan 23] 1943).

I feel that erythrocyte concentrates represent the method of choice for red cell transfusions and that the use of red cell transfusions in anemic states should be greatly encouraged so that they will come into common use in civilian and military practice.

LEON L. BLUM, M.D., Terre Haute, Ind.
Director, Blood-Plasma Bank, Union Hospital

FAMILIAL TUBEROUS SCLEROSIS

To the Editor —Will you enter our opinion as to diagnosis on the father and son described under the heading of "Familial Tuberous Sclerosis (Epiloia) Without Adenoma Sebaceum" in *THE JOURNAL*, June 12?

From the data presented in this article it would seem to us that the entire clinical picture in case 1 could best be explained by the diagnosis of toxoplasmic encephalitis. This diagnosis is possibly applicable also in case 2, but in view of the absence of ocular abnormalities or widespread calcified lesions in the cerebrum there is insufficient evidence for this or any other diagnosis. There are several reasons why the diagnosis is of some moment in such cases, not the least of which is the fact that toxoplasmosis may lend itself to therapy rather better than tuberous sclerosis.

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Medical Examinations and Licensure

Bureau of Legal Medicine and Legislation

COMING EXAMINATIONS AND MEETINGS

MEDICOLEGAL ABSTRACTS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in *THE JOURNAL* July 17 page 829

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Malpractice Chronic Osteomyelitis Following Extraction of Tooth—Marquess, a dentist practicing in Fresno, Calif., in the employ of Kennedy, another dentist, was consulted by the plaintiff, July 22, 1938, relative to a toothache. He discovered a deep carious condition in the second lower left molar, which he cleaned and into which he inserted a temporary filling instructing the patient to return in four days or sooner if suffering from pain. After returning home the patient became feverish and suffered such pain that she was confined to bed. Three days later she was taken to the dentist's office. The tooth was extracted after two injections of cocaine had been given—one "to effect a mandible block" and the other in the tissues adjoining the tooth. According to the patient, the dentist "did not apply iodine or any other solution to her gums before injecting the cocaine," nor did he take or recommend the taking of a roentgenogram of her teeth. According to the dentist, there was no infection of the tooth or in the socket from which it was extracted. After the extraction, the gums were sutured and the patient was instructed to wash her mouth with warm salt water and to apply ice packs. She was then taken home and put to bed. The next day she returned to the dentist's office. Her jaw then was swollen and she was suffering much pain. What the dentist did on this visit is not made clear in the reported opinion. She returned home to bed, but her condition became worse and her family physician was called and found her temperature above normal and her jaw infected. Under his treatment her condition was so improved that she was taken to see the defendant dentist again on July 30 when he advised her to consult a specialist which was done. Subsequently she was hospitalized for fourteen days during the first four of which she was in a semicomatose condition. Abscesses which had formed inside the lower jaw beneath the socket from which the tooth had been extracted and under the chin were lanced from the outside and drained. The gum was also lanced and drained. In January 1939 a diagnosis of chronic osteomyelitis of the left mandible was made at a hospital in San Francisco. On March 27 an incision was made under the jaw at the site of the previous lancing and bone and granular substances were removed. An incision was also made in the surrounding gum tissues and bone was removed and the sockets curetted. Following these procedures she was confined in the hospital until April 9. In December 1939 another abscess which was forming was drained. As late as July 1940 apparently the patient was receiving treatment for her condition. She instituted suit for malpractice against Marquess, the dentist who originally had treated her, and against Kennedy, his employer. The trial court granted a motion for a nonsuit and entered a judgment in favor of the defendants and the patient appealed to the district court of appeal fourth district, California.

At the trial a dentist practicing in Fresno was called as a witness by the plaintiff and testified that according to the standards of the practice of dentistry prevailing in Fresno, the town in which the dental services in question were performed the defendant Marquess should have had a roentgenogram taken before extracting the tooth and should have applied iodine or some other disinfectant to the gums before inserting a hypodermic needle in them and extracting the tooth. Since said the appellate court where a motion for a nonsuit is granted, we must accept as true any substantial evidence tending to

support a judgment for the plaintiff, we must take the following facts as established in this case. That the standards of practice of dentistry in Fresno required that defendant Marquess have an x-ray film taken or at least recommend that an x-ray be taken of the aching tooth and jaw, and also that he sterilize the gums before inserting the hypodermic needle and pulling the tooth, that he did neither of these things and therefore did not employ the training, care and skill required of dentists of good standing practicing in the community. If this failure on the part of Marquess was the proximate cause of the infection from which the patient suffered, the nonsuit was erroneously granted. We may also accept, continued the court, as established facts that immediately after the extraction there was no infection on the roots of the tooth or in the sockets and that a serious infection set in which caused the plaintiff much suffering and expense over a period of two years.

As corroborative of the correctness of its view, the court discussed at some length *Barham v Widing*, 210 Cal 206, 291 P 173. In that case a dentist was accused of malpractice because he failed to sterilize the hypodermic needle used in injecting an anesthetic, and to sterilize the gums before extracting a tooth.

In that case the Supreme Court of California said

Under the circumstances of this case there is a remote possibility that the infection developed from some cause other than the defendant's failure to sterilize the needle or the gum into which it was inserted, but the evidence is sufficient upon which to warrant the jury in finding that it was caused by his negligence in failing to follow these reasonable precautions in spite of his testimony to the contrary. The jurors were entitled to accept the solution to which these circumstances led them in preference, even, to the positive statements of the defendant and his nurse to the contrary. After the verdict of a jury has been fairly rendered all the circumstances of the case, together with every reasonable inference which may be drawn therefrom, will be marshaled in support of the judgment. Because of the very subtleness of the origin and development of disease, less certainty is required in proof thereof. As the court says in the case of *Dimock v Miller*, 202 Cal 668, 671, 262 P 311, 312

"If it is necessary to demonstrate conclusively and beyond the possibility of a doubt that the negligence resulted in the injury, it would never be possible to recover in a case of negligence in the practice of a profession which is not an exact science."

It is not necessary in the trial of civil cases that the circumstances shall establish the negligence of the defendant as the proximate cause of injury with such absolute certainty as to exclude every other conclusion. It is sufficient if there is substantial evidence upon which to reasonably support the judgment. *Ley v Bishop*, 88 Cal App 313, 316, 263 P 369.

It was not necessary for any dentist or physician to state that the conduct of the defendant was negligent or in conflict with the usual established practice of the profession in that vicinity to administer a local anesthetic for the purpose of extracting a tooth without sterilizing the needle or the flesh into which it is inserted. The court will take judicial knowledge of the necessity to use ordinary care to procure sterilization under such circumstances.

The defendant dentist sought to distinguish the facts in the present case from the Barham case, because there the infection started from the exact spot of the injection, while here it was in the general locality but not necessarily in the exact spot of the injections. This distinction, said the court, is too tenuous to be sound. Here the infection was in the region where the needle pierced the unsterilized gums, and the reasonable inference might follow, if drawn by the jury, that a germ on the unsterile gums was carried into the tissue on the needle and caused the infection. The result of an unsterile condition is a matter of common knowledge under the cases already cited.

The defendant dentist next argued that, assuming there was a failure to conform to the standards of good practice of dentistry in Fresno, still there is nothing in the record to establish that this lack of care was the proximate cause of the infection. The same argument, said the court, was made and rejected in the

Barham case just cited. A like argument was advanced by the defendant dentist in *Dimock v Miller*, 202 Cal 668, 262 P 311, in which a dentist was accused of malpractice in failing to sterilize his needle before giving a hypodermic injection and in using impure water in the solution injected. It was held in that case that a plaintiff was not required to exclude all factors, other than those mentioned, as causes of the infection. Where the results of negligence on the part of a physician or dentist, continued the court, are peculiarly within the knowledge of expert witnesses, the testimony of those expert witnesses is a necessary element of a plaintiff's case. The danger of infection from an unsterile instrument, or a dirty field of operation, is a matter of such common knowledge that a jury is authorized to draw the reasonable inference that an infection was caused by negligence when an unsterile instrument is used, or the operative field is not properly sterilized.

As further corroborative of the correctness of its holding, the district court discussed *Roberts v Parker*, 121 Cal App 264, 8 P (2d) 908, in which a dentist was sued for malpractice when osteomyelitis of the jaw bone set in after an extraction had been performed and in which no roentgenogram had been taken prior to the extraction to determine the condition of the field of operation. In that case expert witnesses testified that under the standards of good practice prevailing in the community a roentgenogram should have been taken before the tooth was extracted. There was evidence introduced on behalf of the dentist tending to prove that the disease had its source other than in the extraction of a tooth. It was argued that here was nothing to show that the failure to use due care on the part of the dentist was the proximate cause of the osteomyelitis.

In disposing of this argument the court in the Roberts case said

Therefore, if in spite of the testimony tending to show a different origin of the disease there be testimony to sustain the opposite conclusion which has been reached by the jury, its verdict must be sustained. In other words after the verdict of the jury has been fairly rendered, all the circumstances of the case, together with any reasonable inference which may be drawn therefrom will be marshaled in support of the judgment. Measured by the foregoing rules, the circumstances of the present case are legally sufficient to sustain the jury's verdict.

A like rule, continued the court, must be invoked when the trial court grants a motion for a nonsuit.

The district court of appeal concluded that there was some substantial evidence in the record and that reasonable inferences could be drawn from that evidence, pointing to the lack of due care on the part of the defendant Marquess as being the proximate cause of the disease suffered by the plaintiff. It follows, in the opinion of the court, that questions of fact were presented for the decision by the jury and that the motion for a nonsuit was improperly granted by the trial court. Accordingly, the judgment, in effect, dismissing the suit was reversed—*Mastro v Kennedy*, 134 P (2d) 865 (Calif, 1943).

Society Proceedings

COMING MEETINGS

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va. Sept 9-11 Dr. James R. Bloss, 413 Eleventh St., Huntington W. Va., Secretary
American Congress of Physical Therapy, Chicago, Sept 8-11 Dr. Richard Kovacs, 2 East 88th St., New York, Secretary
Oregon State Medical Society, Portland, Sept 4-5 Dr. Thomas D. Robertson, St. Vincent's Hospital, Portland, Secretary
Utah State Medical Association, Salt Lake City, Aug. 27-29 Dr. D. C. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

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- Protruded Intervertebral Disks J O Morgan—p 289
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American Journal of Diseases of Children, Chicago

65 519-680 (April) 1943 Partial Index

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Sympylalngism: A Familial Malformation P Freud and L B Slobody—p 550
Output of Bile Pigment by Newborn Infants and by Older Infants and Children R J Tat, T J Greenwalt and W Dameshek—p 558
Erythroblastosis Fetalis (Acute Hemolytic Anemia of the Newborn) W Dameshek, T J Greenwalt and R J Tat—p 571
Tumors of the Brain in Children and in Adolescents: A Clinical and Anatomic Survey of 92 Verified Cases J H Globus, J M Zucker and J M Rubinstein—p 604

American Journal of Ophthalmology, Cincinnati

26 343-442 (April) 1943

- *Virus Isolated from Pemphigus-like Keratoconjunctivitis E Gallardo and L H Hardy—p 343
Clinical Vascular Physiology of Eye W F Duggan—p 354
Psychoneurotic Factor in Ophthalmic Practice C A Bahn—p 369
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Convergence Function in Relation to Basal Metabolism S V Abraham—p 400
Hereditary Cataracta Cerulea: Six Related Cases O Wolfe and R M Wolfe—p 404

Virus Isolated from Pemphigus-like Keratoconjunctivitis—Gallardo and Hardy report a case of severe chronic cicatrizing keratoconjunctivitis with pannus, similar in appearance and course to ocular pemphigus. A presumptive diagnosis of ocular pemphigus was made. A virus designated as S virus, close to if not identical with vaccinia virus, was isolated from conjunctival scrapings during three different periods of exacerbation of the disease. Typical elementary bodies and cytoplasmic inclusions like those of vaccinia were found. The virus was isolated by rabbit cornea and by mouse brain inoculations as well as by inoculation of the chorioallantois of the developing chick embryo. The close relationship to vaccinia virus was demonstrated by neutralization tests in which vaccinia immune serum neutralized the S virus, and anti-S serum neutralized vaccinia virus. The relationship of the virus to the keratoconjunctivitis must remain an open question until observations in other similar cases become available.

American Journal of Public Health, New York

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American Review of Tuberculosis, New York

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Pulmonary Calcification and Tuberculin Sensitivity Among Children in Williamson County, Tennessee R S Gass, E F Harrison, Ruth R Puffer, H C Stewart and W C Williams—p 379
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Gold Therapy in Tuberculosis A Rest—p 406
*Gastric Lavage and Sputum Cultures J L Robinson and W T Dunn—p 413
Cultures for Tubercle Bacilli from Sputum and Gastric Contents W Steenkamp Jr, R L Yaeger and F H Heise—p 421
*Chorioallantoic Membrane of Chick Embryo as Medium for Testing Virulence of Tubercle Bacilli E W Emmart and M I Smith—p 426
Bronchiectasis and Dextrocardia: Observations on Etiology of Bronchiectasis A M Olsen—p 435

Gastric Lavage and Sputum Cultures—Robinson and Dunn state that a thousand consecutive bacteriologic examinations of gastric lavage specimens confirm the reported efficiency of this procedure. They recommend the use of a small caliber, soft rubber tube to collect the material and of small amounts of water for lavage. Inoculation of culture mediums and/or guinea pigs with as much as possible of the material obtained is necessary for best results. Microscopic examination of the stained sediment is not adequate. Examination by culture and/or animals of simultaneously obtained sputum and gastric lavage material from persons whose concentrated sputum has been previously found microscopically negative will yield more positive results than will examination of either material alone. A gastric lavage examination should be made of all persons who have a negative sputum or no expectoration and are suspected of having pulmonary tuberculosis. It is also indicated for patients under treatment for pulmonary tuberculosis when the sputum becomes scanty or inconstant in amount or when they cease to expectorate.

Chorioallantoic Membrane of Chick Embryo for Testing Tubercle Bacilli—In order to check the relative virulence of the two substrains H37-R₁ and H37-R₂ suspensions were implanted by Emmart and Smith on the chorioallantoic membrane of the nine day chick embryo and also inoculated into guinea pigs. Within six days after implantation 96 per cent tubercle formation was present in the membranes implanted with the strain H37-R₁ while only 18 per cent tubercle formation was present in those implanted with the avirulent strain H37-R₂. Corresponding differences in invasiveness of the two substrains were found in guinea pigs. Only 1 guinea pig inoculated with H37-R₂ died within one hundred and ninety days.

while 100 per cent of those inoculated with H37-Rv died within the same period. Thus the chorioallantoic membrane of the chick embryo can be successfully used to determine differences in virulence between closely related substrains of tubercle bacilli.

Annals of Otol, Rhin and Laryngology, St Louis 52 5-278 (March) 1943 Partial Index

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Archives of Dermatology and Syphilology, Chicago 47 467-612 (April) 1943

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Histocytemia of Pemphigus Lesions With Special Reference to Bullous Formation CI R C MacCordle, J P Baumberger and W C Herold—p 517
Tinea Versicolor Involving Scalp O G Costa and M A Junqueira—p 546
*Rapid Treatment of Early Syphilis Report of 280 Treatment Courses with Mapharsen Alone and 549 Treatment Courses with Mapharsen Combined with Fever E W Thomas and Gertrude Wexler—p 553
Evaluation of Fungicidal Agent for Fungous Disease of Feet Controlled Hospital Study L Goldman, A B Henningsen, N P Ringelman, H H Fox and J Hesselbrock—p 569
Red Moss Dermatitis Contact with Sponges Affecting Oystermen E F Corson and A G Pratt—p 574
Method to Enhance Value of Biopsies in Dermatologic Diagnosis A E Rhoden—p 580

Epidemic of Erythema Infectiosum—Chargin and his associates report an outbreak of erythema infectiosum in a New York orphanage which housed 137 children, 80 of which were attacked. There were observed eighty primary attacks and ninety relapses, a total of one hundred and seventy attacks. The relapses numbered from one to six. The most severe attacks and the greatest number of relapses were among the girls. Next in order of frequency and severity were the group of older boys. The mildest attacks occurred among the younger boys, no relapses were observed in this group. In 64.7 per cent the eruption was limited to the face, in 23 per cent to the body and in 33 per cent to the face and the body. Infants and children between the ages of 1 and 4 years were relatively immune. Seventy of the eighty primary attacks occurred within the first thirteen days following the outbreak. The relapses appeared in cycles. Laboratory and epidemiologic studies failed to throw light on the causation. The disease is apparently not transmitted by carriers. The disease is not reportable but should be so made as to make possible etiologic and epidemiologic studies. The incubation period appears to have been from one to twelve days.

Rapid Treatment of Early Syphilis—Thomas and Wexler report the results of treating 782 patients by the rapid method. Mapharsen 0.06 Gm was given morning and evening for ten days. Later the treatment period was shortened to six days in order to avoid an occasional "ninth day erythema." The patients were now given 0.1 Gm morning and evening for six days. Thus the dose per day was increased from 0.12 Gm

to 0.2 Gm, but the total amount for the course remained unchanged at 1.2 Gm. Under this plan no serious toxic reactions were noted until the one hundred and eleventh patient, a woman, died of hemorrhagic encephalitis. Efforts were made to find the dose that would be neither great enough to endanger the abnormally sensitive nor small enough to penalize the average patient by unduly protracting his disease. Relapses were more frequent among patients who received less than 0.9 Gm of mapharsen. Attempt was made to enhance the therapy by combining fever treatment with it. This apparently did nothing to prevent rare cerebral reactions but permitted the authors to obtain better therapeutic results from smaller doses. The results of treating early syphilis either with a total dosage of 1.0 Gm or more of mapharsen or with a combination of fever and less than 0.9 Gm of mapharsen compare favorably with the results of prolonged continuous routine treatment.

Arkansas Medical Society Journal, Fort Smith

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- Alcohol Public Health Problem A C Kolb—p 229

California and Western Medicine, San Francisco

58 155-260 (April) 1943

- Hospitals and Medical Practice How Physicians and Hospitals May Render Best Service During Duration W R Molony Sr—p 220
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Central Nervous System Syphilis Its Treatment at Stockton State Hospital T S Marnell—p 226
Practical Ethics L J Regan—p 227

Canadian Medical Association Journal, Montreal

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- Treatment of Phosphorus Burns with Note on Acute Phosphorus Poisoning I M Rabinowitch—p 291
Essential Features Concerning Proper Nutrition of Infant and Child A Brown and Elizabeth Chant Robertson—p 297
Thermal Burns S D Gordon and R A Gordon—p 302
Bromide Intoxication H Detweiler—p 309
Technic in Labor G M White—p 312
Cardiac Pump G F Strong—p 318
Teaching Compatibility Tests for Blood Donors N M Guion—p 322
*Pneumonia Complicating Mild Respiratory Infections R P Becker—p 324
*Primary Atypical Pneumonia of Unknown Etiology J F Meakins—p 333
Seasonal Variations in Water Content of Respiratory Tract of Man and Other Mammals Mary E T Stevens, Alice K Ronan and L M Boyd—p 337
Indications for Common Duct Exploration D Macdonald—p 341

Pneumonia Complicating Mild Respiratory Infections—Becker emphasizes that lobular atelectasis occurring in the course of acute respiratory infection is much more common than is generally supposed. Radiographically it simulates bronchopneumonia. Some degree of infection is frequently present distal to bronchial obstruction. The clinical course, usually benign and brief, is apparently determined by such factors as size, location and number of bronchi involved and the degree of blockage together with the dosage and virulence of infection distal to the bronchial occlusion. Localized crepitations, tubular breathing and dullness are often absent. Even slight differences in breath sounds and resonance in a patient suffering from a respiratory infection warrant a suspicion of a pulmonary complication. In most instances x-ray study alone will afford adequate information. Considerable variation exists in the onset and clinical course of such respiratory episodes, ranging in extent from a picture simulating severe "flu" or grip or a heavy chest "cold" to an ambulant status presenting only extremely mild symptoms. No studies have established a clear cut virus causation for this class of bronchopneumonia. Until satisfactory laboratory studies to the contrary are completed, such pulmonary infections are best explained on a basis of partial bronchial obstruction with distal infection.

Primary Atypical Pneumonia of Unknown Cause—Meakins says that between June and November 1942 approximately 150 cases with the eventual diagnosis of lobar pneumonia, bronchopneumonia and pneumonitis were admitted to his hospital. He thinks that the great majority of these "pneumonias" were what could be termed "primary atypical pneumonia, etiology unknown." He presents an analysis of the data on 100 cases which suggest that this disease entity might easily be

mistaken for severe coryza, grip" or bronchitis. X-ray examination of the lungs always showed infiltrative changes and 90 per cent of the cases gave physical signs. Cough was the main complaint. Usually a normal leukocyte count was found. The course of the disease was mild. No dangerously ill patients have been seen and there have been no deaths.

Cancer Research, Baltimore

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Florida Medical Association Journal, Jacksonville

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- Atelectasis Postoperative Complication in Renal and Ureteral Surgery R B McIver and D R Seabaugh—p 407
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Amebic Dysentery E B Campbell—p 422
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Indiana State Medical Assn Journal, Indianapolis

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- Factors in Management of Cancer of Uterine Cervix J A Campbell—p 181
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Rights of Industrial Practitioner in Industrial Medical Program K R Ruddell—p 200
Legal Responsibilities of Industrial Physician A Stump—p 201
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Journal of Clin. Endocrinology, Springfield, Ill.

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Purification of Equine Gonadotropin and Its Effect on Appearance of Antigonadotropic Substances in Human Sera J H Leatham and A R Abarbanel—p 206
Case of Cushing's Syndrome with Adrenal Cortical Hyperplasia without Pituitary Basophilic Adenoma or Hyperplasia K E Paschalis P A Herbut A E Rakoff and A Cantarow—p 212
Contribution to Treatment of Essential Pruritus and Kraurosis Vulvae E Klaffen—p 218
Effect of Estradiol and Diethylstilbestrol on Atrophic Human Buccal Mucosa with Preliminary Report on Use of Estrogens in Management of Senile Gingivitis M J Richman and A R Abarbanel—p 224
Nutritional Deficiency in Etiology of Menorrhagia Metrorrhagia Cystic Mastitis and Premenstrual Tension Treatment with Vitamin B Complex M S Biskind—p 227
Effect of Androgens on Libido in Women U J Salmon and S H Geist—p 235
Personality Changes in Endocrine Disorders with Note on Symptomatic Hypoglycemia B N Tager and E K Shelton—p 239
Furunculosis—Etiology and Treatment B Barnes—p 243

Furunculosis—Barnes reports observation on furunculosis in 16 college students between the ages of 17 and 25. No correlation was apparent between the hemoglobin values and the development of boils; there was no evidence of malnutrition and no local skin conditions contributing to the development of furunculosis. The basal metabolic rate or basal temperature was below normal in each case. Thyroid 1 grain (0.06 Gm.) a day was given and further boils did not develop during the period of this therapy. In myxedema the blood flow per minute and the skin temperature are reduced but with thyroid medication are restored to normal. Since the healing process is accompanied by an increase in circulation it is not surprising that thyroid therapy would aid in skin infections of persons with poor peripheral circulation.

Journal of Experimental Medicine, New York

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Hemoglobin and Plasma Protein Simultaneous Production During Continued Bleeding as Influenced by Amino Acids Plasma Hemoglobin and Digests of Serum Hemoglobin and Casein Frieda S Robschent Robbins L L Miller and G H Whipple—p 375

Journal of Nervous and Mental Disease, New York

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Journal of Pediatrics, St. Louis

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*Prevention of Rickets with Single Massive Doses of Vitamin D I J Wolf—p 396
Susceptibility of *Shigella* Paratyphenteriae to Sodium Sulfathiazole and Sulfaguanidine in Vitro With Some Information Regarding *Eberthella* Typhosa *Salmonella* Paratyphi a *Escherichia* Coli *Salmonella* Morgan and *Proteus* M L Cooper and Helen M Keller—p 418
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*Fatal Agranulocytosis Following Sulfathiazole Therapy Report of Infant with Toxic Dermatitis K. Kato Mary Stults Sherman and P R Cannon—p 432
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Whooping Cough Vaccines J H Lapin—p 452
Treatment of Paroxysmal Auricular Tachycardia in Infancy and Childhood Report of Case W D Alsever—p 459
Familial Epidemiology of Rheumatic Fever Genetic and Epidemiologic Studies I Genetic Studies May G Wilson M D Schweitzer and Ro c Lubisch—p 468

Vitamin D Therapy in Prevention of Rickets—Wolf gave 600,000 U S P units of an electrically activated preparation of ergosterol divided in two oral doses in precooked cereal and milk to 75 infants between the third to fifth month of life. Massive doses of vitamin D were well tolerated. No toxic manifestations were observed. No diminution in the incidence of respiratory infections was noted. There is no danger in administering a single massive dose of vitamin D to young or premature infants. The danger lies in repeating these large doses over a period of time so that several million units of vitamin D are given. Large doses may be toxic if repeated daily. Two plans are outlined. One is to protect the infant until 2 or 3 months of age by means of daily prophylactic doses of 1,000 units of vitamin D and then to administer a single dose of 600,000 units. The latter dose may be repeated from four to six months later. The other plan is to give an infant at 1 and 2 months of age respectively 50,000 units of vitamin D in formula and then at about 3 months of age to administer a single dose of 600,000 units in precooked cereal. This single dose may be repeated from four to six months later. There is experimental evidence that vitamin D when given in single massive doses is stored in the blood plasma and the tissues for weeks or months. This evidence is borne out by clinical observations. The oral single massive dose prophylaxis of rickets is to be preferred to the parenteral method. Only in severe

intestinal disturbances or for young premature infants whose absorption may be poor is it necessary to use the parenteral method. The single massive dose of vitamin D is effective, safe and time saving.

Fatal Agranulocytosis Following Sulfathiazole Therapy—Kato and his associates report a case of acute and fatal agranulocytosis with toxic dermal lesions produced by therapeutic doses of sulfathiazole in an infant 8 weeks old. Despite the fact that absolute proof of the sulfonamide being the sole cause of agranulocytosis is lacking, the circumstantial evidence in the case strongly suggests that both intoxication by and sensitization to this drug played significant roles in the production of the toxicodermatosis as well as of the agranulocytosis which resulted in the death of the patient.

Medical Annals of District of Columbia, Washington 12 131-170 (April) 1943

- Evaluation of Sympathectomy O. H. Fulcher—p. 131
Use and Therapeutic Value of Intubation and Decompression with Miller Abbott Double Lumen Tube I. A. J. Gair—p. 138
Meningitis Caused by *Bacillus Prodigiousus* Report of Case J. L. Thompson—p. 145
Cranial and Abdominal Migraine Report of Case R. H. Groh and J. R. Veal—p. 147

Military Surgeon, Washington, D. C. 92 353-472 (April) 1943

- *Orthostatic Albuminuria Importance of Its Recognition by Medical Examining Boards H. H. Young, J. S. Humes and C. L. Prince—p. 353
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Therapeutic Considerations for Army Psychiatrists W. C. Porter, J. G. Novak and P. V. Lemkau—p. 372
Management of Acute Malaria J. E. Dushane and L. A. Pissalacqua—p. 379
Relationship of Eye to Antiaircraft Gunnery E. E. Grossmann—p. 383
*Diagnosis and Treatment of Infectious (Gas) Gangrene B. Jablons and L. H. Krebs—p. 394
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Burns Treated by Cod Liver Oil Ointment—Paper Tissue Dressing Peacetime Dressing Brought to War G. B. Callahan—p. 439
Instrument for Introducing Sulfonamide Crystals into Wounds H. J. Walder—p. 442
Flying Ambulance A. W. Williams—p. 443

Orthostatic Albuminuria—Young and his associates show that in each of 4 patients rejected by the medical examining boards because of albumin in the urine the albuminuria was orthostatic in character. The examining boards now accepted these men. The diagnostic value of placing the patient in an exaggerated lordotic position is emphasized. Sixty-seven cases diagnosed as orthostatic albuminuria were studied from the records of the Johns Hopkins Hospital. Three of these were shown to be cases of nephritis. In the remaining 64 no evidence of nephritis developed, and repeated examinations in some showed the urine to be free from albumin at various periods after admission. Orthostatic albuminuria is a harmless condition which generally disappears early in adult life. The following criteria should be met: (1) no past history of renal disease, (2) normal blood chemistry, nonprotein nitrogen, blood urea, total protein and albumin-globulin ratio, (3) normal kidney function (phenolsulfonphthalein, urea clearance, and dilution and concentration tests), (4) no leukocytes, erythrocytes or casts in the urine, except intermittently and in small numbers, (5) no elevation of the blood pressure, (6) negative plain x-ray films and intravenous urograms, (7) absence of albumin in the urine secreted and voided when in the recumbent position. Young men rejected by medical examining boards because of albuminuria could probably be shown fit for service with the use of more comprehensive tests.

Infectious Gas Gangrene—Jablons and Krebs stress that infectious gas gangrene, particularly in war wounds, is a multiple infection. The micro-organisms concerned are members of the anaerobic group, either in pure culture or in association with aerobes. The authors list 21 pathogenic anaerobic organisms which have been isolated from infected wounds, 11 aerobes which have been found in association with anaerobes in clinical cases of infectious gangrene and 9 toxigenic anaerobic organisms which can give rise to a progressive toxic necrosis of tissue with or without general fatal intoxication. The best treatment, in addition to surgery, is a combination of antitoxin and chemotherapy with the sulfonamide group of drugs. Prophylactic serum for infectious (gas) gangrene to be of value must contain antibodies against the three most commonly occurring organisms. The curative treatment of infectious (gas) gangrene depends on the identification of the organisms present, since the serum must contain antibodies against these causative agents. The results of treatment with monovalent and polyvalent serum in the first world war and in civil practice since has shown that the mortality rate of 44.60 per cent in cases of infectious (gas) gangrene can be reduced to 9.12 per cent by the use of anti-Welch-septicum-oedematis serum. Surgical excision is of value as a prophylactic measure. It is not curative in advanced cases. Infiltration of the tissues by the anaerobes in advanced cases makes multiple incisions of little value. Chemotherapy with the sulfonamide drugs or zinc peroxide has some value as a prophylactic measure in delaying development of the infection. Its efficacy in combating advanced anaerobic infections has not been proved.

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- Atypical Pneumonia W. W. Spink—p. 337
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Fitness, Food Allergy and Predisposition to Common Cold W. B. Brown and A. P. Locke—p. 99

New Jersey Medical Society Journal, Trenton 40 121-160 (April) 1943

- Care of the Burned Patient R. A. Schaaf—p. 128
Food Infection by *Salmonella Paratyphi* C. V. Craster and A. H. Haskin—p. 134
Dermatitis Venenata Caused by Phenol Camphor Mixtures E. M. Satulsky and W. Halpern—p. 137
Report of 9 Cases of Subacute Bacterial Endocarditis H. Halpern—p. 140
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Surgery, St. Louis

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- *Acute Craniocerebral Trauma: Surgical and Pathologic Considerations Based on 151 Consecutive Autopsies. F. S. Gurdjian, J. E. Webster and H. Aronoff—p. 333
- Epidermoid Tumor of Spinal Cord: Case Review of Literature of Spinal Epidermoids and Dermoids. K. L. Craig—p. 334
- Paraphysal Cysts of Third Ventricle: Diagnosis and Surgical Management. L. M. Weinberger and B. Boshes—p. 368
- *Use of Detergents in Cleansing and Local Treatment of Burns. A. Rosenburg—p. 385
- Use of Tannic Acid Jelly in Experimental Burns. D. D. Matson—p. 334
- Effects of Application of Tourniquet on General Response to Gross Trauma to Extremity. G. W. Duncan and A. Blalock—p. 401
- Gridiron Occlusion of Mesenteric Vessels: Experimental Study. H. Lautman—p. 406
- *Injection of Varicose Veins: Importance and Technique of Injecting Elevated Extremity. C. J. Bellis and Otto L. Churney—p. 411
- Cylindroma (Adenocarcinoma Cylindroma Type): Report of 2 Cases with Metastasis. M. B. Dockerty and C. W. Mayo—p. 416
- Problems in Surgical Management of Diabetic Gangrene. C. W. McLaughlin Jr.—p. 423
- Studies in Bacteriophage. VII. Behavior of Staphylococcus Bacteriophage in Human Serum and Blood. Helen Zaytzeff Jern and F. L. McInerney—p. 434
- Intaraction of Gallbladder. F. Christopher, E. L. Benjamin and F. H. Cowdy—p. 444
- Failure to Recover Sulfonamides from Gallbladder Bile in Dogs with Cystic Duct Obstruction. D. Lynn, G. S. Bergh and W. W. Spink—p. 447
- Serum Sickness Simulating Acute Abdominal Disorders. A. J. Derbes and F. E. Bruno—p. 450

Acute Craniocerebral Trauma—The material presented by Gurdjian and his associates comprises the results of observations made on postmortem examinations of 151 patients who died following cranial trauma. They show that in practically every instance or fatal head injury there is a combination of pathologic processes. For example although the chief lesion may be an epidural hemorrhage petechial hemorrhages and cerebral bruises frequently coexist. There is great variation in the extent and severity of brain lesions in the fatal cases. Among some few pathologic lesions were noted to explain the cause of death. However gross lesions were found in every case. A massive intracranial hemorrhage due to trauma is usually on the surface of the brain and may be amenable to surgical treatment. Large intracerebral clots are rare. In epidural hemorrhage exploration about a fracture line seems justifiable. In subdural hemorrhage a fracture line is of little value in localization often being opposite to the side of the subdural hemorrhage.

Paraphysal Cysts of Third Ventricle—Weinberger and Boshes point out that the small benign encapsulated cystic tumors occupying the third ventricle of the brain formerly eluded the neurologist. Cerebral pneumography and modern refinements of neurosurgical technic have made possible the diagnosis and the removal of these tumors. The authors report a successful removal of a paraphysal cyst which brings the total number of reported surgical recoveries to 17. Paraphysal cysts are now recognized as arising from the paraphysal body, an ancient gland situated in the midline of the rostral portion of the roof of the third ventricle. A syndrome diagnostic of these tumors is lacking but the occurrence of violent headache influenced by posture is regarded by some as significant. Operation for a paraphysal cyst should be performed in one stage. Ample working room is obtained within the dilated lateral ventricle. The structures are seen clearly with the aid of illuminated retractors which may be easily introduced within the ventricle. The foramen of Monro may be found by following the choroid plexus forward until it is seen to disappear. The cyst if large, presents itself as a greenish or bluish mass in a dilated toramen. If small it may not be visible and the foramen may appear as a small slit. By tugging gently on the choroid plexus, one can bring the cyst wall into view in the aperture of the toramen. In the reported case it was possible thus to tease the cyst through the toramen. Some operators first evacuate the thick colloidal contents of the cyst by aspiration and then deliver the capsule through the toramen. Others enlarge the toramen by slitting its margin. The slit can be made safely only in the anterior rim of the toramen. The occurrence of cerebral swelling as a consequence of operative

manipulations, may require drainage of the ventricle for a few days with a Penrose drain or an indwelling cannula. If a patient survives the operative procedure and the immediate postoperative course, a complete recovery is to be expected. From this point of view paraphysal cysts are extremely favorable tumors.

Detergents in Cleansing of Burns—According to Rosenberg most workers are of the opinion that vigorous cleansing methods have no place in the preliminary treatment of burns because (a) anesthesia is required, (b) shock is thereby increased and (c) injury to remaining healthy tissue results. In many burns the tanning or coagulation method or local treatment seems to possess advantages but infection arising from beneath the eschar speaks for the inadequacy of preliminary cleansing procedures. Certain of the synthetic detergents employed in one of several combinations act as cleansing agents in the local treatment of burns. Their unique properties which make them superior to other cleansing agents are (a) their ability to penetrate and 'solubilize' substances such as greases, oils and fats as well as particulate matter, (b) their lack of irritating or tissue damaging properties, (c) their antiseptic nature and (d) the fact that after all grease including the normal skin oils, is removed the subsequent take of dye or tanning agent is rendered easier and a proper eschar more readily formed. In clinical tests with a number of detergent mixtures performed both on controls with normal intact skin and on 25 patients with relatively mild second degree burns the properties listed were substantiated. More than three fourths of the burns when first observed in the emergency service of a metropolitan hospital were covered with grease, oil, rats or ointments. Burns covered with grease and oil the result of military engagements represent a problem in which the application of these new cleansing agents may be of specific benefit.

Injection of Varicose Veins—The method described by Bellis and Churney has been employed successfully in a large series of cases in the surgical service of the O'Reilly General Hospital, U. S. Army, Springfield, Mo., and in the surgical outpatient clinic of the University of Minnesota Hospital, Minneapolis. With the patient sitting on the table and the lower extremities on a nearby stool or simply flexed over the side, one of the most distal varicose veins, one usually around the ankle, is selected. A No. 25 gage needle to which is attached a syringe containing 3 to 5 cc. of a sclerosing solution is inserted into the vein at the most convenient distal point. With the syringe held firmly in place but without injecting any of the sclerosant one brings the patient's lower extremities carefully onto the table. The patient lies horizontally and the affected extremity is elevated by an assistant to at least 45 degrees. As much as possible of the blood contained in the veins is permitted to drain into the deep system and when the extremity appears pale the sclerosant is injected into the ankle vein and the needle removed. No bleeding occurs from the needle puncture, since the point of injection is elevated above the level of venous pressure. A small dry dressing is placed over the puncture site and an elastic bandage wrapped from the ankle to the middle of the thigh. The extremity is then placed on several pillows and the patient allowed to remain in that position for twenty minutes following which he is allowed to be ambulatory. Any of the popular sclerosants may be employed. The authors used 5 per cent sodium psyllate. With this simple technic a single injection was usually sufficient while a few have been given two injections.

Yale Journal of Biology and Medicine, New Haven

15 531-656 (March) 1943 Partial Index

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- Serologic Studies of Transplantable Mouse Tumor 13021a. H. Bunting—p. 537
- Ontogenetic Correspondences in Skeletal and Internal Postures of Human Infant. A. Geell and Louise B. Ames—p. 555
- Studies in Syphilis. II. Method of Analysis of Yale Anti-Syphilis Tests Including a Code for Punched Card Study of Syphilis. B. Black-Schaffer and P. D. Rosen—p. 575
- Atypical Friedrich's Ataxia: Report of 4 Cases with Encephalography in 1. J. P. Murphy—p. 631
- Comparative Study of Intradermal and Subcutaneous Methods for Typhoid Vaccination. A. L. Boylston—p. 632

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

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- *Some Anomalous Forms of Amaurotic Idiocy and Their Bearing on Relationship of Various Types R Wyburn-Mason—p 193
Marginal Hemorrhage on Disk Partial Cross Section of Optic Nerve Clinical and Histologic Findings A Jockenstein—p 208
Orthoptic Treatment of Anomalous Projection Darius Mann—p 215
Contact Lens in Cases of Neuroparalytic Keratitis M Klein—p 221
Orbital Emphysema Simulating Cellulitis C L C O Malley—p 222
Removal of Small Magnetic Foreign Body from Eye Eighteen Months After Date of Injury H Neme—p 226
Multiple Intraocular Foreign Bodies Case R A D Crawford—p 227

Anomalous Forms of Amaurotic Idiocy—Wyburn-Mason presents a number of typical and atypical cases of amaurotic idiocy and furnishes evidence that two types of the disease exist. 1. An infantile type, mainly confined to Jews, which is usually, but not always, rapidly fatal and almost always begins before the third year. Occasionally only optic atrophy occurs instead of the usual macular cherry-red spot. It is probably related to Niemann-Pick's disease. 2. A juvenile type, with onset chiefly at about 6 to 8 years of age, but sometimes as early as the second year or as late as the twenties. It occurs chiefly in non-Jews, has a slower course and also occasionally shows optic atrophy instead of the pigmentary macular changes, the final retinal picture resembling retinitis pigmentosa. It is unrelated to the infantile type genetically or histochemically and its relationship to macular heredodegeneration is doubtful. Often only cerebral or retinal changes are present in older cases.

British Journal of Radiology, London

16 99-128 (April) 1943

- Radiologic Diagnosis of Craniocavernous J B Hurler and C W F Burnett—p 99
Estimation of Energy Absorption During Teloradum Treatment F Bush—p 109
Subcutaneous X-Ray Therapy Preliminary Communication T A Watson—p 113
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Case of Insufficiency Fracture Occurring in Neck of Femur R L Mansi—p 119
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British Medical Journal, London

1 497-528 (April 24) 1943

- *Cerebrospinal Fever Analysis of 3,575 Case Reports with Special Reference to Sulfonamide Therapy P B Beeson and Ethel Westernman—p 497
*Chemotherapy and Serotherapy in Cerebrospinal (Meningococcal) Meningitis Analysis of 3,206 Case Reports A A Jubb—p 501
Rare Cause of Severe Gastrointestinal Hemorrhage with Note on Aneurysm of Hepatic Artery G Gordon Taylor—p 504
Membranous Inflammation of Oropharynx, Nose and Conjunctiva Due to Sulfathiazole Administration I M Schnee—p 506
Effect of Acid, Alkali and Metals on Blood Level and Excretion of Sulfapyridine in Children H L C Wilson—p 507

1 529-556 (May 1) 1943

- Investigation of Hemolytic Transfusion Reactions P L Mollison—p 529
Three Cases of Prolonged Fecal Fistula Following Operation for Appendicitis P T Crymble—p 532
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Intolerance to Liver Extract in Pernicious Anemia Elizabeth Delikat—p 539

Sulfonamide Therapy in Cerebrospinal Fever—Beeson and Westernman base this study on 3,575 cases of cerebrospinal fever which were submitted to the Ministry of Health by more than a hundred widely scattered hospitals of England and Wales during the two year period June 1939 to June 1941. All but 19 patients were treated with sulfonamides, and 965 of them

received some form of specific serum therapy. The disease occurred most often in infants and young children, 45.5 per cent of the patients being under 15 years of age. The ratio of males to females was 6 to 4. The fatality rate for all patients was 15.94 per cent, it was greatest at the extremes of life and least in the 15-19 years age group. Thirty-eight per cent of the deaths occurred within twenty-four hours of the time of admission to the hospital. The most frequent complications were cranial nerve paralysis, arthritis and deafness. The case fatality rate in 2,591 cases in which sulfonamides alone were used was 14.3 per cent. In an additional 965 cases, in which serum treatment was combined with chemotherapy, the fatality rate was 18.8 per cent. The poorer result was probably due in part to the fact that serum was administered to more severely ill patients. There is no indication that the administration of serum as an adjuvant to sulfonamide therapy is beneficial. In the treatment with sulfonamides a considerable variation appears to be possible in dosage and duration of therapy without noticeable effect on the fatality rate. Statistically the results were about the same whether chemotherapy was begun early or comparatively late in the course of the disease. This can be attributed to the fact that the more severely ill tend to be sent to the hospital sooner than those who are mildly ill. The age of the patient is of distinct importance in determining the outcome of meningococcal infection even with the aid of sulfonamide therapy.

Chemotherapy and Serotherapy in Meningitis—Jubb reviews 3,206 cases of meningitis treated in hospitals either by chemotherapy plus serum or by chemotherapy alone and surviving more than twenty-four hours after admission. The fatality rate in the total number was 10.5 per cent, in the 849 cases treated with chemotherapy plus serum it was 13.8 per cent, in the 2,357 cases treated with chemotherapy alone it was 9.2 per cent. In the five years 1936-1940 there was a steady decline in the fatality of cerebrospinal fever, the annual rates being successfully 63.8, 61.2, 50.6, 34.2 and 20.2 per cent. In a series of cases treated in the period 1931-1934 with serum of improved quality and administered suitably the rate was 27.9, but a decrease of the rate for the whole country did not occur until the introduction of chemotherapy, with the wider employment since 1938 of the sulfonamide derivatives the decline has been dramatic. In 1941 the rate was 19.5 per cent and in the first half of 1942 it was 19.5, as against 19.9 in the corresponding periods in 1940 and 1941. It is possible, therefore, that 1942 will show only a slight further decrease.

Lancet, London

1 481-512 (April 17) 1943

- *Oxygen Therapy in Shock G Melton—p 481
Necrosis of Islets of Langerhans Produced Experimentally J S Dunn, H L Sheehan and N G B McLetchie—p 484
*Paratyphoid B Infection Ineffectiveness of Sulfaguanidine T F M Scott, P B Beeson and W L Hawley, with technical assistance of W Goode, Miss E Hathaway and Miss E Jackson—p 487
Fluorine Distribution C N Bromehead, Margaret M Murray and D C Wilson—p 490

Oxygen Therapy in Shock—Melton gave high concentrations of oxygen to patients with peripheral circulatory failure. In order to assess the effect of oxygen independently of other therapeutic measures such as transfusions and drugs, oxygen was frequently begun as soon as possible after the patient was admitted. Patients with shock treated fell into the following groups: (1) 8 patients with trauma due to accidents or operations, (2) 12 patients with nontraumatic hemorrhage, (3) 5 patients with peritonitis due to perforated viscus or strangulation and (4) 3 patients with postoperative lung complications. A small miscellaneous group of patients with peripheral circulatory failure and severe collapse were also studied and included 1 with asthma, 1 with pneumonia and 1 in diabetic coma. The observations show that oxygen is of benefit in shock. It raises the blood pressure and improves the pulse, color, mental alertness and well-being. The results can be readily understood in the cases in which there was considerable lung involvement as the cause of anoxia, but striking improvement was also obtained when the heart and lungs were not affected. The beneficial action of oxygen was seen in shocked patients during and immediately after an operation. It was also observed in patients who had not received an anesthetic immediately preceding the

shock. In some cases of profound shock, particularly in elderly but also in young persons improvement was not observed. This failure was sometimes found associated with continued hemorrhage, severe infection or uræmia. In some of these cases oxygen may have helped to tide the patient over a critical period, even though immediate improvement was not obvious. There were 14 deaths despite the initial improvement in 12 of these fatal cases, but most prevented a hopeless prognosis from the start of the treatment. Oxygen appears to be most useful in hemorrhage which has been arrested. Hemorrhage was a definite factor in producing shock in 17 of the patients and 13 of them improved with oxygen. With 13 patients hemorrhage was not a factor and 10 of these improved with oxygen therapy. With the exception of 2, the patients in this group were either suffering from pulmonary complications or were recovering from a general anesthetic. Oxygen cannot replace transfusions but must be regarded as an adjuvant to such measures.

Sulfaguanidine in Paratyphoid B—McNair Scott and his collaborators tested sulfaguanidine in an outbreak of paratyphoid B in Liverpool during July and August 1941. The number treated with sulfaguanidine was 40 and there were 48 controls. The two groups appeared to be similar in all respects. The average age of the treated patients was 16.6 years or the untreated 15.5 years. Children under 5 years of age were excluded from the study. Sulfaguanidine was given for ten days. During the first five days the daily doses varied between 8 and 16 Gm. depending on the age of the patients and during the last five days between 4 and 8 Gm. Sulfaguanidine was used in the treatment of paratyphoid B fever in patients who were (a) acutely ill (b) convalescent (c) persistent excretors. During the acute stage no difference was seen in the course of the disease among the treated as compared with the untreated. In the convalescent stage there was no evidence that the patients treated with the drug excreted paratyphoid B organisms for any shorter period than the control group treated with kaolin. The drug failed to clear 4 persistent excretors of the organisms.

1 513-542 (April 24) 1943

- Formation of Red Blood Corpuscles F. Duran Jorda—p. 513
Vitamin C Saturation Test: Standardization Measurements at Graded Levels or Intake L. J. Harris—p. 515
Spontaneous Reduction en Masse of Inguinal Hernia G. G. Crowe—p. 517
Effect of Emotional Shock on Hormone Release and Endometrial Development A. A. Loeser—p. 518
Volkmann's Ischemia or Leg M. Albert and W. R. D. Mitchell—p. 519
Observations on Ctab (Cetavlon) Its Use in Surgery R. Williams, Barbara Clavton Cooper, J. McK. Duncan and Ellen M. Miles—p. 522
*Case of Matricide D. Hill and W. Sargent with assistance of Mollie E. Heppenstall—p. 526
Anesthetic Explosion Due to Static Electricity Elva M. Chivers—p. 527

Case of Matricide—A man aged 20 accused of the murder of his mother, was found guilty but insane. Hill and Sargent report that he had always been nervous and apprehensive but particularly aggressive and had failed to adapt himself to ordinary life having become dependent on his mother. His meals had been irregular. Recently there had been some quarreling between the accused and his mother. On the morning of December 30 he had lost his temper and struck her, for which he had subsequently apologized. On that day he had eaten poorly, his last carbohydrate meal being at noon. In the evening he ate two small chops. Between 9 and 10.30 p. m. he had drunk 4 pints of mild ale and had then returned home. On his mother's return at 11 o'clock a quarrel developed during which he was pushed along a passage into his own room. Despite the 4 pints of beer he suddenly felt thirst and went to the kitchen to fetch an opener for a lemonade bottle. There he saw a kitchen knife and at this point he said something came over him—he was like a homicidal maniac. He attacked his mother with a knife and killed her. A doctor who had examined the accused in 1941 suggested that an investigation be made of the carbohydrate metabolism and of the electroencephalogram. From the history and the examination it was concluded that the accused had an abnormal personality, a poor physique, severe inner ear deafness, a possible birth injury to the right hemisphere and psychopathic inheritance.

He was not suffering from epilepsy or mental disease, but whenever his blood sugar was below 100 mg. per hundred cubic centimeters the electroencephalogram was abnormal and hyperventilation would induce an abnormal electrical discharge in the cortex associated with a degree of impairment of judgment and some clouding of consciousness. From the history of his diet before the murder and the sugar tolerance tests it was practically certain that his blood sugar was below 100 mg. at the time when he murdered his mother and that hyperventilation occurred as the result of the emotion aroused by the quarrel and particularly by his being pushed struggling along a corridor. Since the murder took place over an hour after he had finished the beer the malt sugar would not have inhibited the phenomenon. The authors concluded that the accused knew what he was doing at the time he killed his mother and knew that it was wrong but that his brain was functioning abnormally at the time, the abnormality being such as to impair his judgment and render him unable fully to appreciate the nature of the act.

1 543-572 (May 1) 1943

- Mortality of Men Between Ages of 50 and 65 P. Stocks—p. 543
Impetigo Contagiosa: Its Cause and Treatment J. W. Bigger and G. A. Hodgson—p. 544
Impetigo: Etiology and Treatment H. L. Sheehan and A. G. Fergusson—p. 547
Survival of Normal Erythrocytes After Transfusion to Patients with Familial Hemolytic Anemia (Acholic Jaundice) J. A. Dacie and P. L. Mollison—p. 550
*Mesenteric Venous Thrombosis: Treatment with Heparin J. C. Luke—p. 552
Pfeiffer's Bacillus Meningitis: Response to Chemotherapy J. A. P. Davies—p. 553
*Response of Pfeiffer's Bacillus Meningitis to Sulfapyridine R. A. Moir—p. 556
Tetanus in Immunized Subject H. B. Norman—p. 557

Heparin in Mesenteric Venous Thrombosis—According to Luke mesenteric thrombosis is the most lethal of the causes of bowel obstruction. The reported series show that the chance of survival is almost nil without operation. The operative mortality of resection averages about 50 per cent. The main factor of this high rate is a continuation of the thrombotic process beyond the limits of the resected bowel. It is here that the experience with heparin is encouraging. It occurred to Luke that in the early cases of mesenteric venous thrombosis in which it could be shown that the involved bowel was still viable, heparin alone would be a logical method of treatment. This plan was adopted for a man aged 42 whose history and physical signs suggested an early obstruction of the small intestine. When the abdomen was opened, early mesenteric venous thrombosis was diagnosed and it was decided to treat the patient with heparin alone. The drug was administered by intravenous drip (10 cc. of heparin in 1000 cc. of isotonic solution of sodium chloride). The total amount given in the course of ten and one-half days was 210 cc. The patient was out of bed on the fourteenth day and was discharged on the seventeenth. The author suggests that early cases of mesenteric venous thrombosis seen before serious intestinal infarction has taken place and when the bowel is definitely viable should be treated with heparin alone.

Sulfapyridine in Pfeiffer's Bacillus Meningitis—Moir reviews 4 cases of influenza meningitis in which sulfapyridine was used. Two of the patients, one a child of 10 months recovered. The number of cases described is too small for precise conclusions but from this experience the best form of treatment seems to be diagnostic lumbar puncture to be repeated only if restlessness and irritability become uncontrollable by other means or when the fluid might be expected to be sterile (i. e. when the clinical condition has much improved). The concentration of the sulfapyridine in the cerebrospinal fluid should be as high as possible and repeated lumbar puncture can serve only to reduce the concentration. Large doses of sulfapyridine should be given (never less than 3 Gm. in twenty-four hours) and reduced doses should be given for at least a fortnight after meningitic symptoms have disappeared. Fluids should be pressed in order to prevent renal complication. Dehydration and vomiting are best combated by intravenous drip saline and this provides a convenient method for the administration of sulfapyridine which seems worth a trial in all cases of Pfeiffer's bacillus meningitis.

Bull. Health Organ, League of Nations, Geneva**10 1-76, 1943 Partial Index**

Present Menace of Typhus Fever in Europe and Means of Combating It Y. Biraud—p. 1

*Contribution to Study of Metabolism of Vitamin C and Elimination in Urine F. M. Messerli—p. 65

Metabolism of Vitamin C and Its Elimination in Urine—Messerli reports investigations on the elimination of vitamin C in the urine of Lausanne school children. A modification of the method of Gander and Niederberger was used. The rate of excretion was on an average 1.4 to 1.5 mg. per hundred cubic centimeters in 1940-1941. This amount varied according to feeding and to the social conditions of the children. Body posture, rest, exercise and exposure to sun seemed to have no influence on the excretion. In saturation tests in cases of vitamin balance ingestion of ascorbic acid is followed quickly by an increase of excretion, this increase is not observed immediately in cases of vitamin insufficiency. This test might be used for control of vitamin C sufficiency. For this purpose the urine should be titrated three or four times every half hour after the ingestion of 0.05 Gm. of ascorbic acid. A rise in vitamin excretion would signify vitamin sufficiency, the absence of rise, vitamin insufficiency. Children who for a month received a daily preventive dose of 0.05 Gm. of ascorbic acid and whose vitamin excretion in the urine had greatly increased in consequence were absent from school on account of illness only half as frequently as their schoolfellows who did not receive vitamin C. Vitamin C saturation tests did not reveal any increase in albuminuria.

Schweizerische medizinische Wochenschrift, Basel**72 1141-1168 (Oct 17) 1942 Partial Index**

Eczema and Eczema like Dermatitis W. Lutz—p. 1141

*Efficacy of Extrapleural Pneumothorax M. Arnold—p. 1144

*Cirrhosis Caused by Schistosomiasis and Cirrhosis in General R. Jaffe—p. 1149

Riboflavin Metabolism in Two Patients with Generalized Eczema, Who Had Lived Chiefly on a Raw Diet A. F. Kunz—p. 1154

Treatment of Diphtheria and Scarlet Fever in Institutions W. Hoffmann—p. 1160

Extrapleural Pneumothorax—Arnold regards as indication for the extrapleural pneumothorax active, progressive, chiefly exudative and cavernous, usually febrile, pulmonary tuberculosis. The procedure is also indicated in relatively inactive, partly productive and partly exudative cavernous and perhaps subfebrile types. Total obliteration of the intrapleural space by a previous pleurisy or failure to produce an intrapleural pneumothorax or to improve it by thoracocautery are the prerequisites. A marginal group is represented by the inactive, nonprogressive, cirrhotic, cavernous and febrile pulmonary tuberculosis. Maurer's thoracoplasty, with the removal of five ribs in two stages, is much less dangerous for the heart. The author stresses care in the management of the costal gap, caution in the handling of the intercostal vessels, treatment of cough, avoidance of increase in pressure by refilling with air, avoidance of premature puncture of serous effusion, evacuation of infected collections of serum with local application of sulfathiazole, daily puncture of hematomas and refilling of dry pneumothorax. If these points are adhered to, pneumothorax will effect a cure and will avoid the disadvantages of plastic operations such as residual cavities, permanent collapse and disfigurement. On the basis of observations on the first 50 patients the author believes that extrapleural pneumothorax is particularly effective in bilateral collapse therapy. It has the advantage in that the healthy lower lobe remains adherent to the thoracic wall and diaphragm and thus obtains maximal ventilation. Extrapleural pneumothorax has a greater sphere of applicability than a thoracoplasty. The five rib thoracoplasty of Maurer most nearly approaches the efficacy of extrapleural pneumothorax.

Cirrhosis Caused by Schistosomiasis and Cirrhosis in General—Study of cirrhosis caused by *Schistosomum mansoni* makes it possible to review problems that concern cirrhosis in general. Jaffe agrees with Friessinger that the anatomic basis is the same in all forms of cirrhosis. The author is convinced that this disease is systemic and that the hepatic lesions represent changes in one organ. Changes in the liver may be the only recognizable organic change. The spleen or other organs may

be involved at times. The causes of these differences are not known. Cirrhosis is essentially a parenchymal impairment of the liver. Primary damage of other parts of the liver have not been demonstrated. Changes in other tissues, such as the stellate cells, the lattice fibers and the connective tissue cells, are secondary to the parenchymal lesions. The degree and distribution of the parenchymal lesions determine the further changes. The same cause may produce various types of cirrhosis. It is of no importance whether the hepatic process is regarded as a chronic inflammation or as a transformation. The parenchymal lesion is primary and other lesions are elicited by it. A classification of cirrhosis on the basis of its anatomic appearance is not logical. Jaundice, as an accompanying symptom, is caused by the same parenchymal lesion as the cirrhosis, mechanical factors play a secondary role.

72 1213-1236 (Oct 31) 1942 Partial Index

Differential Diagnosis of Sanguinous Apoplexy A. von Albertini—p. 1213

Methyl Amphetamine (Pervitin) and Female Genital System W. Neuwiler—p. 1217

*Mechanism of Median Fracture of Neck of Femur Treatment by Nailing According to Sven Johanssen O. Hauptli—p. 1220

*Therapy of Herpes Zoster K. Blum—p. 1223

Roentgenologic Examination of Esophageal Spasm Can Lead to Error in Localization of Causal Lesion F. Naville and R. Herrmann—p. 1224

Sven-Johanssen's Nailing in Median Fracture of Neck of Femur—Hauptli reports 43 osteosyntheses carried out for fractures of the neck of the femur between 1935 and 1941. During 1935 and 1936 Henschen's screw method was employed in 4 cases. The results were good in 3 and poor in 1. Eight patients were subjected to Sven-Johanssen's nailing without the guiding instrument, with poor results in half of the cases. Nailing according to Sven-Johanssen was done in 5 cases with the aid of the original guiding instrument of Valls. The results were excellent in 4 cases and poor in 1. During the years 1939 to 1941 Sven-Johanssen's method was employed in 26 cases with Ulrich's "infallible" modification of the directing instrument of Valls. The results were excellent in 22, satisfactory in 2 and poor in 2 cases.

Therapy of Herpes Zoster—The fact that sulfanilamide and a salt free diet produced favorable therapeutic results in postinfections and polyneuraltic conditions suggested to Blum that these measures, together with vitamins B₁ and C, be used early in the treatment of herpes zoster. In view of the virus origin of this disorder he suggests that the same therapeutic methods might be of value in other virus diseases, such as poliomyelitis, measles, acute epidemic encephalitis or venereal lymphogranuloma.

Acta Medica, Rio de Janeiro**10 157-180 (Dec.) 1942 Partial Index**

*Quinine and Other Antimalarial Drugs Experiments S. B. Pessoa—p. 157

Tetanus Vaccination J. Guilherme Lacorte—p. 172

Antimalarial Drugs—Pessoa experimented with camies previously inoculated with *Plasmodium cathemerium*. He found that the antimalarial effect of quinine hydrochloride is greater when the drug is administered intramuscularly than when it is given by mouth. Bolivian quinine sulfate is as efficacious as Java quinine. Potassium tannate injected intramuscularly has no plasmocidal properties. Potassium tartrovanadate has a plasmocidal effect only when it is administered in large doses. Such administration is dangerous because the therapeutic dose is close to the toxic dose. Sodium arsenate has no plasmocidal effect even in the highest tolerable doses.

Boletín de la Sociedad Cubana de Pediatría, Havana**15 105-152 (March) 1943 Partial Index**

*Cerebral Tuberculosis in Disseminated Forms of Primary Tuberculosis in Infants T. Valledor—p. 105

Cerebral Tuberculosis in Infants—The 4 infants observed by Valledor were living with tuberculous members of the family. They exhibited acute symptoms of disseminated primary tuberculosis. Disseminated miliary tuberculosis and one or more tuberculous nodules were found during a necropsy in the brain. In 2 cases development of miliary cerebral tubercles in primary miliary tuberculosis is the starting point for a latent tuberculo-

meningitis which manifests itself by symptoms of increased intracranial pressure, convulsions, acute headache exaggerated reflexes a positive MacEwen sign vomiting and coma. The course of the disease is rapidly fatal. The symptoms are those of a subacute hydrocephalus without increase in the size of the head. The spinal fluid is chemically and bacteriologically normal in the course of the disease, which develops with neither meningeal symptoms nor pathognomonic signs of a brain tumor.

Revista Clínica Española, Madrid

7 173-230 (Nov 15) 1942 Partial Index

- Regulation of Glucose F Grande Covan —p 173
Studies on Malnutrition C Jimenez Diaz I Lorente C Marina E Ortiz De Landazuri G Paniagua and E Roda —p 184
*Glutathione in Blood of Patients with Nutritional Deficiencies J Cruz Aunon and J Rivero Fajardo —p 189
Subdural Hematoma (Internal Hemorrhagic Pachymeningitis of Virchow) in Course of Typhoid A Levi —p 195
Action of Sex Hormones on Intestinal Movements R Sanchez Calvo —p 200
*Problem of Vitamin A in Nutrition of Pregnant Women J Botella Llusia and J M Hernandez Arana —p 203

Glutathione in Blood During Nutritional Deficiencies

—Cruz Aunon and Rivero Fajardo show that the reduction of the glutathione values (thioamino acids) in the blood is the best proof of a diet which contains no animal proteins or has inadequate amounts of these substances which are rich in thioamino acids. They gained the impression that 'mal de Casal' is due to a meat deficiency and that hunger edema is due to universal deficiency. In Casal's disease the reduction in the glutathione content is considerable and in hunger edema it is even more severe.

Vitamin A in Pregnancy

—Botella Llusia and Hernandez Arana tested the dark adaptation of 140 pregnant women. They detected impairment of night vision in 69 per cent of the pregnant women in whom the vitamin A content of the diet could not be controlled. Women with evident avitaminosis showed this defect in 95 per cent of the cases. Only 10 per cent of the pregnant women who received their food from the social aid organizations showed defects of the dark adaptation. This proves that the food provided by these organizations is adequate from this point of view. Since during pregnancy the organism partly loses its capacity to utilize carotene, it is advisable to administer preformed vitamin. Furthermore the nutritional requirements of the fetus increase the vitamin A requirements of the mother during pregnancy. Fats are of great importance in the diet of pregnant women because they are vehicles of vitamins and of carotene. The authors recommend that pregnant women should receive daily 4000 international units of vitamin A and 50 Gm of fat.

7 237-300 (Nov 30) 1942 Partial Index

- Thyroids and Gestation F Bonilla —p 237
*Investigations on Sympathetic Disorders Clinical Aspects of Neurodystonias (Premenstrual Tension and Neurosis of Exophthalmic Gout) C Jimenez Diaz and L Lorente —p 248
Results of Tests with Dust Extract Obtained by Precipitation on Patients with Asthma and Rhinorrhea R Aleman y Vall —p 251
Lathyrism J M De Miguel and E L Galacho —p 254
Electric Shock Therapy in Asthma B Sanchez Cuenca and J Lopez Ibor —p 260
True and False Anemias in Pregnancy J Botella Llusia and M Echazuri —p 262
Parinaud's Conjunctivitis as Clinical Manifestation of Primary Tuberculous Infection A Garcia Miranda and J Gomez Orbaneja —p 269

Neurodystonias —Jimenez Diaz and Lorente examined alcohol acetone soluble extracts of urines of 10 normal persons on different days or a patient with migraine during and after an attack of 2 patients with exophthalmic goiter with severe neurodystonia and of a patient with premenstrual hypertension at various times during the cycle. It was observed that the patients with exophthalmic goiter and the one with migraine eliminated during their crises a substance with an intense acetylcholine effect. The woman with the premenstrual hypertension had the same substance in the premenstrual urine whereas at other times her urine was free from it. The urines of the 10 healthy subjects were free from these effects. In the presence of a sympathetic neurosis as well as in migraine the substance is present in excessive quantities. The authors direct attention to the role of acetylcholine in the excitation of the sympathetic nervous system.

Semana Médica, Buenos Aires

50 250-292 (Feb 4) 1943 Partial Index

- *Therapy of Asphyxia in Newborn Infants by Administration of Oxygen Carbon Dioxide Mixture to Mother R Schwarz F Nessi and R M Pinto —p 250
Pathogenesis of Hemoptysis H Basabe —p 253
Functional Reactions of Phenol Sodium Method for Its Evaluation Rosa C D Messio de Carnevale Bonino —p 289

Therapy of Asphyxia in Newborn Infants —Schwarz and his collaborators advise the routine administration of oxygen carbon dioxide mixture by inhalation to all mothers who give birth under anesthesia, even if the latter is mild. The therapy is especially indicated when fetal respiration is not rapidly established. Oxygen-carbon dioxide mixture should be administered to the mother before sectioning the umbilical cord. Immediately after the inhalation of the oxygen, respiration of the mother improves and pulsation of the umbilical cord increases. The necessary requirements for obtaining results from the administration of oxygen carbon dioxide mixture are intact umbilical cord, an unimpaired center of respiration of the fetus upper respiratory tract free from mechanical obstruction and lungs of normal distensibility. The author's group of 36 mothers includes cases of spontaneous labor, application of forceps internal version and cesarean section. Good results were obtained in all cases but 3. Obstruction of the upper respiratory tract with mucus was the cause of failure of oxygen-carbon dioxide therapy in these cases. The infants were reanimated by aspiration of mucus and insufflation of the oxygen-carbon dioxide mixture.

50 301-356 (Feb 11) 1943 Partial Index

- *Inguinoscrotal Hernia with Mixed Contents Including Stomach J M Jorge L Feldman and T Iturriz —p 301
*Diagnosis of Epilepsy by Means of Pentamethylene Tetrazol I Roismiser —p 310
Myocardial Infarct in Youth Aged 20 A P Ruchelli and A J Marra —p 314
Mucous Cyst of Left Labium Minus Pudendi D Bassan —p 343
Sulfonamide Chemotherapy in Gonococcal Arthritis R E Meroni —p 348

Inguinoscrotal Hernia Containing Stomach —Jorge and his associates report the case of a man aged 66 with a double inguinoscrotal hernia. The one on the right side was enormous. Roentgenoscopy with an opaque meal revealed that parts of the stomach and intestine were present in the large hernial sac on the right side. The smaller hernia was operated on successfully and the wound healed by primary intention. The patient was instructed to return later for operation on the larger hernia. He was hospitalized in a state of prostration and dyspnea and died as the result of a bronchopulmonary process. The necropsy revealed the presence of the stomach in the hernial sac. The authors were able to find only 22 cases of this type in the literature. They stress the importance of a preoperative roentgenologic examination and point out that these giant hernias are compatible with a good general condition.

Diagnosis of Epilepsy by Means of Metrazol —Roismiser points out that metrazol shock therapy led to the use of this substance in the differential diagnosis of epilepsy. He describes his observations on 56 subjects 38 of whom were epileptic and 18 were not. Of the first group 92.1 per cent responded with a typical crisis to the intravenous injection of 3 cc or less of a 10 per cent solution of pentamethylenetetrazol. The test was always begun with the injection of 1 cc. Two of the epileptic patients reacted with an attack to this dose. 3 reacted to 1.5 cc, 12 to 2 cc, 8 to 2.25 cc, 2 to 2.5 cc, 8 to 3 cc and 3 required more than 3 cc for the production of a crisis. The 18 subjects who were not epileptic all required more than 3 cc for the production of a convulsive attack.

Deutsche medizinische Wochenschrift, Leipzig

68 209-236 (Feb 27) 1942 Partial Index

- Question of Vitamin C Requirements H Kalk and W Brühl —p 209
Significance of Ascorbic Acid in Cerebrospinal Fluid from Pig or View of Differential Diagnosis J Wirth —p 212
Therapeutic Short Wave Hyperthermia K von Teubner —p 211
Use of Mariandl Prontalbin Powder in Surgery R Stiller —p 221

Vitamin C Requirements —Kalk and Brühl report observations on a man who had lived on a diet free of vitamin C. He was hospitalized with all the symptoms of scurvy. The development of the scurvy had been favored by inadequate

nutrition, hard physical labor, an infection (otitis media) and achylia. In spite of a continued vitamin C free diet, bed rest alone counteracted the scorbutic symptoms, although no vitamin C could as yet be demonstrated in the serum. Administration of small quantities of vitamin C (10 and 25 mg daily by mouth) increased the vitamin C content of the blood in spite of an existing achylia. The scurvy was practically cured at a time when the serum still contained extremely small amounts (0.3 mg per hundred cubic centimeters). With the daily administration of 25 mg on a diet that was practically free from vitamin C and in the presence of "normal" vitamin C values in the blood a good working capacity and complete freedom from symptoms could be maintained. This status continued even after the vitamin content sank to low levels following cessation of the administration of vitamin C. The authors stress that the development of scurvy is rare even in a population with a low vitamin C intake. Only 5 cases of scurvy were encountered in about 16,000 patients. This rarity shows that vitamin C deficiency alone is not sufficient for the development of scurvy. Other factors detrimental to the vitality must be added, such as lack of sleep, infections, hard physical labor and starvation. A daily quantity of 25 mg of ascorbic acid is adequate to prevent hypovitaminotic conditions.

Klinische Wochenschrift, Berlin

21 1-24 (Jan 3) 1942 Partial Index

- Electroencephalogram a Method for Investigating High Altitude Sickness
A. E. Kornmüller, F. Palm and H. Strughold—p. 5
- Capillary Permeability in Acute and Chronic Nephritis H. Sarre and H. Sostmann—p. 8
- *Chemoprophylaxis of Gas Gangrene Local Application of Sulfonamides and Prospects of Their Efficacy Under Nearly Normal Conditions (Soil Contaminated Crushed Wounds) H. T. Schreus—p. 14
- Action of Water Soluble Desoxycorticosterone on Carbohydrate Metabolism O. Göbell and H. J. Benkner—p. 17

Local Application of Sulfonamides in Soil Contaminated Wounds—Schreus investigated the efficacy of various sulfonamides when introduced locally into soil contaminated crushed muscles (intensified Friedrich's experiment). He found that the efficacy in suppressing the development of gas gangrene depended on the quantity of the drug introduced as well as on the time which had elapsed between the infliction of the wound and the administration. When the drug was applied to the wound before six hours had elapsed, comparatively small quantities were adequate to prevent gas gangrene, but when administration took place between six and eight hours larger quantities were necessary. Neither the pure sulfonamides nor their combinations with one another or with boric acid or methenamine were capable of preventing the death of the animals from gas gangrene if introduction into the wound was delayed more than nine hours. The sulfonamides act on the gas gangrene organisms locally as well as by absorption. Since there is no danger of injury to the tissues, the author recommends the combined local and systemic administration.

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- *Sodium Chloride and Diastase Values in the Blood of Patients Suffering From Diabetes Mellitus M. Dörle—p. 53
- Monophasic Deformation of Electrocardiogram in Lead Three A. Weiss—p. 56
- Alpha Tocopherol Acetate (Vitamin E) Substitutes for Progesterone in Uterus Test Performed in Castrated Rabbits F. Stahler and W. Hopp—p. 58
- *Concentration of Riboflavin in Carcinoma and Excretion of Riboflavin by Patients Suffering from Tumor H. Leemann—p. 60
- Influence of Iontophoresis of Histamine on Blood Cell Formula J. Friesz and T. v. Gorka—p. 62
- Thymotropic Hormone of Anterior Lobe of Hypophysis and Thymus Hormone W. Biehler, G. Hanisch and H. Wollschütt—p. 63

Blood Sodium Chloride and Diastase in Diabetes Mellitus—Dörle says that blood diastase varies considerably in the blood of normal persons. The fall in blood diastase below 80 mg per hundred cubic centimeters is abnormal and occurs in severe diabetes associated with ketonuria, inflammatory complications, grip infections, cachexia and severe anemia. The decline in diastase values parallels a fall in blood sodium chloride in many instances and an increase in blood sugar in

diabetic patients. But this parallelism is not a real one. Isolated disturbances of these substances are possible. The fall of sodium chloride and diastase of the blood does not depend on a certain type of metabolic disorder or on a special kind of organic disease. The fall is secondary to disturbances of nutrition. Sodium chloride blood content, blood sugar and diastase are related to the metabolism. High blood sugar values and low sodium chloride and diastase content may parallel other disturbances, as in severe acidosis of diabetes. Diastase seems to be the most labile element of all. It is readily lowered by a general or toxic disturbance of nutrition.

Riboflavin in Carcinoma—Leemann determined the riboflavin content of tumor tissue and of tissues of normal organs. The concentration of riboflavin in carcinomatous tissue is higher than in the matrix and in the normal tissue. On the contrary, the concentration of riboflavin in tissues of normal organs was lower than that of the average values present in normal tissues of persons not affected with a malignant tumor. The increased demand of the tumor for vitamin B₂ is responsible for the impoverishment of riboflavin in other organs, which in turn results in a reduction of the excretion. While persons not suffering from carcinoma excreted within two days 70 per cent of riboflavin administered to them parenterally, persons with a tumor did not excrete more after parenteral administration of riboflavin.

Zentralblatt für Chirurgie, Leipzig

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- *Local Causes of Postoperative Development of Jejunal Ulcer E. Sipos—p. 130
- Intestinal Occlusion by Gallstones D. Klimko and L. Fedele Fendelsen—p. 145

Local Causes of Postoperative Jejunal Ulcer—Sipos believes that postoperative jejunal ulcers are largely preventable by careful attention to the local conditions during the first operation. The fact that they develop only after a gastrojejunostomy indicates that the new position is a cause. The fact that not every gastrojejunostomy is followed by jejunal ulcer suggests that other factors play a part. The author differentiates two groups of causes: (1) those that intensify the harmful effects on the intestinal mucosa and (2) those which reduce the resistance. It is not the absolute severity of a single factor but the relationship of the two groups of factors that is decisive. Case histories demonstrate that one of the local causes of postoperative jejunal ulcer is the improper operation such as a gastroenterostomy for a perforation or enteroanastomosis according to Brown and Roux. The patient should be prepared for operation by blood replacement and by normalization of the mineral and water balance and of the vitamin C deficit. In case of prepyloric ulcer the vicious circle of stasis, prolonged secretion, inflamed mucosa, muscle spasm and atony must be interrupted. Systematic evacuation of the stomach relieves the spasticity of the musculature, and irrigation of the mucosa reduces inflammation. Gastrojejunostomy should not be performed for a perforation. Only that operation can be considered as optimal which eliminates overburdening of the mucosa, preserves intestinal resistance and produces, as far as possible, normal physiologic conditions for the gastrointestinal function. In case of a resectable ulcer, removal of the distal half of the stomach is usually adequate, two third and four fifth resections are inadvisable. For a palliative resection it is advisable to remove all the antral mucosa and resect more extensively. A relatively small anastomotic opening is desirable in order that the stomach may complete its digestive action, exhaust the effect of the gastric juice and prevent bile regurgitation. That position of the stoma will be the most advantageous which will permit evacuation of the stomach contents into the descending loop. Since inadequate blood supply probably favors the development of ulcers, the most careful handling of the tissues is essential. A fine absorbable suture material should be used. Roux's or Brown's enteroanastomosis should never be employed. It is advisable to avoid spinal paravertebral or splanchnic anesthetics, with a careful surgical technic, infiltration anesthesia of the abdominal walls is adequate.

Book Notices

Textbook of Biochemistry By Benjamin Harrow Ph.D. Professor of Chemistry City College of the City of New York Third edition Cloth Price \$1.15 Pp 557 with 115 illustrations Philadelphia & London W. B. Saunders Company 1913

The last few years have witnessed vast progress in the field of biochemistry. Considerable advancement has been made in the field of the intermediate metabolism of carbohydrates, fats and protein and in the employment of isotopes as tracer elements for complicated or little understood biologic mechanisms. The last years have also witnessed great developments in the fields of enzymes, vitamins and hormones in the field of biologic oxidations and in our knowledge concerning the breakdown and synthesis of glycogen through systems of enzymes and coenzymes. The very fertile fields of viruses, of bacteriostatic or bactericidal compounds such as gramicidin and penicillin of immunochemistry and of chemotherapy have also been energetically explored. Medical practice has derived its share of profit from the applications of the newer knowledge of biochemistry to problems of diagnosis, prognosis and treatment.

The rapid advances in biochemistry call for considerable revision in any edition of biochemistry more than three years off the press. The first edition of Harrow's Textbook of Biochemistry was published in 1938, the second in 1940 and the third this year. All the important late findings in the biochemical field have been incorporated in the new edition. In the unfortunate attempt however on the part of the publishers to keep down the size of a book in the most rapidly expanding field of science the newer topics for the greater part have been treated with the brevity of a dictionary and do not receive the adequate treatment befitting a modern textbook of biochemistry that lays claim to being up to date.

Nevertheless, Harrow's new edition has many excellent features. The text reads well. The language is simple and clear and to the point. The graphs and pictorial illustrations are exceptionally well chosen. Among the illustrations are photographs of animals and human beings with various mineral vitamin or hormone deficiencies, photographs of enzymes in crystalline form, such as urease, pepsin, trypsin and chymotrypsin, and photomicrographs of molecules of tobacco mosaic virus made by means of the electron microscope with a magnification of 34,000 to 37,000.

The book literally abounds with graphic formulas and completed chemical equations. The chemical synthesis of vitamin B₁₂ and of androsterone is given all the intermediate steps being represented by formulas. The various reactions involved impart to the student an insight into the problems concerned with the synthesis of an important biochemical compound. Each chapter ends with a page or two of references unique in that they differ from an ordinary list of authors' titles and journals. They aim to guide the student to the best literature—books, reviews and individual articles—on a particular topic.

Whenever the author goes into a subject at some length he proves to be at his best and succeeds in giving to the student a comprehensive view of the subject. It is for this reason that the chapters on carbohydrates, on proteins, on enzymes, on vitamins, on hormones, on detoxication, on the chemistry of respiration, on biologic oxidations and on the metabolism of carbohydrates which includes the breakdown and synthesis of glycogen are the best in the book. If this book is to be kept confined to a limited number of pages, it is suggested that in future editions chapter 7, on foods, could be well omitted since the material included really belongs to a book on dietetics or nutrition and chapter 20 on energy metabolism could well be relegated to a textbook of physiology.

The book on the whole is valuable to a college or university student, undergraduate or graduate, who is desirous of acquainting himself with the subject matter of biochemistry. It covers the usual requirements of courses in this subject offered to students in agriculture, in nutrition and to college students in general. The volume also constitutes a valuable textbook for

the student of medicine or for the progressive physician for the emphasis it lays on the purely chemical side of biologic chemistry. Its usefulness to the medical student or to the physician, however, would be greatly enhanced had the subject matter been treated more liberally from a biologic point of view and applied to or brought into direct relation with the chemical problems involved in disease.

Intensive Rural Hygiene Work in the Netherlands East Indies By J. L. Hydrick M.D. With an Introduction by Professor J. Snapper. This Study has been Reprinted with Slight Revisions from a Report of the Public Health Service of the Netherlands East Indies. Published in 1937. It is Submitted as a Document for the Eighth Conference of the Institute of Pacific Relations, December 1932. Booklets of the Netherlands Information Bureau No. 7. Paper. Pp. 83 with illustrations. New York: Netherlands Information Bureau 1942.

Although this booklet purports only to describe the program of public health in the rural parts of the Netherlands East Indies especially in Java its scope is actually far broader. The author's account of the development of the program serves as a basis for a discussion of the general principles that might well apply to the conduct of public health work in any part of the world. While the author does not presume to do more than present the philosophy underlying the program in the East Indies he has actually written a treatise that merits careful examination by all students of public health and especially by those engaged in rural areas. His underlying tenet is that lasting progress can be made no faster than the public is educated to appreciate and to want improved conditions of sanitation and health. Enforcement of laws that are neither understood nor supported and the indiscriminate rendering of health services to an unappreciative public are rejected as of no permanent value even though he concedes that they may yield dramatic yet fleeting results. The author supports the thesis that education, though slower, yields more lasting and hence greater return. Special emphasis is placed on the personal type of education rather than the dramatic health propaganda so commonly encountered. The author stresses the desirability of completely separating preventive from curative aspects of public medical service. Though somewhat rambling in style and repetitious in places the pamphlet is one that should be read by all interested in the promotion of public health whether in the Netherlands East Indies or in the United States.

Manual of Veterinary Bacteriology By Raymond A. Kelsor D.V.M. M. Ph.D. Brigadier General United States Army Chief Veterinary Division Surgeon General's Office War Department Washington D.C. and Harry W. Schoening M.D. Chief Pathological Division Bureau of Animal Industry U.S. Department of Agriculture Washington D.C. Fourth edition. Cloth. Price \$6.50. Pp. 719 with 94 illustrations. Baltimore: Williams & Wilkins Company 1943.

The appearance of this book is timely. It arrives at a moment when concerted action is being taken to guard the nation's food poundage against infections of food producing animals. Among those who labor in the field of animal medicine the four revisions in but a few years are accounted for by the reliability of their text plus the constant development of new knowledge of animal diseases control which the veterinary service must use to accomplish its purpose. To that end the senior author obviously overwhelmed by wartime duties obtained the aid of Schoening and his co-workers of the Animal Disease Research Station at Beltsville Md. That their vast experiences on the farms, ranches and abattoirs throughout the United States complement the material of previous issue is self evident and universally admitted in the livestock sanitary circle. In this place it ought to be sufficient to say that this book covers all the main bacterial, protozoal and virus infections to which the domestic animals of the United States are exposed directly or indirectly. Although the subjects are arranged according to the familiar pattern the material is more of a pathologic than of a bacteriologic character. Since the objective is the mastery of disease the details of prophylaxis, therapeutics and hygiene are not slighted. Physicians should find interest in the chapters on tuberculosis, brucellosis, rabies, the crebriphallidias and the salmonellosis and the ruthless war veterinarians wage against them to perpetuate the good name of the United States as a food producing country.

Aids to Tropical Medicine By I C Broom M.D., Bacteriologist to the Wellcome Bureau of Scientific Research, London. Fourth edition. Cloth Price, \$1.75. Pp 203, with 30 illustrations. Baltimore: William Wood & Company, London: Baillière, Tindall & Cox, 1912.

In 1908 the late Gilbert E. Brooke, then port health officer of Singapore, brought out the "Aids to Tropical Medicine" as a part of the students' aids series. Three editions were published under the author's direction, the last in 1927. Since that date the field of tropical medicine has seen such changes that a new edition was in order to keep the volume in step with recent developments. The current volume by Dr. Broom fills that need. The author has attempted wherever possible to preserve the original text and form but has had to make extensive revisions and in many instances to rewrite entire sections. Dr. Broom has wisely chosen to depart from the earlier alphabetical grouping of diseases, which had nothing in its favor other than ease of reference, and has elected to group diseases on an etiologic basis. The latter method leads to better understanding on the part of the student. Each disease is discussed under a logical and fairly standard pattern including definition, geographic distribution, history, etiology, pathology, symptoms, diagnosis, treatment and prophylaxis. More attention is given the latter aspect than in previous editions. Although the total length of the volume has not been increased, the author has been able to include a section on rickettsial diseases. The volume is not intended as a comprehensive textbook of tropical medicine but rather, as its name implies, as a study aid. In this it has richly fulfilled the purpose for which it was designed.

Diagnóstico de los tumores abdominales. Oncoquiliagnosis. Tomos I y II. Por Pablo L. Mirizzi, profesor titular de clínica quirúrgica de la Facultad de ciencias médicas de Córdoba. Cloth. Pp 670, with 192 illustrations. Pp 671-1289, with 189 illustrations. Buenos Aires: Librería 'El Ateneo,' 1911, 1912.

This work concerns itself mainly with diagnosis of abdominal tumors, to which the author refers as "oncoquiliagnosis." In volume I a general study of the abdomen as to its physical characteristics, history and physical examinations of the patient, which embraces laboratory methods, are presented. The specialized part comprises diagnostic points concerned with internal and external hernias, tumors of the peritoneum, the intestinal tract and pathologic entities of the liver. The entire presentation, which is thorough, deals with the diagnosis and differential diagnosis of abdominal tumors. The author stresses the necessity of resort to all available means to arrive at a correct preoperative diagnosis wherever possible. In volume II the author discusses diagnostic features of the gallbladder, spleen, large omentum, kidneys, pancreas, bladder and sympathetic nervous system, the material gathered here is as thorough as that in the first volume. In the chapter on the biliary passages a great deal of information is garnered. It will be recalled that it was the author who popularized cholangiography. The chapter on retroperitoneal and kidney tumors is particularly well presented. At the end of each chapter there is a review of the literature. The illustrations are clear, the paper and binding excellent. The work concludes with an author's index and a comprehensive index of subject matter. Students and others who read Spanish will find Mirizzi's book of value.

Blood Groups and Transfusion. By Alexander S. Wiener, A.B. M.D. Serologist and Bacteriologist in the Office of the Chief Medical Examiner of New York City. Third edition. Cloth. Price, \$7.50. Pp 438 with 69 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1943.

This book has been eminently successful since it was first published in 1935. The rapid growth of our knowledge of blood groups and the widening field of their application in medicine and surgery is manifested by the increase from 220 pages in the first edition to 306 in the second and 438 in the present, with a corresponding rise in the number of tables and illustrations. The book covers the theoretical background so necessary for the understanding of this intricate subject, the technical procedures, the transfusion of fresh and stored blood, of plasma and serum and the medicolegal applications in disputed parentage and in examination of stains. The recently discovered Rh factor (the author of the book was the co-discoverer) and its applications to the prevention and understanding of blood transfusion reactions (this too a discovery by Wiener) and to the pathogenesis of fetal erythroblastosis are treated clearly and exhaustively in a new chapter. Another

new chapter is devoted to recent developments in the use of stored blood and blood substitutes. The presentation is lucid. Small print permits one to skip details less interesting to the nonspecialist. The index is well organized. The general practitioner and every physician regardless of specialty will find in this monograph all that is worth knowing in the field it covers.

A History of Nursing. By Deborah MacLurg Jensen, R.N., M.A. Instructor in Sociology and Social Problems at Schools of Nursing of St. Louis City Hospital and St. Luke's Hospital, St. Louis. Cloth. Price \$2.75. Pp 310, with illustrations. St. Louis: C.V. Mosby Company, 1913.

Modern medicine and modern nursing are closely associated in their historical growth and development as they are in practice. Emphasizing this theme, Mrs. Jensen has prepared an excellent history of nursing against a background of social and economic progress and medical advance. The history of nursing in this country and abroad, the part played by Florence Nightingale and the great nurses who came after her, and the roles of the Red Cross and the Army in the development of modern nursing are all adequately and interestingly discussed. This book should make medical men proud of the parallel advances in their sister profession.

Fractures and Dislocations. By Various Authors. Edited by Sir Humphry Rolleston, Bt. G.C.V.O., M.D., and Alan Moncrieff, M.D., F.R.C.P. Cloth. Price 7s 6d. Pp 104, with 25 illustrations. London: "The Practitioner" in conjunction with Eyre & Spottiswoode, 1943.

This small book is full of good material. It is composed of a six article symposium which appeared in the British publication *Practitioner* for June 1940 and two additional articles. Each of the eight authors is a national authority, five are known internationally. The handy booklet presents the latest thoughts of recognized experts on highly specialized subjects. Illustrations are sparse. The index helps the busy practitioner in an emergency. The subjects covered are "The Diagnosis and Treatment of Fractures and Dislocations of the Pelvis and Hip Joint," "Common Fractures and Dislocations of the Knee and Long Bones of the Lower Limb," "Fracture-Dislocations of the Ankle Joint," "Common Fractures and Dislocations of the Clavicle and Shoulder Joint," "Fractures and Dislocations at the Elbow," "Fractures and Dislocations of the Wrist and Hand," "Head Injuries" and "The Treatment of Spinal Injuries."

Illustrations of Surgical Treatment. Instruments and Appliances. By Eric L. Farquhaison, M.D. F.R.C.S.E. Major R.A.M.C. With a foreword by Sir John Fraser, M.C. M.D., Ch.M. Regius Professor of Clinical Surgery, University of Edinburgh. Second edition. Fabrikoid. Price \$7. Pp 392 with 380 illustrations. Baltimore: William Wood & Company, 1942.

This contains a wealth of useful information presented in a practical and readily understood manner. The illustrations are excellent and well chosen, the text is brief yet broad enough to cover the subjects, which are comprehensively discussed. By the use of photographs and drawings the author has described methods of treatment and the types of apparatus employed in an ingenious manner. This book should be of especial value at the present time when a global war is in progress, but every physician will find information of pertinent value whether he is in the armed forces or in civilian practice. Fractures and orthopedic problems, intravenous therapy and injuries to the extremities are considered, and the book contains an extensive appendix showing surgical instruments and appliances.

Dictionary of Biochemistry and Related Subjects. Editor in Chief William Marias Mallott, Professor of Biochemistry at the Polytechnic Institute of Brooklyn. Cloth. Price, \$7.50. Pp 579. New York: Philosophical Library, 1943.

Although dictionaries have formed an integral part of scientific libraries for years, they often are inadequate to meet the needs in special fields. The Dictionary of Bio-Chemistry is "designed for readers of biochemical literature who might want the definitions of terms used more than a decade ago as well as of terms just coined." The idea for such a dictionary is commendable, it is unfortunate that the book falls short of expectations. Many definitions are too brief to be of much value, a few unnecessarily long, some misleading. Undoubtedly, many of these faults will be corrected before the next issue appears. The usefulness of the book then will be vindicated.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

STERILITY OF SULFONAMIDE POWDERS

To the Editor—In reply to an inquiry on sterilization of sulfathiazole powder in Queries and Minor Notes in The Journal Oct. 4, 1942, page 1221, it is stated that it is possible to sterilize sulfanilamide, sulfapyridine, sulfathiazole or sulfadiazine by heating at 140 C. for four hours. It is also possible to autoclave small amounts of drug in flasks at 15 pounds pressure for twenty minutes. This will sterilize the powder but occasionally there is a tendency for the powder which has been sterilized in this fashion to cake in the flask. Would you advise if it is intended that the flask in the autoclave be open or closed? If the flask is open the contents will be exposed to moist heat. If the flask is closed however the moist heat will be excluded and the material in the flask will be subjected to a dry heat equivalent to the temperature of the moist heat outside it. As it is also stated that 140 C. for four hours is necessary to sterilize the powder is it possible that steam heat for twenty minutes could sterilize the powder in a closed container in the same way that it would in an open container when the contents of the flask are exposed directly to the moist heat of the autoclave? The latest supplement to New and Nonofficial Remedies, 1942, includes Sulfanilamide (Sterile Crystalline) 5 gram shaker type package by Myrson, Westcott & Dunning, Inc., Baltimore. Other pharmaceutical houses are also offering for sale similar types of packages. These vary in minor details but all carry a common claim in that they have the word "sterile" prominently displayed on the package. There can be no question that the term "sterile" is intended in an absolute sense, that is, free from all bacteria, spores or other organisms. Assuming that the drug in these envelopes is sterile at the time of manufacture, is it possible for the sterility to be preserved indefinitely in this type of container which can be demonstrated to breathe air evidently through the folds of the paper? If however the air is not breathed through the folds of the paper but through the paper itself, which is unlikely, can paper of this type be considered capable of filtering bacteria? What effect would excessive atmospheric moisture have on the permeability of bacteria through the paper?

J. M. Bourque, M.D., Sorel, Quebec, Canada

ANSWER—First sulfonamide powders may not be sterilized in the autoclave if they are in tightly closed containers. The steam must be able to reach the powder and this is liable to cause caking. If the powder is sterilized by dry heat in paper envelopes of good quality and well sealed, especially if a double envelop is used, there is little likelihood that they will become contaminated if kept dry and with ordinarily careful handling, as when kept in original cartons or in the first aid kits of soldiers. For the Army and for the medical trade the sulfanilamide powder is packaged in double paper envelopes, six or a dozen such envelopes sold in cardboard cartons wrapped in cellophane. Many such individual envelop packages (not in cartons) have been placed in the dust bags of vacuum cleaners in use in hotels and have been examined after six months of such abuse. They were found thoroughly black with dust and about 10 per cent of them were found contaminated. For the Navy the powder is packaged in single paper envelopes and each of these is enclosed in a sealed cellophane envelop. The Navy prefers this package with a view to keeping out moisture. There is little likelihood of contamination through dry unbroken paper of fair quality but molds and possibly bacteria might grow through moist paper, even as in a humid atmosphere during several days.

RINGWORM ABOUT PERINEUM—DANGER OF X RAYS

To the Editor—What can you tell me about the treatment of a tinea or fungous infection in a man around the scrotum and perineum? Would ultraviolet treatment clear up the infection? He has tried ointments with only temporary success. He has tried x-rays but is afraid of being sterilized.

G. E. Ramseyer, M.D., Plainville, Mich.

ANSWER—The greatest caution should be exercised in exposing the perineum and scrotum to x-rays because of the great sensitivity of the testes to their action. In the present instance x-rays should not be used at all, even though they may be effective against eczematoid ringworm. Eczematoid states of the scrotum are often exceedingly stubborn to treatment of diverse sorts. Ultraviolet rays in suberythema doses may be used but are not especially effective. Care should be given not to increase the dermatitis by excessive dosage because of the aggravating factors of heat and friction at the parts.

The diagnosis of ringworm infection should be checked by searching for fungi by direct and cultural methods. These

infecting elements are not always found at the first trial. Tinea cruris is most often an extension process of eczematoid ringworm from the feet and toes. It found, here too, the therapy must be directed to include these primary sites. Failure to take this precaution accounts for some failures of treatment given to the scrotal and crural areas alone. Less often than the feet and toes, the hands and fingers too are involved.

Local therapy alone is almost always sufficient to achieve a successful conclusion to these infections. If the dermatitis is acute in degree, wet dressings give the greatest relief. For this purpose solution of aluminum subacetate 1 part in 10 to 15 parts of water serves well. When the acuity or the inflammation has subsided the wet dressings may be replaced with lotions at the genitocrural area. Calamine lotion may be fortified with a tar such as coal tar solution from 3 to 10 per cent or resorcinol 1 to 5 per cent concentration. A useful measure for the toes is to separate them by pledgets or cotton changed several times a day to keep the parts dry. Helpful too is a dusting powder consisting of 5 to 10 per cent sodium thiosulfate, 10 per cent boric acid and 3 per cent salicylic acid in equal parts of zinc stearate and talcum. When the chronic stage has been reached ointments are the most useful. Whitfield's ointment mixed with three times the amount of petrolatum or the more modern cholesterinized or water miscible bases is often useful on the feet and on the perineum. While the full strength Whitfield ointment can be finally reached, this is ordinarily much too strong for the scrotum and nearby regions. Some people can stand it, but it is bold treatment for the majority. Instead of Whitfield's ointment various parasitocides may be put in grease bases and used in the same way. Some of these are resorcinol 1 to 10 per cent, ammoniated mercury 1 to 10 per cent, sulfur 1 to 5 per cent, beta-naphthol 1 to 10 per cent, chrysarobin 0.1 to 10 per cent, essential oils such as thymol 0.1 to 2 per cent and cinnamon oil 0.1 to 2 per cent. In general it is better to begin with the weaker concentrations and graduate to the stronger as the patient's tolerance permits. The palms and soles will usually bear considerably more aggressive treatment than the parts about the perineum. Water and soap should be avoided but oils including mineral oil may be used as cleansing agents. Boric acid solution too is useful for the same purpose. Ordinary care will serve as prophylaxis against the spread of the infection to others in the family; infected persons should not frequent public baths or swimming pools.

EFFECT OF PSYCHE ON MENSTRUATION AND OVULATION

To the Editor—It is a generally accepted fact that the menstrual flow usually commences fourteen days after ovulation, equally accepted is the fact that more or less profound psychic disturbance may suppress menstruation. Is this type of amenorrhea dependent on failure of ovulation? In other words in an ordinary regular twenty-eight day cycle in which a delay of six days in the appearance of the period has occurred because of nervous anxiety and assuming that all suppressing influences are absent, when may the next menstrual flow be expected? Will pronounced psychic influences occurring in the latter third of a twenty-eight day cycle suppress the flow?

M. D. Illinois

ANSWER—The effect of the psyche on the menses is by no means clear but there is no doubt whatever that there is a distinct connection between the psyche and menstruation. Among the numerous examples are the cases of pseudocyesis or false pregnancy in which the prolonged amenorrhea and other symptoms are associated with an intense desire for children. Other examples are those of amenorrhea in unmarried girls who worry that they may be pregnant. In animals the connection between the nervous system and ovulation has been proved. In the rabbit, ferret, squirrel and cat, ovulation and luteinization never occur without the nervous excitation of mating. In fact, simple friction or the vulva or artificial stimulation of the cervix produces ovulation even where the ovaries are removed from their normal location and implanted elsewhere in the body. It has been shown that the ovulation and luteinization in these cases result from reflex stimulation of the anterior hypophysis. Therefore in spite of the fact that the anterior pituitary gland is considered the regulator of the menstrual cycle there is a center which in turn has a controlling effect on the pituitary gland. In many women the menses continue with their usual degree of regularity in spite of mental upheavals whereas in others a slight psychic shock upsets the menstrual schedule. The most likely explanation for disruption of the menstrual cycle is that the psychic disturbance affects the gonadotropic function of the pituitary gland which in turn brings about a change in the time of ovulation either by stimulating it prematurely or by suppressing it temporarily. However there are instances in which this explanation cannot hold, as in cases of bleeding which occurs almost simultaneously with the psychic trauma and the sudden stoppage of the menstrual bleeding due to fright or other reason.

There is no certainty about the time of occurrence of the menstrual flow following the delayed menses. In some instances the next flow will begin when it would have done so had the delay not taken place, but in most cases a new cycle is begun with the delayed menses. Strong psychic influences occurring in the latter third of a twenty-eight day cycle can suppress a flow, but this occurrence certainly is not inevitable.

VAGINAL SMEAR AS GUIDE TO ESTROGENIC THERAPY

To the Editor—Kindly tell me the present consensus on the use of vaginal smears for the evaluation of correct dosage of estrogenic hormones. In spite of the appearance of an article recently in a circular from a pharmaceutical company indicating that such examinations are reliable, it would seem from the study of the literature that opinions are rather divided.

Lawrence Parsons, M.D., Reno, Nev.

ANSWER—A study of the vaginal smear is a fairly good indication of estrogenic activity and serves as a guide to therapy in patients undergoing treatment with estrogenic substances. This is brought out by R. B. Greenblatt (*J. M. I. Georgia* 30:297 [July] 1941), who showed that vaginal smears may serve to indicate the degree of efficiency of estrogenic therapy. Geist and Salmon (*Am. J. Obst. & Gynec.* 41:29 [Jan.] 1941) and many others have shown that the administration of estrogens to women demonstrating deficiency of these hormones will definitely produce regenerative changes in the vaginal mucosa if adequate dosage is employed, thus making a basis of therapy of sterile vaginitis by use of estrogenic substances.

Another place in which the vaginal smear is of value in estimating the efficacy of estrogenic therapy is in cases of gonococcal vaginitis in children. Such therapy produces a mature type of mucosa and the presence of such a mucosa means that the gonococci have disappeared.

In the presence of infection or chronic irritation, however, the evaluation of the vaginal smear may be upset and one must be on guard to recognize such an infection when present and to interpret the smear findings in these instances accordingly.

MOLD INFECTIONS OF VAGINA AND CONTRACEPTIVE JELLIES

To the Editor—Since molds are used in the manufacture of citric and lactic acids, could the gels containing either when used in contraceptive technique cause a low grade urethritis in a person whose mucous membranes are allergic to molds? The question came to mind when a young married woman came to my office with a slight irritation and a low fever, there were myriads of pus cells and many molds in a microscopic examination of the urine. From the history it appeared that the beginning symptoms were mild and coincided with the first use of the gel. There was a slight exacerbation following work by an ophthalmologist for a recurring conjunctivitis.

M.D., Georgia

ANSWER—Contraceptive jellies are, for the most part, made from carbohydrate materials which many molds find nutrient. For this reason nonirritant materials are added in low concentration to prevent mold growth. Since the contacts between these and any mold which may be picked up in the process of manufacture is prolonged, the concentration of the mold destroying ingredient need not be high. It seems improbable that molds which might be picked up in the course of the manufacturing processes could survive this prolonged contact.

Mold infections of the urethra and bladder do occur and could, of course, be caused by an infection brought to the urethral orifice by a contraceptive jelly. In view of the almost invariable presence of mold destroying substances in the formulas from which contraceptive materials are prepared, however, it would seem that these would be extremely rare and that other contacts might be equally apt to carry in air borne spores.

SIGNIFICANCE OF DIPHTHEROID ORGANISMS IN BLOOD CULTURE

To the Editor—A man aged 60 with pyrexia of three months' duration and symptoms suggestive of bacteremia has had twelve blood cultures over the period of observation (three months). All but four have been negative. From these a diphtheroid organism has been recovered. One of two bacteriologists who have made the cultures say they are of significance. The other says they are not. Which is the correct position?

Wyndham B. Blanton, M.D., Richmond, Va.

ANSWER—If diphtheroid organisms are found in the blood of the same patient on four of twelve different occasions it is important that these organisms be studied to determine whether they are the same culturally and antigenically. Their pathogenicity for animals should also be alike. If errors in technique are ruled out and the organisms are found to be identical, they are of significance.

EXPOSURE TO CARBON TETRACHLORIDE COMPOUND

To the Editor—What are the possible poisonous effects from a duplicator roller cleaner consisting of half carbon tetrachloride with half Blankrola? It is claimed that absorption of this substance occurs through the hands or lungs and that it harms the bronchi and nerves.

M.D., Kentucky

ANSWER—According to Franco, Blankrola has been found to contain carbon tetrachloride in addition to a normal cleaning solvent. The toxicity of carbon tetrachloride in cleaning solutions is still not as well known as it should be in view of the seriousness and extensiveness of poisoning which can result from the inhalation or absorption of this substance. According to Davis the following symptoms may be caused by exposure to carbon tetrachloride fumes: slight headache, nausea (in many cases this becomes severe and lasts for several days), nervousness, mental confusion, loss of weight, dry dermatitis, secondary anemia, slight jaundice, chronic spasms of muscles, necrosis of the liver, acidosis, phosphaturia and irritative nephritis, loss of consciousness, coma and death, and visual disturbances such as blurred vision, color confusion and disturbance of near vision.

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INHALATION OF NITROUS OXIDE FUMES

To the Editor—Will you kindly advise the best treatment for inhalation of nitrous oxide fumes—the fumes from the burning of photographic films?

Elmer W. Clarke, M.D., Norton, Mass.

ANSWER—In the March 1943 issue (12:128) of *Industrial Medicine* appears an extended article by Fleming dealing with the handling of patients gassed with nitrous fumes. Emphasis is placed on the pathology, diagnosis and treatment of such cases. There are two periods of anoxia following nitrous oxide gassing, assuming that the quantity of exposure is sufficient to have brought about injury. The first occurs early after exposure and apparently is attributable to a spasm of the terminal bronchioles. The second arises with the development of significant pulmonary edema. Emphasis is placed on the necessity for absolute rest and oxygen inhalation, if edema appears, 25 per cent solution of dextrose-saline solution should be introduced intravenously. If cyanosis and venous engorgement arise, venesection may be indicated but under some circumstances is contraindicated. It appears that no benefit derives from such drugs as morphine, barbiturates, nikethamide, epinephrine or the sulfonamide compounds, although the latter may be useful in case pneumonia ensues. The article mentioned furnishes extensive information and a short bibliography.

HYPOSENSITIZATION TO GRAIN DUST

To the Editor—A woman aged 31 is troubled greatly with asthma. Her husband operates a grain and feed mill, and several patch tests done with grain taken from his clothes show quite a positive result. I should like to know where I can have a sample of this grain made into a solution for desensitizing the patient. She has been given injections with grain solutions obtained from some allergen manufacturing company, and I wonder if using her own grain would be better, because she obtained no benefit from the injections.

Henry Friedman, M.D., Granville, N. Y.

ANSWER—In the last few years a number of papers have been published regarding the relationship of dust from grain and feed mills to asthma and rhinitis, and there is no doubt whatever that these dusts are frequent causes of allergic symptoms in those who are exposed. Good results too have been reported by hyposensitization, beginning with small doses of a weak solution of the proper dust extracts and increasing the dosage and strength up to the patient's tolerance. Better results as a rule are obtained with extracts made from dust obtained from the patient's place of employment. The dust can be extracted by any pharmaceutical house which specializes in allergic products or by any allergist who is properly equipped to do this. In either case, instructions as to dosage should be furnished with the extract.

The husband should by all means change his clothes, so that he does not bring the mill dust home.

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A STATISTICAL STUDY OF MINOR INDUSTRIAL BURNS

ROY D. McCLURE, M.D.
AND
CONRAD R. LAM, M.D.
DETROIT

Much has been written on the subject of burns during the past decade and a half and a large amount of laboratory and clinical investigation has been carried out. Nevertheless at the present time there is no method of local treatment which is accepted as standard by those who take care of these injuries. However it can be said that for the more serious or hospitalized cases some unanimity of opinion is beginning to be discernible. For example, there are few proponents of the coagulation methods which make use of such chemicals as tannic acid.

It has been suspected that there has been considerably less standardization of the treatment of minor burns, such as are frequently seen in industrial plants. It was decided that it would be of considerable interest to know how these small injuries are being cared for and approximately what results are being obtained. The following industrial surgeons were consulted and readily agreed to cooperate in a survey of minor burn treatment in the plants of the three large automobile companies now engaged 100 per cent in the stupendous production of war material. Dr. C. D. Selby, consultant, General Motors Corporation, Dr. John J. Prendergast, medical director Chrysler Corporation, and Dr. Harley Krieger, chief surgeon of the Ford Motor Company. This survey thus represents the burns occurring in a group of approximately 250,000 employees.

A supply of forms for the making of weekly reports was sent to the medical departments of a large number of plants. The heading on this form is shown in the accompanying tabulation.

The plant surgeons were instructed not to report a case until treatment was finished and the employee had been discharged from treatment. The response to the questionnaire was gratifying. Of 7,608 cases reported, 5,609 were tabulated for study. The other cases were not included because of insufficient data.

The most striking fact brought out in the study was that no less than eighty-four different substances were used in the treatment of the burns in this series.¹ Many of the remedies were proprietary preparations, some of which were adequately described on the labels or adver-

tising literature, others were described ambiguously. There were several different brands of certain more or less standard substances, such as tannic acid jelly and vitamin ointments. Each brand was tabulated separately, which helped to swell the list of different materials to the high figure just mentioned. It would not be desirable in this paper to mention by name all the substances studied but rather an attempt will be made to group the various remedies into categories to facilitate discussion.

Before considering the methods of treatment, it would be well to review the pathology of the average minor industrial burn. A frequent cause of the injury is brief contact with a hot object. For example, the following causes were listed in one weekly report from a plant: hot metal hot scale arc weld, cutting torch, steam blower, hot shaving. Another listed: burned finger on hot steel, burned chest on hot chips, "burned forehead on lamp," "burned forearm on air hose." If we use the simple classification for the depth of burns, i. e. superficial or deep, most of these injuries would be classified as superficial burns, producing only a painful erythema. Others might be associated with vesicle formation, while the splash of molten metal may occasionally destroy the whole thickness of the skin.

What are we trying to accomplish in the treatment of these small injuries? Our aim should be to (1) prevent disability (get the man back on the job in a matter of minutes), (2) relieve pain, (3) prevent or minimize infection and (4) favor early healing, with a minimum of dressings. These objectives are different in many ways from those we have in mind when we are treating the serious burn in the hospital. In this instance we are concerned with saving the patient's life, which involves considerations of shock due to plasma loss, serious infection, scarring and contractures.

TANNIC ACID

Why has tannic acid been used in the treatment of minor burns? Probably largely because it has had wide acceptance in the treatment of serious burns, and theoretically what is good for a large wound should be good for a smaller one. The large burn is tanned in an attempt to prevent undue leakage of plasma and the resulting secondary shock. This is not a consideration in the minor burn. The large burn is treated with a coagulating agent to fix the injured proteins with the idea of preventing burn toxemia. There is no such hazard in the small burn. Furthermore, we now believe that under certain circumstances notably with slow drying of the eschar the tannic acid may have a specific toxic effect on the liver. Also tanning methods have not reduced the incidence of infection. The formation of an eschar requires that the part be left exposed to

the air for drying and that it be kept quiet for several hours. This would interfere with getting the man back on the job. One surgeon had this to say about the use of a brand of tannic acid jelly: "Our most serious complaint is that the dressing adheres to the medicated surface, making it impossible to remove the gauze without disturbing the crust formed by the ointment. Because of the necessity of keeping men on the job and the fact that the constant motion of the injured part tends to irritate the burned area, the usefulness of the dressing has not been demonstrated. A dressing of a lubricating quality seems to be adapted to industrial practice more readily than tannic acid jelly." There is considerable evidence that tannic acid delays epithelial regeneration.¹

In the recent study six brands of tannic acid jelly were reported. One brand was used in the treatment of 560 cases, with an average healing time of 7 days, each patient received an average of 5.6 treatments. Another brand of almost identical composition was used in 347 cases, with an average healing time of 3.7 days. It is not likely that there was actually a difference in

Report of Industrial Burns
Data requested for use by the National Research Council

Plant Report for week ending,		Location Submitted by		Plant Surgeon		
No.	Cause of Burn (Example)	Treatment	No. of Treat- ments	Days Before Healing	Days Lost	Days Hospi- talized
1	Hot metal	Boric ointment	3	5	0	0
2	Steam	Tannic acid jelly	2	4	0	0

therapeutic response to these almost identical compounds, probably the discrepancy is due to differences in treatment practices and methods of keeping records.

GREASY OINTMENTS

In the study of greasy ointments it was reported that 182 cases were treated with boric acid ointment. The average number of treatments was 2.3 and the average healing time was 2.5 days. Plain petrolatum was used for 32 cases, with an average time of 2 days and an average of 1.7 treatments per patient. Seventy-three patients were treated with zinc oxide ointment. The average healing time was 6.4 days, the average number of treatments being 4.6.

When the tannic methods were in vogue it was considered unfortunate if a patient with burns arrived at the hospital with any sort of greasy ointment applied to his skin. Now there is a swing of the pendulum in the other direction, many groups who have had extensive experience in the treatment of burns use fine mesh gauze impregnated with petrolatum or 5 per cent boric acid ointment. There is disagreement on two points in connection with the treatment of burns in this manner: 1. How much should the wound be cleansed and debrided? 2. How much pressure should be used and

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2 Allen, H. S., and Koch, S. L. The Treatment of Patients with Severe Burns, Surg., Gynec. & Obst. 74 914-924 (May) 1942.

3 Siler, V. E., and Reid, M. R. Clinical and Experimental Studies with the Koch Method of Treatment of Heat Burns, Ann. Surg. 115 1106-1117 (June) 1942.

4 Faxon, N. W., and Churchill, E. D. The Coconut Grove Disaster in Boston. A Preliminary Account, J. A. M. A. 120 1383-1388 (Dec. 26) 1942.

5 Löhner, W., and Zacher, K. Zur Klinik und Pathologie von Verbrennungen 2 und 3 Grades. Zentralbl. f. Chir. 66 5-24 (Jan.) 1939.

6 Hardin, P. C. Cod Liver Oil Therapy of Wounds and Burns. South. Surgeon 10 301-338 (May) 1941. Aldrich, R. H. Cod Liver Oil Ointment in Surgery. Indust. Med. 11 153-157 (April) 1942.

7 Brush, B. E., and Lam, C. R. The Effect of the Topical Application of Several Substances on the Healing of Experimental Cutaneous Wounds. Surgery 12 355-363 (Sept.) 1942.

how important is it? One school, represented by Koch² of Chicago and Siler and Reid³ of Cincinnati, advise a very meticulous cleansing of the wound with white soap and water, using soft cotton instead of a brush. All shreds of epidermis are removed and all blisters are opened. Petrolatum gauze is then placed over the injured area, over this are laid a half dozen layers of flat dry sterile gauze, over this a mass of gauze fluff, and over the fluff mechanic's waste or sea sponges to provide even pressure when elastic bandage is applied. There are a number of good surgeons who do not think that this meticulous cleansing of the burn is necessary. At the Coconut Grove fire in Boston, the patients admitted to the Massachusetts General Hospital had no "debridement" or cleansing, the burns were hastily covered with gauze impregnated with boric acid ointment and dressings applied over this. The results obtained in these cases were eminently satisfactory.⁴ It is well established that the unopened blister is not the infection hazard that it was once supposed to be. It may be that the best dressing for burned epithelium is the layer of plasma which has elevated the superficial layers of epidermis and formed a blister. Therefore we are faced with the conclusion that the application of a petrolatum dressing following some type of cleansing is good treatment for burns both large and small. The next matter for consideration is whether or not there is an advantage in adding various chemical substances to the petrolatum. There is a long list of proprietary preparations composed of a petrolatum or similar base to which one to a dozen medicinal agents have been added. For example, one proprietary containing a shotgun collection of eleven drugs was used in the treatment of 1,285 burns. The average healing time was 6.3 days and the average number of treatments was 3.8. It was not superior to any of the emollient remedies.

VITAMIN OINTMENTS

The overemphasis of vitamin therapy in other fields has been extended to the treatment of burns. A number of commercial preparations have as active ingredients the fat soluble vitamins A and D. Cod liver oil appears to have been used first in Germany by Lohr and his associates.⁵ In 1939 they reported that they had treated 1,562 burns and scalds with cod liver oil and casts. There had been twenty-one deaths, or a mortality of 4.8 per cent. Only one of these deaths was due to late infection of the wound. The American literature contains a number of enthusiastic reports on the use of cod liver oil ointments in clinical cases.⁶ However, these clinical reports have that common fault: there were no controls. Brush and Lam⁷ found that commercial vitamins A and D ointment did not significantly affect the healing time of experimental cutaneous wounds in the guinea pig.

In this statistical study of minor burns "cod liver oil" ointment was used in 25 cases, with an average healing time of 31 days. A commercial vitamins A and D ointment was used in 41 cases with an average healing time of 32 days. It should be remembered that the healing time of 32 cases treated with plain petrolatum was only 2 days.

FOILLE

Foille is a proprietary preparation described by the manufacturers as a stabilized water-in-oil emulsion accomplished through processing several drugs of well known therapeutic value in a vegetable oil base. Chemical action effects combination of certain elements and at the completion of the processing the active ingredients may be stated as follows: alcohol, benzocaine, oxyquinoline base, phenol, calcium soap, calcium iodide, potassium iodide and calcium thiosulfate.⁸ In this study Foille was used in 403 cases, with an average healing time of 59 days and an average of 5.3 treatments per case. This is no better (and probably no worse) than any of the other bland ointments.

SULFONAMIDE OINTMENTS

A number of ointments are available which contain one or more of the sulfonamide drugs. Those containing sulfathiazole and those containing sulfadiazine are more commonly used. A 20 per cent sulfathiazole ointment has been recommended by Dragstedt and his co-workers⁹ at the University of Chicago. A 5 per cent sulfadiazine ointment was used by Pickrell¹⁰ at the Johns Hopkins Hospital. Biram¹⁰ at the Colt's Patent Fire Arms Manufacturing Company treated 1503 burns by dusting with sulfathiazole and putting on "intracaine" ointment. Only 2 patients lost time and there were no scars of consequence.

In this series the sulfonamide drugs combined in ointments were used in the treatment of 299 cases with an average healing time of 41 days. There is no evidence from this study or in other studies of major burns that the use of local sulfonamides is of value in the prevention of infection.

SUMMARY AND CONCLUSIONS

1. An unreasonable number of different preparations are being used for the treatment of minor burns in industrial plants.

2. Regardless of what is put on the average minor industrial burn, it is apt to be healed in less than a week.

3. We recommend the following treatment for minor industrial burns:

- (a) Wash the area with white soap and water.
- (b) Do not break blisters or otherwise "debride" the wound.
- (c) Cover with fine mesh gauze impregnated with petrolatum or 5 per cent boric acid ointment.
- (d) Apply a firm dressing over this, bulky enough to keep dirt away from the injury but not too large to keep the man off his job.

Henry Ford Hospital

⁸ Allen J. C., Owens F. M., Evans B. H. and Dragstedt L. R. Sulfathiazole Ointment in the Treatment of Burns. *Arch. Surg.* 44: 819-828 (May) 1942.

⁹ Pickrell K. L. A New Treatment for Burns. *Bull. Johns Hopkins Hosp.* 69: 217-221 (Aug.) 1941.

¹⁰ Biram J. H. Minor and Medium Burns. Treatment with Sulfathiazole. *Indust. Med.* 11: 462-465 (Oct.) 1942.

NUTRITIONAL REHABILITATION OF ONE HUNDRED SELECTED WORKERS FOR INDUSTRY

TOM D. SPIES, M.D.

BIRMINGHAM, ALA.

The present study might well be said to have begun in 1930, when I realized that persons with deficiency diseases were unbelievably weak and listless. The first six years were spent in the careful study of 278 patients in Ohio, selected because they had lesions typical of pellagra, beriberi or scurvy.¹ In 146 of these patients the nutritional deficiencies were secondary to organic diseases which interfered with the proper ingestion, absorption or utilization of a good diet, in 115 patients they followed chronic alcoholic addiction which interfered with the ingestion of an adequate diet, in the other 17 patients they were of the endemic type which follows the habitual consumption of a diet poor in essential nutrients. All the 278 patients were severely ill and were admitted to the hospital for careful clinical study. Invaluable aid in carrying out these studies was given from time to time by Drs. A. B. Chinn, Warren Payne, A. S. Dowling, H. F. deWolf, John Ambler and W. Clark Cooper. In these studies our efforts were directed particularly toward determining in each patient the predisposing and precipitating factors concerned in the development of the disease and the individual response to treatment. After the patients were discharged from the hospital, our frequent visits to their homes and their visits to the clinic revealed that in each instance the gain in strength had been spectacular. Many of them had returned to work and were extremely grateful for having better health. The 17 patients in the endemic group offered a special challenge in that they were able to obtain work and wanted to know ways of remaining in good health so that they could continue this work. The response of these 17 patients to treatment suggested to us that we seek an agricultural and industrial area in which deficiency diseases were endemic. Accordingly, when we were given an opportunity to go to such an area in Alabama in 1936 we accepted. It seemed to us that the first thing to be settled was whether or not the pellagra we had been treating in the North was the same disease that was so common in the South. This we did by applying the methods of treatment we had used in our cases in Ohio to 50 cases of endemic pellagra in and around Birmingham, Ala.² Our results were as successful as those we had obtained in Ohio, thus indicating that the response to therapy in endemic nutritional deficiencies was the same in the North as in the South. Our next problem was to test our original hypothesis which was that persons debilitated by nutritional deficiencies can be rehabilitated so that they can return to work, provide a good diet for themselves and family, and thus rehabilitate not only themselves but perhaps other members of the family.

¹ University of Cincinnati Studies in Nutrition at the Hillman Hospital, Birmingham, Ala. From the Department of Internal Medicine, University of Cincinnati.

The tremendously heavy expenses of the general nutrition study have been borne by grants from a number of philanthropic persons, foundations and commercial concerns without which this study could not have been done. The necessary expense of frequent observations of these patients in their homes and in the clinic over a long period of time has been defrayed by grants from the John and Mary R. Markle Foundation and Parke Davis and Company.

² Dean William B. Spies, Tom D. and Blancheburn M. A. Unpublished observations. Spies, Tom D., Chinn, Austin B. and McLeer, James B. Severe Endemic Pellagra. *J. A. M. A.* 105: 823 (March 13) 1937.

My purpose in this communication is to call attention to the fact that persons debilitated solely by nutritional deficiencies gain strength promptly following specific nutritive therapy. Certainly it should not be inferred that nutritive therapy is a panacea for all weak, listless but willing workers. I realize that persons who do not have nutritional deficiencies will not be benefited by such treatment. As will be seen, however, the very nature of the present study was such that I could rigidly select patients who could be fitted for work in industry because they were debilitated solely by nutritional deficiencies. In every instance their health was restored and they were able to return to work. The study is being continued but, because of the present great need for manpower, I deemed the results thus far worthy of publication.

MATERIAL AND METHODS

Indigent persons were referred to the Nutrition Clinic from the emergency ward and the outpatient department of the Hillman Hospital, from private doctors in Birmingham and nearby communities, or by other patients. In the latter group were a number of persons who had symptoms which they considered similar to those of patients already under our care. To us it was interesting that, in a local community in which our treatment of a person with some particular symptom had been followed by spectacular improvement, other persons in the community with similar symptoms flocked to us, for example, following the relief of pellagrous psychosis in a patient, many persons with mental symptoms were brought to us from miles around. We then had to decide whether or not the mental symptoms of these persons could be explained on the basis of nutritional deficiencies and, if they could not, we had to make arrangements for them to be treated elsewhere. Similarly, when the treatment of persons with ulceration of the cornea due to riboflavin deficiency was followed by great improvement, persons with various ocular symptoms heard about it and came seeking relief.

In the first month we thought in terms of the individual rather than of the family, with the result that we probably missed a certain number of patients in the various families. We soon learned, however, that when we made a diagnosis of nutritive failure in one person it was desirable to study the family as a group. This proved to be logical in view of the fact that they all ate from the same table. From the afflicted family we selected a potential worker between the ages of 15 and 60 and applied the criteria for the present investigation. From several thousand persons with deficiency diseases we made a very rigid selection of cases for this study.

In initiating the rehabilitation of these patients, we obtained all the available information about the person as well as his disease. In assembling such information, no mere outline sufficed in all details for every patient. Nevertheless, certain forms which we used were helpful. These forms, along with the ones used for the mixed symptom complex, are described in a recent publication.³

By long experience we learned that the very essence of successful therapy is early and accurate diagnosis and that the diagnosis can best be made by a conservative interpretation of all the data secured from

a dietary survey, special laboratory determinations, a complete medical history and a physical examination. When we first saw a person with the idea of selecting him for this study, we obtained a dietary history from the potential patient as well as from others in the family. We questioned them carefully in regard to the amount of each food they ate daily. We made frequent visits to their homes to collect data on their actual food consumption. By comparing the foods these persons ate with those recommended for an adequate diet, we estimated approximately the adequacy of their diets. It was found that information in regard to the family income and their food resources, such as a garden, chickens and cows, was of great value in determining the adequacy of the food intake. If the income was very low and there were few or no food resources, it seemed likely that their diets had been inadequate.

From the beginning we realized that deficiency diseases tend to occur as complexes rather than as single entities. Many of the patients included in this study had presenting evidence characteristic of more than one deficiency disease. Nearly every patient gave a history of having had symptoms which, for a number of years, waxed and waned with the seasons and in most instances became worse each year. The attack which brought them to the hospital at this time was more severe than that of previous years. Many of them said that they had not gone to a physician because they realized that they had pellagra and felt that it was a disgrace. When their vague early symptoms began, some of them had gone to a physician, who in many instances made a diagnosis of hysteria, neurasthenia, anxiety states, functional disorders or just plain neurosis.⁴

In the final analysis a definite diagnosis of nicotinic acid deficiency (pellagra) was made only when the patient had pellagrous mucous membrane lesions or pellagrous dermatitis, the diagnosis of thiamine deficiency was made only when the patient had characteristic nutritional neuritis, we diagnosed scurvy only in the presence of scorbutic gums and hemorrhages into the skin or tissues. For the first three years we selected only persons who had characteristic pellagra, beriberi or scurvy. More recently we have included also persons with diagnostic evidence of riboflavin deficiency. The signs on which we depended for a diagnosis of riboflavin deficiency were cheilosis at the angles of the mouth or characteristic ocular lesions. It is of interest that, in 100 patients arbitrarily selected for this study, niacin deficiency was diagnosed in 56, riboflavin deficiency in 50 and nutritional peripheral neuritis in 24. These figures total more than 100 per cent because two or three types of deficiency were present in 25 patients. Associated with these diagnostic lesions in 100 selected patients we could list pages of other symptoms, but in every instance we found weakness, failure of mental application, nervousness and irritability. In each case we determined whether the nutritional failure was due to an inadequate diet, alcoholic addiction or organic disease which interfered with proper nutrition. After making a positive diagnosis of nutritional deficiency in a potential worker who was unable to work, we discarded for this study any one whose history even suggested predisposing factors other than an inadequate diet. When it was secondary to a chronic disease or alcoholic addiction, the patient was treated but was not included in this particular investigation.

3 Spies, Tom D., Bradley, John, Rosenbaum, Milton, and Knott, John R. Emotional Disturbances in Persons with Pellagra, Beriberi and Associated Deficiency States, Res. Pub. Assn. Nerv. & Ment. Dis. 22: 122, 1943.

4 Spies, Tom D. Diagnosis and Principles of Treatment of Deficiency Diseases, Texas State J. Med. 38: 427 (Nov.) 1942.

From the beginning, the criteria for the selection of patients, white or black, was the same. We were impressed by the small number of Negro patients who came to us. Particularly were we impressed in view of the fact that the population of the locality in which we were working is about 50 per cent white and 50 per cent colored. Of the 100 patients selected, only 1 was a Negro.

While I have seen every patient in the clinic as well as those described here a number of times, it would have been impossible for me to care for the large number of patients treated in the clinic or hospital or to have carried out all the details of this study had it not been for the willing, intelligent cooperation of the following associates at various times through the six years: Drs. Robert E. Stone, Richard W. Vilter, William B. Bean, Luther Terry, Irvin H. Griffin, L. H. Hubbard, D. P. Hightower, Frederick A. Dowdy, T. S. Boozer, Brad Morris, Sam Jones, H. H. Henderson, Sidney T. Wright, Esther S. Gross, A. S. Turk, Gilbert F. Douglas Jr., Norris L. Brookens, Walter B. Frommeyer Jr., Daniel Perry and Robert C. Cogswell Jr. These doctors and Misses Ann Van Blaricom and Monette Springer and Mrs. Jane M. Mann, nurses, and Misses Helen M. Grant and Jean M. Grant, Mrs. Merle S. Babb and Mrs. Mabel Morey, nutritionists, have for the most part spent their time on the hundreds of patients who have been treated and returned to work on the farm or have improved so that they could do their housework or have been accepted by the armed forces. The following consultants have seen certain of these patients and have given freely of their knowledge, time and diagnostic acumen, and to them also I am grateful: Dr. Charles D. Aring, J. P. Frostig, F. H. Lewy, H. E. Himwich, Milton Rosenbaum, John Bradley, John R. Knott, Emory D. Warner, Carl V. Moore and A. W. Mann.

TREATMENT

After selecting the patients we immediately initiated therapy and then began the long, arduous task of eliminating all the factors which predisposed to or precipitated the nutritive breakdown.

In the beginning it was necessary to admit most of the patients to the hospital for intensive as well as persistent feeding and therapy. More recently they have been treated in the clinic and allowed to return home. Of late we have been especially gratified to see the period of convalescence greatly shortened by the application of the newer methods of treatment.

The dietary treatment of these selected persons with deficiency diseases, whether they were treated in the hospital or in the clinic, was based on the principles of nutrition applicable to persons in health. We realized that it was essential for these patients to have an adequate intake of protein, calories, water, minerals and vitamins. We realized also that in persons with deficiency diseases the nutrition of the body has suffered considerably. Accordingly the diet, although based on the principles of the normal diet, was planned so as to supply much larger than normal amounts of the essential nutrients. Each patient was given a diet which supplied at least 4,000 calories, 120 to 150 Gm. of protein and liberal amounts of minerals and vitamins. In the beginning, the type of food used and the method of administering it depended entirely on the ability of the patient to ingest and retain food. As a rule the desire for food was absent. At first it often was necessary to give small feedings at frequent intervals. In the severe cases the mouth and tongue were often

so sensitive that only liquid or soft foods could be given and highly seasoned or acid foods had to be avoided. As these patients improved, semisolid and solid foods were given and a greater variety of food included in the diet. In all cases in which diarrhea was present solid foods were added as soon as possible. Whether the diet was liquid, soft or solid, every effort was made to prepare and serve it in such a way that it was most acceptable and attractive to the patient.

We never relied on food alone to relieve the vitamin deficiencies. Supplements of the nutrients in which the patient was deficient were always given. Until synthetic vitamins became available for clinical use, we depended entirely on such substances as brewers' yeast powder, liver concentrates and citrus fruit juices as supplements to the diet in the treatment of deficiencies of the water soluble vitamins. As valuable as these substances were and still are, there are times when synthetic substances are life saving.

Since vitamin deficiencies usually are multiple rather than single and since, in our experience, we have found that severe deficiencies of the water soluble vitamins are much more common than those of the fat soluble group (A and D), of late we have used a basic formula composed of a mixture of the water soluble vitamins in treating the clinical syndromes of beriberi, pellagra, riboflavin deficiency and scurvy. This formula contains 10 mg. of thiamine, 50 mg. of niacin amide, 5 mg. of riboflavin and 75 mg. of ascorbic acid. When the symptoms of one deficiency predominate, more of the vitamin specific for the predominating deficiency is added. In the case of beriberi, 10 mg. of thiamine was added daily; in riboflavin deficiency, 5 mg. of riboflavin was added twice daily; in scurvy we added 100 mg. of ascorbic acid three times a day. To the severely affected pellagrins, 150 mg. of niacin amide three times a day was given in addition to the basic formula. Two patients were so severely ill that we chose to administer these substances parenterally.

When convalescence was established in patients with B complex deficiencies who had been treated with synthetic substances, dried brewers' yeast powder or oral liver extract was given as a supplement to the diet. These substances contain significant amounts of protein and other nutrients and they are particularly valuable because they supply essential substances in which the patient is probably deficient as well as the B complex vitamins. The amounts of these substances that we gave depended on the severity of the disease. Usually we gave daily doses of from 4 to 6 ounces of dried brewers' yeast powder or oral liver extract.

OBSERVATIONS

As can be seen from the 2 representative cases the response to immediate therapy in all cases was rapid. These cases like the others were selected at a time when jobs were scarce and the competition for them was great, even among skilled competent workers. Many of the persons selected volunteered the information that they could not compete with better nourished and more physically fit workmen.

The following case history is that of a young boy whose father worked in a steel mill, had a good income, owned his own home and provided an adequate diet for the family. As a result of idiosyncrasies in diet this boy became an invalid. Following treatment, he was able to complete his education, obtain a job and become self supporting.

CASE 1—History—R. M., a 15 year old white boy, unable to walk or stand alone, was carried into the clinic of the Hillman Hospital, March 12, 1936. The family history was negative. The past history was irrelevant. From the parents and later from the boy it was learned that he was in perfect health until January 1935. At that time he began to lose his desire for food and soon began to lose weight. Since his appetite was so finicky, his mother stated that she allowed him to eat anything he wished, so he restricted his diet to desserts, candy and soft drinks. Early in March his mother noticed discoloration and roughness over his elbows and knees. These lesions persisted, he continued to lose weight and by September was so weak he could not go to school. In October he became acutely ill and was admitted to a hospital for observation. The redness of his tongue led some physicians to suggest that he might have scarlet fever. Others suggested that he might have nephritis because of the edema of his ankles. At this time he had some pain and numbness in all four extremities. After a ten day period of observation in the hospital he was discharged. A month later he began crying a great deal of the time because of the intense, persistent pains in his legs and arms. His feet burned so much that he refused to have bedclothes over them. By this time he was listless, lost interest in everything and refused to see any of his friends. Gradually he became apprehensive and dull and was no longer able to use his legs and arms. By the end of the year he could not walk or stand alone and was unable to hold a glass or feed himself. Early in February a physician told his parents that the boy had multiple sclerosis. A month later his tongue and mouth became sore again and a "rash" appeared on the elbows and legs, and new areas were involved on the forearms, nose and cheeks. The physician now said that the boy had pellagra and suggested that they take him to the Nutrition Clinic.

Nutrition History—The boy was breast fed until he was 18 months of age, he was not given supplements of cod liver oil or orange juice. From the time he was old enough to eat solid food he preferred bread, desserts and sweets to any other foods. Prior to his illness he often ate 10 to 12 slices of white bread, 4 or 5 servings of desserts and large amounts of candy daily. Usually he drank from 5 to 6 bottles of some kind of soft drink daily. Occasionally he ate small servings of greens or tomatoes and sometimes an apple but would eat no other fruit or vegetables. He refused all meats except lean pork, which he ate once or twice in a week. He had not had milk or eggs since he was 2 or 3 years of age. As the father had regular work in the steel mill, owned his home and supplied adequate food for the children, it is fair to say that the boy's food idiosyncrasies were the reason for his not having an adequate diet. Nutrition histories of two sisters, a younger brother and the parents showed that they had always eaten adequate diets.

Physical Examination—The boy was listless, depressed, undernourished, apprehensive and uncooperative. The tongue and buccal mucous membranes were cardinal red and swollen. Large, symmetrical "butterfly" dermal lesions of pellagra extended over the bridge of the nose and the malar surfaces of both cheeks. These areas were pruritic and dark brown with a fiery red border. The line of demarcation between the pellagrous areas and the surrounding skin was clearcut. The skin over the dorsal surfaces of the elbows and knees looked and felt like rough sand paper. It was thickened, inelastic and bronze in color except at the edges, where it was fiery red.

Neurologic Examination—The boy was unable to walk or to move any extremity. The muscles of the hands, forearms, thighs and legs showed profound atrophy. The hands were "clawlike" in appearance, the deformity was somewhat greater in the left than in the right. The muscles of the legs and arms were weak and there was almost complete loss of power of the dorsiflexion of the lower arms, resulting in bilateral wrist drop. There was extensive atrophy of the muscles of the thighs and lower legs. He had bilateral foot drop. The biceps, triceps, patella and achilles reflexes were absent bilaterally. Babinski, Gordon and Oppenheim signs were not present, and there was no ankle clonus. The abdominal and cremasteric reflexes were present and active. There was no evident disease of any cranial nerve.

Course in the Hospital—He was put on twenty-four hour nursing service and was under the supervision of a dietitian and a number of physicians in addition to the house and visiting staff. He was given a daily diet of 4,000 calories, rich in meat, milk and eggs, supplemented with 180 Gm of dried brewers' yeast powder. The yeast was given in 30 gram amounts, well mixed in 200 cc of ice cold milk. The first two days he could retain the food and yeast mixture only when they were given in very small amounts at frequent intervals, so he was fed at least every two hours day and night. By the third hospital day he had improved and his food was given in more solid form at less frequent intervals and the yeast mixture was given every four hours. His diet included daily 1 quart of milk, 4 eggs, $\frac{1}{2}$ pound of lean meat, 2 servings of green vegetables and 2 servings of fruit, in addition to liberal amounts of whole grain cereal, bread, butter and cream. Although he refused to eat these foods at home and had not tasted many of them before, we insisted that he eat them. He never learned to like carrots or beets but developed a liking for all other foods. After his general sense of well-being began to improve, the redness of the buccal mucous membranes and the tongue faded rapidly and he stated that his mouth and tongue no longer burned. The erythematous borders of the skin lesions faded promptly, began desquamating and within one week had subsided except for a residual pigmentation.

For the first two days in the hospital he was so apprehensive, frightened and antagonistic that little could be done with him other than force food. On the third hospital day he began to chat with other patients and became very friendly with the doctors and nurses during the subsequent week. By this time he was able to move his legs in bed and began to use his hands to help feed himself. Soon afterward he was allowed in a wheel chair and was able to push himself around and started playing checkers with other patients. When he was discharged on his twelfth hospital day he seemed well on the road to recovery and had gained 6 pounds (27 Kg). His mother promised faithfully to follow instructions in regard to preparing and serving his diet, and the boy agreed to eat what ever she gave him. This system worked well. Two weeks after he left the hospital he was able to stand alone and soon began walking on crutches. Two weeks later he was able to walk around the house without crutches and within six weeks was riding a bicycle. By September he had gained 18 pounds (82 Kg) and decided to return to school. In 1940 he graduated from high school and went to work driving a truck for a chain grocery. In December 1942 he was given a much more responsible job with the same company driving a large transport truck over long distances. At present he works steadily, has an excellent appetite and eats the kind of food he was instructed to eat. Like the proverbial fairy story, he is married and living happily and expects soon to become a member of the armed forces.

The following representative case is that of a highly skilled workman who was on the verge of being sent to a custodial home for mental diseases as a result of nutritive failure. His illness appeared soon after the plant in which he worked closed. He subsequently stated that without special treatment he could not have improved sufficiently to secure and hold a job. He said he noticed that better nourished and more physically fit men were the first to be selected to return to work when the steel plants reopened.

CASE 2—History—K. J., a 33 year old white foundry worker in a steel mill, was brought to the Hillman Hospital by his wife on March 16, 1936. The past history was negative. The patient had been in good health until January 1936. When he was finishing his last year in high school his father who had always had a good income, died suddenly, and in order to support his mother and two brothers the patient obtained work in a steel mill. We learned from the superintendent of the mill that he was a skilled, reliable worker, that he was exceptionally conscientious and that he soon learned to be one of the best molders in the foundry. He was made foreman of the shop in 1926, when he was only 23 years of age. At this

time he married and began making payments on a small house and $\frac{1}{2}$ acre of land. Within three years three children were born, and in order to provide them with the best food possible he bought a cow and chickens and grew vegetables and fruit, much of which his wife canned for winter use. At this time the family lived comfortably and had a liberal and well balanced diet. Late in 1929 the mill began operating part time, but for more than a year he made enough money to avoid drawing on his insurance and he continued to make small payments on his house. By 1931 the mill had closed and he was out of a job. His savings dwindled until they disappeared. He sold the cow and chickens when he could no longer buy food for them. Next he sold most of the house furnishings and divided the money with his two brothers who were also unemployed. Occasionally he obtained work in a lumber yard but earned only enough to provide a little milk for the children, scant fuel for the kitchen stove and some seeds for the garden. He worried much of the time about his wife and children and decided that in order to give them the best of what food there was he would tell them he preferred to eat grits, corn bread and syrup. He followed this self imposed diet and gradually lost all desire for food. For many days he ate biscuits and drank coffee in an attempt to get enough energy to work in the garden. In January 1936 his wife observed that he was doing very peculiar things such as getting up at night and pacing the floor or walking around the garden, hours at a time talking or mumbling to himself. He was confused and in the middle of a sentence frequently forgot what he had started to say. When he went on an errand he often forgot where he had started and for what purpose. Despite the fact that he had always been devoted to his family he became so irritable that the children were afraid of him and his wife hid them from him. Although he could not tolerate having the children near him he refused to allow them to go to school because they did not have what he considered the proper clothing. For the first time in his life he developed such a belligerent attitude toward his neighbors and friends that they stopped visiting him. Later he refused to go out of his house for weeks at a time. Early in February he began complaining of pain and burning in his stomach and burning and aching of his feet. The burning was so intense that he could not sleep and he sat up most of the night with his feet in a tub of water. He refused to have bedclothes over them although the house at this time was very cold. A little later he began to complain of a sore mouth and tongue, and by this time the pain in his stomach was so severe that he refused to eat anything but thin gruel made from grits and to drink an occasional cup of coffee. Soon after that his wife noticed that the skin on his hands, forearms and neck became fiery red. He thought he had something catching and issued orders that his wife and children must not enter his room. He lay in bed shouting to his wife that he had made a failure of his life and brought disgrace on his family and he threatened to kill himself and them. He refused her offer to have a doctor on the basis that the doctor would poison him and probably would steal the children and give them to the neighbors. His wife became so alarmed by his actions that she went to his former employer and asked his assistance in having him committed to a custodial institution for the treatment of mental diseases. The employer called a physician who from the skin lesions made a diagnosis of pellagra and prescribed a sedative and the patient was brought in an ambulance to the Nutrition Clinic of the Hillman Hospital. From there he was admitted to the ward.

Physical Examination.—The patient was well developed but emaciated and appeared irritable and depressed. Large symmetrically placed erythematous pellagrous lesions extended over the dorsum of the hands, the wrists and the forearms and completely encircled the neck. The tongue and mucous membranes were swollen and reddened. The knee jerks were greatly hyperactive. The peripheral nerves of the legs were excruciatingly tender to pressure.

Treatment and Course.—He was placed under twenty-four hour nursing dietetic and medical supervision. He was given daily a diet of 4000 calories, rich in meat, milk and eggs and 120 Gm of dried brewers' yeast powder. Although he usually

objected to taking food, complaining that it "scalded his tongue, burned his stomach and made his bowels move too often," by coaxing he was persuaded to eat the desired amount, even on the first hospital day. Since he could eat only a little food at one time, we fed him every hour day and night. He seemed rational at intervals during the first two days but most of the time he was having hallucinations and delusions, frequently manifested by his persistent insistence that his wife was waiting downstairs in the hospital for him to sign a pay check, despite the fact that his wife was at home and that he had not received a pay check for a long period of time. Occasionally he thought we were trying to poison him but this idea was fleeting a few minutes after refusing food he might take the same food without hesitancy. By the third hospital day the redness of the tongue and the oral mucous membranes had disappeared. He said that he felt fine, asked for food and volunteered that he had been "out of his head" for a long time. By this time the skin lesions were fading and by the tenth hospital day they had desquamated. The burning and aching of his feet steadily lessened, and he was discharged ten days after admission, having gained 10 pounds (4.5 Kg) in weight. He now had an excellent appetite, was cheerful and was anxious to return home to his family and felt confident of obtaining employment. He followed the recommended diet at home and visited us in the clinic twice during the next week. The superintendent of the foundry gave him work three days a week. The patient asked our counsel as to how to provide an adequate diet for himself and his family on his new income. He followed our suggestions and remained well until February 1938 when he developed a protracted illness diagnosed by the attending physician as influenza followed by bilateral lobar pneumonia. After a stormy convalescence he gradually recovered but was very weak. During his illness he lost his appetite and 20 pounds (9 Kg) in weight. Three weeks after the pneumonia subsided he noticed burning of the mouth and tongue and burning and aching of the feet soon became so severe that he could not sleep. He worried constantly about his family. His wife was sure he was going out of his head again. He became uncooperative and was reluctant to see us or his friends. He was so depressed that he no longer cared for our counsel. His wife came to see us and we advised her to bring him to the hospital. He did not want to come and she did not wish to urge it at this time. Two weeks later the skin on his hands, forearms and neck became fiery red. In a lucid moment he realized that his symptoms were similar to those we had treated before, so he asked his wife to get a car to bring him again to the Nutrition Clinic.

Between these two attacks of deficiency disease the science of nutrition made rapid progress. The patient remained ambulatory, coming to the Nutrition Clinic for treatment daily for the first three days, then twice a week for four weeks. For three days he was given 500 mg of nicotinic acid daily in ten 50 mg doses, then four 50 mg doses daily for four weeks. His wife gave him 120 Gm of dried brewers' yeast powder each day in tomato juice. The day after treatment was started he volunteered that he felt better again that his head was clear and that his mouth and tongue no longer burned. The redness of the tongue and buccal mucous membranes faded within twenty-four hours. By the third day the redness of the skin lesions had decreased and on the fifth day were well on the way to desquamation and healing. At the end of two weeks he still complained of some aching of the legs and burning of the feet and as a therapeutic test he was given an injection of saline solution which did not relieve his pain. The next day he was given 10 mg of thiamine intravenously and within thirty minutes had complete relief from pain. That night he slept better than he had slept for years. He was then given 10 mg of thiamine twice daily by mouth for four weeks. Within two weeks the burning of his feet had disappeared. Once again he was instructed to eat a liberal diet but this time he objected because of the cost. He thought he would not be able to go back to work for some time and feared that if he ate the recommended diet there would be no food for his family. He consented to follow instructions only when we told him he probably would be able to go back to work in a week if he followed directions. His former employer gave him several days work each week and within three months he was working

six days a week as foreman of the foundry. He continued in this job until the summer of 1941, when he was offered a responsible position in the Navy Yards on the east coast. Since this paid more than the job he had, he decided to try it for a few months. After staying two months he found he enjoyed the work and came back, sold his house and moved his family. Although we made frequent examinations of the wife and children, we never found diagnostic lesions. Nevertheless they were underweight, nervous, irritable and apprehensive. As the patient's health improved and he obtained employment, he was able to provide a better diet for himself, his wife and his children. The general health of his wife and children as well as his own improved steadily. In his last letter he stated that he had not lost a day's work in over a year and that his family were in excellent health.

These 2 patients, like most of the others in the study, have made frequent visits to the Nutrition Clinic, and we have made visits to their homes from time to time, with the result that we were able to keep them under supervision. Many of the patients still take daily supplements of yeast, yeast concentrates or synthetic vitamins. All the patients except 1 white man improved to the place where they wished to get jobs and proceeded on their own initiative to do so. The 1 white man who improved but was not interested in obtaining a job volunteered and was accepted in the Army Engineer

Distribution in Industry of One Hundred Rehabilitated Workers

Miners	25	Cotton mill workers	2
Steel mill workers	14	Painters	2
Saw mill workers	8	Casket factory workers	2
Carpenters	5	Brass factory worker	1
Shipbuilders	4	Powder plant worker	1
Airplane modification plant workers	4	Electrician	1
Department store clerks	4	Blacksmith	1
Salesmen	4	Plumber	1
Law enforcement officers	4	Apartment house manager	1
Restaurant workers	3	Boarding house owner	1
Truck drivers	2	Fishing camp owner	1
Engineers	2	Grocery store clerk	1
Contractors	2	Meat cutter	1
Mechanics	2	Merchant	1
		Road construction foreman	1

Corps. Some idea of the type of jobs they obtained in the various industries can be seen from the accompanying table.

SUMMARY AND CONCLUSIONS

1. One hundred persons, debilitated solely by nutritional deficiencies to the point where they could not work, were selected and treated. In every instance the immediate response was gratifying. Persistent therapy enabled these persons to obtain work and to continue to work and earn sufficient funds to provide an adequate diet. Being grateful and anxious to cooperate, they have followed our dietary instructions with the result that there has been a slow but steady improvement in their health and, in many instances, in the health of their families.
 2. The disease in case 1, which followed an idiosyncrasy in diet, is considered representative of deficiency diseases which occur among both rich and poor, anywhere, at any time. Case 2 illustrates how easily symptoms arising from faulty nutrition of the nervous system can be confused with neurotic and psychopathic states of undetermined origin.
 3. The science of nutrition has advanced so rapidly that the practicing physician naturally wonders what can be counted on in his day to day practice of medicine. Certainly he will be gratified if he makes an accurate diagnosis and applies persistent therapy to a debilitated, potential worker who is held back solely because of inadequate nutrition.
- Hillman Hospital

THE PRESENT STATE OF THE ARMY'S HEALTH

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MEDICAL CORPS, ARMY OF THE UNITED STATES

The United States Army is now faced with the largest and most complex problem of health protection that has ever confronted a military force. Aside from the few zones controlled by the enemy, our forces circle the globe. They are exposed to wide variations of weather and climate, they live under conditions ranging from the best that modern civilization can offer to the worst that exists among aboriginal savage tribes, they must be protected, not only from the diseases of our own country, but from the serious infections that have played a dominant role in retarding the progress of civilization in certain foreign lands. It is no exaggeration to say that the Army is now, or soon will be, confronted with almost every known disease.

The protection of the health of our military forces under such adverse conditions is a matter of great concern not only to the Medical Department of the Army but to the entire medical profession of this country.

In the present article I propose to take stock of the results of the Army's program of preventive medicine as indicated by the present state of the Army's health. The present excellent health record can be best appreciated when contrasted with the Army's past experience with disease.

During the century and a half of our national existence the United States Army has had a rich experience with disease in peace and in war, at home and abroad. The peacetime experience has to a large extent paralleled that of the civilian population, and the health of the peacetime army has improved along with that of the country as a whole. However, mobilization and war always introduce conditions that favor the spread of disease and render difficult the efficient application of the measures available for their control. Therefore it is important to compare our present health record with the records of previous wars.

Beginning with the American Revolution there has been a progressive improvement in the care afforded the sick and wounded. However, in each of our wars the infectious diseases have produced more disability and death than have the injuries of battle. The nature and severity of these infections have differed greatly, depending on circumstances, but prior to the twentieth century the most disabling of the wartime diseases were included in the enteric, respiratory and insect borne groups. In the Mexican War disease caused seven times as many deaths as did battle. During General Scott's campaign dysentery, typhoid, cholera, malaria and yellow fever caused losses exceeding 30 per cent of the effective strength of his forces. In the Civil War about six million Union soldiers were admitted to hospital for disease and the reported deaths were as follows: battle injuries 94,000, disease 186,000, and unknown 24,000.

During the Spanish-American War information was available about many of the micro-organisms of disease, but military hygiene and sanitation were still unde-

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veloped. Consequently we again lost seven men from disease to every one killed in battle. One fifth of all the troops developed typhoid, which caused 80 per cent of the total deaths. Malaria and other diseases were also prevalent.

When our Army entered World War I, two decades later, it was better prepared to meet the challenge of certain of the infectious diseases. Great advances had been made in bacteriology and protozoology, and military preventive medicine had become a highly developed science. Between April 1917 and December 1919, four million men were mobilized. All of these troops were vaccinated against smallpox, typhoid and paratyphoid A and B. Methods were available for the sterilization of water in the field. There were 50,000 battle deaths and only 58,000 attributable to disease. Typhoid was uncommon, but the respiratory infections were prevalent and influenza appeared in virulent pandemic form. As our forces operated mainly in temperate regions, the so-called tropical diseases were comparatively unimportant.

During the next two decades of peace the Army's health record was excellent. As shown in chart 1, the admission rates per thousand per annum reached an all time low in 1939 of 529 per thousand. As shown in chart 2, the decrease in mortality has been even more dramatic and in 1939 the rate reached 3.1 per thousand, the lowest mortality rate experienced up to that time by the United States Army.

With this wonderful health record we entered the period of emergency that preceded the present war. At that time it was impossible to predict what diseases might arise to attack our forces. Past experience indicated clearly that this would depend on many complex factors including geographic location, climate, season, local health conditions in the areas involved and the protection afforded our troops. Therefore all of the wartime plagues were considered as potential hazards and comprehensive plans were made to combat them. These plans resulted in an extensive program of preventive medicine. This program has been developed

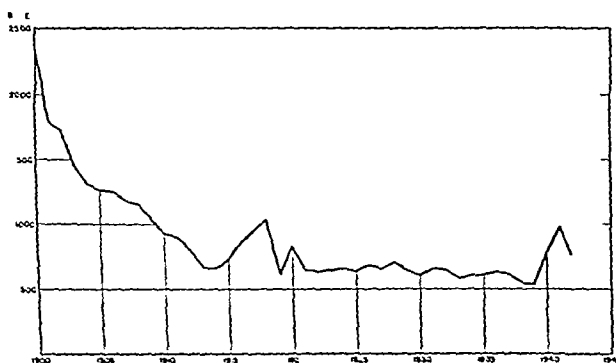


Chart 1—Annual admission rates per thousand strength U S Army since 1900

by the Preventive Medicine Division of the Office of the Surgeon General of the Army through its various branches, including Sanitation, Sanitary Engineering, Laboratories, Occupational Hygiene, Epidemiology, Venereal Disease Control and Medical Intelligence. The results of the program to date will be discussed under the general categories of wound infections, nutritional diseases, gastrointestinal diseases, respiratory diseases, insect borne diseases and venereal diseases.

WOUND INFECTIONS

In no field of military medicine has the effect of modern surgical and prophylactic methods made itself felt with greater force than in the management and treatment of battle casualties. The wounded soldier in this war has a much greater chance of surviving than did his predecessor in World War I. Prompt evacua-

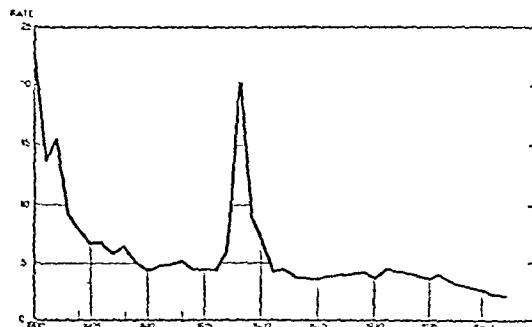


Chart 2—Deaths, all causes excluding battle injuries annual rates per thousand strength U S Army since 1900

tion of the wounded from the battle line, improved methods of transportation and the moving forward of aid stations and surgical units whenever possible make for earlier treatment during the "golden six hours" following injury.

The use of blood plasma to combat shock and of the sulfonamides to control wound infections has resulted in the saving of thousands of lives. During 1941 the Army adopted immunization with tetanus toxoid as a routine procedure for all personnel. So far we have had no tetanus among those immunized.

The problem of gas gangrene is still unsolved, although prompt use of antitoxin, the sulfonamides and improved surgical treatment have led to a pronounced decrease in deaths from this infection. There is great need for an effective prophylactic agent for use against the gas gangrene anaerobes. An intensive search for such an antigen has been under way for several years, and it is hoped that eventually we may have an effective prophylactic for use against these serious complications of battle wounds.

NUTRITIONAL DISEASES

No discussion of military preventive medicine would be complete without some consideration of the nutritional deficiency states. This subject is of growing importance since the production and distribution of food has been seriously dislocated in many parts of the world, and in certain parts of occupied Europe the population is actually faced with starvation. It seems reasonable to predict that the food situation in all countries will grow worse before it grows better.

The United States Army is the best fed force in the world and there is no reason to believe that it will not remain so. However, this applies only under stabilized conditions and when there is no interruption of the flow of supplies. There will be times, however, when troops are cut off from their supply bases and must subsist on emergency rations or lacking these on what food they can glean from the countryside.

During the last three years the Army ration has been a subject of intensive study. In 1940 an expert on nutrition was placed on the staff of the Surgeon General, and well trained nutrition officers are now assigned to

duty with every large command in order to maintain a close check on the quantity and quality of the soldier's food

Various types of field rations have been developed for different special uses. Field ration A is the ordinary ration used in the training camps and elsewhere when possible. It contains a maximum of fresh foods. Field

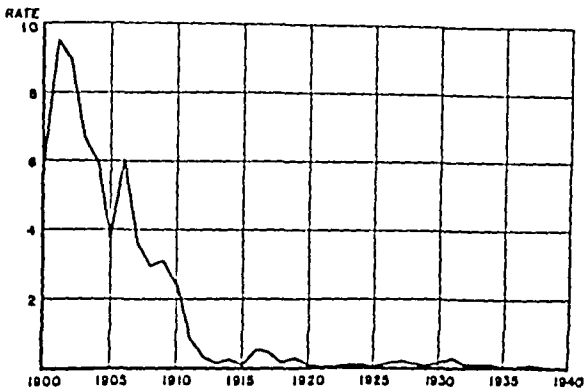


Chart 3—Typhoid and paratyphoid annual rates per thousand strength white enlisted men in U. S. Army since 1900. Typhoid vaccination was voluntary in 1909, was compulsory a portion of 1910 and has been compulsory since 1911. (U. S. Army Medical Museum file No. 70877)

ration B consists of foods that do not require refrigeration, such as canned fruits and vegetables, canned or preserved meats, potatoes, onions, flour and so forth. This ration is supplied for troops on maneuvers and to expeditionary forces. It should be supplemented by local supplies of fresh foods when available. For convenience the B ration is packed in cartons containing sufficient food for the daily use of either 5 or 10 individuals.

Field ration C is concentrated and requires no cooking. It has been devised for use in places where the transportation and preparation of food are difficult. It consists of three cans containing hash, meat and beans and meat stew respectively, also three cans each containing biscuits, a beverage, sugar and candy.

For special occasions where light weight and lack of bulk are necessary, a pocket ration known as field ration K is available. This consists of concentrated foods sufficient for three meals, packed in cartons. It contains meat or cheese, biscuits, candy, sugar, cigarettes, chewing gum and a dehydrated beverage.

These diets are supplemented by vitamin concentrates when necessary. In this manner we have succeeded in avoiding serious outbreaks of scurvy, beriberi, pellagra or other well defined deficiency diseases. There are, however, reports of mild deficiency states in front line troops who have been on short rations for extended periods of time. Such individuals are quickly restored to health and vigor by adequate rest and food.

GASTROINTESTINAL INFECTIONS

Typhoid, the paratyphoid fevers, the dysenteries and diarrheas, and in some areas cholera have long been the scourge of armies. In 1905 the Japanese were able to effect a reasonable control over these infections during the Russo-Japanese War. Compulsory vaccination against typhoid was introduced into the United States Army in 1911, and a triple typhoid vaccine was used during the first world war. In that conflict typhoid, which had caused disgracefully high rates during the Spanish-American War, was unimportant. There were only 1,386 cases and 215 deaths among our troops. The paratyphoid fevers caused 175 cases and 11 deaths. During the subsequent twenty years of peace these infections were practically eliminated from the Army.

It is a pleasure to be able to report that during the recent period of mobilization and war there has been no increase in the typhoid-paratyphoid rates in spite of the insanitary conditions to which the troops are frequently exposed. Undoubtedly this good showing has been due in part to the effective methods used for providing troops with safe food and water. However, a most important factor has been the program of universal immunization with a triple typhoid vaccine. This vaccine contains killed typhoid bacilli and the paratyphoid bacilli A and B. It is given on induction in three doses of 0.5, 1 and 1 cc at intervals of one week and is repeated before the soldier goes to a theater of operations.

When one considers the dysenteries and the infectious diarrheas the picture is not quite so encouraging. There have been, and there will probably continue to be, sharp but small and well localized outbreaks of such infections.

These diseases are most prevalent during the warm summer months and among troops living in the field. Here the trinity of feces, fingers and flies easily accomplishes its unholy work. As a rule the prevalence of enteric diseases among troops is an index of the sanitary and hygienic discipline of the organizations concerned. Obviously, military situations may arise that will make the maintenance of a satisfactory state of sanitation extremely difficult, but the educational program of the Medical Department is resulting in an increasing appreciation by both line officers and men of the importance of adhering strictly to the principles of sanitation. It is believed that eventually the Army as a whole will look on the occurrence of such filthy diseases in a command as a reflection on the efficiency of the commanding officer.

During World War I there were 87,774 cases of dysentery and diarrhea among American troops, and the average time lost from duty was approximately eleven days for each case. The admission rate for 1917-1918 was 18.45 and that for the ten year period from 1930 to 1940 was 1.8. The rate for the last two years has been 10.19. Thus the incidence of the diarrheal diseases since January 1941 has been less than during World War I but greater than during the last ten years of peace. If we are to reduce this incidence further, still greater emphasis must be placed on the training of all military personnel in sanitation and on the supervision and inspection required to see that sanitary matters are handled efficiently. Where this is done the diarrheal diseases will not seriously interfere with military operations.

TABLE 1—Pathogenic Organisms Responsible for Outbreaks

Flexner dysentery bacilli	48 outbreaks
Staphylococci	31 outbreaks
Salmonella organisms	12 outbreaks
Miscellaneous	6 outbreaks
Shiga dysentery bacilli (3 cases)	1 outbreak

Since April 1942 the Preventive Medicine Division of the Office of the Surgeon General has collected data on 320 outbreaks of diarrhea, of which 255 occurred at home and 73 abroad. These outbreaks, which affected groups of soldiers ranging in size from a squad to a division, averaged 75 cases per outbreak, making a rough total of 24,600 cases during the period. In 169 of the outbreaks laboratory studies were made, and 95 outbreaks were reported as due to the pathogenic organisms listed in table 1.

Much excellent laboratory and epidemiologic research has been carried out by Army laboratories and by the Board for the Investigation of Epidemics. Fortunately, certain of the newer sulfonamide drugs including sulfaguanidine, succinylsulfathiazole and sulfadiazine are being used effectively in the treatment of the diarrheal diseases. However such infections still constitute one of the most formidable hazards to be encountered by American troops, ranking second only to malaria in certain tropical theaters. Those of you who join the armed forces should see that there is developed within your organization such a high state of sanitation and sanitary discipline that you will never experience the embarrassment of having to apologize for an epidemic of intestinal disease.

RESPIRATORY DISEASE

The most important diseases encountered during the last war were those transmitted through the respiratory tract discharges by personal contact. Certain of these,

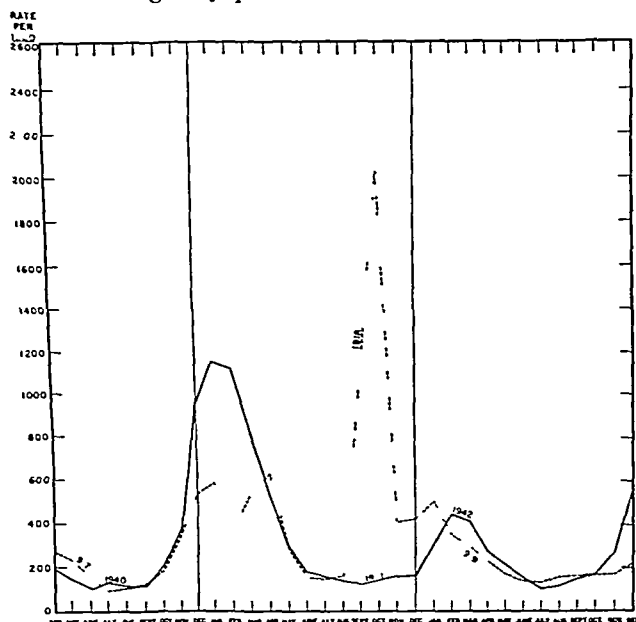


Chart 4—Incidence of respiratory diseases rate per thousand per annum U S Army in the continental United States April 1917 to December 1919 and from April 1940 to December 1942 (U S Army Medical Museum neg No 74097)

including influenza, the common cold, the pneumonias, diphtheria, scarlet fever, measles, mumps and meningitis occurred in epidemic form.

Three of the respiratory tract diseases, namely influenza, bronchitis and pneumonia, were responsible for over a million admissions to hospital and 44,000 deaths. This represented one third of the total admissions for disease and 80 per cent of the disease deaths. Influenza alone caused about 800,000 admissions and 24,600 deaths. Our tragic experience with the pandemic of influenza in the last war left an indelible impression on the older generation of physicians and medical officers. In spite of the increased knowledge of the etiology of this disease and the possession of new but untried weapons for combating it (vaccines and the sulfonamides), influenza is still regarded as potentially one of the most formidable of the disease enemies of the soldier.

The present situation as regards respiratory diseases in the Army is indicated by the graphs in charts 4, 5 and 6 comparing the present morbidity and mortality

rates with those for the last war and with those for the decade of peace which preceded the present war.

In chart 4 there is shown the monthly admission rates for respiratory diseases among troops in the United States from April 1917 to December 1919, also the

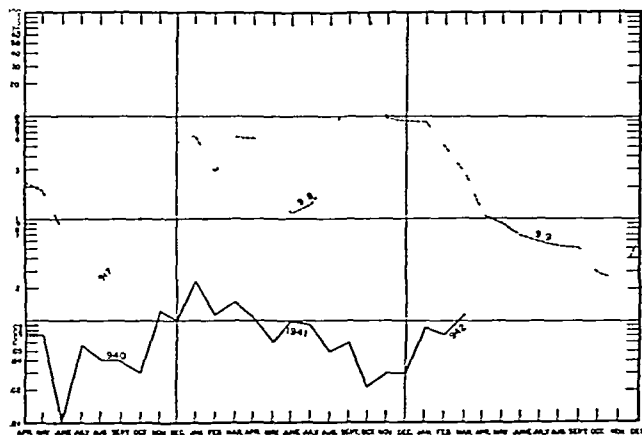


Chart 5—Deaths respiratory disease rate per thousand per annum U S Army in the continental United States, April 1917 to December 1919 and after April 1940 (U S Army Medical Museum neg No 74097)

corresponding rates from April 1940 to December 1942. Except for the peak in the fall of 1918, caused by the influenza pandemic, the two curves are somewhat similar, but, in general, conditions have been better during the present war. An outbreak of mild influenza which occurred in the early part of 1941 produced relatively high admission rates, but subsequently the curve has shown only the expected seasonal variations.

The respiratory disease death rates during corresponding periods of the two wars are strikingly different, as is shown on the semilog graph on chart 5. At only one point has the maximum death rate for the present war reached the height of the lowest rate experienced during the last war. This maximum death rate of 0.24 per thousand per annum is about one five hundredth of the maximum death rate of 100 reached at the peak of the 1918 epidemic of influenza.

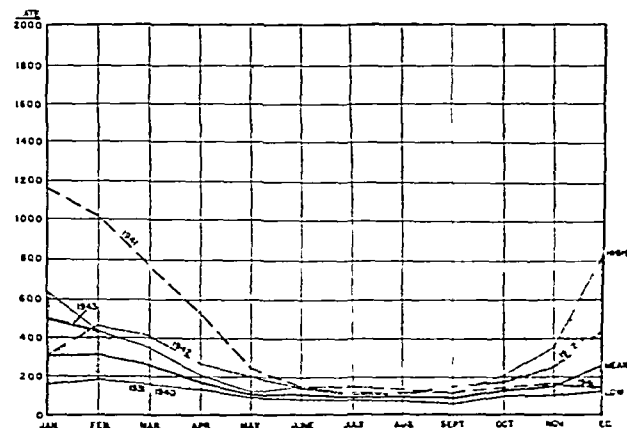


Chart 6—Admissions for respiratory diseases in the U S Army. Monthly admission rates per thousand per annum since January 1941 compared with the high low and mean of such rates during ten years of peace (1931-1940)

In chart 6 monthly admission rates for respiratory diseases during the present war are compared with the high, low and mean admission rates by months for the ten year peacetime period from 1931 to 1940. During the spring of 1941 the widespread epidemic of mild

note that in no month of the current war has the venereal rate for troops in this country been as high or anywhere near as high, as the lowest monthly rate for the last war. This should be a source of comfort to those who have been misinformed as to the incidence of venereal disease among the troops. There are reasons for believing that the rate of infection is not substantially different from that which prevails among comparable civilian groups.

Many factors have doubtless contributed to this record of success, though it is impossible to evaluate their relative importance. Specially trained venereal disease control officers have been placed in key positions in this country and overseas. Close collaboration has been developed with civil authorities in the repression of prostitution and the discovery and treatment of sources of infection. Better drugs have improved treatment and shortened the time lost from active duty. Improved prophylactic facilities have been provided.

TABLE 2—Comparison of the Annual Admission Rates in Troops in the Continental United States and Overseas Theaters
1942 Admission Rates (per Thou and per Annum)

	All Causes	Disease Only	Injuries	Respiratory Diseases	Venereal Diseases	Dysentery Diarrhea	Malaria
Continental United States	750	664	91	227	37	7.15	0.6
Theaters in temperate regions							
A	810	668	152	247	6.8	4.7	
B	810	664	146	240	3.4	1.7	1.0
C	798	689	109	297	37.0	16.9	
D	488	408	80	94	9.7	14.9	0.67
Theaters in tropical and subtropical regions							
E	1,111	926	155	97	7.7	107.0	47.0
F	1,011	833	178	154	33.1	60.1	53.5
G	958	852	106	115	61.0	15.6	108.0
H	1,125	1,049	79	148	66.0	117.0	173.0
I	1,221	1,091	130	232	34.0	260.0	33.0

All soldiers are being instructed regarding the hazards of these diseases. Recreational facilities have been provided within the camps, and public spirited civil agencies have provided healthful entertainment in the cities. All of these factors have contributed to the production and maintenance of the present favorable venereal disease situation in the Army.

The present morbidity and mortality rates for all diseases in the United States Army in this country are indicated in charts 14, 15 and 16. In chart 14 the present monthly rates are compared with the high, low and average rates for the peacetime period from 1931 to 1940. In charts 15 and 16 the monthly morbidity and mortality rates for the present period of mobilization and war are compared with those for the comparable period during World War I. It will be noted that there is a difference in the incidence rates for the fall of 1918 and the fall of 1941. However, the contrast between the death rates is pronounced throughout the entire period and it is obvious at a glance that the mortality from disease in this war is much lower than ever before.

HEALTH CONDITIONS IN OVERSEAS THEATERS

Realizing that all of you would probably like to know more about health conditions in our overseas theaters, especially in the areas where we have been engaged with the enemy, I have prepared a table (table 2) in which

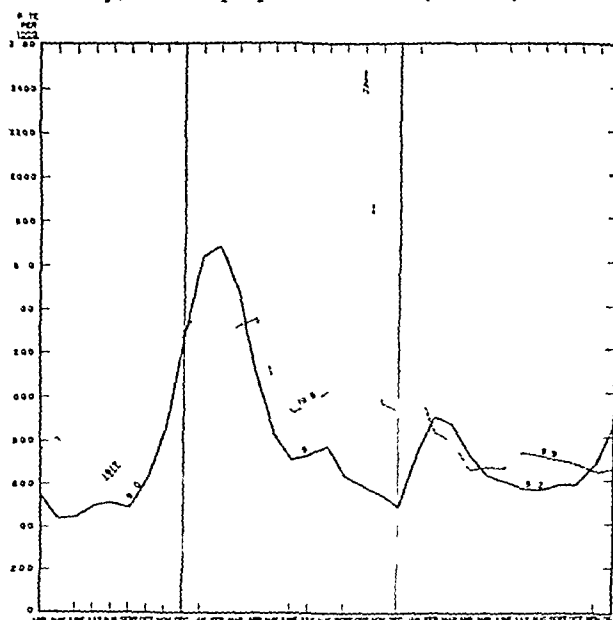


Chart 15—Admissions all diseases rate per thousand per annum U. S. Army in the continental United States April 1917 to December 1919 and from April 1940 to December 1942. Preventive Medicine Division Office of the Surgeon General.

the annual disease rates for various theaters are compared with the disease rates among the troops at home. For reasons of security, no strengths or names of places are indicated.

In general, it may be said that the health of the army overseas has been satisfactory. The disease rates in all temperate zone theaters compare favorably with the rates for troops in the continental United States. In some regions they are actually lower than at home. As it might be expected, the tropical theaters show a greater prevalence of malaria, diarrhea and dysentery and the incidence of these diseases is usually highest among troops who are engaged in combat areas.

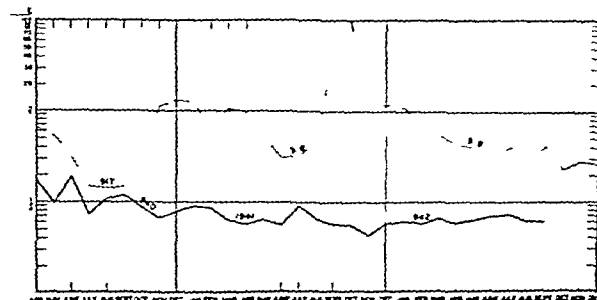


Chart 16—Deaths all diseases rate per thousand per annum U. S. Army in the continental United States April 1917 to December 1919 and after April 1940. Preventive Medicine Division Office of the Surgeon General.

It is hoped that this excellent health record established by the United States Army in this war will be maintained and improved. If this is done the Medical Department and the medical profession will have made their contribution to the winning of the present war.

INTENSIVE HUMAN SERUM TREATMENT OF BURN SHOCK

AND A MODIFIED FORMULA FOR CALCULATING THE AMOUNT OF INFUSION

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On the basis of recent clinical experience we have become convinced that the usual plasma or serum therapy of burn shock is inadequate and that all the formulas recommended for computation of fluid replacement understate the amounts required in extensive burns. Following burns, the body is severely depleted of fluid and protein, and a large part of the infused protein solutions is utilized to replenish the protein and water reserves. This must be taken into consideration in the estimation of the quantity of material to be infused.

We have previously reported¹ that a boy with more than two thirds of the body surface seriously burned was treated with what we then considered adequate fluid and proteins. During the first twenty-four hours 1,250 cc of normal human serum and 2,000 cc of 0.9 per cent saline and 5 per cent dextrose solution were infused. On the third day there developed a generalized edema which we now believe was due to the administration of inadequate amounts of colloidal and excessive amounts of crystalloid solutions during the first two days. We therefore treated the next severely burned patients with such quantities of normal human serum as were needed to maintain normal blood concentration and plasma volume, disregarding the recommended rules for calculating the amounts of fluid necessary. Following this procedure we feel that in severe burns the infusion of iso-osmotic serum in amounts greater than the original normal plasma volume of the patient sometimes may be required. In addition to studying the loss of proteins from the burned surface and its relation to the blood proteins we also compared the protein content of the blister fluid with that of plasma withdrawn at the same time, a procedure which apparently had not been used before.

The pathologic physiology of burn shock has been reviewed recently by Harkins.² We wish to emphasize, however, that besides leakage from capillaries in the burned area and in the tissues surrounding it there may be a considerable loss of fluid and of protein from the blood due to secondary changes in capillary permeability in other areas of the body. In animal experiments we have seen that scalding of a very small portion of the body surface is usually followed by degrees of hemoconcentration which cannot be explained by local loss of fluid into the scalded area.³

Two cases of severe burns involving 45 to 50 per cent of the body surface are reported here, not as reports of successful treatment but to demonstrate the loss of body water and of protein involved and to establish criteria for effective treatment. Three other cases will be mentioned later in the paper.

THERAPY OF EXTENSIVE BURNS

The patients were brought to the emergency room immediately after the burn, which occurred in the vicinity of the hospital. Morphine was administered. Intravenous therapy with normal human serum was started immediately while clothes were being removed, sterile sheets were applied and the burned surfaces were cleaned and debrided. Sterile petrolatum, sulfathiazole ointment, pressure bandages and warmth were applied. Oxygen by nasal catheter was given for forty-eight hours. Adrenal cortex extract was injected intravenously, mainly for maintenance of the blood chloride levels. Both patients made an uneventful recovery. At no time did blood pressure, pulse or temperature become dangerously abnormal. The administration of normal human serum was not accompanied by reactions. Although 1 patient had a short chill during one infusion, we do not feel that this was caused by the serum, because handling or exposure of the patients resulted in chills. Both patients were white men, one aged 52 weighing 71.7 Kg and the other 27 weighing 55.4 Kg. The percentage of body surface with second degree burns was 45 in patient 1 and 50 per cent in patient 2 (estimated by Berkow's formula⁴). Total blood volume was calculated as one thirteenth of the body weight and plasma volume as 55 per cent of the blood volume. Thus patient 1 had a blood volume of 5,515 cc and a plasma volume of 3,033 cc, the corresponding values for patient 2 were 4,261 and 2,344 cc. Hemoglobin was determined as acid hematin with a photoelectric colorimeter, total protein and albumin by the micro-Kjeldahl method of Ma,⁵ nonprotein nitrogen by direct nesslerization⁶ and hematocrits with Wintrobe tubes, centrifuged for one hour at 2,500 revolutions per minute. Normal human serum containing approximately 7.5 per cent protein was infused.

OBSERVATIONS

Each patient received 1,750 cc of normal serum during the first four hours after the burn, so that the hematocrit values at this time were at approximately normal levels. Yet during the next sixty-four hours (i.e. sixty-eight hours after the burn) both patients manifested a persistent tendency toward hemoconcentration which necessitated additional infusions. During this process of hemoconcentration blood pressures did not change appreciably and gave no reliable index of the patient's condition. Each patient required an additional 2,500 cc of serum during this period plus 6,000 cc of a 0.9 per cent saline, 5 per cent dextrose solution to overcome the continued tendency toward hemoconcentration. In addition, fluids were given by mouth, beginning twenty-five and twenty hours after the burn respectively.

Each patient during the first twenty hours after the burn received an amount of serum in excess of his calculated plasma volume, namely, 107 per cent in

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From the Department of Surgery and of Gastrointestinal Research
and from the Samuel Deutsch Serum Center of Michael Reese Hospital.
The help and advice of Drs. Ralph Bettman and M. L. Parker,
attending physicians in the Department of Surgery, is acknowledged.
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Thomas Publisher, 1942, p. 364.
2. Harkins, H. N. The Treatment of Burns, Springfield, Ill.,
Charles C. Thomas Publisher, 1942.
3. Olson, W. H., and Necheles, Heinrich. Unpublished data.

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14: 280 1942.
6. Fohn, Otto, and Denis, W. *J. Biol. Chem.* 26: 473 (Ser.)
1916.

patient 1 and 128 per cent in patient 2. During the sixty-eight hours following the burn each patient received a total of 4,250 cc of serum, i. e., patient 1 received 140 per cent and patient 2 received 181 per cent of his calculated plasma volume as serum infusion (tables 1 and 2). In terms of calculated blood volume, patient 1 received 77 per cent and patient 2 received 100 per cent of serum intravenously.

The question arises as to what happened to the fluid and proteins infused. The disposition of the water can be explained in part by the direct effects of heat,

sustained. Patient 1 received a total of 19,970 cc of fluid intravenously and by mouth during the sixty-eight hours following the burn, i. e., approximately 7,000 cc in twenty-four hours in excess of normal requirements. There was no indication, in either of the 2 patients, that the fluid taken by mouth was not absorbed, because stools were of normal consistency. We have to assume that fluid losses had depleted the body water—intravascular and extravascular—to such a degree that the large volumes of serum, saline and dextrose solutions, plus fluid by mouth, were necessary to reestablish a

TABLE 1—Course of Patient 1, Aged 52, Weight 717 Kg with 45 per Cent of Body Surface Burned
Calculated Blood Volume 5,220 Cc, Plasma Volume 3,053 Cc

Time after burn	4 Hrs	20 Hrs	26 Hrs	43 Hrs	68 Hrs	5 Days	9 Days	12 Days	13 Days
Blood pressure	90/60	100/70	100/60	130/90	115/80	130/80			
Pulse	112	100	120	90	112	100			
Red blood count millions							4.34	4.01	
Hemoglobin per cent	100	102	96	100	110		64	43	
Hematocrit per cent	43.5	50.0	48.5	50	49.4	46.3			
Total plasma protein Gm/100 cc	7.40	7.40	6.90	7.13	7.80	6.25	6.10		5.2
Albumin Gm/100 cc	4.40	4.40	4.40	4.40	4.20	3.74	4.20		2.80
Globulin Gm/100 cc	3.04	3.00	2.50	2.73	3.60	2.54	1.90		2.40
Albumin globulin ratio	1.46	1.47	1.76	1.61	1.17	1.47	2.21		1.16
Nonprotein nitrogen mg/100 cc	44	54	67	50	75	60	40		
Serum infusion cc	1,500	1,500	500	250	250	Total 4,250			
Per cent of plasma volume	50	50	16	8	8	Total 140			
Dextrose 5% saline 0.9% cc	0	0	1,000	5,000	0				
Fluids by mouth cc			3,400	2,500	4,000	3,660			
Total fluids cc	1,500	1,500	4,900	7,500	4,270	Total 19,970			
Urinary output cc			2,910	3,300	1,600	2,190			
Adrenal cortex extract 1 cc intravenously		4 times	2 times	1 time					

TABLE 2—Course of Patient 2, Aged 27, Weight 554 Kg, with 50 per Cent of Body Surface Burned
Calculated Blood Volume 4,261 Cc, Plasma Volume 2,344 Cc

Time after burn	4 Hrs	20 Hrs	26 Hrs	43 Hrs	68 Hrs	5 Days	9 Days	10 Days	12 Days	13 Days
Blood pressure	110/60	100/70	100/76	115/90	100/74	120/80				
Pulse	110	114	103	92	102	90				
Red blood count millions							3.95		3.40	
Hemoglobin per cent	89	111	108	100	114		64		53	
Hematocrit per cent	42.8	54.0	53.0	52.3	51.0	44.7				
Total plasma protein Gm/100 cc	7.90	7.66	6.70	5.90	6.20	5.75		4.80		6.30
Albumin Gm/100 cc	4.34	4.19	3.93	3.70	3.80	3.32		3.00		3.30
Globulin Gm/100 cc	3.56	2.87	2.80	2.20	2.40	2.43		1.80		3.00
Albumin globulin ratio	1.92	1.46	1.39	1.68	1.60	1.40		1.60		1.10
Nonprotein nitrogen mg/100 cc	33	43	55	40	60	60		31		
Serum infusion, cc	1,750	1,250	500	250	500	Total 4,250				
Per cent of plasma volume	75	53	22	11	22	Total 183				
Dextrose 5% saline 0.9% cc	0	0	1,000	4,000	1,000					
Fluids by mouth cc		150	4,500	3,480	3,810	4,170				
Total fluids cc	1,750	1,400	6,250	7,730	5,310	Total 22,540 cc				
Urinary output cc			2,800	3,120	1,220	2,250				
Adrenal cortex extract 1 cc intravenously		4 times	2 times	1 time						

by the loss in the burned areas, by exudation from the burned surfaces (which was considerable in both patients), by loss with urine (urinary secretion was not diminished in either patient), by perspiration and by respiration. Furthermore during the first twenty hours the patients did not take fluids by mouth. Since the daily intake of fluid necessary to replace the natural losses of water in a normal adult is approximately 3,000 cc, the patients had received about 22 to 25 per cent more than the normal fluid requirement in the first twenty hours after the burn. This surplus, however, was not sufficient to counterbalance the losses

normal fluid balance. All of this demonstrates the grave needs of the burned organism for isotonic fluids⁸ and suggests the inadvisability of using concentrated plasma or serum, which has been found to be either inferior to iso-osmotic serum or plasma⁹ or deleterious¹⁰ in the treatment of shock in experimental animals.

A similar calculation for patient 2 shows that he received 22,540 cc of fluid by mouth or intravenously during the sixty-eight hours following the burn, i. e., about 7,955 cc in twenty-four hours. This is approxi-

⁸ Colloidal fluids must be used until the acute shock syndrome is overcome.

⁹ Black, D. A. K., Brit. M. J. 2, 693 (Nov. 23) 1946.

¹⁰ Levinson, S. O., Weson, R. E., Janney, M. J., and Nichols, Heinrich, Surgery 12, 538 (Dec.) 1946.

mately an excess of 5,000 cc over the normal requirements for each twenty-four hours, or an excess of 14,000 cc for sixty-eight hours

It is not improbable that both patients would have died from the extreme depletion of circulating plasma and extravascular fluid without the massive intravenous serum therapy that they received

The movements of blood proteins following the burn were as great as those of water. We know from the literature¹¹ and from our own experience with shock in the dog¹² that fluid and protein shifts can occur rapidly after intusions. The plasma proteins of both patients were at or slightly above normal levels at four hours after the burn when the patients had received 1,750 cc of serum. After that the levels dropped, although a 7.5 per cent protein solution (serum) was being administered. This may be due in part to the drawing into the circulation of extravascular fluid which has a lower protein content than that of the blood, and to a shift of intravascular protein out of the circulation.¹³ Each patient received a total of 319 Gm of protein in the form of serum during the first sixty-nine hours after the burn. The estimated normal total plasma protein (7.5 per cent) was 227 Gm for patient 1 and 176 Gm for patient 2. Thus patient 1

In the 2 cases the fluid was collected one-half hour after the burn, before any therapy had been instituted. In the third case studies were done on the fifth day following the burn, after the patient had received 4,250 cc of serum and a high protein diet. In all 3 cases simultaneous determinations were done on the blood plasma.

In all 3 cases the concentration of albumin in the blister fluid was about 80 per cent of the albumin concentration in the blood plasma with slight variation in the individual cases, namely 79 per cent, 81 per cent and 83 per cent. The concentration of the globulin in the blister fluid, however, varied considerably, with values of 44 per cent, 72 per cent and 54 per cent of the concentration in the blood plasma. This variation in the globulin content resulted in a very decided difference between the albumin-globulin ratios of the blister fluid proteins and those of the plasma proteins. In all 3 cases, however, the albumin-globulin ratio of the blister fluid was greater than that of the blood plasma, the actual percentage differences being 179, 112 and 155. The average total protein concentration of the blister fluid was approximately 71 per cent of the plasma proteins with individual values of 65 per cent, 77 per cent and 71 per cent.

TABLE 3—Protein Concentration of Blister Fluid

Patient	Percentage of Body Burned	Time After Burn	Serum Infused Cc	Fluid	Total Protein		Albumin		Globulin		Albumin Globulin Ratio	Percent age of Plasma Level
					Gm per 100 Cc	Percent age of Plasma Protein	Gm per 100 Cc	Percent age of Plasma Protein	Gm per 100 Cc	Percent age of Plasma Protein		
1	45	5 days	4,250	Blister fluid	4.48	71	3.12	83	1.36	54	2.29	155
				Blood plasma	6.28		3.74		2.54		1.47	
3	10	½ hour	0	Blister fluid	5.74	77	5.65	81	2.09	72	1.15	112
				Blood plasma	7.35		4.50		2.85		1.56	
4	5	½ hour	0	Blister fluid	4.83	65	3.50	79	1.33	44	2.65	149
				Blood plasma	7.45		4.44		3.01		1.47	

received 92 Gm and patient 2 received 143 Gm more than the calculated normal total plasma proteins. The movements of proteins out of the circulation must have been very rapid. One must assume, therefore, that following burns proteins at first are drawn into the circulation, but that when protein solutions are infused the body replaces the depleted tissue protein stores promptly and rapidly. It is important also to consider that, although both patients were on a high protein and vitamin diet after the third day, on the thirteenth day and tenth day respectively the plasma protein concentrations were only 5.2 and 4.8 per cent respectively. We wonder whether absorption or utilization of the ingested food proteins was impaired. The urines of both patients contained traces of albumin for a few days after the burn.

On the twelfth day a considerable degree of anemia was present in the patients, suggesting the desirability of administration of whole blood.¹⁴

STUDIES ON BLISTER FLUID

For the study of blister fluid from burns, 3 subjects were employed in whom approximately 5, 10 and 45 per cent of the body surface had been burned (table 3).

11 Beattie, J. Lancet 2: 445 (Oct. 17) 1942. Beattie, J., and Collard, H. B. Brit. M. J. 2: 507 (Oct. 31) 1942. Harkins.²
12 Weston, R. E., Janota, Martha, Necheles, Heinrich and Levinson, S. O., to be published.
13 Beattie.¹¹ Whipple.¹⁰
14 See also Lambret, O., and Driessens, J. Rev. de chir. 75: 319 (May) 1937.

It is of interest to note that the concentration of globulin and of albumin respectively in the blister fluid, as compared with the plasma levels, seemed to vary independently. Thus in case 4, in which the blister fluid albumin concentration was 79 per cent of the blood plasma, the globulin in the blister fluid was 44 per cent of the blood plasma. In case 2 in which the blister fluid albumin concentration was 81 per cent of the plasma level, the blister fluid globulin was 72 per cent of the blood plasma. These differences are probably due to varying degrees of capillary damage produced in the different patients or in different areas of blister formation in the same patient. With lesser degrees of capillary damage, principally the smaller albumin molecules may be lost, and with greater damage more of the larger globulin molecules may escape from the vessels.

COMMENT

It must be assumed that during the first twenty-four hours after a burn a large quantity of protein and water is lost in the burned area and possibly also into other tissues of the body from generalized capillary leakage and that, at the same time, extravascular fluids with low protein content are drawn into the circulation to compensate for this loss. It is difficult, therefore, to make more specific calculations of individual shifts without having pre-burn control values and complete plasma volume studies. We know from experimental and histologic evidence that the body has limited

reserves of proteins which can be utilized somewhat during shock¹⁵ or other emergencies¹⁶. Moreover, we know that loss of plasma from burns can be considerable and can exceed the amount normally present in the blood before the burn.

Blalock has shown that in dogs with only one third of the body surface burned an average loss of 57 per cent of the blood plasma occurred.¹⁷ Keeley, Gibson and Pijoan found a reduction of plasma volume in burned dogs varying from 20 per cent to 60 per cent.¹⁸ Since there is little loss from the cutaneous surface of burned dogs these values may be too low for human beings.

Underhill, Fisk and Kapsinow¹⁹ found that the edema fluid in rabbits with one sixth of the body surface burned varied from 3 per cent to 70 per cent of the total blood volume, usually from 20 per cent to 40 per cent. One rabbit lost 70 per cent of its original blood volume. By analogy, in extensive burns in human beings this would amount to a loss of fluid in excess of the total amount of circulating plasma. Harkins² performed numerous similar experiments.

In the case of human burns, Black⁹ employed direct measurement of blood volume in 2 cases. In 1 case with 12 per cent of the body surface burned there was a calculated loss of 2100 cc of blood plasma. In another case with a third degree burn involving only 7 per cent of the body surface there was a calculated loss of 1,218 cc of blood plasma. These 2 patients suffered a plasma loss of 175 cc and 174 cc respectively for every per cent of body surface burned.

Elkinton, Wolff and Lee²⁰ using a rather complicated formula to calculate plasma loss from observed hematocrit and plasma protein, cited cases in which 40 cc, 48 cc, 54 cc and 75 cc of plasma were lost for each per cent of the body surface burned. Tenery²¹ cited 1 case in which 100 per cent of the body surface was burned, a hematocrit value of 71 per cent one hour after the burn indicated a loss of approximately one half the plasma volume. This figure seems to be too low. Black⁹ devised a formula based on observed hemoglobin as compared with the normal hemoglobin and normal plasma volume. This formula is unreliable because of wide variations of normal values for hemoglobin and plasma volume.

Since the acute pathologic physiology of burn shock is largely, if not to its greatest part, due to loss of plasma-like fluid from the blood it follows that the logical therapy consists in adequate replacement of this fluid. Consequently infusions of plasma or serum in large enough quantities to prevent the effects of the oligemia are indicated. In man, it would seem the amount of fluid and protein lost is largely dependent on the extent of the body surface burned. Any formula for fluid replacement should be based on this factor primarily. Changes in hematocrit, hemoglobin and plasma protein concentration cannot be used as sole guides as to the quantity of serum or plasma required, because the normal values before shock are usually unknown and because these values are highly variable. The factor of protein and fluid reserves is highly

variable too and also weakens the use of these determinations as satisfactory criteria of shock.

Harkins has devised a simple formula based on hematocrit values, namely 100 cc of plasma for every point that the hematocrit is above normal. As a first aid formula he suggested giving 50 cc of plasma for each per cent of body surface burned. Of the many formulas suggested those of Harkins are the simplest and least conducive to error in rapid calculations during emergencies. In the case of the first formula we suggest the use of a low 'normal' hematocrit value rather than a high one because in anemia a 'normal' value actually may be abnormal. The second formula provides too little plasma for extensive burns, according to our experience.

In terms of percentage of body surface burned, patient 1 received during the first forty-eight hours after the burn 89 cc and patient 2 75 cc of serum for every per cent of body surface burned. The greater part of these infusions were given at four and at twenty hours after the burn. We suggest therefore that, following severe burns in adults for every per cent of surface burned 50 cc of serum be given immediately and, in addition, 20 to 30 cc during the first twenty-four hours and another 20 to 30 cc during the next forty-eight hours. Additional crystalloid fluids should not be given during the first twenty-four hours after the burn and fluids and a high protein diet by mouth should be given as soon as the patient is able to take food.

The foregoing doses of serum should be recognized merely as working doses, and if a satisfactory response is not obtained increased amounts should be given. It is far better to administer too much serum or plasma than too little. To restore comparable amounts of protein approximately 16 per cent more plasma than serum must be given, because of the dilution of plasma with citrate solution.²² If there is vomiting, the additional fluid thus lost must be replaced by saline solutions. If large infusions have to be given, as in our patients, we prefer serum in order to avoid the administration of excessive amounts of sodium citrate. The latter may produce hypocalcemia and tetany.

Elkinton, Wolff and Lee²⁰ maintain that, following a burn, the damaged capillaries do not regain their normal permeability for at least thirty-one to forty hours, so that only small transfusions of serum or plasma should be given during this period. They claim that most of the administered protein and fluid would be lost as quickly as they are given. This is true to a certain extent but appears to be a stronger argument for early large transfusions because assuming that a certain percentage of administered plasma or serum continues to leak through the damaged capillaries giving massive doses would mean a retention of a larger total amount of protein and fluid in the blood.

With present local treatments of the burned area the fluid loss from the cutaneous surface and into the burned tissues is limited by an eschar and pressure dressings. Therefore with increasing amounts of serum or plasma a greater proportion of the administered fluid would be retained in the blood stream.

The continued loss of plasma through the damaged capillaries besides the reduction in the volume of circulating plasma produces a depletion of the body reserves of protein and fluid. Administration of large doses of

15. Li H M. Chinese J Physiol 10:7 (Feb 15) 1936. Harkins Black⁹, Beattie¹¹, Beattie and Collard¹¹, Weston, Janota, Necheles and Levinson¹².

16. Whipple C H. Am J M Sc. 203:477 (April) 1942.

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18. Keeley J L, Gibson J G Jr and Pijoan Michael. Surgery 5:372 (June) 1939.

19. Underhill F P, Kapsinow Robert and Fisk M E. Am J Physiol 95:333 (Nov.) 1929.

20. Elkinton J R, Wolff W A and Lee W E. Ann Surg 111:129 (July) 1940.

21. Tenery R M. Surg, Gynec & Obst 72:1015 (June) 1941.

22. Usually 50 cc. of 4 per cent citrate solution is added to 100 cc. of blood. Assuming a plasma content of blood of 50 per cent this would mean that 35 cc. of a solution containing 2.5 cc. of 4 per cent citrate solution would be obtained after processing.

serum or plasma within the first twenty-four hours would prevent depletion of the body proteins and thereby might protect vital organs like the liver and kidneys. The satisfactory kidney function and the absence of jaundice in our patients point in this direction.²³

It should be pointed out from our experience in cases of critical shock that infusions should be given at a rapid rate (100 cc a minute). A large size needle or even two needles in two veins should be used.²⁴

SUMMARY AND CONCLUSIONS

The usual serum or plasma therapy of acute extensive burns has been found to be inadequate.

Serum or plasma therapy must be given from the point of view of restoring a normal blood volume and not by units of fluid.

Our data and clinical observations definitely indicate the need for much larger doses of serum or plasma in the treatment of burn shock than are provided by the common formulas. By far the greater part of the fluid should be administered during the first twenty-four hours.

We suggest in the treatment of extensive burns in adults the immediate administration of 50 cc of serum (or 60 cc of plasma) for every per cent of body surface burned, and, in addition, 20 to 30 cc for every per cent should be administered during the first twenty-four hours and another 20 to 30 cc in the first seventy-two hours following the burn. Total administration, therefore, should be at least 100 to 110 cc for each per cent of body burn. Crystalloid fluids should not be given during the first twenty-four hours. Fluids and a high protein diet by mouth should begin as soon as possible.

Simultaneous analyses of blister fluid and of blood plasma have been performed. Blister fluid contains a concentration of proteins equivalent to 70 to 80 per cent of the plasma proteins. The albumin content of blister fluid was fairly constant, but the globulin content showed decided variations independent of the albumin or globulin values of the blood and of the albumin values of the blister fluid.

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²³ For discussion see Wilson, W C. *Edinburgh M J* 48 85 (Feb) 1941.

²⁴ Levinson, S O, Rubovits F E, Jr and Necheles, Heinrich. *Human Serum Transfusions, J A M A* 115 1163 (Oct 5) 1940.

A Necessary Step Toward Emotional Stability—The student who faces the college adjustment while still dependent on and closely identified with his family—and most students are—has a special handicap in all the phases of his development. Before he can fit into the college environment altogether successfully he must complete the changes which are expected to occur in the family relationship as the individual grows up. If the student can be properly assisted in handling these problems he may be saved much emotional distress and prevented from wasting energy which can be used more profitably elsewhere. For detachment from the family is a necessary step toward the emotional maturity of an individual, it is a prerequisite to the smooth development of other growth process.

Detachment from the family does not imply antagonism to it or a complete denial of its participation in the individual's life. And in the achievement of detachment, parental guidance need not be thrown off abruptly or ignored. As the phrase is used here, the development of independence means not a severance of all relations between the growing individual and his family but the gradual establishment by the individual of habits of independence in choosing his goals, his values and his associates—Fry, Clements C. *Mental Health in College*, New York, Commonwealth Fund, 1942.

THE THERAPY OF BACTERIAL ENDOCARDITIS WITH MASSIVE DOSAGE OF SULFADIAZINE

REPORT OF FOUR CASES

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NEW ORLEANS

Recently Dick¹ reported the recovery of a patient with bacterial endocarditis to whom a massive dose of sodium sulfadiazine was administered. This is a report of 4 cases in which similar therapy was employed.

CASE 1—A white woman aged 36 had been having fever daily for five weeks before her admission to the Hotel Dieu on Sept 21, 1942, the highest temperature each day being from 101 to 103 F. One week before admission she had experienced sudden pain in the left infra-axillary region, aggravated by deep breathing. She gave no history of rheumatic fever or of preexisting heart disease.

She was in good general condition. The blood pressure was 130 mm of mercury systolic and 50 diastolic. The pulse approached a water hammer type. The heart was moderately enlarged. Blowing systolic and diastolic murmurs were audible over the base of the heart. The lungs were normal. The spleen was considerably enlarged, the tip extending about 5 cm below the rib margin on deep inspiration. No petechiae were seen. Fever was present every day before treatment was begun, the daily peaks varying between 101 and 103 F.

Red blood cells numbered 334 million on admission, leukocytes 7,000 and hemoglobin 10.5 Gm. The urine contained a trace of albumin and numerous red cells. Culture of venous and arterial blood yielded a nonhemolytic, nonpigment producing streptococcus on the mediums which were used.

On September 29, 30 Gm of sodium sulfadiazine was given intravenously, after alkalization of the urine by the administration of sodium bicarbonate. Thirty Gm rather than 40 as used by Dick was given because of the small size of the patient (110 pounds, or 50 Kg). Vomiting occurred immediately and was repeated at short intervals for twenty-four hours. The urine became grossly bloody six hours after the drug was given and remained so for three days, microscopic hematuria, present before treatment, continued.

Immediately after the injection the concentration of free sulfadiazine in the blood was 75 mg per hundred cubic centimeters, twelve hours later it was 32, twenty-four hours later 22.5, thirty-six hours later 15, sixty hours later 5 and eighty-four hours later 1.2. On the day following the injection the temperature reached 103 F but did not exceed 100 for seven days thereafter. The patient's general condition seemed unchanged. A blood culture on October 1 was still positive.

On October 4, five days after the initial treatment, 5 Gm of the drug was given intravenously, on October 5, 5 Gm intravenously and 4 by mouth, on October 6, 12 Gm by mouth, and on October 7, 8 Gm intravenously and 6 by mouth. On October 7 the blood concentration had reached 42 mg per hundred cubic centimeters. Treatment was suspended for one day and then resumed, attempt being made to maintain a blood concentration of from 15 to 20 mg per hundred cubic centimeters.

On October 10 petechiae were noted about one ankle. On October 13 severe pain, swelling and tenderness in the left forearm appeared, which was attributed to embolism in the forearm muscles. On this day the blood culture was still positive.

On October 14, because of increasing microscopic hematuria, treatment was suspended for two days. Thereafter sufficient

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¹ Dick, George F. Subacute Bacterial Endocarditis. Recovery Following Intravenous Sodium Sulfadiazine, *J A M A* 120 24 (Oct 5) 1942.

sulfadiazine was given by mouth to maintain blood levels of from 14 to 20 mg per hundred cubic centimeters, and hyperpyrexia was induced at two or three day intervals by intravenous injection of typhoid vaccine.

Throughout the treatment, transfusions were given whenever the blood count revealed increasing anemia. On November 3 the red cells numbered 3.9 million, the hemoglobin 11.3 Gm.

After the first week of treatment the patient's condition slowly grew worse. The blood culture remained positive. Two further embolic episodes occurred, one in the muscles of the buttock, the other in the spleen. Daily temperature peaks varied from 100 to 104 F. Therapy with sulfadiazine was discontinued on October 31 and the use of sodium para-aminobenzoate begun. Since there was no favorable response to this drug the use of sulfanilamide in large dosage was begun on November 17. Although the temperature remained practically normal while sulfanilamide was being employed there was no improvement in the general condition of the patient, and death occurred on Dec 7, 1942.

Autopsy revealed numerous vegetations on the aortic valve with ulceration through the posterior cusp and secondary involvement of the ventricular surface of the anterior mitral cusp. The vegetations were small and smooth suggesting that partial healing had occurred. There were three large old infarcts in the spleen and two small ones in the right kidney. Acute diffuse glomerulonephritis was also present.

CASE 2—A white man aged 25 was admitted to Charity Hospital on Sept 10, 1942 with a chief complaint of fever of twelve days duration. The onset had been insidious and associated with undue fatigue. Five days after the onset the symptoms became more pronounced and his temperature had been observed to vary daily between 99 and 104 F. At this time general malaise was prominent. His general health had been good until the onset of the present illness. He had experienced vague joint pains at the age of 12 years. Two years thereafter he became troubled with recurrent epistaxis and was told by his physician that he had enlargement of the heart. For the next four years he 'took things easy' and throughout has experienced no cardiovascular symptoms.

The patient was well developed and well nourished and not acutely ill. His skin particularly that of his face and hands presented a delicate cream and coffee pigmentation together with moderate pallor. No petechiae were seen. Many teeth were carious, and oral sepsis was present. The cardiac apex impulse was diffuse and of increased forcefulness and was located in the fifth and sixth intercostal spaces at the mid-clavicular line. A systolic shock was present at the apex, where the first heart sound was greatly accentuated and followed by a 2 plus systolic murmur. A murmur characteristic of aortic insufficiency was audible at the aortic valve area. The rhythm was regular and the blood pressure was 130/45. Neither the liver nor the spleen was palpable.

Blood cultures taken during the first few days following admission were negative but after the second week an alpha streptococcus was consistently isolated.

On the twenty-fourth hospital day (October 3) 40 Gm of sodium sulfadiazine was given intravenously and a high fluid intake maintained thereafter. Through a misunderstanding of orders the blood level was not determined until twenty-four hours later, when it was 25 mg per hundred cubic centimeters. Vomiting occurred immediately after the injection and recurred several times. Gross hematuria appeared within a few hours and persisted for four days, but there was no diminution of urinary output and blood urea remained normal.

On the fourth day following the injection the blood level of free sulfadiazine had declined to 100 mg per hundred cubic centimeters. Subsequent treatment has been substantially the same as that employed in case 1: sulfadiazine, sulfanilamide and fever therapy, sodium para-aminobenzoate, sulfanilamide. No definite improvement occurred following the initial therapy; the blood culture has remained positive and daily fever persists. The general condition of the patient has remained fairly good owing possibly to inhibition of growth of the organisms by the large amounts of sulfonamide drugs which have been used.

CASE 3—A white woman aged 39 was admitted to the Charity Hospital on Sept 16, 1942 complaining of cough and shortness of breath. She dated the onset of her illness eight weeks previously, with a cold which became progressively worse. Her local physician examined her and told her that she had a bad heart. Her symptoms were progressive, with increasing difficulty in breathing. Her past history revealed nothing of significance.

The patient was well developed and well nourished and her temperature was 100.4 F. There were signs of congestion at both lung bases. The heart was moderately enlarged. There were diastolic and systolic murmurs audible over the base of the heart. The blood pressure was 115/50, the pulse approached Corrigan in type. The rhythm was regular. The liver was enlarged to 2 or 3 fingerbreadths below the right costal margin. The spleen was tender and moderately enlarged (3 to 4 fingerbreadths below the left costal margin). The left ankle was tender, reddened and swollen.

Laboratory examination revealed 7.5 Gm of hemoglobin, 3,100,000 red blood cells and 11,200 white blood cells. The urinalysis was negative except for a trace of albumin. The urea nitrogen was 50 mg per hundred cubic centimeters. X-ray and fluoroscopic examination revealed generalized cardiac enlargement. The venous pressure was 110 mm of water.

The diagnosis of an acute episode of rheumatic fever was considered on admission and the patient was given 1 Gm of sodium salicylate three times daily. The fever and pain, swelling and redness of the ankle responded to this therapy, but the patient became more dyspneic and uncomfortable in spite of full digitalization.

During the first week of hospital stay, petechiae were noted on the lateral aspects of both feet. Flame shaped areas of hemorrhage were visible in both tundi. Increased reflexes with ankle and patellar clonus developed bilaterally. The first blood culture was negative, but ones taken on the 22d and 24th of September were positive for nonhemolytic streptococci. At this time salicylates were discontinued. The patient was first treated with the usual doses of sulfadiazine (4 Gm initially followed by 1 Gm every four hours day and night) for four days, at the end of which time the sulfadiazine blood level was 117 mg per hundred cubic centimeters. The patient's temperature ranged from 100.6 F to subnormal daily.

On the evening of September 30 after confirmation of the diagnosis by positive blood culture 30 Gm of sodium sulfadiazine in 1,500 cc of distilled water was given intravenously, the urine previously having been alkalinized by administration of sodium bicarbonate. The blood level obtained four hours after administration of the drug was 85.4 mg of free sulfadiazine per hundred cubic centimeters of blood. The next morning the blood sulfadiazine level was 63.5 mg per hundred cubic centimeters and the urea nitrogen was 19.0 mg per hundred cubic centimeters. During the first twenty-four hours after administration of the drug, 390 cc of grossly bloody urine was voided. The patient's temperature was normal.

On October 2 the patient was semicomatose and bleeding of the gums was noted. One hundred and sixty cc. of blood tinged urine was voided. The blood sulfadiazine level was 45 mg per hundred cubic centimeters and the urea nitrogen was 33.2 mg per hundred cubic centimeters. A bilateral sympathetic block was done in an attempt to increase urinary excretion. Five hundred cc of blood was given by transfusion. The blood pressure was 148/34 and the pulse was definitely water hammer in character. A blood culture taken on this day showed no growth. The next day ureteral catheters were inserted and 85 cc of bloody urine was obtained. The catheters were left in place and frequent lavage was performed.

On October 4 200 cc. of urine was voided. The next day the catheters were removed, no evidence of ureteral blockage being present. No urine was voided during the next twenty-four hour period. The patient's condition was poor and edema was increasing. The blood sulfadiazine level was 22.5 mg per hundred cubic centimeters, urea nitrogen 50, creatinine 5.9 and carbon dioxide combining power 68. Blood culture this day was positive less than 1 colony per cubic centimeter of blood.

On October 6 65 cc. of purulent foul urine was voided, and the next day 700 cc. The patient's condition grew worse. She was comatose and irrational and on October 8

2 This patient died on Jan 4, 1943. Autopsy revealed vegetative endocarditis of the aortic and mitral valves and acute diffuse glomerulonephritis.

she was again semicomatose. The blood sulfadiazine level was 20.2 mg per hundred cubic centimeters, urea nitrogen 66.8, creatinine 9.5 and the carbon dioxide combining power 66. Blood culture was tentatively negative. She excreted no urine for thirty hours. The next day 300 cc of urine was obtained by catheterization. Her condition continued to be grave and she died on the morning of October 10. Her temperature had been essentially normal since administration of the sodium sulfadiazine.

Postmortem examination revealed multiple small vegetations on congenitally deformed (bicuspid) aortic valve cusps, one of which was perforated by ulceration. The kidneys were enlarged and reddened and showed no gross areas of infarction. On section, the cortical striations were obscured. In and immediately adjacent to the pyramids were seen light yellowish gray streaks alternating with the deep red of the tissue. The pelvis, calices and ureters were free of crystal formation and of pathologic changes. On microscopic examination the essential lesions were shown to be of the collecting tubules, which were filled with a purulent necrotic exudate with some extension into the surrounding tissue. There were no crystals in the exudate but it did show the same refraction to polarized light as sulfadiazine crystals. The glomeruli were unaffected. In addition there were infarction of the spleen, thrombophlebitis of both ovarian veins and multiple infarction of the lungs.

CASE 4—A white youth aged 16 years was admitted to Charity Hospital on Sept. 13, 1942 with the complaints of chills, fever and frontal headache of simultaneous onset ten days prior to admission. The symptoms continued and were somewhat less severe after the first week. Occasional vomiting had occurred. On the third day pain developed in the left hip, which was aggravated by exertion. A local physician had given him yellow tablets (probably atabrine), which he had continued to take, one three times a day, until the day of admission. The past history revealed that two years before he had had a febrile illness of three weeks' duration characterized by low grade fever, epistaxis and joint pains. A local physician had pronounced the condition malaria, however, the fever failed to respond to quinine, which was started during the first week. He had had occasional attacks of sore throat and had had an abscess of the right ear three years before. The remainder of the history was noncontributory.

The patient was acutely ill and moderately lethargic. Herpes simplex was present. The skin presented a light yellow tint, although the scleras were white. One petechial hemorrhage was present in the fundus of the right eye and another on the mucous membrane of the lower lip. Examination of the lungs revealed no abnormal findings. The heart was thought to be of normal size. A loud, harsh systolic murmur was present at the apex accompanied by a thrill. The rhythm was regular. The rate was 128 per minute. The blood pressure was 120/78. The spleen and the liver were not felt and the remainder of the physical examination was negative.

The initial laboratory studies showed 4.5 million red blood cells per cubic millimeter in the peripheral blood. The white blood cell count was 10,000 with 98 per cent polymorphonuclear leukocytes. No malarial parasites were found. The specific gravity of the urine was 1.023, and 1 plus albumin was present, together with many pus cells and a few hyaline casts. Urine cultures were negative for organisms of the typhoid group. The blood urea nitrogen was 12 mg per hundred cubic centimeters. The spinal fluid was negative. X-ray examinations of the chest and hip were negative.

During the nine days of hospitalization the temperature remained elevated between 102 and 104 F with occasional peaks to 106 F. Recurrent petechial hemorrhages appeared in the conjunctivas, fingers and toes. Occasional vomiting occurred. The lethargy progressed to stupor after the first week, and it was apparent that the patient could not live more than a few days. At this time venous and arterial blood cultures taken on admission were reported as negative. The diagnosis of bacterial endocarditis nevertheless seemed almost certain and the patient was given 30 Gm of sodium sulfadiazine intravenously dissolved in 600 cc of distilled water following an intravenous infusion of 2,000 cc of isotonic solution of sodium chloride. The blood level twelve hours later was 69 mg per hundred cubic centimeters. At this time the urine had become

grossly bloody, the blood urea nitrogen was 38 mg per hundred cubic centimeters and the carbon dioxide combining power was 40. Sixteen hours after the administration of sodium sulfadiazine the patient died.

Autopsy revealed many small and several large vegetations on the mitral valve. Infarctions of the spleen and kidneys were present, together with countless petechial hemorrhages at all visceral surfaces. No crystals were found in the tubules or calices, and no lesions attributable to sulfadiazine were present. Cultures of the heart's blood and of the vegetations were positive for alpha streptococcus.

SUMMARY

Four patients with bacterial endocarditis were treated with sodium sulfadiazine in massive dosage. All four patients showed gross hematuria following the massive initial dose.

Two patients who were in good condition when treatment was begun showed hematuria as the only significant toxic effect of the drug, but neither patient was cured.

The third patient, who was very ill when the treatment was given, developed suppression of urine and died of uremia eleven days after a single intravenous injection of 30 Gm of sodium sulfadiazine. At autopsy necrotizing nephrosis, involving principally the collecting tubules, was present.

The fourth patient, who was practically moribund when the treatment was given, died sixteen hours after the intravenous administration of 30 Gm of sodium sulfadiazine. No renal lesions attributable to toxic effect of sulfadiazine were present at autopsy.

PANHISTERECTOMY VERSUS IRRADIATION FOR EARLY CANCER OF THE UTERINE CERVIX

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AND

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BALTIMORE

It is the clinical impression of many gynecologists that panhysterectomy offers a satisfactory method of treatment for selected cases of early cancer of the cervix. In the most recent report on cancer of the cervix from the Kelly Clinic,¹ 1 patient with a recurrence after operation was treated for every 10 patients admitted with primary cancer of the cervix. We have reviewed a selected group of 36 cases of early carcinoma of the cervix treated with panhysterectomy and compared the results with 704 unselected cases in all stages, treated with radiation.

It is, however, not a matter simply of comparing gross and absolute cure rates, other factors must be considered. For example, Martzloff² demonstrated with operable material that the microscopic appearance was of importance in determining prognosis. Due consideration must be given to such an essential aspect. We have also reviewed the curability in relation to the microscopic changes in both irradiated and surgically treated patients.

Dr. Richard W. TeLinde helped the authors in this study. From the Kelly Clinic and Department of Gynecology of the Johns Hopkins University and Hospital.

1. Jones, Howard W., Jr. Carcinoma of the Cervix. Clinical Evaluation of Radium Dosage and Supplementary Roentgen Irradiation Based on a Study of 915 Cases. *South. M. J.* 35: 959 (Nov.) 1942.

2. Martzloff, K. H. Carcinoma of Cervix Uteri. A Pathologic and Clinical Study, with Particular Reference to the Relative Malignancy of the Neoplastic Process as Indicated by the Predominant Type of Cancer Cell. *Bull. Johns Hopkins Hosp.* 34: 141 (May) 184 (June) 1923.

The problem has been complicated in recent years by the not infrequent "accidental" finding of exceedingly early carcinoma when there is no real suspicion of it. These "accidental" findings are made by the more common use of biopsy of the cervix. In this group may be included the so-called preinvasive carcinoma,

TABLE 1—Distribution of Type of Carcinoma

	Number	Per Cent
Adenocarcinoma	26	4
Spinal cell carcinoma	46	6
Transitional cell carcinoma	543	77
Spindle cell carcinoma	89	13
	704	100

or Bowen's disease of the cervix. It is obvious that any conclusion which might be reached for the treatment of early cancer of the cervix in general would not necessarily apply to the exceedingly early lesions just mentioned.

MATERIAL AND RESULTS

The irradiated material reviewed in the present study consists of 704 patients with carcinoma of the cervix treated by radium or radium and x-rays at the Kelly Clinic between Oct 1, 1927 and Dec 31, 1935. The details of treatment and other clinical features have been reported elsewhere.¹

The material has been divided into clinical stage according to the League of Nations classification and further subdivided, with the Martzloff classification, according to microscopic appearance of the tumor. The adenocarcinomas have been separated from those of the epidermoid type, which are subdivided into spinal cell, transitional cell and fat spindle cell. The spinal or prickle cell variety is composed for the most part of cells resembling those seen in the superficial zone of stratified cervical epithelium. The cells are adult in character and exhibit their squamous tendencies by the occurrence of cell nest or pearl formation. The cell membranes are distinct, and although they resemble prickle cells the intercellular protoplasmic bridges are

TABLE 2—The Cure Rate in Relation to Microscopic Abnormalities 704 Cases of Cervix Carcinoma Treated with Irradiation

Clinical Stage	Spinal Cell Cancer	Transitional Cell Cancer	Spindle Cell Cancer	Adeno carcinoma	Total
1	2/6 (33%)	37/64 (58%)	10/11 (91%)	1/6 (16%)	50/87 (57.5%)
2	3/4 (75%)	35/39 (89%)	8/24 (33%)	4/6 (66%)	50/124 (40.3%)
3	2/9 (22%)	41/180 (23%)	5/17 (29%)	4/9 (44%)	52/240 (21.7%)
4	1/27 (4%)	10/209 (5%)	0/12 (0%)	0/5 (0%)	11/253 (4.3%)
Total	8/46 (17%)	123/543 (23%)	25/89 (28%)	9/56 (16%)	163/704 (23%)

not easily discernible. Mitoses are few. The transitional cell variety is composed of cells resembling the midlayer of stratified cervical epithelium. The cells may have variable shapes and are often round. The cytoplasm is relatively sparse. The spindle cell variety is composed of spindle shaped cells resembling sarcoma. Mitoses are common. The cytoplasm is very sparse and the cells are closely packed.

The distribution in the 704 cases of the present series is shown in table 1.

Table 2 gives the five year cure rate according to the clinical stage and microscopic structure.

The operative material consists of all patients with early carcinoma of the cervix operated on at the Johns Hopkins Hospital during the ten year period 1927-1937. It was the practice of the clinic during that time to operate on a selected number of such patients. This small group consists of only 36 patients. These cases were chosen as suitable for operation in consultation with the gynecologist in charge of radiation therapy.

The 36 cases were distributed as follows: adenocarcinoma 2, spinal cell carcinoma 2, transitional cell carcinoma 30, spindle cell carcinoma 2. The results of treatment are shown in table 3.

COMMENT

The absolute cure rate of 41.6 per cent for the patients operated on does not compare favorably with the cure rate of 57 per cent by irradiation.

Although the results of the surgically treated group are compared in this paper with a series of stage 1 cancers treated with radiation, the superiority of the latter is greater than is indicated by the figures herein quoted. This superiority arises from the fact that the surgically treated group represents lesions with an

TABLE 3—Cure Rate in a Series of Thirty-Six Selected Patients with Early Cervix Carcinoma Treated with Panhysterectomy

Total Number of Patients	Living and Well 5 Years or More	Living and Well 5 Years After Treatment by Radium for Recurrence After Operation	Died	Not Followed	Absolute Cure Rate by Operation per Cent
36	15	2	15	4	41.6

average malignant ulceration of 1 cm (Schmitz 1), while the cancers in the irradiated group are classified as stage 1 League of Nations and therefore represent lesions further advanced than those of the surgically treated group. It would perhaps be more accurate to compare the 41 per cent cure rate by operation with the reported cure rates up to 80 per cent for Schmitz 1 cases.

However, as already stated, the microscopic abnormality is of great importance in determining the prognosis in early cases.

It is impossible to discuss the subject of tumor morphology relative to curability without detailed reference to the work of Martzloff.² He reported the five year survivals, according to microscopic structure in 379 cases of carcinoma of the cervix. Martzloff's cases were divided into adenocarcinoma and three types of epidermoid carcinoma—spinal cell, transitional cell and spindle cell. It should be emphasized that this classification is morphologic and not histogenic. It should also be remembered that the criterion of classification is fundamentally different from the grading of tumors according to the method of Broders. However a rough parallel between the two methods exists: low grade tumors (grade 1 Broders) are for the most part of the spinal cell type while high grade lesions usually correspond to the spindle cell type.

When only operable material was considered and cases presenting unsuspected involvement of the broad ligaments at the time of operation were eliminated, the five year cure rate of patients surviving operation was

found by Martzloff to be adenocarcinoma 75 per cent, spinal cell cancer 47 per cent, transitional cell cancer 24.2 per cent and spindle cell cancer 9.5 per cent. These results were obtained by radical Wertheim operations on carefully selected material.

It would be a misapplication of statistics to apply Martzloff's figures to curability by irradiation. In 1928 Healy and Cutler³ found that by irradiation the curability of carcinoma of the cervix, with respect to the microscopic appearance of the tumor, was the reverse of that obtained by operation, provided cases of similar clinical stage were considered, the best results were obtained in the spindle cell group. These conclusions were based on a study of 200 cases. The investigations of Hueper and Schmitz⁴ and of Pomeroy and Strauss⁵ seemed to confirm these observations of Healy and Cutler, while Plaut⁶ could find no correlations between microscopic appearance and curability. Such investigations have, for the most part, been handicapped by material insufficient for classifying their results by both clinical stage and microscopic appearance.

The more detailed study of the relation of microscopic abnormality to cure rate and method of therapy may best be discussed in a paragraph for each pathologic type.

Transitional Cell Carcinoma—With irradiation a 58 per cent cure rate was obtained. Of the 30 patients with transitional cell carcinomas operated on, 14, or 47 per cent, survived for five years. The difference is undoubtedly greater than that expressed by the percentage, as the irradiated cancers are League of Nations 1 while the operative cancers are Schmitz 1, including 5 preinvasive lesions.

Spindle Cell Carcinoma—There are too few spindle cell cancers in the operative series to estimate the curability in this group. However, it is reasonable to assume that Martzloff's figure of 9 per cent curability would be higher in the Schmitz 1 cases herein considered, as Martzloff was dealing with League of Nations 1 and some 2's. Yet it is difficult to believe that the figure would nearly approach the 91 per cent cure obtained with irradiation, or with comparable figures reported by other observers.

Spinal Cell Carcinoma—The material in the present study contains only 6 spinal cell carcinomas stage 1 treated with radiation and only 2 by operation, so that no conclusion is possible. This is particularly unfortunate, as certain collateral evidence indicates that this might be a favorable group for operation. First, in considering all stages of carcinoma (table 2) irradiation of spinal cell cancers gives the poorest results. This is in confirmation of Healy and Cutler and others. Second, Martzloff obtained the most favorable results by operation in this group. While no conclusion is possible it is true that irradiation has proved more generally satisfactory, all cases considered. So it is apparent that the burden of proof must be put on the advocates of operation.

Adenocarcinoma—Here too there is insufficient evidence for or against operation or irradiation to warrant a conclusion. There is reason to believe that adenocarcinoma is the most favorable group for operation, as indicated by the operative cure rate of 75 per cent reported by Martzloff. It is difficult to believe that irradiation can equal this percentage when comparable clinical material is considered. The problem is complicated by the relatively satisfactory results of many workers with irradiation in adenocarcinoma of the cervix irrespective of the clinical stage (table 2). However, based on Martzloff's results, and until further statistics on group 1 adenocarcinoma have been accumulated panhysterectomy must be considered a satisfactory method of therapy for this uncommon clinical picture.

Preinvasive Carcinoma—While the present study strongly suggests that operation is not the method of choice in early stage 1 cases, especially in the transitional and spindle cell groups, it does not at all indicate that the "accidental" and preinvasive lesions should not be operated on. In the 36 cases of the operative series herein reported, 5 belong to this group. All these patients are living except 1, who died of postoperative shock. With the information at hand, the question of operation or irradiation cannot be definitely decided for this group.

In a more general consideration of the selection of type of therapy for these early cases of carcinoma of the cervix, it is worth noting that, although the lesion in several instances was thought to be of the earliest, there was found, on examination of the gross operative specimen, a large intracervical nodule of cancer. For this reason, and because of the experience considered in this paper with slightly more advanced squamous cell lesions, we feel that irradiation will prove more satisfactory for the entire squamous cell group, including the "accidentally" discovered and preinvasive lesions. If radium is selected as the method of treatment, full dosage should be employed, because early lesions of the cervix may be more extensive than clinical examination can indicate.

SUMMARY AND CONCLUSIONS

Although irradiation has been demonstrated by numerous observers over a period of years to be more satisfactory than panhysterectomy for the average case of cervix carcinoma, it is the opinion of many gynecologists and general surgeons that operation is a satisfactory method of therapy for very early cases. That panhysterectomy is commonly selected in such cases is indicated by the fact that, in our experience, for every 10 patients with primary carcinoma of the cervix there is 1 admitted for treatment of a recurrence after operation.

During the years 1927-1937, 36 patients with early carcinoma of the cervix were carefully selected for operation at the Johns Hopkins Hospital. In spite of this careful selection a five year cure rate of only 41 per cent was obtained. This does not compare well with the cure rate of 57 per cent obtained by irradiation with less favorable material.

It has therefore been concluded that as a practical therapeutic procedure for early carcinoma of the cervix panhysterectomy is an unsatisfactory method of therapy. Irradiation is the treatment of choice.

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³ Healy, W. P., and Cutler, Max. Relation Between Structure and Prognosis in Cervical Carcinoma Under Radiation Treatment, *Am. J. Obst. & Gynec.* **16**: 15 (July) 1928.

⁴ Hueper, W. C., and Schmitz, H. Relations of Histologic Structure and Clinical Grouping to Prognosis of Carcinomas of Breast and Uterine Cervix, *Ann. Surg.* **90**: 993 (Dec.) 1929.

⁵ Pomeroy, L. A., and Strauss, Abraham. Carcinoma of Cervix. Uteri. Review of One Hundred Cases with Especial Reference to Pre-dominating Type of Cell, *J. A. M. A.* **83**: 1060 (Oct. 4) 1924.

⁶ Plaut, Alfred. The Relation to Prognosis to the Histologic Findings in Carcinoma of Cervix, *Surg., Gynec. & Obst.* **43**: 450 (Oct.) 1926.

DIAGNOSTIC TIME SAVERS FOR
OVERWORKED PHYSICIANSWALTER C. ALVAREZ, M.D.
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For the duration most of the physicians left to care for the civilian population are going to be terribly overworked. Already many are carrying a killing load, the older men who used to have assistants are now back to taking histories, and many are having trouble because so many of the roentgenologists and laboratory workers who used to help them with their diagnoses have gone to war. More and more, then, the physician who just cannot get around to see all the persons who call for him in a day will have to attend first to those who appear to be seriously ill, he will have to try to make diagnoses as quickly as possible and with the minimum of help from others and he will have to try to recognize immediately and dismiss quickly all those many chronic complainers and psychopathic worriers who would love to take up much of his day with long rambling accounts of their aches and pains. Perhaps he can get some of these persons to look on the sparing of their physician's time as their contribution to the war sacrifice! They are probably too self-centered to return, but one might suggest it to them.

All this, of course, does not mean that any one is advocating the doing of poor or careless work. What is proposed is that we physicians now do more of what we have always done, and that is to try to make the diagnosis with the minimum of expense to the patient and the minimum of effort for ourselves. All physicians cannot practice as does a professor of medicine in a free clinic, ordering all the tests he wants, many of his patients haven't the money to pay for them, others are not concerned enough over their illness to want to pay for them, and many do not need them because the diagnosis can be made correctly without their help.

Every physician worth his salt should be making perhaps more than half of his diagnoses every day without the help of roentgenologic or laboratory reports. Usually he must go on and order some tests, but they will serve largely to confirm his first hunch or to safeguard his reputation or to satisfy the patient who usually looks on him merely as a passive broker who will order tests and then relay the reports! Today it seldom occurs to a much traveled patient that a good clinician can recognize many a syndrome and be sure of it merely from the answers to a few questions or that he can see in a few minutes that he is dealing with a scatterbrained neurotic, a constitutional inadequate, a chronic worrier, a hypersensitive complainer, a fussbudget of a perfectionist or a psychopath. All the average patient in a consultant's office wants today is tests and plenty of them, he wants to "be given the works."

I, who depend on tests day after day, would be one of the last to decry their value, but still I maintain that nowadays hundreds of diagnoses would be made more correctly if the physician concerned were to order fewer tests and ask a few more questions of the patient.

Often when I am trying to get a psychoneurotic woman to see how it was that after a few minutes or talking to her I could be so certain that her troubles were functional in origin I will say, "Let us suppose you were to hear a child cough violently, then whoop and finally vomit, wouldn't you know what it had?"

"Surely," she says, "it would have whooping cough." "Of course, and you would be sure of it, wouldn't you, because you have seen that clinical picture many times before?" You wouldn't feel the need for sending the child for any laboratory tests. All right, then, why can't you see that after years of studying the sick and listening daily to their stories of illness, I ought to be able to recognize a few of the common diseases the minute I hear the well known tale. I ought to know them on sight just as you know whooping cough on sight."

What I wish to do in this paper is, first, to encourage physicians to put greater trust in the diagnoses they make from the history and second, to pass on especially to my younger medical brethren some of the little tricks of diagnosis that I have picked up in the course of forty years. So often when a patient is referred to me for diagnosis I am impressed by the fact that the wise old family doctor, and perhaps my young assistant as well, had the right hunch as soon as they took the history, they felt then that the trouble should all be nervous in origin but when from the laboratories came reports of a slowly emptying gallbladder, some peculiarity in the electrocardiogram or some agglutinins for *Brucella abortus* they lost confidence in their clinical acumen and gave in to the laboratory report. In many such cases they shouldn't have given in because subsequent events showed that their first diagnosis was right. The laboratory finding was usually correct but it wasn't significant. It was like the finding of amebas in the stools of a man who has recently collapsed and quit work because of a slight stroke. In such cases one would like to hear the man's physician say to him "Even if you have amebiasis or the diseased gallbladder that some one says you have that couldn't possibly account for your symptoms, they are those of a nervous breakdown."

HINTS TOWARD THE RECOGNITION OF
FUNCTIONAL TROUBLES

In most cases of neurosis the diagnosis is best made from the recognition of a typical story and not from attempts to exclude organic disease. The trouble with the latter technic is that too often the overhauling turns up some unimportant organic disease, and then, if one hasn't already discerned what the trouble is, one is very likely to be thrown off the diagnostic track.

Good signs of a neurosis are the inability of the patient to say what the main complaint is, a tendency to answer the physician's questions with irrelevant statements, to complain too much of little things, to break in and not let the physician finish a sentence to keep consulting a long written list of symptoms to tremble and weep as the story is told or to tell the physician how to diagnose and treat the disease. The harder it is to get a clear history out of a person, the less likely he or she is to have organic disease.

Certain symptoms practically always mean a neurosis—symptoms such as globus, jitteriness, the fear of not being able to get a deep breath, fluttering or burning in the abdomen, or repeated belching, regurgitation or food immediately or soon after eating, distress or bloating immediately after eating or especially after drinking cold water or "pop," attacks of pain and soreness in the lower abdomen associated with the passage of mucus, abdominal distress which can be avoided or relieved by keeping the bowels open, attacks of abdominal pain following emotional debauches, distresses that come before breakfast, pains that leave no residue or

sores, bloating that comes up during the day and disappears during the night without the passage of flatus, and pains that have survived several abdominal operations.

The wise physician will think also of a neurosis or a neuralgia whenever he hears of a pain that for years has been fairly constant day and night and which does not interfere much with sleep. A long lasting ache in the left upper quadrant of the abdomen, and all those aches which are out in the abdominal wall are usually associated with or due to spondylitis. Pains in the back are usually arthritic in origin and rarely have anything to do with the kidneys. Pains that shift about in the abdomen are less likely to have an organic basis than are those which remain in one place. Abdominal discomfort which is not made either worse or better by the taking of food or the emptying of the bowel is not likely to be arising in the digestive tract. Pelvic pain in a woman is not likely to be arising in disease of the pelvic organs if it is not made worse by menstruation.

Diarrhea which comes in short episodes is often due to panicky fear or to the eating of some food to which the patient is allergic. The woman who remains fat in spite of years of abdominal discomfort, if she hasn't gallstones, usually is suffering from a neurosis. The person with greatly exaggerated knee jerks is often suffering from a neurosis. The person who responds wrongly to barbiturates and opiates is usually somewhat psychopathic or is in a nervous breakdown. The patient who aches all over may be arthritic but usually is a bundle of nerves. The woman whose liver region is always sore, but who has never had colics, and has a gallbladder which functions well with the dye had better not be operated on. Occasionally her trouble is due to food allergy. Always it is well to remember that pseudocholecystitis and pseudo-ulcer are fairly common conditions. Chronic appendicitis is probably a rare disease and adhesions probably rarely produce symptoms.

Although a psychoneurotic, fussy and fretty woman can have a cancer or other serious disease, usually all her many aches and pains are arising in her disturbed brain and are being referred out to the periphery of her body. The point to remember is that pain is a common symptom of psychoneurosis. If this fact were more widely known, laboratory workers in this country would be spared an enormous amount of futile work and surgeons would be spared many disappointments because of a failure to cure.

SPONDYLITIC PAIN

A common type of pain which is often puzzling and is usually best recognized from the history arises in an arthritic spine. Such pain is easily recognizable when it consists of sharp stabs and comes in a person who is arthritic and has suffered from lumbago, sciatica, wry neck, cricks and sacroiliac lameness. The trouble is not so easy to diagnose when the distress comes in the epigastrium and several physicians have been hazarding diagnoses of angina pectoris, a poorly emptying gallbladder, peptic ulcer or gastritis. But even then one can often save the patient much expense for tests by eliciting such facts as that the distress is not really a pain but an ache or a burning and that it is felt superficially and not deep in. The fact that it has no relation to fast walking or going upstairs or getting angry indicates that it is not arising in the heart. The fact that the man can walk rapidly or go hunting or play tennis will show that his cardiac reserve is good. Under the

circumstances an electrocardiogram will probably not show anything wrong.

The facts that the distress has no relation to eating or belching or taking soda or passing feces or gas and that it was not helped by a Sippy regimen will indicate that it is not arising in an ulcer or any other disease of the digestive tract. The facts that it tends to get worse when the patient sits a while or lies down and that it goes away when he gets up and walks around a while make it almost certain that the disease is arthritic or fibrositic in nature.

CONSTITUTIONAL INADEQUACY

One of the most common problems in medicine is that of the woman who ever since girlhood has had one puzzling illness after another. She usually has had headaches, weak eyes, indigestion, constipation, abdominal pain, dysmenorrhea, palpitation, backache, bladder trouble, insomnia and aches and pains all over. She possibly has had several abdominal operations, none of which did her much good. Often one can see at a glance that she is constitutionally frail, and a few minutes of listening to her tale of woe will be enough to convince any experienced physician that no amount of examining will ever reveal one localized "cause" for all her troubles. Poor nervous heredity and "the contractor's having put in poor materials" are usually the best explanations for her miseries. Often tactful questioning will show that the woman has near relatives who have been insane or good-for-nothing, and to me this fact is the most important one in the whole history.

EXTREME FATIGUE

Another common problem is that of the woman who complains primarily of an extreme and distressing sense of fatigue for which several careful examinations have failed to reveal a cause. A few minutes questioning usually shows that she has had the distress for years, so it can hardly be due to tuberculosis or brucellosis or cancer. It is usually worse in the morning and clears away toward evening, so obviously it is not due to the strain of the day's work. Often the woman is not overworked, vacations have not helped, and in spite of all her years of misery she is well nourished and healthily looking.

In such cases the answer to just one question often gives all the explanation that I think is needed for the syndrome. This question is "Have any of your relatives suffered from mental disease, and particularly spells of depression?" If any have been so afflicted, the chances are that the woman's distress is her share of the family curse. Often also with an inherited psychopathic makeup the woman wears herself out with poor adjustments to living, with silly worrying and with much fretting against small discomforts.

A NERVOUS BREAKDOWN

It is a distressing fact that today, with all the wonderful diagnostic technics on which we physicians like to rely, one of the most common diseases that we see often fails to get recognized. I refer to the nervous breakdown of one kind or another. The difficulty is that the patient seldom thinks to mention the really important symptoms. Instead, he talks so much about pains and aches and what other physicians diagnosed and prescribed that even a consultant immediately thinks of disease in heart, digestive tract or glands or internal secretion and starts hunting for it with many tests. Unfortunately none of these tests can reveal the

fact that the man is almost out of his mind with nervousness or fatigue or fear of going insane. All that the tests do often is to turn up some unimportant abnormality which causes the physician to assume that the diagnosis has now been made and that no further thought need be given to it. Actually a very different diagnosis would have been made if the doctor had only thought to ask the man if he was working. Then it would have been learned that for months or years he hadn't worked because he couldn't meet people comfortably or stand having them around him. He was too nervous and restless and jittery to sleep or read or even to sit through a movie. Curiously, he who complained only of a little belching or abdominal discomfort did not mention the fact that for months he had been unable to talk business with any one for even a few minutes without getting prickly or faint or sweaty. He didn't confess that he couldn't make decisions that he couldn't talk to his wife without weeping or that he couldn't concentrate well enough or long enough to read even an editorial in the paper. Obviously the brain of such a man must be badly disorganized and sadly in need of rest.

A few more questions are then needed to help determine whether the nervous breakdown is due mainly to a bad nervous heredity, dissipation, unhappiness, overwork, heavy nervous strain, an insoluble life problem, cerebral arteriosclerosis, a slight stroke, some smoldering infection or a combination of several causes. In most of these cases it is of little use to go searching again and again for some focus of disease, because even if one was to be found it wouldn't be the cause of the breakdown and in most cases it would be unwise to do any operating until the man was rested and feeling more like himself.

SO-CALLED MUCOUS COLITIS

A considerable number of the women found in the offices of gastroenterologists have a disease which in most cases is easy enough to diagnose from the history alone. They have the irritable bowel syndrome. I do not like to call it spastic colitis because this term often breeds confusion and fear. Usually all the physician need do is to find out that for years the woman has had a sore, constipated and perhaps gassy colon which gets more painful and troublesome whenever she runs into worry or excitement or painful emotion. The woman may complain of attacks of diarrhea, but more careful questioning will show that what she means is that she has to go frequently and pass a little water and mucus and gas. Highly important will be the fact that the discomfort is felt in the lower half of the abdomen. This goes far to rule out disease in the stomach, duodenum or gallbladder.

THE IRRITABLE DIGESTIVE TRACT

Many persons who think they have an ulcer or some disease which could be cured with diet have only an overly irritable and reactive digestive tract. This fact can be ascertained easily by asking a few questions which will show that the distress complained of commonly follows within a few minutes after eating and more significant yet, within a few minutes after drinking cold water. Sometimes the patient will say that she bloats suddenly after drinking water or taking a cup of tea or some pop. In such cases the mere distention of the colon with an enema may cause much distress or the woman may fill with gas or get diarrhea whenever she becomes excited or frightened. Food may go

through her within an hour, and a small dose of laxative may act like a drastic purgative. Obviously, if the simple distention of the stomach or bowel by water can cause so much distress, there can be little hope of finding a diet that will be innocuous.

FOOD ALLERGY

Often the present day, long winded study of suspected allergic disturbances could be greatly shortened if only the patient was to be asked to go without any food for twenty-four or forty-eight hours. If this did not promptly relieve the indigestion, flatulence, constant headache, toxic feeling or stuffy nose complained of there could be little hope of finding any diet that would work well. Incidentally, the patient who says he couldn't bear to fast for twenty-four hours shows immediately that either he hasn't any guts or his pain cannot be very troublesome. If he promises to fast and then cheats, that also will tell the physician all he needs to know about him.

Usually one can tell the chronic dyspeptic from the allergic simply by asking a few questions. If a person is allergic and knows he must not touch egg white, he will usually say that he cannot eat cake or sherbet or anything containing egg, but the dyspeptic who says that he cannot touch eggs will often say that he can take one if it is boiled hard or beaten up in milk. Evidently, then it is the appearance of a poorly cooked egg which he does not like. He will say also that he cannot take anything raw or anything acid or anything fried or any pastry. Such generalizations do not mean anything to an allergist and suggest to him that the patient is a fussy, opinionated person who is full of prejudices.

MIGRAINE

Typical of the diseases that are best diagnosed from the history and the appearance of the patient is migraine. All one has to do is to recognize the story of a throbbing unilateral headache, followed by nausea and utter misery, or to see the miserable and apathetic patient in the attack. In typical cases this attack begins with a scintillating scotoma. Just to make it hard the woman will often have, in addition to the migraine, a milder nervous headache and sometimes a nuchal headache due perhaps to sore muscles. In cases of doubt it is helpful to find that near relatives have migraine, that the woman had spells of "bilious vomiting" in childhood, that she was free from the spells during her pregnancies and that she slips into the headaches whenever she gets tense, worried, tired or unhappy, when she is about to menstruate or when she is going to give a dinner party.

For nearly a hundred years it has been known that this disease is an entity inherited from some ancestor. Its cause is in the brain, and the patients almost always have a peculiar temperament which contributes most to keeping up the trouble. They are nervous, hypersensitive, easily fatigued, worrisome and meticulous persons who take responsibility keenly and are inclined to work too fast and to do too much. Because I have never seen the tendency to the disease permanently eradicated by any abdominal operation I have little desire to make a lot of tests. I would much rather spend what time I can spare talking to the woman, finding out what her sources of strain are, showing her how she can live so as to cut down on the number of spells and giving instructions as to how to go at relieving the headache the minute it appears.

A QUESTIONABLE BASAL METABOLIC RATE

Many a nervous, wide awake and energetic little woman goes to an internist to say that for a while her doctor treated her for myxedema because one estimate of basal metabolic rate was reported as -35 per cent. Significant then will be the fact that with the taking of thyroid substance she only became so much more jittery than she was before that she had to stop the medication. Fairly obviously she did not need it. The question then is: Shall the internist send her for more estimates of the basal rate or shall he spare his overworked laboratory girl? Usually he can spare her. Just let him talk to the woman for a few minutes and he will see that she can't be myxedematous, with her keen mind, mobile face, quick movements and active reflexes she just cannot have a rate of -35 per cent. The calculation must have been wrong.

Well, then, is she perhaps hypothyroid? Probably not, if her skin is cool and her pulse normal, if she has no tremor if she does not kick off the bedclothes and if she hasn't been losing weight. Under such circumstances many a wise clinician will not bother to send the patient for a measurement of the basal metabolic rate because he knows it almost certainly will be within the limits of normal. Incidentally, the limits of normal are wider than many physicians think. They are probably somewhere between -18 and $+18$ per cent. Many thin, frail women have a low basal rate of from -14 to -17 per cent, which is not due to hypothyroidism. Borderline measurements should always be repeated until at least two figures come out close together, and then no conclusion should be based on them which does not fit with the other facts obtained from the history and the physical examination. Any diagnosis based on one laboratory test the result of which does not fit with other facts of observation is usually wrong.

SUPPOSED DISEASE IN THE GLANDS OF INTERNAL SECRETION

Every so often a stout woman comes to an internist asking for treatment for some glandular disease which some one has told her she has. Already she has been treated extensively with hormones derived from the several glands of internal secretion, but she has not gotten better. The wise physician will note at a glance that she is normally feminine in build and appearance, her fat is evenly distributed, and she has no hair in places where it should not be. The fact that she has a normal menstrual cycle will indicate that the pituitary-ovarian mechanism must be functioning fairly well, and after running over in his mind the characteristics of the few known diseases due to a hypofunctioning or hyperfunctioning of the several glands of internal secretion the physician will see that she hasn't any of these syndromes. Then, perhaps, when he finds that obesity runs in her family, he will be satisfied to give her only a reduction diet.

SUPPOSED FEVER

A problem that often takes up much of the internist's time is that of supposed chronic fever. Usually the woman (it is significant that the patient is practically always a nervous woman) has already been subjected to many tests and much treatment for supposed brucellosis. Questioning usually shows that by fever the woman means 99.5°F on some afternoons. Often it can be noted, and this is highly significant, that on the first day in the office, when the patient was tense and anxious, the temperature, pulse, blood pressure and

leukocyte count were up a little, but later, when she calmed down, they all dropped to normal.

To one well acquainted with this syndrome, it will seem probable that, along with an unstable personality, the woman has unstable thermostats in her hypothalamus, and all she needs do is to stop worrying and to throw away her thermometer. Recent studies have shown that tense active persons normally have a temperature ranging around 99.3°F .

A helpful test in these cases is a measurement of the blood sedimentation rate. If this is under 15 mm in an hour, the woman is not likely to have any serious illness. Another helpful thing to do is to get a scout film of the abdomen, which usually shows that the spleen is normal in size. This tends to rule out brucellosis or other chronic infectious disease. Stereoscopic roentgenograms of the lungs should, of course, be made to help rule out tuberculosis.

THE OLDER MAN OR WOMAN WHO HAS
SUDDENLY FAILED IN HEALTH

There is one type of case in which no good physician will want to trust only to a clinical hunch, and that is when a previously healthy person past middle age has just begun to fail and for the first time in his life has either become conscious of his stomach or gotten a pain, passed some blood or lost strength, weight or joy in life. Usually in such cases the cause is something serious, and always it must be searched for with care and pertinacity.

Unfortunately, one fairly common type of disease seen in these older persons who have begun to fail in health is seldom diagnosed correctly because the typical history is not elicited. I refer to intracranial arteriosclerosis with thrombosis of one or more small blood vessels in the brain. The disease should be easily recognizable when the illness comes suddenly at a certain minute of a certain day or when the patient wakes some morning feeling terribly dizzy and perhaps nauseated and confused. It is pathognomonic when, with this, there go changes in character, loss of memory or loss of joy in life and interest in loved ones and friends. Some of the patients lose considerably in weight, and a few become crippled with arthritis.

In those cases in which there was known to have been hypertension it is highly significant that after the dizzy spell the pressure fell decidedly, perhaps to normal, and remained there. This sign is probably pathognomonic. Sometimes the history of a little stroke cannot be obtained because the shutdown in circulation came slowly or at night, but then manifest character changes with loss of memory, a slowing up of the mental processes, an inability to work, loss of proper grooming or the coming of some signs of Parkinson's syndrome will make the diagnosis fairly easy and will show that the disease is in the brain and not in the thorax or abdomen.

RULING OUT CARCINOMA OF DIGESTIVE TRACT

In older persons with failing health it is often necessary to rule out cancer of the digestive tract and here again a few hints may be helpful. Since most cancers of the digestive tube ooze blood, a high hemoglobin reading is encouraging. Since most of these cancers become infected, normal leukocyte and polymorphonuclear cell counts are encouraging as is a low blood sedimentation rate. When six months of illness have passed and symptoms of obstruction have not appeared, this tends to rule out cancer of the small bowel and of

the left half of the colon. A normal liver function test is cheering, as it lessens the likelihood that metastasis has taken place.

A SUPPOSED GASTRIC HEMORRHAGE

Every so often the gastroenterologist sees a man who for months has been undergoing ineffectual treatment for ulcer. The diagnosis was based largely on the history that the man vomited blood or passed a tarry stool. But proper questioning soon shows that the little blood that was brought up was seen only after the patient had been retching for half an hour. This means that it came probably from a small ruptured vessel in the esophagus or stomach. If the stomach had been full of blood coming from an ulcer the story would have been very different. Then the minute he vomited perhaps a pint of bloody material would have come up.

More questioning is likely to throw great doubt on the nature of the black stool. Almost always the passage of tarry stools due to a real hemorrhage greatly weakens the patient. Often he faints on the bathroom floor, he is unable to walk up stairs, and usually he has to take to his bed and stay there for a week or two until some hemoglobin is regenerated and strength returns. Hence when one learns that the patient with a black stool went right on with his work and did not become weak or anemic one must doubt if he ever had a hemorrhage. If more questioning shows that at the time the dark stool was passed he was taking iron or some white powders, probably containing bismuth, it will be even more doubtful if he had any bleeding.

Because the man with an ulcer usually loses his pain for a while after a hemorrhage it is often helpful to ask about this, and if an abdominal discomfort went on unchanged after the passage of a black stool it probably was not due to an ulcer. Another strong indication that a man never had an ulcer is the story, commonly obtained, that a Sippy regimen, well carried out, failed to give any relief. When a man has a tractable ulcer without any complication such as penetration into the head of the pancreas or pyloric obstruction, he ought to get relief as soon as he is put to bed and given frequent feedings.

SUPPOSED PYLORIC OR DUODENAL OBSTRUCTION

A woman may say that she vomits violently in spells, and her physician suspects that she has an ulcer obstructing the pylorus. Or because on one occasion a roentgenologist saw stasis in her duodenum, it is feared that she will have to have a duodenojejunostomy. When, however, questioning shows that the woman never vomits food but brings up only a watery fluid, it will be obvious that her pylorus is open and food is not stagnating in the stomach. When further questioning shows that her spells always start with a unilateral headache it will become apparent that what she has been having are attacks of migraine.

Many a woman who complains of "vomiting" is really regurgitating food the minute she finishes eating, or even before. She has no nausea and does not retch. This trouble is always functional in nature and due to a hereditary predisposition plus nervousness or fatigue or a psychoneurosis. I have never seen it helped by any operation.

ARTHRITIS AND FIBROSITIS

One of the common problems the physician has to deal with every day is that of arthritis and fibrositis. Usually the question uppermost in the mind of the patient is whether he is going to be crippled. If he can be assured that he is not headed straight for a wheel-

chair he will usually go away happy and willing to put up with his pain and soreness. Often the physician can encourage the man by reminding him that he has been having attacks of stiffness in his joints off and on for most of his life without getting either deformed or crippled. Under these circumstances he will probably recover again.

With arthritic patients one of the most helpful tests is the measurement of the blood sedimentation rate because, if this is less than 10 mm in an hour, the chances are that the man has fibrositis rather than arthritis, which means that he is never likely to be crippled. Usually sinuses, tonsils and devitalized teeth have been attended to long before the consultant sees the patient and hence about the only place left in which he can hope to find infection is the prostate gland. In older patients with senescent changes in the joints one cannot expect to work much of a miracle by the removal of foci of infection.

THE PATIENT WHO CONTINUES TO HAVE TROUBLE AFTER AN OPERATION FOR ULCER

Often when a patient returns with abdominal pain after gastroenterostomy or subtotal gastrectomy the question is "Has the old ulcer flared up or has a new ulcer formed in the jejunum just below the stoma?" Often the best way of deciding this is to find out if the pain has shifted. If it is in the old place in the epigastrium the chances are that the old ulcer has become active again, but if the pain has moved down to a point a little below and to the left of the navel the chances are that a jejunal ulcer has formed. If the man has recently had a hemorrhage and had never had one before the operation, the chances are large that he has a new ulcer, this time in the jejunum.

THE PATIENT WHO STILL HAS PAIN AND INDIGESTION AFTER CHOLECYSTECTOMY

The first thing to do when a person comes complaining of abdominal distress after cholecystectomy is to find out whether before operation there were any colics or other symptoms strongly indicating the presence of gallbladder disease or whether the operation was done largely because some roentgenologist thought the gallbladder was slightly abnormal. If the symptoms originally were those of a psychoneurosis and the operation did no good, the chances are that it was ill advised, and in attempting to make a diagnosis the physician can leave out of consideration residual disease in the bile ducts. It is helpful to find out whether the gallbladder contained stones. If it did and if the patient is now complaining of attacks of pain, perhaps with chills and fever and slight but definite jaundice, the chances are that a stone was left in the common bile duct. But if at operation there were no stones in the gallbladder there is little likelihood that now there is one in the duct. Whenever the patient says that he has had jaundice he should be cross examined because often it turns out that all he had was a questionable sallowness.

COMMENT

It is suggested that for the duration of overworked physicians spare overworked roentgenologists and laboratory technicians and make more of their diagnoses quickly with the help of a few shrewd questions. A number of hints have been given for the making of such quick diagnoses. Today many diagnoses could be made with greater accuracy if based on a good history rather than on tests, in many conditions the diagnosis can be made from the history alone.

ERYSIPELOTHRIX RHUSIOPATHIAE SEPTICEMIA DIAGNOSIS AND TREATMENT

REPORT OF FAIAL CASE OF ERYSIPELOID

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PHILADELPHIA

The cutaneous disease that Rosenbach in 1884 designated erysipeloid is now known to be an infection caused by *Erysipelothrix rhusiopathiae*, the organism of swine erysipelas. Erysipeloid occurring at the site of injury, usually the hand, in abattoir workers, fish handlers and retail butchers, is a common occupational disease. Erysipeloid resulting in blood stream infection and death is rare.

The case reported here concerns a butcher who cut his finger while working. Although we did not see him at that time, evidence suggests that a severe form of erysipeloid resulted from this injury. Blood stream infection with *Erysipelothrix rhusiopathiae* ensued, from which he died six months after the injury. The organism was recovered from antemortem blood culture. Symptoms of the septicemic form of the infection in man are not described in medical textbooks. The clinical picture is somewhat comparable to the infection in swine, which is well known to veterinarians.

REPORT OF CASE

Clinical History—J Z, a white man aged 46, a retail butcher, came under our observation when he was admitted to the medical service of Dr David W Kramer at the Philadelphia General Hospital on Sept 18, 1941.

On April 15, 1941 the left thumb was lacerated by a meat bone. No particular attention was paid to the injury until three days later, when the thumb began to swell, compelling him to stop work on April 21. The physician who treated him reported extensive infection of the thumb, periostitis of both bones and cellulitis of the soft tissues. The site of infection was incised and drained, but with little improvement. A roentgenogram of the thumb on May 7 disclosed necrosis of the base of the distal phalanx. Another physician advised amputation, which was not performed. He reported an infectious arthritis of the interphalangeal joint with erosion of the distal phalanx. On May 16 it was reported that the thumb was considerably swollen. There was an open area, the remains of previous incision, with serous discharge but no pus. The surrounding tissues were not inflamed and there was no evidence of extension of infection. The patient's general condition was good, there were no systemic symptoms. The thumb gradually improved, complete healing ensued, enabling him to return to work on June 9. He worked regularly until August 15, when he stopped work because he felt weak and sick. He continued to feel weak and spent most of the time in bed. A physician who visited him reported that he was anemic and had fever and a purpuric eruption and advised admission to the hospital.

Physical Examination—The patient was well developed and well nourished. He appeared ill and anemic. The skin was yellowish white. Scattered over the extremities and trunk there were a number of purpuric macules varying in size from

0.5 to 4 mm, the color varied from shades of red to purple. There was a scar on the left thumb but no evidence of infection. The tongue and mucous membranes were pale. The heart was not enlarged to percussion. The heart sounds were soft and distant with normal rhythm. There was a blowing systolic murmur heard at the apex. The liver was enlarged two fingerbreadths below the costal margin. The edge of the spleen was palpable.

The blood pressure was 150 mm of mercury systolic and 70 mm diastolic, the pulse rate 90, the temperature 100 F and the respiratory rate 25.

Laboratory Examination—Repeated examinations of the urine revealed 2 to 1 plus albumin, occasional casts and white blood cells and on one occasion red blood cells. The Fishberg test revealed fixation of the specific gravity at 1.010 to 1.011. On admission the erythrocyte count was 2,000,000 and the hemoglobin content 49 per cent (7.15 Gm). The erythrocyte level decreased to 1,560,000 on September 25 and to 1,000,000 on October 2. The white blood cells numbered 8,800. The differential count was 74 per cent neutrophils, 16 per cent lymphocytes and 10 per cent monocytes. The sugar content of the blood was 87 mg per hundred cubic centimeters and the total cholesterol content was 136 mg with 26 mg (19 per cent) of cholesterol esters. Blood Wassermann and Kahn tests gave negative results. Agglutination tests for typhoid, paratyphoid, *Brucella abortus* and *Pasteurella tularensis*, and the Weil-Felix



Fig 1—Purpuric spots and purplish disciform lesions. The eruption resembled erythema multiforme more than any other skin disease (see figure 6 for comparison).

reaction revealed negative results. The blood urea nitrogen gradually rose from 50 mg per hundred cubic centimeters on admission to 90 mg on October 13. Of four blood cultures three showed a small, slender, gram positive bacillus.

Course of Illness—The pulse remained elevated and the temperature spiked between 99 and 102 F. The heart became enlarged and a short diastolic apical murmur was heard when the patient was in the left lateral position. The standard urea clearance test diminished to 8 per cent. The purpuric like macules on the trunk faded, followed by a new outbreak of purplish macules, with smooth, nonelevated surfaces, on the dorsa of the hands and on the forearms. Here the lesions were disciform, varying in diameter up to about 5 cm (fig 1). Some became confluent, others were somewhat rounded with irregular borders. Around the elbows and ankles the eruption consisted of discrete spots. There were purpuric-like linear lesions that followed some creases on the palms and palmar surfaces of the fingers (fig 2), concomitant with these palmar lesions there were swelling, tenderness and pain of the carpal and metacarpal joints of both hands. The patient also complained of pain in other joints. Transfusions and sulfathiazole (the blood concentration was 12 mg per hundred cubic centimeters) were without effect. The patient became progressively weaker and died on October 17.

Clinical Diagnosis—This was subacute bacterial endocarditis. In the terminal stage of the disease, *Erysipelothrix rhusiopathiae* septicemia was suggested. The organism recovered from blood culture was identified as *Erysipelothrix rhusiopathiae* after death.

Necropsy—This was performed twenty hours after death. The body was well developed but poorly nourished and showed neither icterus nor peripheral edema. The previously described cutaneous changes were not obscured by livor mortis. The pleural, pericardial and peritoneal surfaces were apparently normal. The lungs, aorta, gastrointestinal tract, pancreas

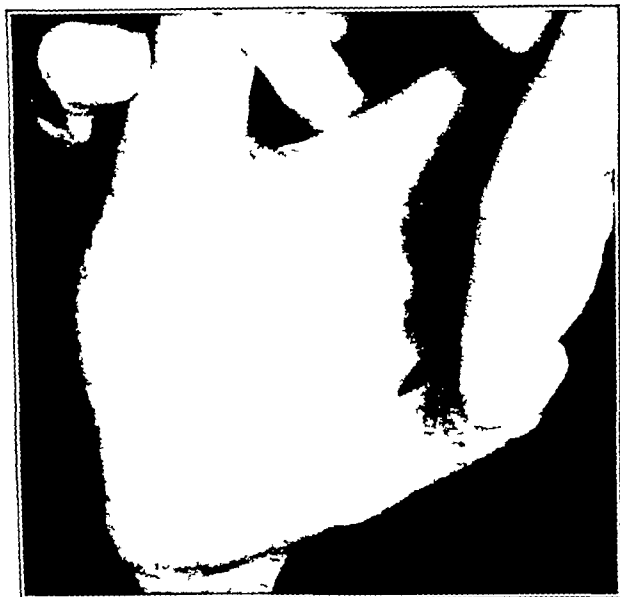


Fig. 2—Purplish linear lesions in some creases of the palms and palmar surfaces of the fingers

extrahepatic biliary passages, lower urinary tract, genitalia and adrenals were not remarkable on gross examination.

The heart showed moderate hypertrophy of the left ventricular myocardium and a moderate degree of dilatation of each ventricle. Adherent to one aortic leaflet there was a pinkish yellow friable vegetation¹ (1/4 inch in diameter). The other valves and the coronary arteries were not remarkable.

The spleen was four times the normal size and presented a moderately firm recent infarct which took the form of a transverse band 1 inch wide.

The liver was somewhat enlarged and cut with decreased resistance. The inferior edge was rounded. On the cut surface

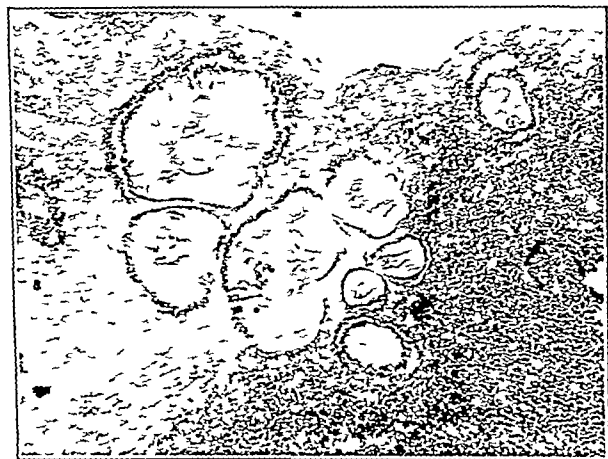


Fig. 3—Section of endocardial vegetation showing large amorphous masses in the center, pus cells and fibrin. Hematoxylin and eosin stain. Reduced from a photomicrograph with a magnification of 63 diameters.

the normal hepatic architecture was obscured by a diffuse, irregular pale pink and yellow mottling.

The kidneys were large and swollen. On both the subcapsular and cut surfaces there were scattered petechiae.

1. Since death resulted from accidental injury, necropsy was performed by the coroner's physician. No culture was made of the endocardial vegetations.

Anatomic Diagnosis—This was acute bacterial endocarditis (aortic valve), cardiac hypertrophy and dilatation, recent infarct of the spleen, acute hepatitis with fatty change and acute focal glomerulonephritis.

Microscopic Observations—Heart. A section through the involved aortic cusp, stained with hematoxylin and eosin, showed the leaflet definitely thickened by layers of fibrin in various stages of organization. The endothelium was disrupted at the site of attachment of a vegetation. The latter was composed in some parts of closely packed polymorphonuclear leukocytes with a few large mononuclear cells; in other areas there were fine and coarse wavy threads of fibrin, small foci of degenerated erythrocytes and an occasional pus cell. Scattered through the vegetation especially in its periphery, were numerous doughnut shaped amorphous gray masses with strongly eosinophilic margins (fig. 3). After staining with the Weigert modification of the Gram stain, these masses and the tissue surrounding them showed many gram positive rods and threads scattered singly, in clumps and in linear formation (fig. 4).

Spleen. Two thirds of the section showed extensive areas of necrosis. The viable splenic tissue, the pulp, showed occasional histiocytes filled with blood pigment and a few giant cells, probably megakaryocytes.

Liver. Most of the liver cells were distended by large globules of fat. In numerous foci well defined acute inflammatory infiltrations occurred in and around the periportal connective tissue.

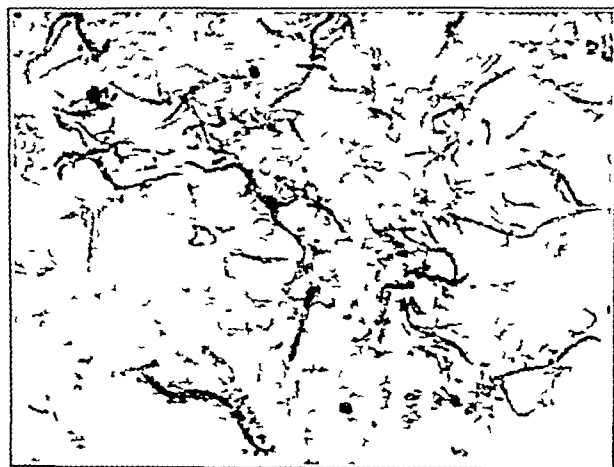


Fig. 4—Section of endocardial vegetation showing *Erysipelothrix rhusiopathiae*. Slight nodular irregularities of some filaments suggested beading. Gram Weigert stain. Reduced from a photomicrograph with a magnification of 398 diameters.

Kidney. Many glomeruli were unusually cellular, several were the seat of recent thrombosis with a moderately severe localized leukocytic infiltration surrounding many of the necrotic foci. Occasionally there was a localized proliferation of the capsular epithelium with the formation of an epithelial crescent. Few of the tubules contained erythrocytes.

Microscopic Diagnosis—Aortic Valve. Acute bacterial endocarditis with bacterial colonization.

Spleen. Recent septic infarction.

Liver. Focal acute hepatitis, fatty metamorphosis.

Kidney. Focal acute embolic glomerulonephritis.

BACTERIOLOGY

The organism obtained from an antemortem blood culture was identical morphologically, culturally and serologically with a known strain of *Erysipelothrix rhusiopathiae*.²

Morphology—The organism was a slender, straight or slightly curved rod from 1 to 15 microns long, arranged singly or in small groups or in chains. It was nonmotile, non-spore.

² This strain in the laboratory of the Research Institute for Cutaneous Medicine was obtained from a lesion of diamond skin disease in 1941. The original culture has since been maintained in its true form. Morphology and virulence of the organism have remained unchanged. This method is a convenient one for maintaining a virulent stock strain of *Erysipelothrix rhusiopathiae*.

forming and was gram positive. In old broth cultures the organism grew in longer forms.

Cultural Characteristics—The organism grew well on blood agar. Scanty growth was obtained on heart infusion broth (Bacto) but grew well in this medium (turbidity in twenty-four hours) with the addition of ascitic fluid (10 per cent). Better growth was obtained on a modified heart infusion broth (Burky and Henton³). Liquefaction of gelatin did not occur. Voges-Proskauer and methyl reactions were negative. Indole and hydrogen sulfide were not produced.

Virulence—White mice inoculated intraperitoneally with 0.1 cc of a 1:10 dilution of a forty-eight hour culture on Burky's medium were moribund in two to three days. The organism was recovered in pure culture from the heart blood.

Scrum Reactions—The organism was strongly agglutinated by a concentrated antiserum. Dr W. F. Verway of Sharpe & Dohme also performed agglutination tests with positive results with some scrums; agglutination resulted in dilutions reaching 1:1,600. Two rabbits that had been previously inoculated intravenously with 2 cc of a forty-eight hour broth culture were immunized as follows: Injections of 0.5, 1, 2 and 4 cc of forty-hour living broth cultures of organisms from our patient were given intravenously at four day intervals. Serum from these animals agglutinated a known strain of *Erysipelothrix rhusiopathiae* in dilutions reaching 1:2,560. The same antigen was not agglutinated by normal rabbit serum used as a control.

Biochemical Characteristics

	Our Organism	Known Strain of <i>Erysipelothrix rhusiopathiae</i>	Russell and Lamb ⁴	Bergey ⁵
Dextrose	Acid*	Acid	Acid	Acid
Maltose				
Sucrose				
Lactose	Acid	Acid	Acid (litmus milk)	Acid
Mannitol				Acid (late)
Xylose	Acid	Acid		

* Acid, but no gas

Biochemical Reactions—The accompanying table shows results of fermentation reactions with a known strain and with an organism from our patient. For comparison, fermentation reactions given by Russell and Lamb⁴ and by Bergey⁵ are shown. It will be seen from the table that fermentation reactions with the known strain and with the organism from our patient were identical. Compared with the results of Russell and Lamb⁴ and of Bergey⁵ there was a discrepancy in reaction with mannitol and xylose. It is to be noted, however, that fermentation reactions, as reported by different investigators working with different strains, have varied. Some report a variable reaction with xylose and others an acid reaction with xylose and with mannitol.⁶

In addition to our study the organism was identified as *Erysipelothrix rhusiopathiae* by the Pathological Division of the Bureau of Animal Industry of the United States Department of Agriculture in Washington, D. C. Dr H. W. Schoening of this division reported: "Both cultural examination and mouse and pigeon inoculations proved the organism to be typical of *Erysipelothrix rhusiopathiae*."

THE ORGANISM

Bergey⁵ classified *Erysipelothrix rhusiopathiae* among the "higher bacteria" of the order of Actinomycetales. There are three generally accepted strains, human,

swine and mouse, although the organism has been found in a considerable assortment of animal species either as a harmless parasite or as a pathogen. Its wide dissemination is extraordinary. It is found wherever nitrogenous substances are decomposing. In putrid material the organism is capable of retaining its viability and virulence for months. In certain environments it exists in the soil as a saprophyte. The organism has been recovered from the slime of fish,⁷ from houseflies⁸ and from putrefying horseflesh.⁸ The organism is not the cause of any known disease of fish. It appears that the slime of fish attracts the organism from refuse thrown in the water and other decaying matter and that change of environment increases the virulence.⁹

The virulence varies considerably in different species and in the same species. The organism has a capacity to change suddenly from a harmless saprophytic to a pathogenic parasite. This transition occurs particularly in swine. Man is relatively immune, particularly when the organism enters through the gastrointestinal tract. Pigeons and white mice are highly susceptible to artificial infection, rabbits and guinea pigs, considerably less.

THE INFECTION IN SWINE

The infection is one of the most serious diseases of swine. It is manifested in three forms. A mild form ('diamond skin' disease) is characterized by slight constitutional symptoms and the presence of quadrangular, rectangular and disciform lesions, bright red spots and ill defined blotches. The lesions, becoming confluent, form bizarre designs constituting an eruption pattern peculiar to this disease. This form is the more frequent in the United States. Frequently the cutaneous lesions are not visible until after the animal has been slaughtered, scalded and cleaned. A severe, frequently fatal, form is characterized by constitutional symptoms of septicemia, the presence of diffuse areas of erythema and at times vesicles, petechia and necrosis. A chronic form is characterized particularly by polyarthritis and at times symptoms referable to a vegetative type of endocarditis. Endocarditis, when occurring, usually involves the mitral valves, and the vegetations tend to attack and invade the endocardium.¹⁰

THE INFECTION IN MAN

The most common form of the infection in man is erysiploid. Other forms are less well known and somewhat correlate manifestations of the disease in swine. Erysiploid is a mild, rather localized cutaneous infection occurring usually at the site of injury, invariably the hand (fig. 5). Infection frequently arises from occupation (88 of 100 cases reported by one of us¹¹) in persons handling fish, the products of swine, dead matter of plant and animal origin and other sources. Pain, intense swelling, purplish red erythema at the site of inoculation and absence of suppuration are distinctive features. The disease may be wrongly diagnosed as pyogenic infection.

7 Brunner, G. Experimentelle Untersuchungen über Schweinerotlaufbakterien bei Fischen. Zentralbl. f. Bakt. (pt. 2) 97: 457, 1938.
Schoop, Gerhard. Rotlaufbakterien auf Seehäuschen, Deutsche tierärztliche Wchnschr., 1936, number 21, pp. 371-375.
8 Kondo, S., and Sugimura, K. Experimental Studies on Swine Erysipelas Bacillus Found in Fishes. J. Jap. Soc. Vet. Sc. 14: 111-113, 1935.
9 Klauder, J. V., Richter, L. L., and Harkins, M. J. A Distinct and Severe Form of Erysiploid Among Fish Handlers. Report of Clinical and Laboratory Studies. Demonstration of the Bacillus of Swine Erysipelas. Arch. Dermat. & Syph. 14: 662-678 (Dec.) 1926.
10 Coombs, C. F., Hadfield, G., and Henson, G. E. Endocarditis of Swine Erysipelas and Its Relation to Cardiac Infections of Man. Proc. Roy. Soc. Med. (Sect. Compar. Med.) 19: 13 (Feb.) 1926. Van F. arl McGrath.¹⁵
11 Klauder, J. V. Erysiploid as an Occupational Disease. J. A. M. A. 111: 1345 (Oct. 8) 1938.

3 This culture is a modification of the one described by Huntton and contains (a) fresh ground beef heart, eggs, distilled water, (b) neopeptone (Difco), sodium chloride, distilled water (Burky, E. L., and Henton, H. D. Am. J. Ophth. 19: 782 [Sept.] 1936).
4 Russell, W. O., and Lamb, M. E. Erysipelothrix Endocarditis. A Complication of Erysiploid. J. A. M. A. 114: 1045-1050 (March 23) 1940.
5 Bergey, D. H. Bergey's Manual of Determinative Bacteriology, ed. 4, Baltimore, Williams & Wilkins Company, 1934, p. 533.
6 Karlson, A. G., and Merchant, I. A. The Cultural and Biochemical Properties of Erysipelothrix Rhusiopathiae. Am. J. Vet. Res. 2: 510 (Jan.) 1941.

Arthritic symptoms particularly of the hand may accompany erysiploid and may persist after disappearance of the cutaneous lesions. In this event joints other than the hand may become affected.¹²

Generalized infection with polyarthritides and constitutional symptoms (with negative blood culture) has been reported.¹³

A few cases of septicemia with endocarditis have been reported. Russell and Lamb's⁴ case however is the first one in which endocarditis was proved at necropsy with recovery of the organism from the heart blood and endocardial vegetation. They appropriately write that the apparent rarity of the disease as suggested by the literature with only 3 questionably identified cases is probably not entirely justified. While endocarditis in swine is an infrequent complication of swine erysipelas, it is observed and generally recognized by veterinarians. For this reason the opinion is ventured that more cases in man will be recognized in the future as the prevalence of erysiploid infection is rapidly being publicized in the medical literature.¹

The report of Russell and Lamb⁴ concerned a lobster fisherman who presented a hospital course of sepsis and endocarditis. No port of entry of infection could be demonstrated and there were no cutaneous lesions. Death occurred after three months of illness. Antemortem blood culture revealed *Erysipelothrix rhusiopathiae*. Vegetative endocarditis of the aortic and mitral valves was found at necropsy.

In the case reported by Fiessinger and Brouet¹⁴ infection occurred from eating salt pork. The initial symptoms were malaise, anorexia (diarrhea was absent) and an eruption. The latter was described as red spots on the trunk and extremities becoming confluent in places, forming large plaques. The fever ranged from 37.6 C to 39 C (99.7 F to 102.2 F) and there was a painful swelling of one knee. The ears were swollen, purplish red¹⁵ and painful resembling a traumatic hematoma and purpuric spots appeared on the face. There was severe anemia, leukopenia with the monocytes reaching 22 per cent. Blood culture revealed *Erysipelothrix rhusiopathiae*. The patient rapidly improved after administration of immune serum. Soon after discharge from the hospital acute nephritis and cardiac failure ensued with fatal outcome.

Prausnitz's¹⁶ patient was a 10 year old child. There were bluish red spots on different parts of the body, joint pains and a clinical picture of sepsis with endocarditis. Blood culture disclosed *Erysipelothrix rhusiopathiae*. Death resulted after six months of illness. Necropsy was not performed.

The 2 cases reported by Gunther¹⁷ to which Russell and Lamb refer as questionably identified cases of septicemia with endocarditis occurred in veterinarians accidentally inoculated with culture of the organism. Bacteriologic studies were lacking however in both cases.

12 Further discussion may be found in Kartal S. Die chronische Erysipeloidarthritis beim menschlichen Schweinerotlauf. Deutsche Ztschr. f. Chir. 244: 332-334, 1935. Rahm H. Zur Schweinerotlaufarthritis der Fingergelenke. Klin. Wchnschr. 3: 224-226 (Feb. 5) 1924. Klauder J.

13 Klauder J. Generalisiertes Erysipeloid. Bericht über einen 29 Monate dauernden Fall mit Sektionsbefund. Dermat. Wchnschr. 93: 613-619 (May 19, 1934).

14 Fiessinger Noel and Brouet Georges. Rouget du porc chez l'homme a forme porcine et d'origine digestive. Presse med. 42: 939 (June 2) 1934.

15 Similar involvement occurs in swine.

16 Prausnitz C. Bakteriologische Untersuchungen über Schweinerotlauf beim Menschen. Zentralbl. f. Bakt. (pt. 1) 55: 362, 1921.

17 Gunther G. Schweinerotlauf beim Menschen. Wien. klin. Wchnschr. 35: 1315, 1912. Die Infektion eines Tierarztes mit todtlichem Ausgange. Tierärztl. Zentralbl. 26: 141, 1903.

COMMENT

The infection of the thumb apparently was a severe form of erysiploid. When we first saw the patient only a scar remained. It was reported that there was periostitis and necrosis of the bone. Reexamination of the roentgenogram showed unmistakable evidence of necrosis of the bone. This complication of erysiploid is not recorded as occurring in the medical literature. Despite this it is reasonable to ascribe necrosis of bone to the organism causing blood stream infection. Periostitis and osteitis, however occur in the infection in swine.¹⁸ Nonsuppurative at the site of injury is against pyogenic origin of bone involvement in our case. The injury to the thumb and the patient's occupation were the only evidences of the port of entry of *Erysipelothrix rhusiopathiae* infection.

Failure to demonstrate the organism in culture taken from the endocardial vegetations is compensated by its demonstration in stained sections from such vegetations (fig. 4). The organism seen as filaments in the section had slight nodular irregularities suggesting beading. In



Fig. 5.—Erysiploid of eight days duration in an abattoir worker who cut his thumb while working. This is the most common form of infection with *Erysipelothrix rhusiopathiae* in man. Pain, tense swelling, purplish red erythema and absence of suppuration are distinctive features.

old cultures especially on broth beading of the filamentous forms of the organism occurs.

The course and symptoms of the infection were similar in many respects to those in the case reported by Fiessinger and Brouet.¹⁴

DIAGNOSIS AND TREATMENT OF ERYSIPELOTHRIX RHUSIOPATHIAE SEPTICEMIA

There are three cardinal symptoms of the infection in swine—an eruption, symptoms referable to the joints, and endocarditis. This triad although occurring in man is not diagnostic. Moreover diagnosis before endocarditis develops is desirable. The eruption and monocytosis probably have more diagnostic value since other symptoms of the infection in man are common to any septicemia. Diagnosis is facilitated through the following considerations:

Anamnesis.—The history of erysiploid or of local cutaneous infection occurring in the course of an occupation or from a source entailing exposure to the organism. Illness after eating partly cooked pork or its product, fish or tainted food.

18 Van Es L. and McGrath C. B. Swine Erysipelas. Bulletin 34, College of Agriculture, University of Nebraska.

Eruption—Purplish red, hematoma-like swelling of the ears with necrosis (Fressinger and Briquet's patient) is a distinct symptom if frozen ears are excluded. The reported occurrence of "purpuric spots," "bluish red" lesions and "red spots" have limited diagnostic value. The formation of disciform lesions (fig 1) and large plaques lacking characteristic features of erythema multiforme is of more diagnostic value (fig 6). Purplish linear lesions in creases of the palms and palmar surfaces of the fingers are unique cutaneous lesions (fig 2). The character of the rash and its distribution in our patient resembled the purpuric and petechial eruption that characterizes the extrameningeal types of acute and chronic meningococcal infection.¹⁹

Monocytosis and *Listerella Monocytogenes* Infection in Man—In the few reported cases of septicemia in man there was an increase in the monocytes. Such increase is of diagnostic significance, since few diseases cause monocytosis in man, and is consistent with the following observations. In Barber's²⁰ study it was noted that among features common to both *Listerella monocytogenes* and *Erysipelothrix rhusiopathiae* was the production of monocytosis in rabbits. In some rabbits the increase in monocytes reached 30 per cent

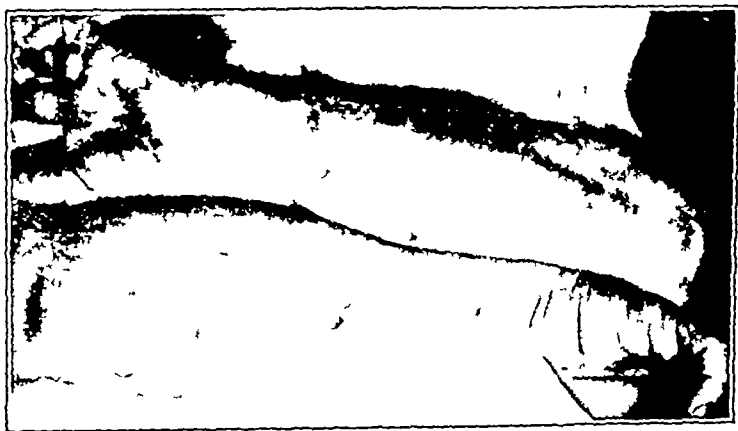


Fig 6—Erythema multiforme for comparison, showing bluish red, disciform lesions with central clearing (target shape) and with concentric rings (erythema iris). The central clearing and concentric rings, characteristic features of erythema multiforme, were lacking in the eruption of our patient.

Seastone²¹ observed that inoculation of chickens, rabbits and guinea pigs caused monocytosis. Egehoj²² noted monocytosis in *Erysipelothrix rhusiopathiae* infection in swine.

Listerella monocytogenes and *Erysipelothrix rhusiopathiae* are similar morphologically and culturally. One difference, however, is that *Listerella* is motile whereas *Erysipelothrix rhusiopathiae* is nonmotile. Both organisms are the cause of widespread infection in animals. The common result of *Listerella* infection in cattle²³ and sheep²⁴ is encephalomyelitis. "In rabbits, guinea pigs, chickens, septicemia is observed. In rodents, a monocytosis is considered pathognomonic. A similar monocytosis occurs in chickens but has not

been observed in ruminants."²⁵ In man,²⁶ *Listerella* causes meningoencephalitis, and the organism has been recovered from the blood of patients with infectious mononucleosis.²⁷

In view of the difference in the clinical picture of systemic infection with *Listerella* and with *Erysipelothrix* in man, there is less likelihood of confusing the two infections despite the presence of monocytosis and a preliminary blood culture report of a gram positive slender rod.

Agglutination Test—This has not been studied in septicemia in man. Grey, Osteen and Schoening²⁸ studied the value of the agglutination test in the diagnosis of the infection in swine. In the acute stage they observed that, although the test may be positive, this was quite variable. More uniform results were obtained in animals with joint lesions visible on clinical examination. Karlson and McNutt²⁹ observed that microscopic agglutination tests conducted on swine dead or dying of the septicemic form of the disease gave negative results.

In erysipeloid, Bierbaum and Gottion³⁰ observed that agglutination did not exceed dilutions of serum ranging from 1:20 to 1:40, in which dilutions the serums of normal persons caused agglutination.

Intracutaneous Test—Biberstein,³¹ notably, studied the diagnostic value of an intracutaneous test in erysipeloid and in experimentally produced infection in laboratory animals. His studies were conducted with an antigen comprising "fresh" vaccine and "fresh" filtrate made from a twenty-four hour bouillon culture of *Erysipelothrix rhusiopathiae* and "old" vaccine and "old" filtrate made from a ten day old bouillon culture. Best results were obtained with "old" filtrate, which gave positive results in 88 per cent of 17 persons with active erysipeloid and in 50 per cent of 6 persons who had recovered from erysipeloid. With the same filtrate, 5 per cent of 60 normal persons gave a positive reaction.

Recovery of Organism—In addition to blood culture, it is to be expected that the organism can be recovered by culturing an excised piece of affected skin. By this method it has been demonstrated in "diamond skin" disease and in erysipeloid and was demonstrated also in Klauder's¹³ patient who had generalized cutaneous lesions as long as fifteen months after onset of the infection.

Erysipelothrix rhusiopathiae septicemia should be considered when the clinical diagnosis is subacute bacterial endocarditis with a blood culture report of a gram

19 Mitchell Heggs G B. Skin Manifestations of Meningococcal Infection, Brit J Dermat & Syph 54: 283-307 (Nov.) 1942. Comparable to demonstration of meningococcus in smear obtained by friction over the petechiae or purpuric lesions and in microscopic section of such lesions, it would be interesting to know whether *Erysipelothrix rhusiopathiae* could be similarly demonstrated.

20 Barber, Mary A. Comparative Study of *Listerella* and *Erysipelothrix*, J Path & Bact 48: 11 (Jan.) 1939.

21 Seastone, C V. Pathogenic Organisms of the Genus *Listerella*, J Exper Med 62: 203-212, 1935.

22 Cited by Barber.²⁰

23 Schwarte, B S, and Biester, H E. *Listerella* Infection in Cattle, Am J Vet Research 3: 165-176 (April) 1942.

24 A common symptom in sheep is a circular movement, giving rise to the name "circular disease."

25 Graham, R, Dunlap G, and Levine N. Studies on *Listerella* III. Experimental *Listerellosis* in Domestic Animals, Cornell Veterinarian 30: 268-290 (July) 1940.

26 Wright, H A, and MacGregor, A R. A Case of Meningitis Due to Bacterium *Monocytogenes*, J Path & Bact 48: 470-472 (March) 1939.

Schultz, E W, Terry, M C, Brice, A T, Jr, and Gebhardt L P. *Listerella Monocytogenes*, a Cause of Meningoencephalitis in Man. Proc Soc Exper Biol & Med 38: 605-608 (1938). Webb, R A, and Barber Mary. *Listerella* in Human Meningitis. J Path & Bact 45: 523-539 (1937).

27 Nyfeldt A. Etologie de la mononucleose infectieuse, Comp rend Soc de biol 101: 590-592, 1929. Klinische und experimentelle Untersuchungen über die Mononucleosis infectiosa, Folia haemat 17: 1144.

1932. Pons C R, and Julianelle L A. Isolation of *Listerella Monocytogenes* from Infectious Mononucleosis, Proc Soc Exper Biol & Med 10: 360-361 (March) 1939.

28 Grey, C G, Osteen, O L, and Schoening, H W. Swine Erysipelas. The Agglutination Test for Its Diagnosis and a Report on a Study of Arthritis in Swine. Am J Vet Res 2: 74-76 (Jan.) 1941.

29 Karlson, A G, and McNutt S H. A Microscopic Agglutination Test for the Diagnosis of Swine Erysipelas, J Infect Dis 61: 49-51 (Jan Feb) 1939.

30 Bierbaum, K, and Gottion H. Zur Kenntnis des Erysipels. Rosenbach unter besonderer Berücksichtigung seiner Beziehungen zum Schweineerkrankung, Dermat Ztschr 57: 127 (Oct.) 1929.

31 Biberstein, H. Untersuchungen über Hautreaktionen bei menschlichem und tierischem Rotlauf, Arch f Dermat u Syph 168: 146-161 (1933).

positive rod provided the organism is nonmotile and non-spore forming. Other descriptive names that may be given the organism before identification are gram positive rodlike bacilli, coccoid or streptobacilli. In such event, in order to avoid delay, administration of immune serum should be considered before identification of the organism is established.

Treatment—Immune serum should be employed in massive doses in a short space of time.³¹ The following treatment is suggested: 100 cc intravenously every twelve hours for the first four to six injections, further treatment depending on the clinical results.

It is to be noted that sulfathiazole in our case and sulfamidamide in Russell and Lamb's case were ineffective. In a study³³ by one of us it was observed that the sulfonamide compounds were ineffective in the treatment of experimentally produced infection in mice (survival of 12–5 per cent) and also ineffective when combined with subcurative doses of immune serum.

1934 Spruce Street—2007 Pine Street—1532 South Sixth Street

Clinical Notes, Suggestions and New Instruments

ERYTHROBLASTOSIS FETALIS (HEMOLYTIC DISEASE OF THE NEWBORN) OCCURRING IN ONE OF TWINS

DONALD H. KARIHER, M.D., ROCHESTER, N. Y.

There has recently been called to my attention a case of erythroblastosis fetalis which occurred in 1 infant of twins while the other twin is perfectly normal. In view of the recent interest in the blood factor Rh as the etiologic agent of erythroblastosis I feel that this case is of sufficient importance to warrant publication. Complete blood Rh studies have been carried out in this case and they add further support to the thesis that erythroblastosis is the result of isosensitization of an Rh negative mother by an Rh positive fetus. Considerable evidence¹ has been brought forth to prove the truth of this statement.

In a recent publication² it was suggested that the term 'hemolytic disease of the newborn' be used rather than 'erythroblastosis fetalis,' since the erythroblastosis seen in the infant is merely one of the results of the underlying cause which is hemolysis of the fetal red blood cells. Furthermore, erythroblastosis may not be a prominent feature of the disease in certain cases whereas hemolysis is always present. Henceforth therefore in this discussion I shall use the term 'hemolytic disease of the newborn' instead of 'erythroblastosis fetalis.'

REPORT OF CASE

Mrs. A. DeH., a woman aged 41, secundipara, tertigravida, had given birth to living normal infants as the result of her first two pregnancies which were full term. The third preg-

32 Erysipelothrix rhusiopathiae antiserum can be obtained from Sharpe & Dohme, Inc., Philadelphia; Pitman Moore Company, Indianapolis; Lederle's Laboratories, Inc., Pearl River, N. Y.; Jensen Salsberry Laboratories, Kansas City, Mo.; and other manufacturers of biologic products in veterinary medicine.

33 To be published.

From the Department of Obstetrics and Gynecology, University of Rochester School of Medicine and Dentistry.

Dr. F. S. Fumia, the attending physician, allowed the author to study this case. Dr. Frederick Summerill, pathologist and director of laboratories at Highland Hospital, Rochester, N. Y., helped in obtaining detailed information.

1 Levine, Philip, Burnham, Lyman, Katzin, E. M., and Vogel, Peter. The Role of Isosensitization in the Pathogenesis of Erythroblastosis Fetalis. *Am. J. Obst. & Gynec.* 42: 923-937 (Dec.) 1941. Potter, E. L., Davidson, Israel, and Crunden, A. B. The Importance of the Rh Blood Factor in Erythroblastosis. *ibid.* 45: 254-261 (Feb.) 1943. Kariher and Spindler.²

2 Kariher, D. H., and Spindler, H. A. Erythroblastosis Fetalis and the Blood Factor Rh. *Am. J. M. Sc.* 205: 369-376 (March) 1943.

nancy terminated in 1941 by abortion at 2½ months. The most recent pregnancy, the fourth, was a twin pregnancy complicated by hydramnios. The expected date of confinement was April 3, 1943. On March 11 labor was induced by her attending physician at another hospital by rupturing the membranes of one of the twins. After an uneventful labor the patient delivered twin male infants, the first, baby A, weighing 5 pounds 13 ounces (2,635 Gm.) and the second, baby B, weighing 6 pounds

TABLE 1—Results of Determinations

	Group	Rh	Anti Rh
Father	A	+	
Mother	A	0	+
Normal twin	A	0	
Twin with hemorrhagic disease of the newborn	A	+	0

The blood Rh determinations on the family showed the mother and the normal twin to be Rh negative and the twin with hemorrhagic disease of the newborn and the father to be Rh positive.

7 ounces (2,925 Gm.). The placentas were typical of a double ovum gestation, there being two separate placentas and sets of membranes. Baby B looked perfectly normal at birth and continues to be a healthy infant. Baby A, on the other hand, was quite pale, cried weakly and had a dusky icteric tint to the skin. Within twenty-four hours after birth the infant was definitely icteric and looked poorly. When the infant was 34 hours old it was given a transfusion with 50 cc of the father's blood. Four hours later, just as a second transfusion was being prepared, the infant died.

A blood count on this baby at the time of birth showed a red blood cell count of 2.9 million and a hemoglobin value of 62 per cent. A blood smear showed 28 per cent erythroblasts of all varieties. I was given blood on the mother and father as well as the twin babies for Rh determination. The findings are shown in table 1.

Autopsy on baby A showed findings typical of hemolytic disease of the newborn. In addition to the icterus there was slight edema present in the subcutaneous tissues. The liver weighed 175 Gm., with 78 Gm. being the normal weight. The spleen was also somewhat enlarged. Sections of these organs showed an unusually large number of active hemopoietic centers. Hemopoiesis was also noted in the adrenals. Unfortunately the placentas were not saved for study.

COMMENT

This case seems to present clearcut evidence that the Rh factor is the etiologic agent in hemolytic disease of the newborn. From table 1 we note that the father is Rh positive and the mother is Rh negative. One of the double ovum twins is Rh negative and is therefore normal. The other twin is Rh positive and died of hemolytic disease of the newborn. It would seem uncontroversial that the Rh factor from the diseased twin crossed the placenta, thus gaining access to the maternal circulation and there stimulating the production of anti-Rh isoantibody, which in turn crossed the placenta into the fetal circulation and there destroyed the fetal red blood cells. Evidence to support his statement can be gained from the fact that the anti-Rh isoantibody was found in the maternal circulation (table 1). This is demonstrated by the agglutination of the cells of the affected infant when these cells are set up in an agglutination test with the maternal serum.

It has been stated that the Rh antigen crosses the placental barrier from the fetus to the mother and there stimulates antibody production. Just how this process takes place is still a matter for speculation. It has been stated that defects in the placenta allow the fetal red cells carrying the Rh factor to enter the maternal circulation and Javert³ has reported finding such defects in placentas from cases of hemolytic disease of the newborn. A more plausible mechanism would seem to be the passage across the placenta of the breakdown

3 Javert, C. T. Further Studies on Erythroblastosis Fetalis and on Obstetric Significance. *Am. J. Obst. & Gynec.* 43: 921-941 (June) 1942.

products of physiologic fetal red blood cell destruction. The Rh factor then may be in a molecule small enough to get through the placental barrier.

It will be recalled from the case history that the diseased infant was only slightly icteric at birth but within twenty-four hours of birth became definitely so. This is not an infrequent observation, and it would seem to be somewhat contradictory to our views of isoimmunization of the mother being the particular factor in the disease. On the contrary it lends support to this idea. We tend to think that the fetal red cells hemolysis stops abruptly the minute the infant is delivered. However, this is probably not the case, since the infant still carries antibody, which it obtained from the mother for a short time after birth. This antibody will continue to react on the infant's red cells, just as it did when the infant was in utero. However, now there is no means for the elimination of the end products of red cell destruction and they accumulate in the infant's body, whereas, while the fetus was in utero, these end products were probably eliminated from the fetus by means of the interchange of substances in the placenta.

TABLE 2—Results of Mating (After Levine⁴)

Mother Rh— rh rh	Offspring	Father Rh+ Rh rh
	50% Rh rh Rh+	
	50% Rh rh Rh—	

About 50 per cent of offspring from mating of Rh negative mother and heterozygous Rh positive father will be Rh+, and 50 per cent will be Rh—.

The answer as to how 1 fetus or twins could be Rh positive and the other Rh negative can be found in the work of Landsteiner and Wiener⁴ on the heredity of the Rh factor. In my case the mother is Rh negative and hence would have the genotype rh rh. The father is Rh positive and could have one of two genotypes, Rh Rh or Rh rh. If his genotype was Rh Rh, then all the offspring of this mating would be Rh positive, since all the progeny would carry the dominant gene Rh. However, we know that 1 of the twins is Rh negative, therefore the father's genotype must be Rh rh and would be termed heterozygous. Table 2 shows the results of mating an Rh negative mother and a heterozygous Rh positive father. We see that there is an equal chance of getting an Rh positive and an Rh negative infant in the progeny. In my case of double ovum twins, it merely happened that the two genetic types occurred in the same pregnancy instead of in succeeding pregnancies, as is the more common occurrence.

FATAL BULLOUS DERMATITIS FOLLOWING ADMINISTRATION OF SULFADIAZINE

MAJOR S. I. GREENBERG AND CAPTAIN A. L. MESSER
MEDICAL CORPS ARMY OF THE UNITED STATES

Sulfadiazine is probably the least toxic of the sulfonamide compounds in common use today and causes the lowest incidence of drug eruption. Ensworth and his associates¹ reported only 4 cases of drug rash in a series of 239 cases of pneumonia treated with sulfadiazine. In a series of 660 treated with sulfadiazine by Dowling and Lepper,² 10 instances of dermatitis occurred. These were scarlatiniform, morbilliform and urticarial, and all subsided on cessation of administration of the drug.

⁴ Landsteiner, K., and Wiener, A. S. Studies on an Agglutino-gen (Rh) in Human Blood Reacting with Anti Rhesus Sera and with Human Isoantibodies, *J. Exper. Med.* **74**: 309-320 (Oct.) 1941.
⁵ Levine, Philip. Erythroblastosis Fetalis and Other Manifestations of Isoimmunization, *West J. Surg.* **50**: 468-475 (Sept.) 1942.
From the Station Hospital, Camp Croft, South Carolina.
¹ Ensworth, H. K., Kalkstein, Mennasch, Barefoot, S. W., Liebmann, James, and Plummer, Norman. Sulfadiazine in Pneumonia. *Am. J. M. Sc.* **204**: 179 (Aug.) 1942.
² Dowling, H. F., and Lepper, M. H. Toxic Reactions Following Therapy with Sulfapyridine, Sulfathiazole and Sulfadiazine, *J. A. M. A.* **121**: 1190-1194 (April 10) 1943.

However, more serious dermatologic complications have been reported. Raffetto and Nichols³ reported a nearly fatal pemphigus-like rash occurring in a 10 year old girl following sulfadiazine therapy.

REPORT OF CASE

D. J., a white man aged 20, was admitted to the Station Hospital March 4, 1943 complaining of sore throat and cough. On physical examination a small area of consolidation was found in the base of the left lung posteriorly. X-ray examination confirmed the diagnosis of bronchopneumonia of the left lower lobe. Urinalysis was negative. The blood count revealed 4,750,000 red blood cells per cubic millimeter and 8,800 white blood cells per cubic millimeter with 78 per cent polymorphonuclear leukocytes.

Sulfadiazine was started on March 4 with 2 Gm. as an initial dose and 1 Gm. every four hours. This was discontinued on March 8. It was started again the same day when the patient's temperature rose to 102 F. Physical and x-ray examination revealed the spread of the pneumonia to the left upper lobe. On March 12 the physical and x-ray examinations revealed considerable resolution of the pneumonia, and sulfadiazine was discontinued. The blood sulfadiazine level was 98 mg. per hundred cubic centimeters on that day. The patient had received a total of 49 Gm. of sulfadiazine in the period of eight days. He appeared somewhat confused at times during the period in which he was receiving sulfadiazine. He vomited twice but retained fluids well. The patient had also received occasional doses of codeine sulfate 0.06 Gm. and capsules containing acetyl salicylic acid, acetophenetidin and caffeine.

On March 13, the day after administration of sulfadiazine was stopped (and nine days from the time it was started), a faint erythema appeared on the face and trunk. There was a mild conjunctival injection. The temperature rose to 104 F. but dropped to normal the following day. On March 14 the eruption was generalized and consisted of discrete and confluent pink pea sized macules. It closely resembled the rash of measles. The tip of the spleen was felt at this time. On March 16 there was a bright red erythema involving the entire body with 10 to 12 flaccid bullae scattered on the trunk and extremities. The bullae varied from 1/2 to 3 inches in diameter and contained clear fluid. When the skin was pinched gently a new bulla was formed (positive Nikolsky sign). There were many ruptured bullae in the mouth and extensive denudation of the bulbar and palpebral conjunctivas. On March 17 no sulfadiazine was detected in the blood, the nonprotein nitrogen was 33.6 mg. per hundred cubic centimeters and urinalysis revealed a trace of albumin and an occasional granular cast and red blood cell. The white blood count was 12,000 per cubic millimeter with 79 per cent polymorphonuclear leukocytes. New bullae continued to appear. The patient was extremely toxic and his temperature varied from 101 to 105 F. He was given large amounts of fluid including blood plasma and massive doses of ascorbic acid, nicotinic acid, thiamine hydrochloride and liver extract. The patient died on March 18.

COMMENT

The character of the eruption and its onset nine days after sulfadiazine therapy was started make it highly probable that it was a toxic manifestation of sulfadiazine medication. The resemblance to pemphigus was striking, although a definite erythema was present in areas not involved by bullae. This case shows that an erythematous eruption appearing after sulfadiazine therapy may be the first manifestation of a more serious dermatitis. Although sulfadiazine was not given after the eruption appeared (and not even a trace could be detected in the blood five days after cessation of the drug) the dermatitis continued to become more severe.

SUMMARY

A case of fatal, bullous dermatitis with involvement of the oral and conjunctival mucosae occurred after sulfadiazine therapy.

³ Raffetto, J. F., and Nichols, Stanley. A Nearly Fatal Reaction to Sulfadiazine in a Ten Year Old Girl Involving Skin, Eyes and Oropharynx, *J. Pediat.* **20**: 753 (June) 1942.

Special Articles

MEDICAL AND HOSPITAL MATERNITY AND INFANT CARE

FOR WIVES AND INFANTS OF ENLISTED MEN

EDWIN F. DAILY, M.D.

Director, Division of Health Services, Children's Bureau
U. S. Department of Labor

WASHINGTON, D. C.

The Congress has recently appropriated \$4,400,000 for continuing into the fiscal year beginning July 1, 1943 grants to states to provide medical, nursing and hospital maternity and infant care for wives and infants of enlisted men in the armed forces of the United States under plans developed and administered by state health agencies and approved by the chief of the Children's Bureau.

This program, which received its first special appropriation in March 1943, is now operating in thirty-nine states, Hawaii, Alaska and the District of Columbia. The health agencies of several of the remaining nine states¹ are at the time this is written, completing their plans for administering these programs.

Thirty-three state health agencies reported 11,586 authorizations for medical and hospital care under this program during the month of June. More than 95 per cent of these authorizations were for maternity care and less than 5 per cent for pediatric care. The average amount obligated for the medical and hospital care of each case was approximately \$75. Reports received from thirty-eight state health agencies estimate that during the month of July maternity care will be authorized under this program for more than 20,000 wives of enlisted men.

The policies of administration which are of particular interest to physicians as summarized from the state plans approved by the Children's Bureau include the following:

WHO IS ELIGIBLE FOR THESE SERVICES?

The wife and infant of any enlisted man serving in the Army, Navy, Marine Corps or Coast Guard in the fourth, fifth, sixth or seventh pay grade are eligible as long as similar services are not readily available through medical or hospital facilities of the Army or Navy. (The Congress has recently made eligible for these services when circumstances require the wives and infants of enlisted men in the first second and third pay grades. Ninety-three per cent of enlisted men are in the fourth, fifth, sixth and seventh pay grades.)

WHERE MAY WIVES OF ENLISTED MEN SECURE APPLICATION FORMS?

Forms for requesting care have been made as readily available as possible for these families from state and local health and welfare agencies, American Red Cross chapters, antepartum clinics, military posts and local practicing physicians.

HOW ARE REQUESTS FOR AUTHORIZATION MADE?

The wife enters identifying data on the application form and takes it to the physician (private or clinic) of her choice. The physician completes the form and forwards it to the state director of maternal and child health (or his deputy), requesting authorization to provide the medical care needed at the rates of payment established by the state health agency.

Physicians participating in the programs agree to provide the authorized services without charge to the patient or her family. Physicians and hospitals receive payment for authorized services from the state health agency only. Hospital care is authorized only when medical care is also authorized except when medical care is provided without cost to the patient or her family. For example, when a commissioned medical officer in the Army or Navy provides the medical care, the payment for hospital care can be authorized under the program. Payment is not made for services rendered to the patient prior to the date authorization was requested, except for emergencies. Care is usually authorized by the state health agency in the state in which the attending physician practices irrespective of whether the patient lives in the same state or in another state. The state health agency reviews the request for authorization and usually within twenty-four hours notifies the patient, physician and hospital whether authorization is granted. Each case is referred to the local health department for antepartum and postpartum public health nursing services.

WHAT SERVICES ARE AUTHORIZED AND WHAT RATES OF PAYMENT HAVE BEEN ESTABLISHED BY THE STATE HEALTH AGENCIES?

1 Complete medical care by the attending physician throughout pregnancy, labor and the postpartum period. Payments to the attending physicians for these services, including care of complications and operations performed by him, are made on a uniform inclusive rate basis in each state, varying between states from \$25 to \$50. In a few states the amount paid specialists in obstetrics may vary from one fourth to one third more than the amount paid general practitioners.

2 Medical care of sick infants during their first year of life. Payments to attending physicians are usually made on a visit basis with an average maximum of \$12 for the first week of illness and \$6 for each additional week of illness.

3 Hospital care as requested by the attending physician (if the hospital has been inspected and approved as meeting the requirements of the state health agency for maternity and pediatric service). Hospitals are usually paid at the inclusive ward cost per patient day as calculated annually by each hospital.

4 Consultation by recognized specialists. Lists of qualified consultants have been established in the states, and general practitioners are urged to call them for any serious complication. Consultants are paid at rates varying from \$5 to \$10 for bedside consultation and up to \$25 to \$50 when they perform major surgery at the request of the attending physician.

5 Bedside nursing care at home or in the hospital for seriously ill patients.

6 Ambulance service and unusually expensive drugs under some of the state programs.

The extent to which services are made available in each state and additional information relative to policies of administration may be secured from each state health agency.

The state health agencies have shouldered the responsibility for putting this program into operation without appropriation of additional administrative funds because the Congress did not make funds available for administration either by the state agencies or by the Children's Bureau. All expenditures from the appropriation are

¹ Colorado, Georgia, Louisiana, Massachusetts, North Dakota, Ohio, Oregon, Pennsylvania and Texas.

for medical, hospital and bedside nursing care. The wholehearted cooperative spirit which state agencies have shown in formulating plans and directing their execution has contributed greatly to the success in establishing and maintaining these programs. The cooperation of practicing physicians and hospital administrators, on whom much of the burden of the program ultimately rests, has made it possible for most of the state health agencies to establish these statewide services for the wives and infants of enlisted men in the armed forces.

PROBLEMS OF HOSPITAL ORGANIZATION PRESENTED DURING THE DETROIT RACE RIOT

WILLIAM L. ABBOTT, MD

AND

JOHN WINSLOW HIRSHFELD, MD

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The recent race riot presented the staff of the City of Detroit Receiving Hospital with the problem of caring for 433 new patients in twenty-four hours. In addition, the load of new patients during the six to twelve hour periods immediately preceding and following these twenty-four hours was heavier than usual. We do not intend to give a detailed account of the diagnosis and treatment of these cases but rather to discuss the organization for the handling of such a large number of cases.

Patients Admitted to Emergency Ward on June 21
(Midnight to Midnight)

Stabbings	56
Gunshot	65
Beatings	312
Total casualties	433
Admitted to hospital	101
Treated in emergency ward and discharged	332
Died from wounds	17

The rioting began late Sunday, June 20, 1943 but patients were not admitted in large numbers until midnight. Of the 433 admitted to the emergency ward (table) from midnight Sunday to midnight Monday, June 21, 101, or approximately 24 per cent, were hospitalized. The remaining 332 patients required some sort of treatment, in many instances the suturing of multiple lacerations. Many of these patients who were severely injured but sent home after treatment would under less pressing circumstances have been hospitalized.

Weapons confiscated from the rioters included shotguns, rifles, revolvers, knives, razors, ice picks, blackjacks, meat cleavers, axes, hatchets, baseball bats and clubs, bricks, stones, hammers, bowling pins and bayonets. The injuries inflicted from this wide assortment of weapons were varied and often complex. During the twenty-four hour period twenty major operations were performed on patients suffering from bullet or stab wounds of the abdomen, thorax or extremities (including compound fractures) or suffering from depressed skull fractures. In addition, approximately seventeen fractures were reduced.

Seventeen patients died during the twenty-four hour period. Of these, 14 were either dead on admission

or died within ten to twenty minutes. Hence treatment was of no avail. Two of the 3 patients who survived for a longer period had serious depressed fractures of the skull. The other sustained a gunshot wound of the abdomen and did not respond sufficiently to shock treatment to permit exploration. Three patients succumbed postoperatively between 2 a m and 7 a m on Tuesday, June 22. It is possible that 1 or 2 of these 3 patients might have survived if better organization had permitted more complete postoperative observation.

One of the first persons to be killed was a physician attempting to make a house call in the district where the rioting was taking place. The cars of several other physicians were badly damaged by the rioters. Hence very few of the attending staff were able to come in, and the medical care was given almost entirely by the house staff of the Receiving Hospital.

Early in the course of the emergency it became apparent that the hospital would have to be cleared of all patients who could be moved. We therefore submitted a list to the hospital authorities, who in turn arranged for the patients' safe transportation. To increase further the capacity of the hospital, emergency beds were set up in lecture rooms and clinics. The quick exhaustion of the available blood and plasma in the hospital necessitated an additional amount, which was obtained from the American Legion plasma bank. A very large amount of surgical materials was required for treatment of the patients, and by the end of the twenty-four hour period the supply of certain items had been almost exhausted.

Since the Detroit Receiving Hospital is primarily designed to handle emergencies, it was felt previous to the riot that its organization was adequate to cope with a large influx of seriously injured patients. Consequently no special plan had been made to handle such a disaster. Although there was some confusion and duplication of effort, the organization was fairly efficient, and by and large the patients were well handled. A few patients were temporarily misplaced, and in at least 1 instance we feel that this misplacement may have contributed to the patient's death. The experience demonstrated clearly that even in a hospital devoted largely to emergency work the usual routine is not adequate to cope with a large influx of injured patients. If such an emergency is to be handled with proper efficiency, it is imperative to have a well organized plan of action. A schematic representation of such a plan is shown in the accompanying chart.

Because of the difficulty in getting to and from the hospital, it is necessary to make the institution almost entirely self sufficient. The methods outlined by Faxon and Churchill¹ which were employed at the Massachusetts General Hospital during the recent Cocoanut Grove disaster would not have been entirely satisfactory in our emergency because they depended on summoning outside assistance. In the second place, disasters resulting from fire and explosion are usually self limited, while in rioting it is possible that the flow of casualties may continue for some time as in actual warfare.

Our experience, however, emphasizes the importance of some of the features of Faxon and Churchill's plan.

1 The immediate examination and segregation of the living and the dead and of major and minor cases.

From the Department of Surgery, Wayne University College of Medicine and the Surgical Service of Receiving Hospital, Detroit

1 Faxon, N. W., and Churchill, E. D. The Cocoanut Grove Disaster in Boston, J. A. M. A. 120: 1385-1388 (Dec. 26) 1942.

Because of the complexity of injuries it is important that this function be performed by a physician of considerable experience

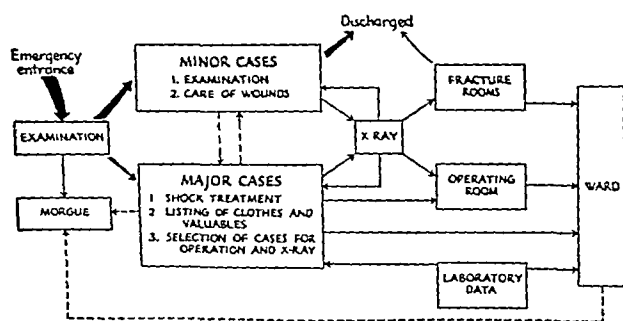
2 The organization and division of the hospital personnel into teams to care for the registration of patients, the identification and tagging of living and dead, the care of clothing and valuables, the thorough examination of patients and the care of minor wounds the treatment of shock and the selection of patients for operation and x-ray examination, operative and postoperative care of patients and the performance of essential laboratory tests

3 The concentration of serious casualties into one group so that they can be under constant supervision

The experience gained during the recent race riot emphasized the following additional problems

1 During an emergency of long duration there is need for replenishing linens and other supplies. If because of street rioting or the disruption of transportation it is impossible to bring additional aid to the hospital volunteer workers should be assembled in previously designated spots for the preparation of materials and supplies to be taken to the hospital under suitable military protection

2 Any such plan should provide relief for the hospital personnel so that food and rest may be obtained



Plan for handling a large number of injured patients

3 While riots and such disasters are rare, when they do strike it is frequently necessary to send equipment from one hospital to another. The multiplicity of design of transfusion sets makes such an interchange difficult and time consuming. It would therefore be desirable to standardize equipment to make it interchangeable

4 It is well known that many hospitals have not been laid out in a fashion commensurate with the most efficient handling of patients. Under normal conditions the increased amount of transportation necessitated by inefficient hospital layout is not noticed, but the sudden influx of a large number of seriously injured patients immediately demonstrates the desirability of having the distance between emergency ward, x-ray department, operating rooms, recovery ward and the plasma bank as short as possible

In conclusion we should like to reemphasize the following points

1 There is need for a well rehearsed and well organized plan to cope with disasters, as time is not available for organization when an emergency occurs

2 The plan should organize the available hospital personnel into teams for definite duties at specific locations

3 The plan should provide for the classification and segregation of patients so that the teams can care for them with the utmost efficiency

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT

AUSTIN E SMITH M.D. Secretary

ENTERIC COATED DOSAGE FORMS OF DIETHYLSTILBESTROL NOT ACCEPTABLE FOR N N R

In the consideration of various submitted dosage forms of diethylstilbestrol, the Council reached the conclusion that there was no conclusive evidence to show that the use of enteric coated dosage forms decreased the incidence of such symptoms of toxicity as nausea, vomiting and the like. Interested firms were informed of this decision of the Council and none offered any evidence to establish the need for marketing diethylstilbestrol in enteric coated dosage forms as superior to the plain dosage forms, from the standpoint of stability, therapeutic efficiency or incidence of toxicity symptoms

The Council therefore authorized publication of the foregoing statement to place itself on record in this matter

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTIONS WILL BE SENT ON APPLICATION

AUSTIN E SMITH M.D. Secretary

DIETHYLSTILBESTROL (See the Supplement to New and Nonofficial Remedies, 1942 p 27)

The following additional dosage forms have been accepted
E R SQUIBB & SONS, NEW YORK

Tablets Diethylstilbestrol 0.25 mg

LEDERLE LABORATORIES, INC., PEARL RIVER, NEW YORK

Ampuls Diethylstilbestrol (in sesame oil), 0.5 mg per 0.5 cc 0.5 cc.

Ampuls Diethylstilbestrol (in sesame oil), 0.1 mg per cc 1 cc

Capsules Diethylstilbestrol 0.1 mg 0.5 mg and 1.0 mg

THEOPHYLLINE WITH ETHYLENEDIAMINE (See New and Nonofficial Remedies 1942 p 332)

The following dosage form has been accepted

THE WARREN-TEED PRODUCTS COMPANY, COLUMBUS OHIO

Tablets Aminophyllin 0.1 Gm

IMMUNE GLOBULIN (HUMAN) (See New and Nonofficial Remedies, 1942 p 480)

The following dosage forms have been accepted

PITMAN-MOORE COMPANY, INDIANAPOLIS

Immune Globulin (Human) 2 cc and 10 cc diaphragm stoppered vials Preserved with merthiolate 1:7500

NICOTINIC ACID (See New and Nonofficial Remedies 1942 p 561)

THE WARREN-TEED PRODUCTS COMPANY, COLUMBUS OHIO

Tablets Niacin 50 mg

NICOTINIC ACID AMIDE (See New and Nonofficial Remedies 1942 p 562)

The following dosage form has been accepted

BURROUGHS WELLCOME & CO. INC., NEW YORK

Hypoloid Nicotinamide Injection 100 mg per cc. 5 cc vial Preserved with 0.5 per cent chlorobutanol

NIKETHAMIDE (See Supplement to New and Nonofficial Remedies 1942 p 17)

The following dosage forms have been accepted

FLINT EATON & COMPANY, DECATUR ILL.

Ampuls Solution Nikethamide 25 mg W/V 2 cc and 5 cc

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SATURDAY, JULY 31 1943

PRACTICE OF RADIOLOGY AND HOSPITAL SERVICE PLANS

Among the problems especially considered by the House of Delegates at the meeting of the American Medical Association in Chicago in June, few have aroused more interest or concern than the place of radiology in new forms of hospitalization insurance as well as its place in routine hospital service. The question was brought before the House as a result of three resolutions introduced at the Atlantic City session in 1942. These resolutions were referred to the Board of Trustees for clarification as to existing relations between physicians and hospitals. The supplementary report of the Board of Trustees pointed out that all the questions involved in the same or similar form had previously been considered and acted on by the House of Delegates. Specific citations were made to the previous actions of the House on this subject.

The reports were assigned by the speaker of the House of Delegates to the Reference Committee on Reports of Board of Trustees and Secretary. The reference committee, after reviewing the two supplementary reports of the Board of Trustees, made the following recommendations:

A That the House emphatically reiterate that it disapproves the injecting of a third party into the personal relationship of the patient and the physician, and that hospitals should not be permitted to practice medicine.

B That the practice of radiology, pathology and anesthesiology is the practice of medicine just as much as is the practice of surgery or internal medicine, and that it is only a short step from including the first three in a medical service plan to including the whole field of medicine in such a plan.

C That the public should be educated to realize that the hospital created monopoly control of radiologic or any service as a source of profit beyond the normal provision for replacement, department development and proper proportion of over-all costs of operation of the hospital should not be permitted, nor can the hospital rightfully use per diem charges against all the hospital patients to support a radiologic or other department devoted to creating bargains in radiologic or other services in order to make hospital group insurance more attractive. To permit either will result in decrease of the quality of service and increased cost to the patient.

D The medical profession must watch with care all proposed plans for medical service and endeavor to prevent the acceptance of any plan which includes medical service under the control of the hospital.

E The effectiveness of this program can be attained only if constituent state medical associations and component county medical societies use their influence on hospitals in their respective localities and exercise control over the local members of the medical profession.

F The public must be educated on what it will mean to them in the way of inferior medical care if these dangerous trends are not curbed.

G In the relationships of the medical staff and the board of directors of a hospital there should be no intermediary. The staff should have direct access to the board.

H The Board of Trustees should continue its conferences with national hospital associations and should also endeavor to enlist the support of special medical organizations in education both of the profession and of the public.

The Board of Trustees in general and Dr. Sensemich and Dr. Irons in particular should be commended for the tremendous amount of time and effort which they have given in preparing their very informative report.

Your reference committee recommends that the House of Delegates of the American Medical Association urge the American Hospital Association to withhold approval of the uniform comprehensive Blue Cross contract proposed by the Hospital Service Plan Commission of the American Hospital Association which includes certain medical services as a part of hospital care and which, if adopted as recommended by the said commission, would virtually compel the addition of medical services to the benefits of those Blue Cross plans and now accede to the demands of the American Medical Association by confining their benefits to hospital services.

In presenting this report to the House of Delegates, Dr. Louis H. Bauer, the chairman of the reference committee, made some interesting comments which should be considered carefully by every physician. These supplementary reports of the Board of Trustees present an analysis of current trends in the nature of medical practice which may have a profound effect on the whole future of medical service. The reference committee said:

Unless the medical profession as a whole is willing to devote at least the same amount of time and effort in studying the report and correcting the dangers pointed out therein as the Board of Trustees has in compiling it, then we might as well "throw in the sponge" now and consent to lay domination of the practice of medicine.

In the report of the reference committee it was indicated that the "Blue Cross" plans to give medical service with or without the approval of the medical profession. This prediction has already been demonstrated to be a practice in many parts of the country. An announcement just made by the Associated Hospital Plan in New York City states plainly the intention and the conditions under which services will be rendered. The report of the reference committee recognizes the bald outlines of the situation when it says: "The fact that the House of Delegates on numerous occasions has declared against the selling of medical service by hospitals has not stopped the practice." The

treatment recommended for the cure of this unfortunate situation is also succinctly stated by the reference committee when it says "National approval or disapproval of any practice is a waste of time unless the state and county organizations will see that the dicta of the national body are carried out in the small localities."

The majority of roentgenologists of the United States and their national organizations are convinced that the subscribers' contract in hospitalization insurance should exclude all medical services and that contract provision should be limited exclusively to hospital facilities. The action of the House of Delegates taken in 1934 emphasized that all features of medical service in any method of medical practice should be under the control of the medical profession and that hospital service and medical service should be considered separately. Again in 1936 the House of Delegates emphasized its interpretation of this point of view by saying, in accepting the report of a reference committee:

If hospital service is limited to include only hospital room accommodations such as bed board, operating room, medicines, surgical dressings and general nursing care, the distinction between hospital service and medical service will be clear.

In the report of the reference committee this year, this point is further stressed in paragraphs C, D and G cited in this editorial. These paragraphs indicate the technics by which those who are concerned may aid in reversing or inhibiting a trend which is apparently now well under way in regard to radiologic practice. Education of the public as to the significance of radiologic practice is important in this direction. Doubtless few of those who obtain the services of radiology in hospitals realize that in many institutions the radiologist is working for a small salary and the hospital is deriving a considerable profit from his professional practice. In other institutions what amounts to virtual fee splitting between the hospital and the radiologist is routine technique. Certainly it is not to the interest of the patient, who must be given first consideration, that the necessity for radiologic study of his case should be made the occasion for providing excess income for the hospital. If the trend is to be controlled, every new arrangement between a hospital and a radiologist and every new plan for a prepaid medical service should be carefully scanned by the county medical society in the area concerned to determine whether or not it violates the fundamental tenets that have been so often iterated and reiterated by the House of Delegates of the American Medical Association. The danger to the sick does not lie in the collection of income for the hospital or the radiologist; it is in the inevitable deterioration that must come in any form of medical service when its practitioners are placed on a basis in which the quality of the service rendered is secondary to the price charged or the method by which the service is supplied.

THE TREATMENT OF TUMORS WITH ESCHAROTICS

A report in a recent issue of the *Journal of the Missouri State Medical Association* by Ackerman and Eberhard¹ calls attention again to the dangers of the use of escharotic pastes in the treatment of cancer. The 39 patients who constitute the basis for their report were treated previous to their admission to the Ellis Fischel State Cancer Hospital by various charlatans who used the paste treatment. Nineteen of the patients had received treatment at Dr. Nichols' Sanatorium, Savannah, Mo. This institution was investigated and its practices were condemned by THE JOURNAL in 1933. The lesions of the 39 patients treated with paste included 23 which were located on the skin of the face and the lip, 2 on the skin of the hand, 1 on the vulva, 1 on the cervix and 12 on the breast.

The deplorable results of the treatment may be best surmised from the consideration of the 12 patients with breast tumor. Ten of these showed evidence on admission to the State Cancer Hospital of local recurrence and metastasis. Two of the patients with lesions of the breast did not have evidence of tumor but showed absence of the breast and extensive surrounding disfigurement. The clinical histories of these 2 patients suggested that the original lesion was in all probability benign.

Ackerman and Eberhard raise the question whether "chemosurgery"—a method advocated by Mohs—has any place in the treatment of tumors. Mohs² in 1941 published an enthusiastic report on the treatment of 440 patients with primary carcinoma located on the face, eyelids, lips, nose, ear, parotid gland, penis, breast, vulva and vagina. The treatment consisted in the application of a zinc chloride paste, which was followed twenty-four hours later by the surgical removal of that part of the tumor which was 'fixed' by the zinc paste. A further application of the escharotic paste was practiced until careful microscopic control of the underlying tissue established the total destruction of the malignant growth. This rather painstaking piece of clinical investigation failed to arouse much interest on the part of the medical profession. Ackerman and Eberhard believe that this chemosurgical method accomplishes nothing that cannot be equally well, or better, done by irradiation or surgery. They do not believe that the method has a practical place in the treatment of superficial lesions readily controlled by irradiation or surgery or of deep seated visceral tumors. They feel that it certainly should never be used in the treatment of breast tumors. The method at best can hardly compete with the precision and effectiveness of modern radiation therapy.

¹ Ackerman, L. A. and Eberhard, T. P. The Treatment of Tumors by Escharotic. *J. Missouri M. A.* 40: 163 (June) 1941.
² Mohs, F. E. Chemosurgery. *A. M. A.* 117: 160 (Oct. 1941).
of Cancer Ex. 17: 125 (Feb.) 1941.

POSTWAR PLANNING FOR CANCER CONTROL

What can be done to control cancer more and more effectively in the years to come? Unremitting promotion of research on cancer, better education about cancer, more facilities for diagnosis and treatment of cancer—the basic elements in control of cancer—should greatly improve the situation.

The only hope of solving fundamental problems of cancer lies in research. But the immediate needs of the cancer patient are not met with the promises of research. The patient must be treated as well as possible with the means at hand. Consequently clinical research on cancer—observational, diagnostic, surgical, radiologic—must be intensified. Here is a vast field for continued progress by clinicians and pathologists. An urgent need is research into the incidence and characteristics of cancer in different areas and environments. Studies must be made of social and economic aspects with a view to providing adequate services for all types of patients. What are the trends and needs of cancer in a given city, community or geographic area? Plans should be made to answer such questions on the basis of results of local studies, and ways should be devised to meet the needs by the organized cooperation of the agencies concerned, medical, health and social.

The means at hand for the immediate control of cancer are the application of knowledge to its prevention and its best treatment as early as possible. The first step toward diagnosis must be taken by the patient. At present he cannot be sought out as in tuberculosis. There is no accepted test of immunity or susceptibility to cancer. The earliest time when cancer can be treated is, most always, when the patient comes to the physician of his own will, often this is late. A personal knowledge of cancer by every one, an understanding of its earliest manifestations, is a vital factor for more efficient control. The delay in the treatment of cancer, the weeks and months that only too commonly intervene between the first symptoms and treatment, emphasize the need of planning for more and better education.

Does cancer education as now conducted teach as many people as it should and is the education sufficiently continuous and personalized? In cancer of the uterus and of the breast, education appears to be reducing the time between the first signs of the disease and treatment as reflected in the reduction in the rates of cure and of death of those cancers. In other accessible cancer, for example the larynx, the delay is still far too long in many cases.

Lack of early action by the patient is not, however, the only difficulty in control of cancer. There may also be lack of competent treatment within easy reach. In cancer, self-supporting patients of moderate means may need help as do the indigent. The many cases of

accessible, curable cancer that somehow slip into as yet incurable stages everywhere demonstrate the needs for earlier and better treatment of cancer, needs that can be met only by careful planning by states and communities.

On every practitioner in every branch of clinical medicine rests the responsibility of finding cancer in his patients when it is present and of doing what he can to prevent cancer by the elimination of "irritative" and inflammatory conditions. The education of physicians about cancer will remain the duty of medical schools, hospitals, tumor clinics, medical organizations, medical publications and governmental agencies. The plans for cooperation in these matters must recognize the tendency of diagnosis and treatment of cancer to develop into a specialty or specialties requiring special training and special facilities.

The organization of encouragement and facilities for periodic health surveys for cancer in general and particularly for cancer of the uterus, the breast and the stomach demands careful planning. Group examinations may provide better possibilities for prevention and early diagnosis than are otherwise available for many people. The cost of expert periodic examinations decreases with increase in the number of subjects examined, since it permits better utilization of time and materials. The manifest usefulness of diagnostic and preventive cancer clinics, when properly organized, should lead to the consideration of plans for their establishment in areas where the need is manifest.

The problem of cancer among veterans of the war needs special study. A permanent, closed group of this type offers suitable conditions for systematic control by continuous personal education, by periodic examinations and by early diagnosis and treatment. According to William H. Donner,¹ an average of twenty-two veterans of the first world war entered hospitals of the Veterans Administration each day in 1941 with cancer. Donner says that "it is only reasonable to expect that, twenty or twenty-five years from now, about forty-five veterans of the second world war will daily enter Veterans hospitals with new cases of cancer." Already cases of cancer of the breast in women on war service have come to the attention of the Veterans Administration, which faces the unique opportunity to institute systematic, personalized cancer control on a gigantic scale under the most favorable auspices.

In all plans for the control of cancer among various groups of our population the medical profession must play a conspicuous role. In the absence of special facilities the burden rests particularly on the general practitioner, the public health officials, the pathologists, the surgeons and experts in radiology. Scientific planning can determine just how the most efficient utilization of personnel and materials is to be secured.

¹ International Cancer Research Foundation, Report for 1942, p. 11

Current Comment

TOXICITY OF INSECTICIDES

Poisonings following the accidental or intentional ingestion of insecticidal preparations have been frequently reported. Deaths have probably occurred. An acute fatal illness which followed the use of a spray to exterminate bedbugs has recently been reported¹ to THE JOURNAL. Reply from the manufacturer after inquiry concerning the composition of the preparation included the following: "Under the regulations of the Insecticide Act of 1910, whenever an insecticide does not contain a list of the percentage of active or inert ingredients it is construed as being 100 per cent active. We regret that the policy of our company does not permit us to divulge the formula of any product." Under existing regulations active and toxic ingredients can be secretly incorporated in insecticides without disclosing their nature and thereby subjecting the users to great hazards. Remedial measures designed to require the proper labeling and other safeguards similar to those which have been adopted for drugs now appear to be urgently necessary.

ALDOUS HUXLEY'S VISION

Mr. Aldous Huxley's widely advertised new book "The Art of Seeing" and his magazine articles have brought new interest in certain unorthodox methods of treating visual defects which seemed to be en route to desuetude. The story¹ in brief is that Mr. Huxley, basing his conclusions on his own experiences has revived the theories of William H. Bates, years ago, presented some animal experiments by which he claimed to have shown that accommodation in animals and man was due to the action of the superior and inferior oblique muscles and deformation of the eyeball, the universal treatment for which is the institution of "dynamic relaxation." This was to be accomplished by certain exercises, as a result of which the eye would become normal. Huxley maintains—and there is no reason to doubt his statement—that following an attack of keratitis punctata at 16 he followed orthodox methods of treatment with glasses for twenty-five years. His vision nevertheless became progressively more deficient until he began the Bates method of visual reeducation by eye exercises. "In two months," he then said, "I was reading without spectacles." Two possible explanations have so far been proposed: an ingenuous and complicated reconstruction of the sequence of possible organic events presented by Hamilton Hartridge, professor of physiology in the University of London, and the obvious possibility of a rapid functional recovery. Regardless of the actuality of these explanations it is certain, as Duke-Elder points out, that this method may be dangerous when prescribed for one who suffers

from glaucoma or detachment of the retina or for a myopic child, even though it was as satisfactory for the simple neurotic as any other system of Yoga or Coue-ism. The majority of intelligent persons with access to competent ophthalmologists will not permit themselves for long to be deceived by pursuing this method. Unfortunately, many a credulous victim will throw away his glasses in search of perfect sight by this technique and thereafter find himself even worse crippled in eyesight than previously.

MICROBES IN NATURAL HABITATS

In his presidential address before the Society of American Bacteriologists Waksman² discussed the relationships of microbes in their natural habitats as distinguished from their isolation and activities in pure cultures. In dealing with pathogenic microbes or with microbes used for various purposes in industry or in the preparation of foodstuffs pure cultures are essential. But the pure culture is not adequate in the study of microbial life in soil, waters, plant and animal residues, and other substrates. The great majority of microbes carry out their activities in mixed populations in which the reactions of a particular microbe may differ greatly from those in pure culture unaffected by the presence of other microbes. Waksman, a soil microbiologist, draws on the microbial life of the soil for illustrations of the relationships of microbes in natural conditions. The microbe population of the soil includes "thousands of species of bacteria, hundreds of genera of fungi, actinomycetes and algae, numerous families of protozoa, nematodes, and other worms and insects", probably also a great many viruses. Some soil microbes are concerned with highly specific reactions, e.g., fixation of atmospheric nitrogen, production of nitrite from ammonia and many others. Certain processes of this kind are carried out by a number of different organisms. Some of the processes take place in chainlike reactions in which one organism acts on the products of another. Decomposition of proteins or of cellulose is an example of this mode of action. Microbes in the soil appear not only to assist one another or to compete with one another but also to produce stimulating as well as directly injurious substances and effects. There is now an extensive literature on the results of research in this fertile field. Light has been shed on complex natural processes. The research dealing with the antagonistic relations of micro-organisms³ is yielding results of practical significance. The production of antibiotic substances is of great importance in mixed microbial populations. Mixed cultures were early found to be antagonistic to pathogenic bacteria. Typhoid bacilli are destroyed by organisms in sewage soil and water. Antibiotic substances may be produced by soil organisms on artificial mediums and also obtained by extraction of such organisms. Their effects vary; some act on many, some

¹ Personal communication.

² Hartridge, Hamilton. The Strange Case of Mr. Huxley's Eye. *Lancet* 1: 657 (May 22) 1943. Duke-Elder, Stewart. Aldous Huxley on Vision. *Brit. M. J.* 1: 635 (May 22) 1943. Crisp, W. H. Review of Huxley, Aldous. *The Art of Seeing*. New York: Harper & Brothers, 1942. *Sight Saving*, Review 12: 303 (Dec.) 1942. Aldous Huxley, a Disciple of W. H. Bates, editorial. *Am. J. Ophth.* 26: 200 (Feb.) 1943.

³ Waksman, S. A. The Microbe as a Biological System. *J. Bacteriology* 45: 1 (Jan.) 1943.

² Waksman, S. A. Antagonistic Relations of Micro-organisms. *Bacter. Rev.* 31 (Sept.) 1941.

on only few microbes, some act on fungi, others on bacteria (penicillin, tyrothricin, gramicidin), they may influence cell division, respiration metabolism. Waksman states by way of summary that these antibiotic substances have many important practical applications, including "(a) the domestication of micro-organisms for disease control, (b) the isolation of new chemotherapeutic agents for combating animal [and human] diseases, (c) the utilization of the activities of micro-organisms for combating certain plant diseases." The address gives a good bird's eye view of the struggles for existence in the world of microbes and of the dynamics of microbial populations.

SUDDEN DEATH FROM ALLERGIC SHOCK

A remarkable case of sudden death from allergic or anaphylactic shock is reported by Hunt,¹ who had charge of the medicolegal examination. The main details of the case are recounted on account of the warning it conveys to physicians. In a hospital for the insane a study was to be made of the rate of the cutaneous spread of color in schizophrenic as compared with normal persons. The test substance selected was guinea pig hemoglobin under the mistaken idea that it would be safe because of its supposed low antigenic power. It is not stated in the report how the hemoglobin was prepared or whether special efforts had been made to eliminate other blood proteins. Here the question arises why a foreign protein should be used to study the spread of color. Why not human hemoglobin? The guinea pig hemoglobin was dissolved in isotonic solution of sodium chloride "made up to a volume equivalent to that of the quantity of blood from which the corpuscles were originally derived," and of this solution 0.2 cc was injected intradermally. The normal controls in this experiment were young women who were questioned concerning allergic sensitiveness and previous immunization, to which negative replies were made in all cases. Physical examinations and eye and scratch tests were not made, since they were not thought necessary. One wonders how abnormal sensitiveness could have been excluded in the schizophrenic patients. A well developed woman of 22 became dyspneic and cyanotic, and in spite of the injection of epinephrine into the heart and artificial respiration she died ten minutes after the injection of guinea pig hemoglobin into the skin of the right forearm. The postmortem examination the results of which are described fully in another paper,² brought forth no other explanation of death than allergic shock, and the Prausnitz-Küstner reaction, a local passive sensitization, revealed the presence in the blood of the dead woman of antibody specific for some component of guinea pig blood. Closer inquiry disclosed that the mother of the subject of this report had asthmatic attacks and symptoms of hay fever, that a brother suffered from hay fever and that the mother's first cousin, also asthmatic, at the age of 16 died ten minutes after the sub-

cutaneous injection of diphtheria antitoxin, the first death of that kind in this country.³ The lesson again brought home by the bare facts in Dr Hunt's report is that the most watchful precaution must always be taken to avoid fatal shock on the injection of foreign protein antigenic material into human beings.

CANCER OF THE STOMACH

The entire June issue of the *Archives of Surgery* is devoted to articles on various aspects of gastric carcinoma. Among the subjects discussed are experimental gastric carcinoma, relations between chronic atrophic gastritis and cancer of the stomach, metabolic abnormalities in patients with cancer of the gastrointestinal tract, diagnosis and surgical care of patients before and after operation, transthoracic resection for cancer, and prognosis and end results in the treatment of cancer of the stomach. The contributors include some of the most experienced workers, and the entire number therefore constitutes an up to date evaluation of present knowledge in the field.

PROVISIONAL BIRTH AND DEATH STATISTICS IN 1943

The rise in the birth rate in the United States became notably accelerated in the fall of 1942, preliminary figures¹ indicate that the rate has been continued at a high level for the first four months of this year although there has been a slight drop in the percentage increase in the monthly birth rates in comparison with the corresponding months of 1942. Based on figures for the first four months of 1943 the provisional annual crude birth rate is 22.1 per thousand of estimated population as compared with a rate of 19.2 for the same period of last year. It may be anticipated that as the war progresses the rise in crude birth rate will first decelerate and later decline. The death rate beginning in September 1942 also was higher than the rate for the corresponding months in 1941, and the crude death rate in 1943 has so far continued higher than in the early months of 1942. Sampling figures taken in March 1943 indicate that pneumonia and influenza mortality for the first quarter of 1943 was 10 per cent higher than last year, the rate for infectious enteric diseases was 15 per cent higher, that for the common diseases of childhood was 10 per cent higher and that for syphilis 11 per cent higher. The figures for deaths from cerebrospinal meningitis, which were sharply higher in the first months of 1943 than in 1942, are the only ones, however, which might be clearly interpreted as significant. The interpretation of these provisional figures must be cautious, but the facts themselves may sometimes furnish interesting clues to long or short term trends.

¹ Hunt, E. L. Death from Allergic Shock, *New England J. Med.* 228: 502 (April 22) 1943.

² Lund, Herbert, and Hunt, E. L. The Postmortem Diagnosis of Allergic Shock. The Value of the Prausnitz-Küstner Reaction, *Arch. Path.* 32: 664 (Oct.) 1941.

³ Kortright, J. L. Practical Experiences with Antitoxin, *Broadly* M. J. 10: 87, 1896.

¹ Monthly Vital Statistics Bulletin, Department of Commerce, Bureau of the Census, Washington, D. C., June 9, 1943, vol. 6, number 4. Registrar, Department of Commerce, Bureau of the Census, Washington, D. C., June 15, 1943, vol. 8, number 6.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

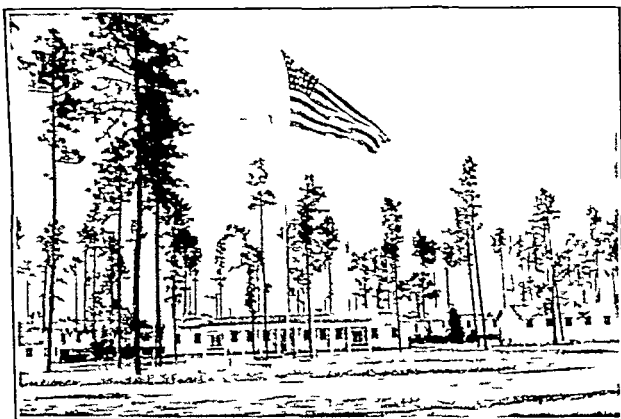
ARMY

THE FINNEY GENERAL HOSPITAL

The Finney General Hospital was formally opened for patients on June 16 after having been activated on April 20. The hospital, located at Thomasville, Ga., has a setting of the Old South with brick pillars and a white wooden fence at the main entrance. A ¼ mile driveway leads through yellow pines to the Headquarters Building with its white columns and flanked by evergreens and boxwood. Throughout the spacious grounds are found numerous dogwood trees, crape myrtle and pine.

This 1,800 bed hospital is of the cantonment type. The officers' quarters, barracks and warehouses are composed of hollow tile, while the wards and connecting corridors are of gypsum board.

The commanding officer is Col. Samuel M. Browne of Anderson, S. C., and the executive officer is Lieut. Col. James T. McGibony of Greensboro, Ga. Colonel Browne has been in



Administration building, Finney General Hospital, Thomasville, Ga.

the Army Medical Corps for twenty-seven years. He spent two years in France from 1929 to 1931. He was with the American forces in China. Prior to being ordered as commanding officer of the Finney General Hospital, Colonel Brown was chief of the medical service, Panama Canal Department, special detail with the governor of the Panama Canal and with Gorgas Hospital. Colonel McGibony is a graduate of the Army Medical School, Washington, D. C., and Carlisle Barracks, Pennsylvania. Colonel McGibony was on duty in the Surgeon General's Office in Washington before being assigned as executive officer at Finney General Hospital.

The Finney General Hospital is named in honor of the late Brig. Gen. John Miller Turpin Finney (June 20, 1863-May 30, 1942), one of America's most distinguished surgeons. General Finney maintained a keen interest in and participated actively in military affairs. He was brigade surgeon of the Maryland National Guard from 1898 to 1904 and was commissioned in the Medical Reserve Corps in 1908. He was clinical professor of surgery at Johns Hopkins School of Medicine when he went abroad in 1917 as commanding officer of Base Hospital No. 18. In France, General Finney was appointed director of surgery for the American Expeditionary Forces. He was awarded the

Distinguished Service Medal for the organization of surgical teams for the purpose of affording expert surgical aid to the wounded in the immediate vicinity of the battlefield. Dr. Finney received many honors. He was honorary member of the Hunterian Society of London, the Medical Society of London, the Royal College of Surgeons in England, the Royal College of Surgeons in Ireland, the Royal College of Surgeons in Edinburgh and received honorary LL.D.s from Tulane University, Harvard University and Loyola College of Baltimore. He was one of the founders and first president of the American College of Surgeons, a member of the American Surgical Association, the Southern Surgical Association, the Medical and Chirurgical Faculty of Maryland and the Society of Clinical Surgery. Among the additional officers assigned to Finney General Hospital as of June 20 were:

Col. Samuel M. Browne, commanding officer
Lieut. Col. James T. McGibony, executive officer, medical inspector
Lieut. Col. Hugh L. McCalip, assistant medical inspector, Yazoo City, Miss.
1st Lieut. Frank E. Jones, sanitary engineer, Detroit

SURGICAL DIVISION

Major Crenshaw D. Briggs, director of the surgical division, Washington, D. C.
Major Milford B. Hatcher, assistant director of the surgical division, Macon, Ga.
Major George T. McCutchen, chief of the general surgical branch, Columbia, S. C.
Major Thomas R. Gaines, chief of the eye, ear, nose and throat branch, Anderson, S. C.
Major Jacob Grove, chief of the genitourinary branch, Chicago.
Major Arthur J. Barkin, faciomaxillary plastic surgery branch, New York.
Capt. Everett I. Bugg, chief of the orthopedic branch, Durham, N. C.
Capt. Moysius P. Harney, chief of the septic surgery branch, New Bedford, Mass.
Capt. Joel Hartley, orthopedic branch, New York.
Capt. Albert Faulconer, chief of the anesthesia and operating branch, Detroit.
Capt. Leslie M. Jones, anesthesia and operating branch, Detroit.
Capt. William T. Ladd, chief of the women's branch, Washington, D. C.
1st Lieut. Thomas A. Peter, on orthopedic branch, Savannah, Ga.

MEDICAL DIVISION

Major Hilton S. Read, director of the medical division, Atlantic City, N. J.
Major Howard D. Fabing, chief of the neuropsychiatric branch, Cincinnati.
Capt. Michael (NMI) Gleason, ward officer, communicable disease branch, Mendota, Ill.
Capt. Paul M. Glenn, chief of the gastroenterology branch, Cleveland.
Capt. A. G. Hollander, chief of the cardiovascular renal branch, assistant director of the medical division, Brooklyn.

LABORATORY DIVISION

Lieut. Col. Charles G. Darlington, laboratory division, New York.
1st Lieut. Alexander K. Prentiss, sanitary corps, bacteriologist, Cincinnati.
2d Lieut. Seth W. Gilkerson, sanitary corps, bacteriologist, Leavenworth, Kan.

OUTPATIENT DIVISION

Major George R. Dillinger, director of the outpatient division, admission and disposition officer, French Lick, Ind.
Major Joseph Killebrew, assistant admission and disposition officer, outpatient division, Chattanooga, Tenn.
Major Daniel Landrum, assistant outpatient division, San Juan, P. R.

ROENTGENOLOGICAL DIVISION

Capt. Holart H. Wright, M. C., director of the roentgenological division, Milwaukee.
1st Lieut. Joseph McK. Ivins, M. C., roentgenologist, roentgenologic division, Rochester, Minn.

AVIATION MEDICAL EXAMINERS

Graduation exercises were held at the School of Aviation Medicine, Randolph Field, Texas, on June 3, following completion of the course for Aviation Medical Examiners. The didactic portion of the course is conducted at Randolph Field, Texas, and the practical portion of the course at the three army air forces classification centers. The list of students graduating on June 3 follows:

ALABAMA

Thomas E. Booth, 1st Lieut, Mont
gomery
William H. DeRamus, Captain,
Schn
Roy I. Grubbs Jr., 1st Lieut
Lutaw
James T. Jackson, 1st Lieut
Montgomery
Claude W. Lavender, 1st Lieut
Fairfield

ARIZONA

Maxwell R. Palmer, 1st Lieut
Tucson
Dwight H. Porter, Captain, Phoe
nia

ARKANSAS

Clifton H. Bersky, 1st Lieut
Little Rock

CALIFORNIA

LeGrande Anderson, 1st Lieut
Berkeley
Manuel Barbosa, 1st Lieut, San
Francisco
Donald L. Brubaker, Captain, San
Francisco
W. Hollis Burrow, 1st Lieut, San
Mateo
Stephen B. Devin, Captain, Los
Angeles
Cornwall C. Lierman, 1st Lieut
Point Reyes Station
Arthur R. George, Captain, San
Bernardino
Joel M. Gibbons, 1st Lieut, Santa
Paula
Earl O. Hagen, 1st Lieut, Han
ford
Patrick C. Humphreys, Captain
Los Angeles
Irving I. Lasky, 1st Lieut, Los
Angeles
Allan R. Mendelson, Captain, San
Francisco
Edward C. Pallette, Major, Los
Angeles
Roy F. Peck, 1st Lieut, Merced
J. B. Melville Price, Major, Santa
Ana
Henry F. Quinn, 1st Lieut, Stock
ton
Charles C. Smith, 1st Lieut, Oak
land
Ira M. Unsell, Captain, Santa
Monica
Dallas L. Wagner, 1st Lieut, Fort
Bragg
Horace A. Wald, 1st Lieut, South
San Francisco
Theodore W. Witalis, 1st Lieut
Pomona

COLORADO

Harlan E. McClure, 1st Lieut,
Lemar
Frederick B. Parkhurst, 1st Lieut
Denver

CONNECTICUT

Emerick Friedman, Captain, Nor
wick
Weston M. Kelsey, 1st Lieut,
Westport
Warren W. LaPierre, 1st Lieut,
Norwicketon
Ralph J. Lenoci, 1st Lieut,
Bridgeport
Frederick E. Mott, 1st Lieut, New
Haven
Robert Walker, Captain, Cornwall

DISTRICT OF COLUMBIA

R. Brown, 1st Lieut, Washington
Warren B. Burch, 1st Lieut
Washington
Herschel F. Gray, 1st Lieut,
Washington
Edwin W. Hakala, Lieut Col,
Washington
George E. Leone, Lieut Col,
Washington
David M. Nolan, 1st Lieut, Wash
ington
Robert L. Simpson, 1st Lieut,
Washington
Abraham Tauber, 1st Lieut,
Washington

FLORIDA

Archie J. Baker, 1st Lieut, Jack
sonville

Ben A. Dreibrod, 1st Lieut
Jacksonville
Thomas S. Gowin, 1st Lieut,
Kendall
Oscar I. Kelley, Captain, West
Palm Beach
Paul O. Messner, Captain, Miami
Springs
Harvie J. Stipe, Captain, Fort
Myers

GEORGIA

Walker I. Curtis, Captain, College
Park
Walter I. Graham Jr., 1st Lieut
Augusta
James S. Peters Jr., Captain
Nashville

ILLINOIS

Vaughn A. Walker, 1st Lieut,
Chicago
Thomas H. Culhane Jr., Captain
Rockford
Robert I. Dearborn, 1st Lieut
Byron
Robert G. Fox, 1st Lieut, Park
Ridge
Harold J. Frech, 1st Lieut,
Highland
Norman L. Goulder, 1st Lieut,
Chicago
Robert D. Hart, 1st Lieut, Peoria
Glenn L. Judson, 1st Lieut
Evanston
Irwin A. Kallen, Captain, Chicago
Robert T. LeSage, 1st Lieut
Dixon
Emil D. Levitt, Captain, Chicago
Walter Lewinck, 1st Lieut,
Mason City
William A. Loepfert, 1st Lieut
Chicago
Keith J. Long, 1st Lieut, Fair
view
George B. McNelly, 1st Lieut,
Stanford
Albert G. Martin, 1st Lieut, Au
rora
Howard W. Merideth, Captain,
Chicago
John W. Monroe, 1st Lieut, Ben
ton
Herman R. Moser, 1st Lieut, Au
rora
Alfred H. Movius Jr., 1st Lieut
Oak Park
Carl F. Neuhoff, 1st Lieut, Peoria
Henry C. Oleschowski, 1st Lieut,
Chicago
Herbert Rodewald, 1st Lieut
Murphysboro
Julian J. Sitney, 1st Lieut, Chi
cago
Ralph D. Sullivan, 1st Lieut,
Chicago
William O. Townsend, 1st Lieut,
Chicago
Elliott M. Tratt, 1st Lieut, Mor
ris
Arthur R. Weihe, 1st Lieut, Oak
Park

INDIANA

Robert C. Badertscher, Captain
Bloomington
David B. Brown, 1st Lieut, Gary
Ray H. Burnikel, 1st Lieut,
Evansville
Herbert O. Chattin, Captain, Vin
cennes
Earl P. Cripe, 1st Lieut, Red Key
Dee D. Gill, 1st Lieut, Green
field
Peter B. Hoover, 1st Lieut,
Boonville
Charles J. Marino, 1st Lieut,
Gary
Franklin F. Premuda, 1st Lieut
East Chicago

IOWA

James H. Coddington, 1st Lieut,
Humboldt
Louis Goldberg, 1st Lieut, Des
Moines
Chauncey E. Heffernan, 1st Lieut
Sioux City
Ardo M. Hess, 1st Lieut, West
Union
Jay E. Houlahan, Captain, Mason
City

Ernest C. Margaret, 1st Lieut,
Glenwood
Paul W. Osincup, 1st Lieut,
Sioux City
Paul L. Pascoe, 1st Lieut, Carroll
Dean C. Snyder, 1st Lieut, De
Witt

KANSAS

Morris R. Blacker, Major, Wichita
George R. Maser, 1st Lieut, Mis
sion
Richard P. Rindles, 1st Lieut, Fort
Scott

KENTUCKY

John D. Allen Jr., 1st Lieut,
Louisville

LOUISIANA

Byron L. Cook, 1st Lieut, Min
den
Philip S. Gold, 1st Lieut, Burr
wood
Lee I. Hartman, 1st Lieut,
Shreveport
Martin Z. Kaplan, 1st Lieut, New
Orleans
Roger I. Miller, 1st Lieut, Jen
nings

MAINE

George C. Howard, 1st Lieut
Guilford
Harold E. Pressey, Major, Bangor

MARYLAND

Donald D. Cooper, Major, Towson
Irwin P. Klemkowski, 1st Lieut,
Baltimore
Joshua M. Perman, 1st Lieut
Baltimore
Daniel J. Schwartz, 1st Lieut,
Baltimore

MASSACHUSETTS

James C. Allanson, 1st Lieut
Boston
Hugh G. Brereton, 1st Lieut, Bos
ton
John J. Clark, 1st Lieut, North
ampton
Joseph H. Colman, 1st Lieut,
Mansfield
George A. Curley, 1st Lieut, Bos
ton
Franklin C. David, 1st Lieut, Bos
ton
Milton Elkin, 1st Lieut, Boston
Samuel M. Finkelstein, 1st Lieut,
Boston
Frank P. Foster, Major, Boston
Donald E. Higgins, Captain
Cotuit
Leroy E. Mayo, 1st Lieut, Hol
den
Richard H. Wallace, Captain, Bos
ton

MICHIGAN

James M. Fitzgerald, Captain, De
troit
Robert M. Griffith, 1st Lieut, Mus
kegon
Arthur B. Levant, 1st Lieut, De
troit
Reuben H. McArthur Jr., Captain
Cho
Marion S. McLellan, 1st Lieut
Grand Rapids
Darvan A. Moosman, 1st Lieut
Pontiac
Emil F. Rupprecht, Captain, De
troit
John G. Ruth, Captain, Benton
Harbor
Gregory A. Skully, 1st Lieut, De
troit
Edward Stein, 1st Lieut, Detroit
John W. Strayer, 1st Lieut, Ann
Arbor
Donald A. Young, 1st Lieut, De
troit

MINNESOTA

Schuyler P. Brown, 1st Lieut,
Minneapolis
William D. Cleaves, 1st Lieut
Grand Rapids
John East, Captain, Northome
Carl J. Fritsche, Captain, New
Ulm
William M. Haller, Captain, Be
midji
John E. Minckler, 1st Lieut, Vir
ginia
Lorin M. Olson, 1st Lieut, Chi
cago City

MISSISSIPPI

William R. Armstrong, 1st Lieut,
Iuka
Walter W. Crawford, 1st Lieut
Hattiesburg
Joseph S. Edmondson, 1st Lieut,
Vardaman

Harvey F. Garrison, Captain, Jack
son

MISSOURI

Thomas W. Alsobrook, Captain, St
Louis
John R. Forgrave, 1st Lieut, St
Joseph
Max S. Franklin, 1st Lieut, St
Louis
Edmund J. Kadlubowski, Major
Lemay
Larry B. Klebba, 1st Lieut, St
Louis
Martin J. Mueller, 1st Lieut
Kansas City
Howard B. Throgmorton, 1st
Lieut, Sikeston

MONTANA

Robert L. Casebeer, 1st Lieut
Butte

NEBRASKA

Daniel D. Dolce, 1st Lieut
Omaha
Arthur M. Greene, Captain
Omaha

NEW HAMPSHIRE

James M. Ballou, Captain, Keene
Donald E. Bowen, 1st Lieut
Wentworth Location

NEW MEXICO

Thomas L. Morgan, Captain
Hobbs
Lucien G. Rice Jr., Captain, Al
buquerque
Carl W. Whistler, Captain, Albu
querque

NEW JERSEY

Banks S. Baker, 1st Lieut, Cam
den
Milan Duray, Captain, Bergen
Charles M. Howell Jr., 1st Lieut
Lawrenceville
Charles S. Kollar, 1st Lieut, Tea
neck
John T. McLaughlin, Captain
Pleasantville
John J. Marsella, 1st Lieut, Jer
sey City
John A. Sullivan, 1st Lieut, Tea
neck
Eli A. Wallack, 1st Lieut, Jersey
City

NEW YORK

Carl B. Alden, Captain, Adams
Harold Axelrod, Captain, Brook
lyn
Harmon J. Briley, Captain, New
York
Benjamin H. Balser, Major, New
York
Edmund M. Braun, 1st Lieut,
New York
Joseph F. Cavaliere, 1st Lieut
Brooklyn
Harry R. Chinigo, Captain, Flush
ing
Edgar L. Chyton, 1st Lieut, Ja
maica
James T. Collins, 1st Lieut, Elm
hurst
Anthony V. Condello, 1st Lieut
Brooklyn
Joshua R. Derow, 1st Lieut,
Brooklyn
George F. Emerson, 1st Lieut
Scotia
Norman Fabian, Captain, Pough
keepsie
Byron O. Garner, 1st Lieut, New
York
Constantine D. Generale, 1st
Lieut, New York
Lee Gillette, 1st Lieut, New York
John P. Glaubitz, 1st Lieut
Hempstead
Warren F. Gorman, 1st Lieut
Flushing
Seymour B. Gostin, 1st Lieut
Valhalla
William F. Greene, 1st Lieut, New
York
Peter V. Gugliuzza, 1st Lieut
Jamaica
Frank P. Hill, 1st Lieut, New
York
Donovan M. Jenkins, Captain
Webster
Frank D. Jennings Jr., 1st Lieut
Brooklyn
Augustin Jones, 1st Lieut, New
York
Sidney Kahn, 1st Lieut, New
York
Charles Kavovit, Captain, New
York
Ernest F. Kish, 1st Lieut, New
Kisco

Michael R. Labate Captain Brooklyn
John J. H. Maen Captain Poughkeepsie
Angelo Marzangola Jr. 1st Lieut. New York
Thomas F. McDermott Jr. 1st Lieut. New York
John W. Mead Captain Poughkeepsie
Edward Mainman 1st Lieut. New York
Simon B. Mendelsberg 1st Lieut. Brooklyn
Robert E. Mountman 1st Lieut. Olean
Herbert F. Muhlolland Captain Fair Rockaway
Harry L. Orlov Captain New York
Amadeo W. Pallone 1st Lieut. Flushing
Herbert Pearl 1st Lieut. Brooklyn
Joseph A. Pincus 1st Lieut. Brooklyn
Norbert J. Roberts 1st Lieut. Buffalo
Elias Savitsky 1st Lieut. New York
Joseph F. Schneider 1st Lieut. Brooklyn
Jerome Schreff 1st Lieut. New York
Spencer J. Servos Captain Medina
James D. Sharpe 1st Lieut. New York
Stanley J. Snitow 1st Lieut. New York
Kenneth J. Wheeling 1st Lieut. Port Jervis

NORTH CAROLINA

Rudolph P. McCulloch 1st Lieut. Durham

NORTH DAKOTA

Alfred M. Fulton Jr. 1st Lieut. Minot
Marvin J. Geib 1st Lieut. West Fargo

OHIO

Morris L. Battles 1st Lieut. East Cleveland
Kenneth E. Bennett 1st Lieut. Strasburg
Edmond J. Booth 1st Lieut. Columbus
Riley E. Frush 1st Lieut. Lexington
Stephen V. Geroch 1st Lieut. Akron
Courtney L. Jack Captain Cincinnati
Charles F. Kiefer Captain Cincinnati
Alexander H. Kimmel Captain Norwalk
George L. Maltby Captain Cincinnati
Merritt K. Marshall 1st Lieut. Findlay
Jerome H. Meyer 1st Lieut. Cleveland
William F. Mitchell 1st Lieut. Columbus
Guy S. Peterson Jr. 1st Lieut. Cleveland
Earl E. Linnell 1st Lieut. Cleveland
Ernest D. Rehm 1st Lieut. Toledo
Raymond H. Schroeder 1st Lieut. Quincy
Birna R. Smith 1st Lieut. Lewisburg
George R. Smith 1st Lieut. Painesville
Lloyd M. Snively 1st Lieut. Massillon
Ralph J. Starbuck 1st Lieut. Salem
John P. Urban 1st Lieut. Columbus

OKLAHOMA

Paul S. Anderson 1st Lieut. Claremore
Evan C. Houston 1st Lieut. Oklahoma City
Claude B. Knight 1st Lieut. Wewoka
Edwin C. Yarns Captain Elmore City

OREGON

James W. Wiley 1st Lieut. Portland

PENNSYLVANIA

Robert F. Beckley 1st Lieut. Bryn Mawr
William I. Brutsch Jr. 1st Lieut. Philadelphia

Harry H. Clements 1st Lieut. Coraopolis
Charles O. DeLuca Major Philadelphia
John I. Feldman 1st Lieut. Philadelphia
Lloyd K. Forcey Captain Wilkesport
William L. Cranatur Captain Philadelphia
Lester S. Greider 1st Lieut. Millersburg
Warren B. Grover 1st Lieut. Pockville
DeWitt C. Kissell 1st Lieut. Pittsburg
Dominic E. Losano Captain Vandergrift
Milton C. Miloney 1st Lieut. Hanover
Philip R. McDonald Major Philadelphia
Ned D. Mervine 1st Lieut. Meriden
Harry H. Miller 1st Lieut. Johnstown
Frederick A. Parsons 1st Lieut. Pittsburgh
Edward M. Phillips 1st Lieut. Mount Lebanon
Kenneth M. Reighter 1st Lieut. Philadelphia
Leonard Snydman 1st Lieut. Philadelphia
John W. Strouse 1st Lieut. Hulmeville
Robert U. Wisler 1st Lieut. Ephrata

RHODE ISLAND

Michael Di Maio 1st Lieut. Providence
Edward Foster 1st Lieut. Pawtucket
John L. O'Hara 1st Lieut. Providence

TENNESSEE

John H. Ledbetter Jr. 1st Lieut. Memphis

TEXAS

Robert J. Antell 1st Lieut. San Antonio
Stephen A. Foote Jr. Captain Houston
Samuel B. Goodson 1st Lieut. Sherman
Ralph V. Greene Jr. Captain San Antonio
Royal H. Kay 1st Lieut. Dallas
William M. Lively Jr. 1st Lieut. Dallas
Columbus H. McCunston Jr. Captain Austin
Orin P. McMillan Captain San Antonio
Dudley Y. Oldham Captain Houston
August H. Saegert 1st Lieut. San Antonio
Gerald S. Smith 1st Lieut. Lubbock
Robert C. Stow Captain Fort Worth

VERMONT

Raynald T. Cocne Capt. Burlington

VIRGINIA

Julius F. Chairsell Jr. 1st Lieut. Christiansburg

WASHINGTON

Thomas W. Crowell 1st Lieut. Seattle
Charles G. Day 1st Lieut. Seattle
Charles D. Kimball 1st Lieut. Seattle
William V. Meyer 1st Lieut. Everett
Harry M. Morgan Captain Longview
Paul W. Sweet 1st Lieut. Centralia

WEST VIRGINIA

William A. Dasher 1st Lieut. Parkersburg
James H. Gray Jr. Captain Clendenen
Owen A. Groves 1st Lieut. Charleston

WISCONSIN

Samuel B. Black 1st Lieut. West Allis
Carl A. Fomark 1st Lieut. Madison
Louis D. Craber 1st Lieut. Watonsa
Hilbert Cultranden 1st Lieut. Virsqua

Douglass A. Gutheil 1st Lieut. Wauwatosa
Laurence H. Siegel Captain Milwaukee
Paul J. Trier 1st Lieut. Fond du Lac
Joseph E. Vaccaro 1st Lieut. Wauwatosa

WYOMING
Louis G. Booth 1st Lieut. Sheridan
Lowell D. Kattenhorn 1st Lieut. Powell
CANAL ZONE
Theodore Stonehill 1st Lieut. Gatun

AWARDED LEGION OF MERIT

The War Department announced on July 15 an award of the Legion of Merit to Col. Austin J. Canning M. C., U. S. Army, for exceptionally meritorious service in the performance of outstanding service as commanding officer, Station Hospital Schofield Barracks (now known as North Sector General Hospital), in planning and coordinating the expansion of that hospital. During the period commencing Dec. 7, 1941, his performance of duty in establishing and carrying out the handling of battle casualties contributed in a large measure to the saving of a large percentage of such casualties. Colonel Canning graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1911 and from the Army Medical School in 1914.

Col. Clarence E. Fronk of the Army Medical Department has been awarded the Legion of Merit for exceptionally meritorious service as assistant (liaison officer) to the department surgeon, Hawaiian Department, during the period Feb. 13, 1941, to April 11, 1941, in connection with the formulation of plans for the initiation of civilian medical defense measures and in presenting these plans to and having them accepted by local civilian agencies and authority. His energy, experience and knowledge of local conditions were of the greatest value and contributed materially to stimulating the initiation and development of civilian medical defense measures largely volunteered at a time when such action was most necessary. Colonel Fronk graduated from St. Louis University School of Medicine in 1906.

Col. Alvin C. Miller M. C., U. S. Army, was awarded the Legion of Merit for exceptionally meritorious service in the performance of outstanding service as commanding officer, Tripler General Hospital, in maintaining efficient hospital facilities on and after Dec. 7, 1941, reflecting great credit on the military establishment through the exceptionally prompt handling of a large number of wounded admitted within a brief period following the Japanese attack on Oahu, thus contributing in a large measure to the saving of an unusually high proportion of such casualties. Colonel Miller graduated from the Medical College of Ohio, Cincinnati, in 1909 and from the Army Medical School in 1912.

Lieut. Col. (then Major) Leonard D. Heaton M. C., U. S. Army, was awarded the Legion of Merit for exceptionally meritorious service in the performance of outstanding service as chief of the surgical service, North Sector General Hospital, at the time of the Japanese attack on Hawaii on Dec. 7, 1941, and the months that followed. Lieutenant Colonel Heaton by his unusual devotion to duty and his excellent judgment at the time of the sudden emergency on Dec. 7, 1941, did much to enhance the efficiency, state of readiness and effectiveness of the surgical teams handling that emergency and by so doing rendered service of great value. Lieutenant Colonel Heaton graduated from the University of Louisville School of Medicine in 1926 from the Army Medical School in 1929 and from the Medical Field Service School in 1929.

Lieut. Col. Charles T. Young M. C., U. S. Army, was awarded the Legion of Merit for exceptionally meritorious service in the performance of duty during and after the Japanese attack on Oahu, Dec. 7, 1941. Lieutenant Colonel Young, then chief of the medical service, took over the supervision of all surgical wards and expeditiously organized and controlled the entire ward service for the preoperative and postoperative care of the wounded thereby making emergency therapeutic measures quickly available to battle casualties and contributing largely to the saving of lives. By his excellent judgment and thorough adaptability to these unusual duties he reflected great credit on the Medical Corps, United States Army. Lieutenant Colonel Young graduated from Johns Hopkins University School of Medicine in 1927 and from the Army Medical School and Army Field Service School in 1929.

ONE THOUSAND CIVILIAN EMPLOYEES TREATED DAILY BY WAR DEPARTMENT

The War Department announced on July 2 that an average of 1,000 of its civilian employees in Washington apply for medical treatment or advice daily in War Department emergency rooms. During May, 2,751 patients were treated and 555 were sent home as unfit for duty. There were 1,450 employees injured on duty, mostly minor injuries, who were treated in emergency rooms. Only 38 of these were sent to the United States Public Health Service. Patients whose attendance records are faulty are examined in the emergency rooms to determine their fitness for duty. Physicians also examine individuals who apply for parking space near entrances because of physical disabilities. Staff physicians have completed 4,646 chest x-ray examinations, and are handling 200 a day. Arrangements have been made with state and city health units for care and home supervision of any tuberculous persons found. The facilities of the George Washington University Hospital Medical School have been offered for treatment of some cases of lung and heart disease found by War Department doctors.

The yearly per capita cost of treating the 44,000 civilian employees of the War Department amounts to \$2.37. Lieut Col A J Lanza, chief of the Occupational Hygiene Branch, Office of the Surgeon General of the Army, states that the amount allowed annually for this purpose in private industry commonly ranges from \$5 to \$10 per capita.

COLONEL HUME APPOINTED HEALTH OFFICER OF OCCUPIED SICILY

In an Associated Press dispatch from the allied headquarters in North Africa on July 18 concerning Gen Harold Alexander's proclamation to the people of Sicily as military governor for the Allies of that island, it was pointed out that several AMGOT (Allied Military Government of Occupied Territory) leaders were already in Sicily or preparing to go soon in connection with the establishment of military government on that

island, among those named in this category was Col Edgar E Hume of the Army Medical Corps, who was listed to be chief American health officer. Colonel Hume graduated from Johns Hopkins University School of Medicine in 1913 and entered the Medical Reserve Corps as a first lieutenant on Sept 16, 1916. He had been director of administration at the Medical Field Service School, Carlisle Barracks, Pa., since 1937.

APPOINTMENT OF MARRIED NURSES IN ARMY NURSE CORPS

For the duration of the war and for six months thereafter, married nurses who meet all other requirements for military service may now be accepted for appointment in the Army Nurse Corps as Reserve nurses. Only those nurses who are willing to accept assignment unreservedly will be appointed. A nurse with one or more dependent children under 14 years of age may not qualify for appointment.

LIEUT EDITH E GREENWOOD AWARDED SOLDIER'S MEDAL

The War Department announced on July 15 that Lieut Edith E Greenwood of North Dartmouth, Mass., was awarded the first Soldier's Medal ever made to a woman for her heroic conduct in saving her patients from a hospital fire at Yuma, Ariz., on April 17. A stove in the diet kitchen exploded and fire quickly spread through the ward, where Lieutenant Greenwood was duty nurse in charge of 15 bed patients. Lieutenant Greenwood gave the alarm and with the ward attendant, Pvt 1st Class James J Ford of Madrid, Iowa, tried to extinguish the flames. Finding that impossible, they removed all the patients safely. The rescue was speedily achieved and not a single patient was injured, although the ward burned to the ground in five minutes. Lieutenant Greenwood entered the army in September 1942, having completed her nurse's training at St Luke's Hospital, New Bedford, Mass., in 1941.

NAVY

CAPT ERIK G HAKANSSON IN COM- MAND AT NAVAL MEDICAL RESEARCH INSTITUTE

Capt Erik G Hakansson, MC, USN, assumed command of the Naval Medical Research Institute, Bethesda, Md., on July 17, succeeding Rear Adml William L Mann, MC, USN, newly appointed medical officer for the Thirteenth Naval District. Captain Hakansson will supervise numerous scientific investigations which are being undertaken in the fields of naval medicine, surgery and hygiene. The projects under study include improvement of oxygenation, prevention of flash burns, provision of drinking water for sea castaways, nutrition, equipment for high altitude fliers and deep sea divers, and many others. Captain Hakansson is a specialist in tropical medicine and medical parasitology and has been on duty in the division of research, Bureau of Medicine and Surgery, since April 1942, when he was ordered to Washington from the U S hospital ship *Solace*. He graduated from the University of Illinois College of Medicine in 1915 and after an internship of two years he was commissioned in the medical corps of the navy as a lieutenant (jg). He was on duty in the Virgin Islands during the first world war organizing medical attendance for the inhabitants and modernizing hospital and sanitary services.

SHIP NAMED FOR DENTAL OFFICER

A new destroyer-escort vessel will be named in honor of the late Lieut Comdr Laurice A Tatum (DC), USNR, who was killed in action on Sept 15, 1942 while attached to the U S S *Wasp* during the battle of the Solomons. The new escort vessel was launched on July 3 at Orange, Texas, with

Mrs Cecile Cofield Tatum, widow of Dr Tatum, as sponsor. Lieutenant Commander Tatum was awarded the Silver Star Medal posthumously on February 12. The citation was as follows:

"For extremely gallant and intrepid conduct while serving aboard the U S S *Wasp* during the attack on that vessel by enemy Japanese forces. Completely cut off from the rest of the ship by raging flames, Lieutenant Commander Tatum calmly braved the danger from fire, exploding ammunition and flying debris to remain in the forecabin to administer first aid to all wounded in the vicinity. His great personal valor and courageous efforts on behalf of his shipmates, carried on only with improvised facilities, were in keeping with the highest traditions of the United States Naval Service."

MONTHLY CONFERENCE OF NAVAL MEDICAL RESEARCH INSTITUTE

The monthly conference held at the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md., on July 13 was attended by Rear Admiral E R Stitt, MC, USN, Ret., and Rear Admiral H W Smith, MC, USN, Ret., who spoke on the contributions of Admiral W L Mann Jr., MC, USN, to the field of medicine, naval hygiene and sanitation and naval medical research and was of the nature of a farewell to Admiral Mann on his detachment and departure to a new assignment as the incumbent president of the Association of Military Surgeons. These monthly conferences are informal and are designed for the interchange of ideas between outside scientists and the staff of the Naval Medical Research Institute.

PHOTOFLUOROSCOPIC CHEST EXAMINATIONS OF V-12 STUDENTS

The Bureau of Medicine and Surgery of the U S Navy Washington, D C, announces that two new trucks equipped to make photofluoroscopic chest examinations have been procured for field use in connection with the V-12 Navy College Training Program for medical and dental students. One unit will be used in the East Coast and the other will cover the West Coast area. Arrangements are now being made to send these trucks to various training colleges in both coast areas to take chest pictures of all V-12 students.

SPECIAL LAPEL AND SLEEVE INSIGNIA FOR MEDICAL AND DENTAL STUDENTS

Special lapel and sleeve insignia have been authorized according to the Bureau of Medicine and Surgery for students in the Navy V-12 Program attending medical and dental colleges. Such students will wear the regular midshipmen's uniform. On the lapels or the blue uniform coat medical students will wear a device composed of the oak leaf and acorn insignia of the medical corps superimposed on a fouled anchor at a 45 degree angle. Similarly, dental students will wear the dental corps insignia superimposed on a fouled anchor. In addition the

number of years of completed medical or dental study will be indicated by gold sleeve stripes. These stripes, one for each year completed will be $1\frac{1}{2}$ inches long and $\frac{1}{8}$ inch wide. They will be sewed 2 inches above the cuff and at a 45 degree angle to the cuff line. First year medical or dental students will wear clean sleeves. When in khaki uniforms, medical and dental students will wear pin on insignia, similar to the lapel insignia on each side of the shirt collar.

AWARDED LEGION OF MERIT

Lieut Harold A Cassady, MC USNR, was awarded the Legion of Merit for exceptionally meritorious conduct in the performance of outstanding services as medical officer of a beach party during the assault on and occupation of French Morocco from Nov 8 to 11, 1942. With utter disregard for his own personal safety Lieutenant (jg) Cassady tirelessly and skilfully administered to the wounded in the face of hostile gunfire thereby contributing greatly to the success of this operation. His cool courage and heroic devotion to duty were a constant inspiration to his corpsmen and were in keeping with the highest traditions of the United States Naval Service. Lieutenant Cassady graduated from the University of Cincinnati College of Medicine in 1941. His home address is Cincinnati.

NEW PROCUREMENT AND ASSIGNMENT SERVICE ADDRESS

The Central Office of the Procurement and Assignment Service for Physicians, Dentists Veterinarians Sanitary Engineers and Nurses in Washington, D C was moved on July 24 from 1006 U Street NW to 1778 Pennsylvania Avenue NW. Future communications should be sent to the latter address.

MISCELLANEOUS

PUBLIC HEALTH UNDER HITLER

According to the *Aftonbladet* Stockholm April 12, the quelling authorities have attempted to force Norwegian doctors to pay a compulsory yearly subscription of 100 kroner to the national socialist organization. This has encountered determined opposition, and nearly all the doctors are declaring that they will not bow to the demands of the national socialist organization or of the authorities.

Radio Paris of April 13 states that the secretary of state for health and the family has issued a reminder that under the law of March 25 1943 doctors, pharmacists and dentists established since Jan 1 1940 who have not yet joined the Order of Doctors of the Chamber of Pharmacists must register within fifteen days at the office of the health inspector of their prefecture. In principle all those who are able to follow their profession in civilian life will be considered as able to do so in prisoners camps. The stay there would last one year.

Reich Health Leader Dr Conti according to DNB, Germany April 14 stated at a conference of the Reich Midwives Association that the fall in the mortality rate of mothers had continued even during the recent war years. He thanked the midwives for these good results which they have achieved at births at which they attended unaided. This applied to 75 per cent of all childbirths which were seen through by midwives established in free practice on their own responsibility while they acted as doctors assistants in the remaining 25 per cent of childbirth cases. The reich health leader specially praised the fine efforts and the courage displayed by midwives in areas exposed to air raids for which several of them had been awarded the War Merit Cross.

According to *Universul Rumania* April 3 in view of the campaign against epidemics, Dr I Apostolescu chief municipal doctor of Bucharest has decided that the Casa Asigurarilor

Sociale should contribute two groups for delousing and disinfection. In the framework of the same campaign 50 beds have been provided in a special pavilion of the Colentina hospital for convalescents from infectious diseases.

Universul Rumania March 29 reports that in view of the fact that the present situation renders the supply of medicines containing insulin very difficult, the Ministry of Health has ordered a census of all persons suffering from diabetes and a rationing of the medicines containing insulin so that this ingredient can be economized. The census will be made by medical clinics and the services for internal medicine. The census must be finished by March 31 when insulin cards will be issued.

According to the *Petit dauphinois* France April 28 the compulsory antitetanic and antidiphtheritic vaccination of children between 1 and 14 will be carried out in Annecy before June 16. Parents who do not comply are under severe penalties.

According to *Wiesci Polska* Budapest April 2 from April 1 the so called state medical courses for students of Aryan origin or non German nationality will be opened in Lwow. Persons who have had six months labor service will be admitted. Instead of labor service sanitary work in hospitals work in the reich or services rendered in combating the typhus epidemic may also be recognized.

In France *l'Effort* of May 19 reports that after ten years research Prof Gaston Ramon with the assistance of Drs Lemetayer Minguet Touze-Yen and Paul Ramon has discovered a serum against foot and mouth disease obtained from horses. The first experiments being most successful it is hoped that a large scale production will prevent the recurrence of foot and mouth disease which caused the loss of a million head of cattle in France in 1927.

Medical News

(PHYSICIANS WILL CONFIR A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Dr Askey Resigns as President of School Board—Dr Edwin Vincent Askey has resigned as president of the Los Angeles City Board of Education. In his letter of resignation Dr Askey said: "As long as the war continues I feel my first duty lies in the practice of medicine." Dr Askey was elected to the board for a four year term in May 1937. During the 1940-1941 school year he was president of the board and in 1941 was reelected for a second four year term.

CONNECTICUT

Mobile X-Ray Unit—The new mobile x-ray unit of the Connecticut State Tuberculosis Commission recently started its first survey of industrial groups in cooperation with the New Haven Department of Health. The work is being carried out among employees of industrial plants.

Hartford Responds to Drive for Funds—On July 9 only \$155,000 was needed in the campaign for a fund of five million dollars for the Hartford Hospital. A concentrated program was directed by Will, Folsom and Smith, Inc., New York. At a "Victory Dinner" of volunteers 147 corporations subscribed more than \$1,800,000, 410 subscriptions from individuals and families accounted for more than \$2,500,000 and 28,314 employees in industrial plants subscribed more than \$169,000. The funds are to be used to finance a building program at the Hartford Hospital.

KENTUCKY

Food Poisoning Traced to Pasteurized Milk—An outbreak of 32 cases of food poisoning in a Kentucky community of 8,000 population was traced to pasteurized milk, according to a recent report. The milk was sold by one of three large distributors, all patients being among customers of one distributor. A majority of the patients were children under 10 years of age. Illness was characterized by nausea, vomiting, prostration and, in a few cases, diarrhea. These symptoms developed in from one to seven hours after consumption of the milk. Ninety-eight cows, distributed in four herds, were examined. Investigation at the pasteurizing plant revealed insanitary conditions. Probably the most important observation was that afternoon milk, after being run over the cooler into the pasteurization vat, was allowed to stand without further cooling until about 9 o'clock the following morning. There was evidence that the milk temperature during the night rose as high as 76 F. In a report, Dr Fred W. Caudill, Louisville, director of the division of communicable diseases of the Kentucky State Department of Health, and Melvin A. Meyer, state milk sanitarian, concluded that the outbreak was due to staphylococcus toxin developed during the several hours of pasteurization when the milk was at about room temperature.

LOUISIANA

Stamp Collection Given to Tulane—Dr B. Bernard Weinstein, instructor in gross anatomy and gynecology at Tulane, has presented a postage stamp collection to the Tulane University of Louisiana School of Medicine, New Orleans. According to the *Tulanean* the collection contains stamps honoring such characters of medical history as Imhotep, an Egyptian deity of medicine, and the Curies, discoverers of radium. The collection is said to be one of the largest in the country. Dr Weinstein graduated at Tulane in 1937.

Dr Erwin Nelson Joins Burroughs Wellcome & Company—Dr Erwin E. Nelson, since 1937 professor and head of the department of pharmacology at Tulane University School of Medicine, New Orleans, has been appointed director of research of the Burroughs Wellcome & Company (United States) experimental research laboratories at Tuckahoe, N. Y. Dr Nelson had received his Ph.D. at the University of Missouri, Columbia, in 1920 and graduated at the University of Michigan Medical School, Ann Arbor, in 1926. He had been assistant

professor in pharmacology at Michigan from 1919 to 1927, associate professor from 1927 to 1936 and professor from 1936 to 1937, when he joined the Tulane faculty. Among other positions held during his career Dr Nelson was principal pharmacologist and chief of the division of pharmacology of the Food and Drug Administration for a year in 1935. He has been consulting pharmacologist to the administration since 1936. He is an Associate Fellow of the American Medical Association and in 1939 was chairman of its Section on Pharmacology and Therapeutics.

MASSACHUSETTS

State Medical Election—Dr Elmer S. Bagnall, Groveland, was chosen president-elect of the Massachusetts Medical Society at its annual meeting in May and Dr Roger I. Lee, Boston, was installed as president. Dr Michael A. Tighe, Boston, is the secretary.

Personal—Brenton R. Lutz, Ph.D., professor of biology in the Boston University College of Liberal Arts, has been elected a fellow in the American Academy of Arts and Sciences. Dr Frank H. Lahey, Boston, recently received the degree of doctor of science from Boston University.

Creation of Nutrition Chair Marks Seventieth Birthday of Frances Stern—On July 4 Miss Frances Stern, chief of the food clinic of the Boston Dispensary, Boston, observed her seventieth birthday. To commemorate this event a fund has been established in the Tufts College Medical School to be used by her to extend the research and educational activities of the clinic. A department of nutrition will be set up and staffed by selected members of the faculty for the duration of the war with the hope that later a full professor of nutrition may be installed. The food clinic at the dispensary has been named the Frances Stern Food Clinic to honor further the woman who established it twenty-five years ago. The clinic is said to be the first of its kind and was established in 1918. After her return from Paris, where she had been head worker of *Pour l'Enfance et la Famille par l'Aide Sociale*, which had been carrying on the service begun by the American Red Cross, the food clinic became the main concern of Miss Stern. The plans in her honor are being carried on by the Frances Stern Seventieth Birthday Fund begun by many of her friends. Judge A. K. Cohen, president of the Jewish Philanthropies, is chairman. In 1908 Miss Stern was assistant to Mrs. Ellen H. Richards, first woman student and teacher at the Massachusetts Institute of Technology and founder of the American Institute of Home Economics.

MINNESOTA

Changes at the University of Minnesota—Dr J. Charnley McKinley, head of the department of medicine and director of the division of nervous and mental diseases, University of Minnesota Medical School, Minneapolis, has been named head of the newly established department of neuropsychiatry at the school, which includes the division of adult psychiatry and child psychiatry. Dr Cecil J. Watson has been named head of the department of medicine and director of the division of internal medicine. Dr Raymond N. Bieter, professor of pharmacology, has been appointed head of the department of pharmacology to succeed the late Dr Arthur D. Hirschfelder. According to an announcement, recent promotions at the university include:

Harold A. Whittaker, B.A., to clinical professor of preventive medicine and public health.
Dr Ralph T. Knight to clinical professor of anesthesia.
Dr Wallace D. Armstrong to professor of physiologic chemistry.
Dr Clarence D. Dennis to associate professor of surgery.
Dr N. Logan Leven to clinical associate professor of surgery.
Dr Charles E. McEwen to associate professor of obstetrics and gynecology.
Dr Charles E. Connor to clinical associate professor of ophthalmology and otolaryngology.
Joseph T. Cohen, D.D.S., to clinical associate professor of pediatrics.
Miss Ruth B. Freeman to associate professor of preventive medicine and public health.
George O. Pierce, M.S., to associate professor of preventive medicine and public health.
Dr Edward A. Regnier to clinical associate professor of surgery.
Dr Thomas J. Kinsella to clinical associate professor of surgery.
Dr Frank W. Whitmore to clinical associate professor of neuropsychiatry.
Dr Frederick W. Hoffbauer to assistant professor of medicine.
Dr Thomas Lowry to clinical assistant professor of medicine.
Dr Alphonse E. Walsh to clinical assistant professor of medicine.
Dr James K. Anderson to clinical assistant professor of surgery.
Dr Willard D. White to clinical assistant professor of surgery.
Dr Hewitt B. Hannah to clinical assistant professor of neuropsychiatry.

MISSISSIPPI

New Assistant Dean at University of Mississippi—Dr James B. Looper, professor of anatomy at Mississippi, has been appointed assistant dean of the University of Mississippi School of Medicine University.

State Medical Election—Dr Benjamin L. Crawford, Tylertown, was chosen president elect of the Mississippi State Medical Association at its annual meeting, May 12 and Dr Ellis LeRoy Wilkins, Clarksdale, was installed as president. Dr Thomas M. Dye, Clarksdale, is the secretary. The 1944 meeting will be held in Jackson, May 9-10.

MISSOURI

Personal—Dr Herbert S. Brevigle, a fellow in legal medicine at Harvard Medical School Boston, has been appointed instructor in pathology at the Washington University School of Medicine and pathologist to the St. Louis City Hospital. He will serve also as pathologist to the coroner of St. Louis County.

State Medical Election—Dr Curtis H. Lohr, St. Louis, was chosen president elect of the Missouri State Medical Association at its recent annual meeting and Dr Andrew W. McAlester, Jr., Kansas City, was installed as president. Dr Ralph L. Thompson, St. Louis, is the secretary-editor. The 1944 meeting is planned for Kansas City.

Dr Muench Released—Newspapers report that Dr Ludwig O. Muench, St. Louis, was released on June 6 from the federal prison at Terre Haute, Ind., after serving six years on a conviction of using the mails to defraud. In 1935 Dr Muench was found guilty of unlawfully and fraudulently making out signing and certifying a fraudulent birth certificate. In 1936 he was charged by indictments in nine counts with wilfully, knowingly, unlawfully and feloniously using and causing to be used the United States mails to defraud and obtaining money and property by means of false and fraudulent pretenses. In 1937 his license to practice medicine was revoked by the state board of health for unprofessional and dishonorable conduct.

NEW JERSEY

Dr Leverett Bristol Named State Health Director—Dr Leverett D. Bristol, Montclair, health director of the American Telephone and Telegraph Company since 1929, has been appointed health director of New Jersey for a four year term. If he accepts, Dr Bristol will succeed Dr Jesse Lynn Mahaffey, Camden, who has held the office for the past twelve years. Dr Bristol was born in Chicago in 1880 and graduated at Johns Hopkins University School of Medicine, Baltimore, in 1907. After practicing medicine in St. Paul, Dr Bristol went to the Syracuse (N. Y.) University College of Medicine in 1913 as associate professor of bacteriology. From 1914 to 1916 he was professor of bacteriology at the University of North Dakota School of Medicine, Grand Forks, and director of the laboratories of the state health department. For a year in 1916 he was a member of the faculty of Harvard Medical School, Boston. He served as state commissioner of health of Maine from 1917 to 1921 and professor of preventive medicine and public health at the University of Minnesota Medical School, Minneapolis, for a year in 1922. He was director of the New York State Health Demonstrations from 1923 to 1929 when he became health director of the American Telephone and Telegraph Company. He is a member of the Council on Industrial Health of the American Medical Association. Dr Bristol is a member of a number of health groups and at one time served as president of the New Jersey Health and Sanitary Association and the Montclair Council of Social Agencies.

NEW YORK

Outbreak of Sore Throat Among Hospital Employees—An outbreak of 23 cases of sore throat, most of them quite severe, among interns and employees of a hospital in the upstate area was recently reported to the state department of health. The illnesses were thought to be from a common source since all the persons involved ate in the hospital dining rooms. There were no attacks among the patients and only one among the group of 255 nurses who ate their meals in separate rooms. Of particular importance was the observation that with the exception of one person, all those affected drank large quantities of milk daily. This person did not drink milk during the week of the outbreak but did occasionally drink milk and use cream in coffee and on various foods. A survey of the milk handling procedure in the hospital disclosed certain inadequacies especially in the washing of milk containers. Labora-

tory study disclosed that in all of 10 cases the individuals were carrying hemolytic streptococci in their throats, and a throat culture of the hospital milk handler also proved positive. According to *Health News*, it is believed that the outbreak was due to contamination of a portion of the milk.

New York City

Promotions at Cornell—Dr McKen Cattell, associate professor of pharmacology in charge of the department, Cornell University Medical College, has been promoted to professor of pharmacology and head of the department. Dr John M. McLean has been promoted to professor of clinical surgery (ophthalmology).

Coordinating Committee for Nutrition Work—Grace MacLeod, Ph.D., has been named in charge of a special planning committee to carry out the city nutrition program originally set up by the department of health to disseminate information in the best use of the available food supply in terms of a well balanced diet. The special planning group will be part of the coordinating committee sponsoring the program.

Academy of Medicine Receives Endowments—The New York Academy of Medicine recently announced the establishment of two new funds to assist in the support of its educational projects. One the George R. Siedenburgh Memorial Fund was established to defray expenses in connection with lectures given at the academy. The second is an endowment in perpetuity of the Graduate Fortnight and was created by R. Thornton Wilson as a memorial to his wife Frances Elizabeth Wilson.

OHIO

Pharmacy Dean Joins Winthrop Company—Edward D. Davy, dean of the School of Pharmacy, Western Reserve University, Cleveland, has been appointed director of the pharmaceutical division of Winthrop Chemical Company with headquarters in Rensselaer, N. Y. Mr. Davy has been associated with Western Reserve for twenty-one years, serving first as professor of pharmaceutical chemistry and becoming in 1940 dean of the school of pharmacy. From 1930 to 1940 he served on the Committee of Revision, U. S. Pharmacopeia.

Physician Honored—A portrait of Dr. Elizabeth Campbell was recently unveiled in Christ Hospital, Cincinnati, in recognition of her forty-one years service as a member of the staff. Dr. Campbell in 1909 organized the Cincinnati Visiting Nurse Association. In 1917 the Cincinnati Social Hygiene Society serving as its first president and in 1932 the Cincinnati Committee on Maternal Health. In 1942 Dr. Campbell was given an honorary life membership in the American Social Hygiene Association having served as a member of its board from 1925 to 1936 and from then until 1938 as vice president.

Promotions at Western Reserve—John Paul Quigley, Ph.D., associate professor of physiology at Western Reserve University School of Medicine, Cleveland, has been named professor of gastrointestinal physiology and Edward Muntwyler, Ph.D., associate professor of biochemistry, professor of experimental biochemistry. Dr. Quigley, who received his Ph.D. at the University of Chicago in 1929, has been a member of the staff of Western Reserve since 1929. He had previously served at the University of Georgia, Augusta University of Alberta, Edmonton, and the University of Chicago. Dr. Muntwyler received his Ph.D. at the State University of Iowa, Iowa City, in 1928, joining Western Reserve in the same year. He had been an assistant in biochemistry at Iowa from 1924 to 1927.

TEXAS

Southwestern Medical Foundation School of Medicine—The registration of students on June 21 marked the official opening of the Southwestern Medical Foundation School of Medicine, Dallas. The medical school originated through the Southwestern Medical Foundation which under its charter was authorized to carry on medical education and research. The new school is housed temporarily in the Alex. Spence Junior High School, the accommodations to be available until September 1. After this period the school of medicine will be quartered in temporary wooden buildings for the duration of the war. Dr. Donald H. Slaughter is acting dean of the medical school and professor of pharmacology and chairman of the department. Dr. Edward H. Carr is the president. The faculty is composed of a large number of teachers formerly on the staff of Baylor University School of Medicine, now removed to Houston. The Southwestern Medical Center will ultimately occupy 25 acres of land but the Parkland Hospital and Hines Boulevard purchased in 1942 by the foundation.

This site augments the 11 acres occupied by Parkland Hospital. This year trustees of the foundation invited the citizens of Dallas to provide an initial \$1,500,000 to launch the new school. The directors of the Dallas Chamber of Commerce and Citizen's Council endorsed the project and pledged a fund of \$100,000 annually for not less than ten years toward the operation of the school and medical center. The Southwestern Medical Center plans eventually to have at least ten million dollars in buildings and the goal for its endowment has been set for fifteen million dollars.

VERMONT

Dr Goodman Named Professor of Pharmacology at Vermont—Dr Louis S Goodman, assistant professor of pharmacology, Yale University School of Medicine, New Haven, Conn., has been appointed professor of pharmacology and physiology and chairman of the department at the University of Vermont College of Medicine, Burlington. Dr Goodman graduated at the University of Oregon Medical School, Portland in 1932 and has been a member of the staff at Yale since 1935.

GENERAL

Board Examinations—Oral examinations including the subspecialties will be given by the American Board of Internal Medicine in New Orleans on August 10 and 11. The schedule is full for this examination. The oral examination including subspecialties will be held in San Francisco on September 16-18. Applications must be filed on or before August 15.

Diploma Lost—Dr Arthur A Marmor, Denver reports that his diploma issued to him in June 1942 by the University of Colorado School of Medicine has been lost. According to Dr Marmor the diploma was inside a suitcase which was stored in a room at the U S Marine Hospital, Norfolk, Va. The suitcase was stolen sometime during the year ended July 1943.

Otorhinologic Society—On May 27 the American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery was incorporated. The society was organized on Oct 17, 1942 to create a body of qualified physicians who are specialists in otorhinolaryngology and who have training and experience in plastic and reconstructive surgery. Officers of the group are Drs Romeo A Luongo, Philadelphia, president, Morris S Bender, New York, vice president, Jacob Daley, New York, secretary, and Nathan Settel, New York, treasurer.

Brochure on Roentgenology of the Heart—The Medical Department of the Equitable Life Assurance Society of the United States recently prepared an educational brochure on Roentgenology of the Heart. This is being distributed on request without charge to members of the medical profession by the Picker X-Ray Corporation, 300 Fourth Avenue, New York. The booklet serves as a complete atlas for the subject, carrying illustrative charts and text. The object of this brochure is to review some of the methods for determining the heart size and to indicate the sphere of usefulness of roentgen examination in various types of heart disease. Certain phases which are not discussed in detail, such as fluoroscopic and kymographic study of the cardiac pulsations, and contrast visualization of the heart chambers, are referred to in an appended reading list.

New Industrial Hygiene Officers—The National Conference of Governmental Industrial Hygienists at its meeting in Rochester, N Y, May 24-27, elected Dr Paul A Brehm, Madison, Wis., chairman, Manfred Bowditch, Boston, vice chairman, and J J Bloomfield, Washington, D C, secretary-treasurer. Officers of the American Industrial Hygiene Association chosen for the coming year include Helmuth H Schrenk, Ph D, Pittsburgh, president, Mr Bloomfield, president-elect, Edgar C Barnes, Pittsburgh, secretary, and John B Littlefield, Pittsburgh, treasurer. The American Association of Industrial Physicians and Surgeons chose the following officers: Drs Harvey Bartle, Philadelphia, president, Frederick W Slobe, Chicago, president-elect, Melvin N Newquist, New York, and Loyal A Shoudy, Bethlehem, Pa, vice presidents, and Edward C Holmblad, Chicago, treasurer and managing director. The officers of the three groups were selected at the first joint meeting on May 24.

Special Society Elections—At an election of officers of the American Board of Neurological Surgery, May 6, Dr Howard C Naffziger, San Francisco, was chosen chairman, Dr Max M Peet, Ann Arbor, Mich, vice chairman and Dr Paul C Bucy, Chicago, secretary-treasurer. Dr Alexander R Stevens, New York, was chosen president-elect of the American

Association of Genito-Urinary Surgeons in June and Dr Benjamin S Barringer, New York, was installed as president. Dr Charles C Higgins, Cleveland, is the secretary. At the annual meeting of the American Ophthalmological Society in June Dr S Judd Beach, Portland, Maine, was chosen president-elect and Dr John Green, St Louis, was installed as president. Dr Walter S Atkinson, Watertown, N Y, is the secretary. The next annual session will be held in Hot Springs, Va, May 29-31. Dr Alice Woolley, Poughkeepsie, N Y, was chosen president-elect of the American Medical Women's Association at its annual meeting in June and Dr Zoe A Johnston, Pittsburgh, is the secretary. Officers of the Society of American Bacteriologists are Rebecca C Lancefield, Ph D, New York, president, Ira L Baldwin, Ph D, Edgewood Arsenal, Md, vice president, and William C Frazier, Ph D, Madison, Wis, secretary-treasurer.

LATIN AMERICA

Blood Banks in Brazil—A blood bank was recently established in Rio de Janeiro. Another one is being organized in Fortaleza, Ceara.

Pan American Ophthalmologic Congress Postponed—Announcement is made of the postponement of the Pan American Congress of Ophthalmology, which was scheduled to be held in November in Montevideo.

Courses on War Surgery—Courses on war surgery were opened recently at the Instituto Benjamin Baptista, rua Frei Vaneca, 94, Rio de Janeiro, by the Syndicate of Surgeons of Rio de Janeiro, under the auspices of the Department of Health of the National Army.

Aztec Medal to Americans—The medal of the Aztec Eagle for services and work on military medicine was recently awarded in Washington, D C, to Drs Edgar Erskine Hume and Tomas Cajigas, Washington, D C, honorary members of the Academia Nacional de Medicina of Mexico. Dr Francisco Castilla Najera, the ambassador of Mexico in the United States, presented the medals to Dr Hume and Dr Cajigas.

Centennial Anniversary of Chair of Legal Medicine—Ceremonies were recently held in the Faculty of Medicine of the University of Havana in celebration of both the one hundredth anniversary of the establishment of the chair of legal medicine and toxicology of the faculty and the twenty fifth anniversary of Dr Ramundo de Castro y Bachiller as regular professor of the chair. A feature of the celebration was the unveiling of a plaque dedicated to Dr de Castro y Bachiller by the members of the chair and of the museum of legal medicine and by the pupils and friends of Dr de Castro.

FOREIGN

Wellcome Museum of Medical Science and Historical Medical Museum—In answer to many inquiries, an announcement has been issued concerning the Wellcome Museum of Medical Science and the Wellcome Historical Medical Museum. They are and will continue to be housed in the Wellcome Research Institution, 183-193 Euston Road, London, NW 1. Although the Wellcome Research Institution building suffered considerable damage by enemy action, its structure was unharmed and the museums can quickly be put into shape again as soon as labor and materials become available after the war.

Vitamins in Northern Russia—Scurvy has been eliminated in Kolyma, one of the northernmost districts of the Union of Socialist Soviet Republics, through the use of antiscorbutic preparations which are produced of local raw materials in a factory there. According to the *Information Bulletin* of the Embassy of the Soviet Union, vitamin C is extracted from the stunted cedar and syrups, and jams with a high vitamin content are manufactured from the northern wild rose and various berries which grow abundantly in the valleys of rivers flowing through the taiga. The factory furnishes surrounding districts with the products. Thousands of liters of juices and wines are also produced.

CORRECTION

Dr Reifenstein's Name Omitted from Cardiology List—In announcing the program of Wartime Graduate Medical Meetings arranged by Syracuse University College of Medicine in *THE JOURNAL* June 26 page 608, the name of Dr H C Reifenstein, professor of medicine was erroneously omitted from the list of teachers in connection with the course in cardiology.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 19, 1943

Consultant Criticism of the Government's Proposals for a State Medical Service

In the House of Lords the government scheme for a state medical service was severely criticized. Lord Derwent said that an ancient and honorable profession would be degraded from its high calling and thwarted in its best efforts to improve itself if it was turned into a band of salaried functionaries. Further the ordinary citizen would lose by being put into the hands of an indifferent and perhaps tired and harassed functionary on a local government body. Two leading consultants followed. Viscount Dawson of Penn (consulting physician to the London Hospital) said that the government had introduced a spirit of haste and hustle instead of proceeding gradually. It would be disastrous if doctors were to be regarded as agents to control monetary benefits in the interests of the social security fund. We should not pull up the existing system by the roots until we were sure we had something good to replace it. Freedom for initiative and individual responsibility were the life blood of the medical profession who could ill fit into a bureaucratic machine. The only chance of the acceptance of the local authority as the ultimate administrative agent was to have at the elbow of each area authority an advisory council consisting of representatives of the government hospitals and the voluntary hospitals with a considerable proportion of physicians. The medical profession would not consent to be pawns on the local government chessboard; they would not consent to the government of a highly skilled profession by laymen. Lord Moran (president of the Royal College of Physicians) said that it was essential that all the activities concerned with health should come under one department and not under six as at present. He had in mind a medical council which should consider policy with the minister of health, would meet regularly and publish uncensored reports. A second essential was that the conditions under which the rank and file of the profession worked must be made as perfect as possible. If doctors combined eight or nine together, and saw patients in a house built for the purpose and suitable for diagnosis, with a consultative service at their elbow they would breathe again the atmosphere of their student days and this would be a great gain to the community. It would be quite useless to try to drag them to work under local authorities unless assurances were given that there would be no interference with the working of their profession. The personal relation between doctor and patient would be imperiled if some of the arrangements suggested were carried out. A good consultative service was essential, and at the present time there were not enough consultants and those available were not distributed according to the needs of the community.

Replying for the government Lord Snell said that any proposal would be carefully examined and no hasty decision would be taken. It was not his experience that doctors were reluctant to become servants of a local authority. The government had made no final decisions about the suggestion that the medical profession might be turned into a state salaried service. A free choice of doctor was desirable wherever that was possible but he was not among those ultra-logical souls who would prefer to die under the care of a doctor whom he knew rather than be cured by a perfect stranger. The government was resolved that while there should be no irresponsible haste there would also be no unnecessary delay.

Eve's Rocking Method of Artificial Respiration

In 1932 Dr F C Eve of Hull, England, described a new method of artificial respiration which, unlike all previous methods works by the force of gravity. It has been adopted on our warships as the method of choice. Our naval surgeons found Schater's method—the one in vogue—seldom successful. Eve points out that Schater based it on experiments on the normal subject on whom it works well and his claim holds that when the pressure on the chest is relaxed the same volume of air as that expelled must pass in again. But in cases of drowning—the principal contingency for which artificial respiration is used—the inspiratory recoil may be lost. The lack of elasticity is due to loss of tone in the diaphragm which has become flaccid. In some countries Sylvester's method is preferred because the bony thorax has some resilience apart from muscle tone. Schater's method relies on tone, Eve's method is independent of tone.

In Eve's method the victim of drowning is laid face downward on a stretcher and is well wrapped with blankets above and below. His wrists and ankles are lashed to the handles. Then he is hoisted on a trestle or sling and rocking is begun. The first tilt should be head down and steep (50 degrees) and should produce full expiration by the weight of the abdominal contents pressing on the diaphragm. It will also force aortic blood through the coronaries and empty the stomach and lungs of water. Then full inspiration is produced by tilting the foot end down to 50 degrees. The rocking is done a dozen times a minute through an angle of 45 degrees each way. The method is safe and can be done by anybody. During any delay in getting the stretcher it is recommended that Schater's method be used until the rocking can be started.

Great Deterioration in German Vital Statistics

The *Times* states that recently published statistics of mortality in German cities show a steadily deteriorating health of the urban dweller especially in the later months of 1942. The following German official figures refer only to the large cities of Greater Germany with a total population of 24,500,000. Compared with the corresponding months of 1941 infant mortality rose by 17 per cent during the last quarter of 1942 to 69 per thousand live births. For the whole year the rate was 66 against 59 for 1941. This contrasts with a record low rate of England and Wales of 49 during 1942. Among children aged 1 to 5 years—another sensitive index of health—the number of deaths rose sharply in 1942 to 7,236. In previous years the numbers had been 6,404 in 1941, 6,062 in 1940 and 5,670 in 1939. Thus the number of deaths has steadily increased during the war. School children aged 5 to 14 also show a similar increase, but adolescents seem to be more affected than any other group. For ages 15 to 20 the mortality showed a rise of 38 per cent compared to 1939. The numbers were 4,159 in 1942, 3,192 in 1941, 3,126 in 1940 and 3,023 in 1939. Contributing to these significant upward trends in children's mortality were sharp increases in the number of deaths from diphtheria and scarlet fever. The deaths from tuberculosis showed a sharp rise. From all forms there were in the German cities nearly 5,500 more deaths in 1942 than in 1939. The death rate per thousand at all ages was 24 per cent higher in 1942 than in 1939 and the rise was more rapid in 1942 than in 1941.

A Lower Birth Rate

The latest figures show a dramatic fall in the birth rate. For the large German cities the number of births in 1942 declined by 80,000 from the figure of 4,190,000 in 1940 and the rate per thousand of population fell to 15.9 compared with 17.3 in 1940. In the last quarter of 1942 the rate was as low as 12.7. The experience of the German cities is borne out by the rate for all areas of Greater Germany which declined from 20.4 in 1939, 19.0 to 15.2 in 1942, a loss of 25 per cent over 550,000 live births.

AUSTRALIA

(From Our Regular Correspondent)

June 15, 1943

Parliamentary Joint Committee on Social Security

The Parliamentary Joint Committee on Social Security was appointed "to enquire into and from time to time report upon ways and means of improving social and living conditions of the people of Australia and of rectifying anomalies in existing legislation." During the past few months the committee has been taking evidence from members of the medical profession in the different states on the question of nationalization of medical and ancillary services. The questionnaire submitted to witnesses is a basis for the presentation of evidence took this form:

1 What is your conception of the medical, hospital and health services required by the people of Australia, and how and under what conditions do you consider such services should be provided?

2 Are you familiar with, and which, if any, of the following do you consider suitable for application in Australia: (a) the proposal of the National Health and Medical Research Council for a salaried medical service, (b) the proposal of the federal council of the British Medical Association in Australia for a general medical service in Australia, (c) medical, hospital and related benefits as in operation in New Zealand, (d) national health insurance?

3 Do you consider any of the following services could and/or should be introduced during the war? (a) the whole or any portion of any such scheme is you favor, (b) any other medical, health, hospital or welfare service or benefits, or alternatively (c) that any financial provision should be made for services or capital expenditure after the war, (d) if your answer to the foregoing is in the affirmative, can you give details?

4 Have you any proposals regarding the following which you would like to submit and which might be included in a comprehensive health scheme or as an instalment of it: (a) child welfare, (b) maternal welfare, (c) tuberculosis, (d) hospital benefit scheme, (e) hospital accommodation and organization, (f) group practice, (g) national fitness, (h) any other health service or benefits, and which of these, if any, do you consider should be introduced during the war? after the war?

5 Have you any suggestions as to the means that should be adopted to secure the introduction and efficient administration of a comprehensive health scheme in Australia, or any part of such scheme, and the cooperation of all interested parties?

The committee has more than once insisted to witnesses that it has no preconceived plan and that it intends to sift available evidence in a search for the most suitable scheme of medical services for Australia.

Problems of War Neurosis

The effects of war neuroses and problems arising in the rehabilitation of discharged soldiers are discussed in a report prepared by the Society of Returned Medical Officers of Queensland, of which Dr. Jarvis Nye is president. The report states that the biggest readjustment the discharged soldier has to make is that of resuming personal responsibility for his own livelihood. Men should be discharged from the army as soon as it becomes evident that they will not again become efficient soldiers. The disabled soldier should be trained to an occupation at the earliest possible moment, and the maximum of training time should be spent on useful and gainful work. With regard to pensions, the report states "We wish it to be clearly understood that we consider that the commonwealth is under definite obligation to give adequate pensions, but we definitely

deplore the psychological handicap which a pension bestows on any soldier, who, by grit and determination, could have avoided it." In many cases the mere granting of a pension is shirking official responsibility. Far more attention should be given to rehabilitation. The Repatriation Commission, with its years of experience, is the logical body to deal with the problem of the serviceman. The rebuilding of social background is considered of major importance for the success of any plan for repatriation and rehabilitation.

Services Medical Merger Planned

There is an acute shortage of hospital staffs for the civilian population in Australia. Hospitals in all the states are forced to keep large numbers of beds unoccupied because of the inadequacy of their nursing, domestic and laundry staffs. Unless the situation is relieved, many metropolitan and country private hospitals will soon be forced to close down.

It has been suggested that considerable manpower could be made available for the civilian population by merging the medical and nursing personnel of the services into one combined service. Under the present system there are in many towns separate hospitals for the army and the air force, and this entails much unnecessary duplication of the work of the services' medical and nursing personnel.

The director general of manpower (Mr. W. C. Wurth) has discussed a scheme for a unified medical and nursing service with the navy, army and air force authorities, who have agreed to investigate its possibilities and to inform him of their views as soon as possible. One direct effect of the scheme will be a reduction in any further intake of nurses for the fighting services.

Invitations to American Medical Officers

Invitations have been extended to medical officers of the armed services of the United States to attend all scientific meetings of the Australian branches of the British Medical Association. In Queensland they have been offered various other facilities including the use of the branch library and have been invited to attend postgraduate courses arranged by the Queensland Postgraduate Committee. During a weekend course held recently in Brisbane several American medical officers took part as lecturers in the program. Arrangements have also been made for the regular supply of copies of the *Medical Journal of Australia* to each medical unit of the United States Army in Australia.

Marriages

ERLOND H. HEDRICK to Miss Myrtle Adele Wade, both of Beckley, W. Va., in Baltimore, June 23.

J. HARRY DUNCAN, Hazlehurst, Ga., to Miss Mary Jane Martin of Union City, Tenn., in June.

JOHN S. STEWART, Warren, Pa., to Miss Annie M. Ramwater of Florence, S. C., June 19.

THOMAS A. HEDRICK, Baltimore, to Miss Jane Miller House at Mercersburg, Pa., June 5.

JAMES BALLEW, Americus, Ga., to Miss Martha Maxine Elliott of Atlanta, June 27.

ALBERT B. WOLFE, Orangeburg, S. C., to Miss Anna Lou Black in Bowman, June 15.

THOMAS H. DAVIDSON, Casper, Wyo., to Miss Elaine Carroll of Ottawa, Ill., June 21.

JOHN H. ABBOTT to Miss Eleanor J. Gilmore, both of Allen town, Pa., recently.

JOSEPH W. KRYSOSLK to Miss Josephine Lobacz, both of Chicago, July 11.

JACK MASUR to Miss Barbara Forsch, both of New York, June 28.

Deaths

Leslie Tillotson Webster, member of the Rockefeller Institute for Medical Research New York, died at his home in Scarsdale N. Y., July 12, aged 48.

Dr Webster was born in New York in 1894. He completed his studies at Amherst College in 1915 and graduated at Johns Hopkins University School of Medicine, Baltimore, in 1919. After a year as resident pathologist at the Johns Hopkins Hospital and assistant in the department of pathology at the medical school Dr Webster joined the Rockefeller Institute for Medical Research, first as assistant in the department of pathology and bacteriology and later as associate and associate member. He had been a member since July 1, 1934.

Through his work on the mechanism of the spread of disease in animal populations Dr Webster was largely responsible for the establishment of the special branch of epidemiology known as experimental epidemiology. In investigations extending over a period of fifteen years he developed by selective breeding strains of mice that manifested a ten thousand fold variation in their susceptibility to a given infectious agent. By setting up mouse populations in which the natural resistance of all the individuals was known he demonstrated that the course of an epidemic in the population was determined by the relative proportions of susceptible and resistant animals that had been introduced into the group. This work emphasized the importance of the host factor in the spread of disease, which was the theme of his De Lamar lecture in 1935.

Dr Webster had also engaged extensively in investigations of rabies and of epidemic virus diseases in man devising tests for the early diagnosis of rabies and for determining quantitatively the potency of antirabic vaccines. He developed a concentrated vaccine, containing the virus killed by ultraviolet light which gives effective protection following the injection of a single dose into animals. After the publication of his book on Rabies the Dog Writers Association voted him for 1943 its annual award for 'the person who over a long period of time has performed meritorious work in the field of dogs'. Because of his interest in encephalitis at the outbreak of the war Dr Webster was invited to participate in the work for the Commission for Neurotropic Virus Diseases of the U. S. Army. In this field he and his associates have made significant contributions to the specific etiology and diagnosis of the various types of human encephalitis by improving the methods of immunologic differentiation of the infectious agents.

At the time of his death he was chairman of the National Research Council's Committee on the Maintenance of Pure Genetic Strains for use in experimental biology.

Dr Webster held membership in numerous scientific groups, including the Society for Experimental Biology and Medicine, American Society for Experimental Pathology, American Epidemiological Society, American Association of Pathologists and Bacteriologists, Society of American Bacteriologists, the Harvey Society, the American Association for the Advancement of Science and the American Public Health Association. In 1935 he received the price of 1000 francs from the Faculty of Medicine of the University of Berne, Switzerland for his research on encephalitis.

His published works covered experimental epidemiology, the spread of epidemics, poliomyelitis, encephalitis, rabies and resistance to infectious diseases.

George Thomas Palmer of Springfield Ill. Northwestern University Medical School Chicago 1898 at one time assistant director and acting chief of tuberculosis state department of public health formerly health officer of Springfield specialist certified by the American Board of Internal Medicine past president of the Sangamon County Public Health Nursing and Public Health Association member and for ten years president of the Illinois Tuberculosis Association member of the American College of Chest Physicians the Institute of Medicine of Chicago American Trudeau Society and the Union League Club of Chicago served as a director of the National Tuberculosis Association past president of Illinois State Conference of Charities and Correction president and medical director of the Palmer Sanatorium a member of the staffs of the Memorial and St. John's hospitals designated examiner for tuberculosis of the U. S. Veterans Bureau at one time on the editorial staff of the *Journal of the Outdoor Life* aged 68 died June 14 of cerebral hemorrhage.

Benjamin Rush McClellan of Xenia Ohio Miami Medical College Cincinnati 1884 member of the House of Delegates of the American Medical Association in 1911 1913-1914 1916-

1917, from 1919 to 1923 and from 1925 to 1941 past president of the Greene County Medical Society, vice president of the Ohio State Medical Association in 1903, president in 1906-1907 and for many years a member of various committees fellow of the American College of Surgeons member of the state medical board from 1915 to 1922 past president of the Greene County Historical Society and the Rotary Club a captain in the medical corps of the U. S. Army during World War I serving as chief of the surgical staff at Debarkation Hospital number 2 New York City in 1898 established the McClellan Hospital, where he had been surgeon and chief of staff dean of the medical and surgical staff of the Ohio Soldiers and Sailors Orphan Home aged 83 died, June 5, in Williamsburg, Va. of coronary arteriosclerotic heart disease.

Arthur Eggleston Davis of Scranton Pa. Medico-Chirurgical College of Philadelphia 1911, fellow of the American College of Physicians formerly vice president of the Medical Society of the State of Pennsylvania past president of the Lackawanna County Medical Society at one time director of public health of Scranton served in the medical corps of the U. S. Army during World War I on the staffs of the Scranton State Hospital and the West Side Hospital consultant in cardiology at Farview (Pa.) State Hospital and the Mercy Hospital aged 56 died May 2, of coronary heart disease.

George Herbert Allen of Newark N. J. New York Homeopathic Medical College and Flower Hospital, New York, 1910 on the staff of the East Orange General Hospital where he died May 6 of chronic myocarditis aged 57.

John H. Andrews Buffalo Medical College of Ohio Cincinnati 1883 aged 86 died April 12 of arteriosclerosis and chronic myocarditis.

Seth Fenelon Arnold, Boston Tufts College Medical School Boston 1908 for five terms a member of the city council formerly a member of the state house of representatives served in the U. S. Navy during World War I aged 64 died May 9 of a self-inflicted bullet wound.

Herbert Atkins of Pratt Kan. University Medical College of Kansas City Mo. 1910 past president of the Pratt County Medical Society formerly county health officer counselor of the Eleventh District of the Kansas Medical Society served during World War I aged 62 died April 10 of coronary thrombosis.

Samuel Lee Battles Washington D. C. George Washington University School of Medicine Washington 1906 aged 71 died May 18 of cerebral hemorrhage.

John Irving Beattie of San Jose Calif. Cooper Medical College San Francisco 1905 served during World War I president of the Santa Clara County Medical Society aged 59 on the staff of the San Jose Hospital where he died May 7, of cerebral hemorrhage.

Ralph Linwood Benjamin of St. Anne Ill. Rush Medical College Chicago 1902 vice president of the American Association for the Study of Goiter aged 64 chairman of the surgical section of St. Mary's Hospital Kankakee where he died May 10 of injuries received when his automobile was struck by a train.

Charles C. Berlin of Wapakoneta Ohio Medical College of Ohio Cincinnati 1898 for many years secretary of the Auglaize County Medical Society director of the Peoples National Bank president of the library board a former member of the board of education aged 71 died May 3 of acute coronary disease.

William Anderson Black Asheville N. C. Memphis (Tenn.) Hospital Medical College 1895 aged 88 died May 18 of pneumonia.

Ray Wellborn Blackmar of Jacksonville Fla. Tulane University of Louisiana School of Medicine New Orleans 1919 member of the American Urological Association aged 55 died April 21.

Robert Eugene Blake Bakersfield Calif. University of California Medical School San Francisco 1933 aged 49 died May 4.

Eric Thorston William Boquist Minneapolis University of Minnesota Medical School Minneapolis 1916 served in the medical corps of the U. S. Navy aged 51 on the staff of the Swedish Hospital chief medical officer of the Minnesota Soldiers Home Hospital where he died April 20 of coronary occlusion.

Arthur E. Broga Oneida N. Y. Flectic Medical College of the City of New York 1882, member of the Medical

Society of the State of New York, served on the staff of the Onondaga City Hospital, aged 90, died, April 17, of cerebral hemorrhage

Charles H. Brown, Fan Play, Mo., St. Louis University School of Medicine, 1903, member of the Missouri State Medical Association, past president of the Dallas-Hickory-Polk Counties Medical Society, for many years president of the board of education, aged 68, died, April 28, in the Springfield Baptist Hospital, Springfield, of cerebral thrombosis and arteriosclerosis

Jackson Tucker Brown, Ragland, Ala., Birmingham Medical College, 1897, member of the Medical Association of the State of Alabama, formerly local surgeon for the Southern Railway Company, aged 77, died, May 8, in a Birmingham hospital

Meritt Chesteen Brumley, Jeffersontown, Ky., University of Louisville Medical Department, 1893, aged 80, died, May 2, of nephritis

William Wiley Bryan, Hamilton, Miss., Memphis (Tenn.) Hospital Medical College, 1909, aged 62, died, April 24

Gulick O. Bundy, Barton, N. D., St. Louis College of Physicians and Surgeons, 1904, aged 86, on the staff of the Good Samaritan Hospital, Rugby, where he died, April 29, of carcinoma of the bladder

Benjamin Wade Burleigh, Ragan, Neb., Northwestern University Medical School, Chicago, 1905, aged 79, died, April 9, in the Holdrege (Neb.) Hospital of myocarditis

Charles Wesley Burrill, Kansas City, Mo., Chicago Medical College, 1872, an Affiliate Fellow of the American Medical Association, Civil War veteran, aged 97, died, April 28

Walter F. Carver, Albion, Ind., Fort Wayne College of Medicine, 1892, secretary of the Noble County Medical Society, in 1916 third vice president of the Indiana State Medical Association, president of the board of the town council for twenty-one years and county coroner for several terms, aged 76, died, May 11, in the McCray Memorial Hospital, Kendallville, of empyema of the gallbladder

John Augustine Casey, Bridgeport, Conn., Cornell University Medical College, New York, 1918, resident physician at the Hill Side Home for fourteen years, aged 52, on the staffs of the Bridgeport Hospital and St. Vincent's Hospital, where he died, May 8, of Laennec's cirrhosis of the liver

Lowell Newton Clyne, McLeansboro, Ill., Chicago Medical School, 1939, member of the Illinois State Medical Society, aged 32, died, May 9, at St. Genevieve, Mo., in an airplane accident

Frank Michael Condron, Philadelphia, Jefferson Medical College of Philadelphia, 1919, aged 47, died, May 8, of cerebral hemorrhage and hypertension

Warren Cox Daly, Rochester, N. Y., New York Homeopathic Medical College and Hospital, New York, 1902, member of the Medical Society of the State of New York, aged 68, on the honorary staff of the Genesee Hospital, where he died, May 2, of arteriosclerotic and hypertensive heart disease

Herman P. Daniels, Wichita, Kan., Northwestern University Medical School, Chicago, 1892, served on the staff of the Wichita Hospital, aged 74, died, May 6, of myocarditis

Sylvester James Deehan, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1902, aged 66, died, May 12, in the Memorial Hospital of heart disease

Horace William Delesdernier, Danielson, Conn., University of Vermont College of Medicine, Burlington, 1885, aged 92, died, May 8, of arteriosclerosis and prostatitis

Charles Wladimir Dubin-Alexandroff, Philadelphia, Temple University School of Medicine, Philadelphia, 1918, served in the medical corps of the U. S. Army during World War I, aged 63, died, May 2

Clarence Swan Duner, Chicago, Rush Medical College, Chicago, 1917, a member of Selective Service Board number 14, served in the U. S. Navy during World War I, on the staff of the South Shore Hospital, aged 50, died, May 28, of congestive heart disease

Angus L. Emerson, Hernando, Miss., Memphis (Tenn.) Hospital Medical College, 1893, past president of the De Soto County Medical Society, past vice president of the Mississippi State Medical Association, for many years health officer of De Soto County, member of the board of trustees of the Baptist Memorial Hospital, Memphis, Tenn., a surgeon for the Illinois Central Railroad, aged 78, died, May 9, of cerebral hemorrhage

Louis Ferber, Brooklyn, University and Bellevue Hospital Medical College, New York, 1927, assistant in medicine at the Brooklyn, Jewish and Kings County hospitals, aged 41, died, May 9, of coronary sclerosis

Oscar George Finkle, Coral Gables, Fla., Columbia University College of Physicians and Surgeons, New York, 1918, aged 55, died, May 2, of gastrointestinal hemorrhage and duodenal ulcer

Charles Marc Gilmore, Beacon, N. Y., Columbia University College of Physicians and Surgeons, New York, 1919, specialist certified by the American Board of Psychiatry and Neurology, Inc., member of the American Psychiatric Association and the Association for Research in Nervous and Mental Disease, aged 47, medical director of the Craig House, where he died, May 15, of carcinoma of the colon

Henry L. Henderson, Astoria, Ore., Eclectic Medical Institute, Cincinnati, 1882, American Medical College, St. Louis, 1888, formerly mayor of Astoria, on the staff of St. Mary's Hospital, aged 85, died, April 27, of coronary thrombosis

Samuel T. Henderson, Fort Wayne, Ind., Physio-Medical College of Indiana, Indianapolis, 1896, aged 69, drowned in St. Mary's River, May 3

George Earl Hermence, Marshalltown, Iowa, State University of Iowa College of Medicine, Iowa City, 1912, on the staffs of the Evangelical Deaconess Home and Hospital and the Thomas Mercy Hospital, aged 54, died, April 25, in Conrad of cerebral hemorrhage

Kendall James Hocker, Millville, Del., Baltimore University School of Medicine, 1898, member and past president of the Medical Society of Delaware, past president of the Sussex County Medical Society, also a druggist, formerly postmaster, served as acting assistant surgeon in the U. S. Public Health Service, consultant physician to the Milford (Del.) Memorial Hospital, aged 66, died, April 24, of heart disease

James B. Hodge, Detroit, Detroit Homeopathic College, 1906, member of the Michigan State Medical Society, served on the staff of the Grace Hospital, aged 73, died recently of a hip fracture received in a fall

Edgar Lee Hughes, Commodore, Pa., Jefferson Medical College of Philadelphia, 1909, for many years physician for the New York Central Railroad coal mining division, aged 58, died, April 8, of coronary occlusion

Charles Worley Jones, Olympia, Wash., St. Louis College of Physicians and Surgeons, 1903, fellow of the American College of Surgeons, served during World War I, on the staff of St. Peter's Hospital, at one time physician in charge of the Elma (Wash.) General Hospital, aged 63, died, April 25, in Tumwater of coronary occlusion

Rudolph G. Kellner, Seattle, College of Physicians and Surgeons, Baltimore, 1904, aged 71, died, April 19

August Kuhlmann, Melrose, Minn., University of Minnesota College of Medicine and Surgery, Minneapolis, 1905, served on the staffs of the Melrose and St. Cloud (Minn.) hospitals, for twenty-five years health officer of Melrose, aged 67, died, April 4, of bronchial asthma

Frank B. Lansdowne, Kenosha, Wis., Missouri Medical College, St. Louis, 1897, for several years served as coroner of Kenosha County, aged 67, on the staffs of the Kenosha Hospital and St. Catherine's Hospital, where he died, April 19, of carcinoma of the lung with metastases to the brain

John Joseph Mahaffey, Philadelphia, Temple University School of Medicine, Philadelphia, 1938, school inspector, aged 32, on the staffs of the Memorial Hospital, Roxborough and the Temple University Hospital, where he died, May 1, of pneumonia

Edward J. Martens, St. Louis, Marion-Sims College of Medicine, St. Louis, 1897, aged 73, died, May 6, of heart disease

Charles William Martin, Hot Springs National Park, Ark., Hospital College of Medicine, Louisville, Ky., 1905, aged 69, died, May 5, of myocarditis and cardiovascular syndrome

James O. Matthews, Clinton, N. C., University College of Medicine, Richmond, Va., 1897, member of the Medical Society of the State of North Carolina, at one time state senator, aged 75, died, May 4

Aristides John Mavromatis, Newark, Del., Columbia University College of Physicians and Surgeons, New York, 1929, aged 53, member of the staff of the Delaware Hospital, Wilmington, where he died, May 3, of coronary thrombosis

Marvin Wilson McLarty, Atlanta, Ga., Atlanta College of Physicians and Surgeons, 1909, member of the Medical Association of Georgia, aged 64 died April 27, in the Crawford W. Long Memorial Hospital of heart disease.

Davis Dennis Mehigan ♂ Milwaukee Marquette University School of Medicine, Milwaukee, 1913 a surgeon for the city police department, served during World War I on the staffs of the Misericordia and St. Joseph's hospitals, aged 52, died April 26, in Rochester, Minn., of carcinoma.

Luther Michael ♂ San Leandro Calif., Medical College of Ohio Cincinnati 1884 formerly city health officer, for many years physician for the Western Pacific Railway served on the staff of the Peralta Hospital, Oakland, aged 79, died April 25, of uremia.

Ananias D. Miller, Mount Pleasant Pa., Eclectic Medical Institute Cincinnati 1889 formerly member of the state legislature and director of the school board on the staff of the Henry Clay Frick Memorial Hospital, aged 82, died April 23, of cerebral hemorrhage.

Georgia S. Cruickshank Motz, Buffalo University of Buffalo School of Medicine 1898 aged 69 died April 29, of coronary thrombosis and pulmonary embolism.

Charles Clinton Moyer, Pittsburgh Jefferson Medical College of Philadelphia, 1905, aged 61 died April 28.

Richard J. Muenzner, Milwaukee Wisconsin College of Physicians and Surgeons, Milwaukee, 1900 member of the State Medical Society of Wisconsin aged 67 on the staff of St. Joseph's Hospital, where he died, April 20 of abscess of the liver.

William Simons Overton ♂ Binghamton N. Y. Long Island College Hospital Brooklyn 1887 also a pharmacist at one time owner of the Moore-Overton Hospital formerly on the staff of the Binghamton City Hospital aged 78 died May 17, at Sag Harbor, L. I. of coronary thrombosis.

Martin Ringwalt ♂ Rohrerstown Pa. Jefferson Medical College of Philadelphia 1880 aged 85 died April 1.

David G. Roy, Chicago Hering Medical College Chicago, 1904 member of the Illinois State Medical Society served on the staff of the Englewood Hospital aged 74 died March 18, of heart disease.

Frank Cassius Sibley, Carmi Ill. Beaumont Hospital Medical College St. Louis 1900 St. Louis University School of Medicine 1903 member of the House of Delegates of the American Medical Association in 1917 member of the Illinois State Medical Society served during World War I aged 68, died May 7 in Little Rock Ark. of pneumonia.

John Edward Cronham Snyder ♂ Hoboken N. J. New York University Medical College New York, 1896, formerly a druggist aged 67, died May 14 of heart disease.

William Sonneborn, Philadelphia Hahnemann Medical College and Hospital of Philadelphia, 1890, aged 79 died May 1 in the Philadelphia General Hospital of arteriosclerosis.

Enos S. Spindel, Springfield, Ill., Eclectic Medical Institute, Cincinnati, 1899, formerly a member of the state board of health aged 73, died May 25, in St. John's Hospital of injuries received in an automobile accident.

Maurice Stayer, Johnstown, Pa. Medico-Chirurgical College of Philadelphia, 1905, member of the Medical Society of the State of Pennsylvania served on the staff of the Conemaugh Valley Memorial Hospital, aged 66, died May 4, of coronary thrombosis.

Franklin Pierce Stevenson, Houston Texas, Vanderbilt University School of Medicine Nashville Tenn. 1892 aged 73 died April 23 of cerebral hemorrhage and bronchopneumonia.

Thomas Newcomb Stone ♂ Haverhill Mass. Harvard Medical School Boston 1903 president of the Pentucket Medical Association 1941-1942 a captain in the medical corps of the U. S. Army during World War I on the staffs of the Hale and Benson hospitals chairman of the Municipal Planning Board served many years as school physician aged 63 died April 21 of carcinoma of the rectum.

Joseph E. Stults, Fort Wayne Ind. Fort Wayne College of Medicine 1886, twice elected Allen county coroner aged 86 died May 6 in the Lutheran Hospital of chronic myocarditis and chronic nephritis.

Robert Lee Summers, Des Moines Iowa Southwestern University Medical College Dallas Texas 1910 aged 61 died April 9 in the Broadlawns Polk County Public Hospital of hypertensive cardiovascular disease.

Robert Clive Sutherland, Penns Grove, N. J., Jefferson Medical College of Philadelphia, 1916, member of the Medical Society of New Jersey, formerly on the staffs of the Salem County Memorial Hospital, Salem, aged 60, died April 23, of pulmonary edema and cerebral hemorrhage.

Ezekiel Chester Swarthout, West Salem, Wis., Bellevue Hospital Medical College, New York, 1879, aged 87, died May 10 of cerebral hemorrhage.

Isadore Bennett Swickley ♂ Braddock Pa. St. Louis University School of Medicine 1937, served on the staffs of the Montefiore Hospital Pittsburgh, and the Braddock Hospital aged 33, died April 10, of hypertension and heart disease.

Horace Rowe Taylor ♂ Whitbourne Newfoundland, University of Buffalo School of Medicine, 1912, member of the Medical Society of the State of New York medical officer in charge of the Markland Hospital aged 55 died April 23, of coronary thrombosis.

Frank Martin Tukey ♂ Bridgeport Conn. Harvard Medical School Boston 1894 past president of the Fairfield County Medical Society, served on the staff of the Bridgeport Hospital aged 72 died April 24, of cerebral thrombosis and arteriosclerosis.

William Alonzo Vincent, Belle Plaine, Iowa, Rush Medical College Chicago, 1881 Civil War veteran at one time on the staff of the Rochester (Minn.) State Hospital formerly mayor of Belle Plaine aged 96, died April 20 of hypostatic pneumonia.

Charles M. Wanzer, Cincinnati Medical College of Ohio, Cincinnati 1883, aged 85 died April 12 of heart disease.

Harry Whitney Wheaton, Baltimore University of Maryland School of Medicine and College of Physicians and Surgeons Baltimore, 1917, for many years a member of the city health department served in France during World War I member of the staffs of the University and South Baltimore General hospitals aged 51 died April 24 in the Bon Secours Hospital of acute circulatory collapse following spinal anesthesia.

Lyle Gordon Young, Van Buren Ark., Kansas City (Mo.) College of Medicine and Surgery 1925 member of the Arkansas Medical Society drafter examiner for the Crawford County Selective Service System, aged 43, died April 26 of coronary occlusion.

John S. Ziegler, Washington D. C. University of Maryland School of Medicine Baltimore 1878 member of the Medical Society of the State of Pennsylvania, aged 84, died March 1.

DIED WHILE IN MILITARY SERVICE

Kirby Knapp Bryant ♂ Surgeon U. S. Public Health Service Charleston S. C. University of Virginia Department of Medicine Charlottesville 1925 medical officer in charge quarantine and relief stations district coast guard medical officer aged 48 died April 15 in the U. S. Naval Hospital of heart block.

David Hickman Drummond ♂ Major M. C. U. S. Army Camp Berkeley, Texas University of Michigan Medical School Ann Arbor 1935 appointed a first lieutenant in the medical corps of the U. S. Army in February 1940 and later promoted as a major aged 32 died Oct. 25 1942 of pneumonia.

Julian Hawthorne Givens, Seattle Rush Medical College Chicago 1931 member of the Washington State Medical Association captain medical corps Army of the United States aged 39 died April 22 of bilateral pulmonary embolism at Camp Swift Texas.

Hugh Joseph McLaughlin, Caldwell Idaho Craigton University School of Medicine Omaha 1924 diplomate of the National Board of Medical Examiners served on the staff of the Mercy Hospital Nampa county physician 1940-1941 captain medical corps Army of the United States aged 43 died April 11 of bronchopneumonia in a Pullman car en route from Caldwell to Camp Adair Ore.

Irving Roy Rathgeb Jr., Portland N. Y. Jones Island College Hospital Brooklyn 1935 aged 35 U. S. Army (National Guard) aged 29 died February 25 in an airplane accident near Camp Adair Ore.

Correspondence

ALLOXAN

To the Editor—In the first editorial of the July 3 issue of THE JOURNAL attention is drawn to the report of Dunn, Sheehan and McLetchie of Glasgow on the specific necrosing action of alloxan, the uride of mesoxalic acid, on the islet cells of the pancreas and convoluted tubules of the kidney in rabbits. We have confirmed these observations in rabbits and have observed animals which survive injections of alloxan and exhibit only transitory hyperglycemia. Dunn and his co-workers observed no survivors beyond five days.

Furthermore we have observed the effects of alloxan injected intravenously in dogs. Doses of 200 to 500 mg. per kilogram are fatal in one hour to five days. Where death does not occur in a few hours there is first a hyperglycemia followed by hypoglycemia, and by the end of forty-eight hours a pronounced sustained hyperglycemia obtains. The blood nonprotein nitrogen is also definitely elevated. Doses of 50 to 150 mg. per kilogram are not uniformly fatal to dogs and, if the animals survive, a sustained hyperglycemia without uremia may obtain. We have observed 5 dogs with hyperglycemia sustained for two to three weeks.

There is histologic evidence of islet cell injury, but this is not as pronounced as in rabbits. The necrosing action on the epithelium of the convoluted tubules, however, is just as extensive in the dog with high nonprotein nitrogen as it is in the rabbit. In dogs in which the nonprotein nitrogen remained normal, no degenerative changes were found in the kidneys.

Of special interest is the fact that alloxan which was injected into 3 human patients with carcinomatosis, 1 of whom presented an insulin producing islet cell carcinoma of pancreatic origin, was entirely without effect either on the sugar or on the nonprotein nitrogen levels in the blood. No subjective disturbances developed. The doses injected intravenously were 220 (islet cell carcinoma), 400 and 950 mg. per kilogram of body weight. These observations in man are of significance in connection with the question raised by Dunn and his co-workers of the possible relationship of the experimental chemical diabetes of alloxan to diabetes in man.

A. BRUNSCHWIG, M.D.	M. G. GOLDNER, M.D.
J. G. ALLEN, M.D.	G. GEORGE GOMORI, M.D.
Department of Surgery,	Department of Medicine,
The University of Chicago	

IMMUNIZATION AGAINST TETANUS

To the Editor—I should like to sound a note of warning to physicians supervising the care of children in summer camps. Many medical blanks filled out by parents prior to the camp season contain a question as to whether the child has been immunized against tetanus. If it hasn't, attempts often are made to do so before the child leaves for camp. If so, it should be remembered that, even if the full number of recommended injections are given, the interval between them is not likely to be as satisfactory as if there were more time. What is more important, however, is the fact that the antitoxin titer probably will not have reached its maximum until after the summer is over, since it has been shown that it requires about four to five months to secure the full antigenic effect of the toxoid. If the child is injured during the summer and there is a possibility of tetanus contamination, it is essential that the physician in charge find out whether the patient had previously been given adequate immunization. If it had, then a stimulat-

ing dose of tetanus toxoid should be given at the time of the injury. If, however, the child had been only partially immunized or given the injections just before going to camp, a protective dose of tetanus antitoxin should be administered except in the uncommon instances in which the patient is sensitive to horse serum. In the latter instance spaced injections combined with epinephrine may be used or bovine tetanus antitoxin given.

While active immunization against tetanus is of definite value, further data, as no doubt will be accumulated at the end of the present war, will make it possible for us to decide whether we can rely on it solely for patients with wounds possibly contaminated by tetanus organisms. Until then and whenever in doubt or for patients with badly lacerated or contaminated wounds, it is better to give the protective dose of antitoxin anyhow rather than take a chance on the active immunity engendered by the toxoid injections.

LOUIS TUFT, M.D., Philadelphia

HOSPITALIZATION FOR THE ALCOHOLIC

To the Editor—Your readers will be glad to hear that the American Hospital Association has accepted a grant from the Research Council on Problems of Alcohol, a subsidiary of the American Association for the Advancement of Science, and has appointed a subcommittee of its Council on Professional Practice to study the problem of hospitalization and to make recommendations. The help of clinicians who have given thought to this problem will be very welcome.

We have no cause for pride in this neglected field. Our hospitals are, indeed, organized in such an exclusive way that it would almost seem as if they had appointed themselves the representatives of the moral extremists in closing their doors to this peculiarly baffling malady. Every kind of patient has been provided for, in one type of hospital or other, including the patient with leprosy, whose traditional position in society as an outcast has not influenced our planning for his care. The patient suffering from primary alcoholism is left out in the cold (and pneumonia is the worst complication that can come to him, besides serious injury, even to this day) unless he is a man of wealth, in which case he can obtain private care of a palliative sort. If he is poor he is doubly cursed and, for his pains, he gets kicked around by those who, in their hearts, know better. As an urgent case he will get sobering-up treatment in an acute general hospital which does not, however, look deeper when duration of illness complicates the application for admission. We must not lull ourselves into believing that we can dispose of the problem by pleading that we have other work to do for those whom we consider more deserving. The fact is that we have gotten nowhere by stigmatizing and excluding the alcoholic patient. The committee is starting work with the conviction that this kind of patient needs our sympathetic care like all other patients for whom, because of urgency or because of any other reason, we hold our doors and our arms open.

Many hospitals which, because of the war, have been compelled to lower their personnel standards are now employing workers with a history of chronic alcoholism while trying the flattering unctious to their souls that they are making a virtue of necessity. As they engage in this enforced task of rehabilitation they are learning, from direct experience, the implications of this malady. We shall find, when peace returns to our troubled world, that it is not always necessary to take the bad with the good in civilization, and that scientific inventions and discoveries which have been put to perverted use can be controlled. So shall we find with the challenge of alcoholism. There must be a scientific solution to this problem without resort to extreme measures, and our hospitals are peculiarly

situated to take the lead, if not for plain moral reasons because they dispose of the best in medical talent, investigative facilities and educational arrangements.

Isolation and segregation of patients, except for contagious disease, should be associated with the past and not with the future. There is a wholesome tendency these days to draw all special hospitals, sanatoriums and asylums into the orbit of the general hospital. Another tendency is the replacement of the term cure by the newer term rehabilitation since we are committed to the total cure of all patients by total means and their restoration to full or at least partial, service in the community.

The problem of the alcoholic patient in relation to the hospital must be faced squarely. The committee is now engaged in seeking the facts about the hospitalization of the alcoholic, and since it will doubtless uncover an almost universal negative attitude toward this problem we shall expect a series of recommendations for the consideration of the American Hospital Association. Every hospital executive, every clinician, every social worker and every public spirited citizen who has dealt with this problem and is willing to give his best thought to its solution should cooperate with this committee for only in this way can we do our duty in this forsaken field and escape the condemnation of future generations.

E M BLUESTONE, M.D. New York
Director, Montefiore Hospital Chairman of the Committee

ICTERUS INDEX

To the Editor—In contemporary medical literature we find a lively interchange of the expressions 'icterus index' and 'icteric index' with the apparent indication that these terms are synonymous. Perhaps it is time to remind authors that the proper expression is 'icterus index' and not 'icteric index'.

In THE JOURNAL of July 3 is an article 'Pyuria of the New-born Treated with Sulfathiazole' by Florman and Bass in which 'icterus index' is mentioned in case 1 and 'icteric index' in case 2. These terms are not interchangeable and do not mean the same thing. Again in the text of 'The Physiological Basis of Medical Practice' by Best and Taylor ed 3, 1943, we find the 'icteric index' mentioned on page 780.

'Icteric' is an adjective and means 'relating to or marked by jaundice' (Stedman), while 'icterus' is a noun meaning 'jaundice'. 'Icterus index' means the index or measure of jaundice. We must remember that it is the patient who is 'icteric' (or jaundiced) and not the index. With this thought in mind, I am sure that the expression 'icteric index' will gradually fade into oblivion.

SAMUEL WIDMAN, M.D. Brooklyn

USE OF SULFONAMIDE POWDERS IN OTOLARYNGOLOGY

To the Editor—In a communication in THE JOURNAL, July 3, page 695 certain disadvantages arising from the local use of sulfonamide powders in otolaryngology are pointed out. The experiences which my associates and I have had with the powder blower method of therapy have not revealed these disadvantages.

Of 18 patients thus treated only 5 showed the presence of the drug in their blood streams at the end of twenty-four hours. In none of these did the value exceed 0.9 mg. per hundred cubic centimeters. In addition the patient must of necessity hold his breath during the treatment or the tracheal reflex will make it impossible to continue with the procedure. Therefore we feel that during treatment little if any, of the powder is aspirated.

MARVIN S. FREEMAN, Lieutenant, M. C. U. S.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations or boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL July 24, page 893.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* August 24. Sec. Dr. J. S. Rodman 225 S. 15th St. Philadelphia

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written* Various centers Sept. 27. *Oral* Philadelphia Nov. 5-6. Final date for filing application is August 16. Sec. Dr. C. Guy Lane 416 Marlboro St. Boston.

AMERICAN BOARD OF INTERNAL MEDICINE *Oral* San Francisco Sept. 16-18. Final date for filing application is Aug. 15. *Written* Oct. 18. Final date for filing application is Sept. 1. Asst. Sec. Dr. William A. Werrell 1301 University Ave. Madison Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written Part I* Locally Feb. 12. Final date for filing application is Nov. 15. Sec. Dr. Paul Titus 1015 Highland Bldg. Pittsburgh Pa.

AMERICAN BOARD OF OPHTHALMOLOGY *Oral Parts I and II* Chicago Oct. 8-9. Sec. Dr. John Green 6830 Waterman Ave. St. Louis Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Written and Oral Part I* New Orleans Oct. 8-9. New York Oct. 15-16. Chicago Oct. 22-23. San Francisco Oct. 29-30. Final date for filing application is Aug. 10. *Written and Oral Part II* Chicago Jan. 21-22. Sec. Dr. Guy A. Caldwell, 3503 Prateria St. New Orleans Louisiana.

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Chicago Oct. 6-9. Sec. Dr. Dean M. Lierle University Hospital Iowa City Iowa.

AMERICAN BOARD OF PEDIATRICS *Written* Locally Oct. 8. *Oral* New York City Nov. 20-21 and Cincinnati Dec. 11. Final date for filing applications is Aug. 10. Sec. Dr. C. A. Aldrich 707 Fullerton Ave. Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *Written* Locally Oct. 30. *Oral* Locally Dec. 20-21. Final date for filing application is Sept. 30. Sec. Dr. Walter Freeman 1028 Connecticut Ave. N.W. Washington D. C.

AMERICAN BOARD OF SURGERY *Written Part I* Oct. 7. Final date for filing application is Aug. 1. Sec. Dr. J. S. Rodman 225 S. 15th St. Philadelphia.

AMERICAN BOARD OF UROLOGY *Oral* Chicago February. *Written* Various centers December. Final date for filing application is Nov. 1. Sec. Dr. Gilbert J. Thomas 1409 Willow St. Minneapolis Minn.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Basic Science Law (Washington) Constitutionality, Validity of Requiring Examination in Chemistry—Ellestad sought by virtue of a license to practice chiropractic in Nevada to obtain by reciprocity and without examination a license to practice chiropractic in Washington. The director of licenses of the state of Washington refused to issue the license until the chiropractor had taken and passed the examinations in anatomy, physiology, chemistry, pathology and hygiene required by the Washington basic science act as a condition precedent to licensure to practice any form of the healing art. The chiropractor then brought an action under the Washington declaratory judgment act to test the constitutionality of the basic science act. He alleged that the act was unconstitutional and void because it violated the due process and equal protection clauses of both the state and the federal constitution and further because it was discriminatory in operation, constituted class legislation and was arbitrary and unreasonable. The trial court dismissed the action and the chiropractor appealed to the Supreme Court of Washington.

The specific question presented for our determination and the Supreme Court is whether the requirement in the basic science act of an examination in the basic sciences of anatomy, physiology, chemistry, pathology and hygiene as applied to a person seeking a license to practice chiropractic violates such person of the due process of law or of the equal protection of the laws in violation of the state and federal constitution. This question has been squarely decided by this court in *State v. Ellestad*.

W. J. Hinger, 182 Wash 360 47 P (2d) 35, in which it was held that the basic science act, as applied to a chiropractor, was constitutional and valid. Seventeen states and the District of Columbia have adopted basic science laws of varying degrees of similarity to our own. Up to the present time the constitutionality of these basic science laws has been questioned in only three states, including our own, and in every instance these laws have been upheld as constitutional. *State v. Wehinger*, supra, *State v. Broden*, 181 Minn 341, 232 N W 517, *State ex rel. Shenk v. State Board of Examiners in Basic Sciences*, 189 Minn 1, 250 N W 353, *State v. Ulicki*, 202 Minn 114, 277 N W 420, *Stroud v. Crowe*, 199 Ark 814, 136 S W (2d) 1025. In the *Shenk* case, supra, in which the law was applied with reference to a naturopath, the Supreme Court of Minnesota said:

There is claim for petitioner that the basic science law is unconstitutional because abridging his privileges and denying him due process and equal protection of law. The point is without merit. The law does not limit naturopathy. It does regulate it. We are not interested in the extent to which the medical profession may have sponsored the law, nor their motives in doing so. It is enough that, since the days of Hippocrates through those of Galen, Vesalius and their modern successor anatomists, there has been great progress and splendid accomplishment in their science and the related arts of diagnosis and treatment. Lawmakers everywhere have taken note and have been doing so for a century or more. They began by laws facilitating the procuring of human bodies for dissection.

Other laws, regulatory and otherwise, followed. Finally came the restrictive regulation through licensing, now familiar law everywhere. The basic science statute is the latest addition thereto. It departs somewhat from the older definition of the practice of medicine. Of its newer and broader category of the practice of healing, naturopaths have no complaint on constitutional grounds.

The chiropractor attacked the decision of the Supreme Court of Washington in the *Wehinger* case, supra, and likewise criticized the decisions by the other courts, on the ground that they failed to take into consideration the fundamental distinction between medicine and chiropractic, and that, on the contrary, they assume that there is no difference between medical anatomy, physiology, pathology and hygiene, on the one hand, and chiropractic anatomy, physiology, pathology and hygiene, on the other. The chiropractor then set forth the medical definitions of the five subjects specified in the basic science law and contrasted them with chiropractic definitions of the same subjects. The five subjects named in the basic science law, said the Supreme Court, pertain to separate and distinct fields of science. These sciences are, in themselves, exact and universal, and their principles operate with uniformity on the human body, regardless of the method of healing, or treatment, employed. The method of healing is simply the practitioner's art, as distinguished from the sciences which deal with the structure, composition, functions, diseases and sanitation of the body. It may be said, broadly, that chiropractic places the emphasis of its study and treatment on the spinal column, including the brain, the spinal cord and spinal nerves, while the school of medicine does not so restrict its field of either study or treatment. Whatever may be the extent of the difference of view between the two schools, whether of kind or of scope, the chiropractor's real objection here is that the basic science law requires him to take an examination which is broader in scope than the chiropractic field of study and treatment. The stumbling block, so far as he is concerned, is thus one of general educational requirements. The various professions, particularly those involving the healing arts, have long been the subject of regulatory legislation setting out requirements for the granting of licenses to practice such professions. As is stated in *Rottschaefer*, Constitutional Law (1939), pp 468, 469:

The requirement of a license necessarily involves a control by the government of who shall be permitted to pursue the licensed business or calling. Its aim is the protection of the public against injuries that it might suffer from the conduct of such business or calling. The state may, therefore, impose any conditions precedent to the grant of its consent which have a real and substantial relation to that objective. The principal field for the application of these principles has been in prescribing minimum standards of professional competence for such professions as the practice of medicine, dentistry, pharmacy, optometry, veterinary medicine, law, accountancy, and many others.

The legislature, continued the court, may therefore prescribe the standard of knowledge required of applicants for license to practice any of the healing arts, and the fact that it is broader in scope than the training which is given in chiropractic schools is not of itself enough to invalidate the legislative prescription.

It is sufficient if the requirements have a real and substantial relation to the objective sought, which is the protection of the public health and welfare. It is to be remembered that by the basic science act the legislature has prescribed one examination for all who desire to practice the healing arts, regardless of the school from which they come or the system which they desire to follow. The legislature must have intended thereby to set up a standard of basic, fundamental knowledge required of all practitioners of the healing arts in order to protect the public against incompetent attendance on human ailments.

The court of civil appeals of Texas, continued the Supreme Court, in *Johnson v. State*, 267 S W 1057, 1061 (1924), in a case in which a chiropractor urged that chiropractic is sufficient in all its requirements thoroughly to prepare the student for this special branch of the healing art and that the right to have this special branch recognized by law was denied by requiring an examination before a medical board, said:

Regardless of the school of medicine or system of practice followed by the practitioner of medicine in any of these systems the general welfare of the people demands that such practitioner be able to detect, readily, the presence of disease and to treat it in some manner recognized as appropriate for its removal. In order that assurance may be had that the one who treats diseases has this requisite qualification, the state has the undoubted right to prescribe a general preparation to be made by one entering such profession, and also to prescribe that he shall have a knowledge of what the legislature may deem the necessary scientific branches of such profession. The fact that it [the law] requires a broader education than is given by the chiropractic college to meet these conditions cannot be urged as a discrimination against such schools of medicine.

The authorities, continued the court, are uniform to the effect that the legislature may adopt such regulations and restrictions of the healing arts as they may consider necessary for the public good, and the courts will not question the wisdom or desirability of such legislative requirements, so long as there is any reasonable basis on which the legislative determination can rest.

The chiropractor contended further that in the *Wehinger* case previously decided by this court this court did not squarely meet the argument that the addition of chemistry to the list of subjects as one of the basic sciences is an unreasonable requirement. The chiropractor argued that chemistry does not enter into the principle and practice of chiropractic. Chemistry, answered the court, may not enter into the theory and practice of chiropractic, but every law of which we are aware providing for the licensing of chiropractic provides for learning in some subjects other than the theory and practice of chiropractic. The legislature set out the requirements for all practitioners of all schools of the healing art in the basic science act. It is the relation of chemistry to this basic fundamental knowledge that is important and to which we must look, and not the relation of chemistry to the particular school of learning. The court certainly cannot say that it is unreasonable to require a knowledge of chemistry on the part of those who deal with human life and diseases.

The court therefore held that the basic science act did not offend the constitutional provisions relied on by the chiropractor and that, regardless of the wisdom or propriety of the basic science law, its enactment was within the valid exercise of the police power of the state. Accordingly the court affirmed the judgment of the trial court against the chiropractor—*Ellstad v. Swavze, Director of Licenses*, 130 P (2d) 349 (Wash., 1912).

Society Proceedings

COMING MEETINGS

- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept 9-11 Dr James R. Bloss 413
Eleventh St., Huntington, W. Va., Secretary
- American Congress of Physical Therapy Chicago, Sept 8-11 Dr Richard Kovacs, 2 East 88th St., New York Secretary
- Northern Minnesota Medical Association Duluth Aug 28 Dr R. V. Jones, 8 Sixth Avenue N., St. Cloud, Secretary
- Oregon State Medical Society, Portland, Sept 4-5 Dr Thomas D. Robertson, St. Vincent's Hospital, Portland Secretary
- Utah State Medical Association Salt Lake City, Aug. 27-29 Dr D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City Secretary
- Wisconsin State Medical Society of Milwaukee, Sept 13-15 Mr Charles H. Crownhart 110 East Main St., Madison Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents in one and 18 cents in three periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

25 429-572 (April) 1943 Partial Index

- Studies on Nature of Pain Arising from Ischemic Limb. I. Clinicoperimental Observations. A. Harpuder and I. D. Stein—p. 429.
Relationship of Congenital Heart Disease to Premature Birth. E. Araya and P. D. White—p. 449.
Histologic Demonstration of Accessory Muscular Connections Between Atricle and Ventricle in Case of Short PR Interval and Prolonged QRS Complex. F. C. Wood, C. C. Wolterth and G. D. Geckeler—p. 454.
Acquired Palmar Erythema and Cutaneous Vascular Spiders. W. B. Bean—p. 463.
*Pathogenesis of Subacute Bacterial Endocarditis. I. W. Held and A. Liebersohn—p. 478.
*Role of Insulin Free Histamine Free Pancreatic Tissue Extract in Treatment of Peripheral Arterial Disease. L. W. Gorham and D. R. Climenko—p. 486.
Pericardial Effusion in Myxedema. G. T. Harrell and C. Johnston—p. 505.
Aortic Aneurysm with Rupture into Pulmonary Artery. H. J. Schattenberg and W. H. Harris Jr.—p. 512.
Capacigraph String Galvanometer for Recording Arterial and Venous Pulsations. C. Fenning—p. 522.

Subacute Bacterial Endocarditis—Held and Liebersohn maintain that subacute bacterial endocarditis is a distinct entity. The vegetative endocarditis with its exudation of fibrin, blood platelets and enmeshed bacteria represents a state of high local and general tissue immunity rather than lowered resistance. The immunity resides in the local endothelial structures as well as in the general reticuloendothelial system. Since the reaction to this bacterial invasion is largely endothelial, the disease may be termed infectious endotheliosis. Subacute bacterial endocarditis occurs in patients with valvular disease, usually rheumatic, but who have acquired a high degree of immunity, so that reinfection, recurrent endocarditis or pancarditis and congestive heart failure do not occur. This increased immunity is responsible for the fact that the patient is not heart conscious even during the attack of acute valvular infection. A transient bacteremia caused by an upper respiratory infection, tonsillectomy, extraction of an infected tooth or pyelitis, permits secondary invasion and implantation of bacteria, usually of *Streptococcus viridans*, on the damaged valve. A careful history will reveal that some infection which lowered the general body resistance is usually the beginning of an illness that later develops into subacute bacterial endocarditis. Although the bacteria are able to implant themselves on the damaged valves, they find there an altered tissue reactivity which does not permit much local damage, such as ulceration or extension into the myocardium or pericardium. A more favorable outcome would be likely if the bacteria were not localized in a focus that communicates directly with the blood stream. If embolism does not cut the disease short, death occurs when the local and systemic endothelial systems become exhausted. Subacute bacterial endocarditis is a true endocardial sepsis for the valve acts as the primary distributing focus of the infection. If the focus can be removed surgically (as in some cases of patency of the ductus arteriosus) or chemotherapeutically before complications set in there is some hope for cure.

Pancreatic Tissue Extract in Peripheral Arterial Disease—Gorham and Climenko present proof of the physiologic activity of a new and potent pancreatic extract which is free from insulin and histamine. It has been shown to cause peripheral vasodilatation in the limbs of animals and normal human beings, as measured by an increase in volume and a rise in

temperature. The authors report the results obtained with the pancreatic extract in 21 cases of peripheral arterial disease. There were 15 instances in which the response to cold was of the spastic type. These patients reacted especially well to the extract, all of them showed significant increases in limb volume and rises in skin temperature. Symptomatic relief was complete in 8 cases and partial in 4. The 3 patients in the "spastic group" who failed to benefit symptomatically had Buerger's disease or thrombophlebitis. Six patients in the series of 21 gave a normal response to cold stimulation, that is, they showed no evidence of vasospasm. None of these patients received any benefit from injections of the pancreatic extract.

American Journal of Clinical Pathology, Baltimore

13 123-164 (March) 1943

- Medicolegal Necropsy. A. R. Moritz—p. 123.
Examination and Preservation of Nonmedical Scientific Evidence Acquired Incident to Conduct of Medicolegal Postmortem Examination. J. T. Walker—p. 127.
Importance of Postmortem Examination of Fetus and Newly Born Infant. Edith L. Potter—p. 133.
Serologic Reactions Following Smallpox Vaccinations. J. M. Lubitz—p. 139.
Comparative Effects of Six Compounds Administered with Therapeutic Intent to Tuberculous Guinea Pigs. W. H. Feldman and H. C. Hinshaw—p. 144.
Occurrence of Protozoan like Cells in Biopsy from Anus. P. H. Hartz and F. R. van de Stadt—p. 148.
Cyst of Lung Complicated by Aspiration of Animal Hairdust. A. P. Falkenstein, N. N. Crohn and I. Davidsohn—p. 154.

American Journal of Medical Sciences, Philadelphia

205 469-624 (April) 1943 Partial Index

- Distribution of Patterns of Ventricular Potential Which Determine Forms and Significance of Electrocardiograms. C. C. Wolterth, Mary Miller Livezey and F. C. Wood—p. 469.
Treatment of Leg Ulcers with Blood and Concentrated Plasma. M. Naide—p. 489.
Effect of Accumulation of Blood in Extremities on Venous Pressure of Normal Subjects. J. V. Warren and E. A. Stead Jr.—p. 501.
Cardiac Cirrhosis. C. F. Garvin—p. 515.
Studies on Penetration of Sulfonamides into Skin. I. Penetration of Sulfonamides from Various Ointment Bases into Intact Skin of Guinea Pigs and New Method of Analysis of Tissue Sulfonamides. E. A. Strakosch and W. G. Clark—p. 518.
Effect of Adrenalin and Sympathomimetic Amines on Total Body Water. E. M. Body, G. M. Johnston and Betty Palmer—p. 532.
Thrombic Activity of Globulin Fraction of Plasma Proteins of Beef Swine and Human Blood. Margaret A. Adams and F. H. L. Taylor—p. 538.
Experimental Riboflavin Deficiency in Man. J. J. Boehrer, C. E. Stanford and Elizabeth Ryan—p. 544.
*Focal Necrosis of Adrenal Cortex. A. Mitchell and A. Angrist—p. 549.
Platelet Red Cell Conjugation Phenomenon and Its Relation to Blood Coagulation. S. Pennell—p. 562.
Tuberculosis in Industry. H. R. Edwards—p. 571.

Focal Necrosis of Adrenal Cortex—The 18 cases of focal necrosis of the adrenal cortex reviewed by Mitchell and Angrist represent lesions discovered during 3080 routine necropsies. With the exception of 1 case all lesions were seen microscopically in a single section of the adrenal gland. All lesions were studied on formaldehyde fixed paraffin embedded material stained with hematoxylin and eosin. Giemsa and Gram stains were done on lesions showing recent changes. Eleven females and 6 males comprise the series. The ages range from 14 months to 84 years. The lesions were of recent origin in 12 instances and showed evidence of chronicity in 5. The acute changes were of 2 types. The first consisted of a focal coagulation necrosis of the adrenal cortex tissue. They were encountered mainly in the zona fasciculata but were also seen in the other two layers and in 1 instance reached to the capsule. Some of the zones of necrosis bore a distinct resemblance to tubercle structures. Complete examination in the cases failed to reveal any active or inactive tuberculosis and stains for acid fast bacilli were negative. The other type of acute change was one of localized cytonecrosis of a varying number of individual cortical cells. In the literature focal necrosis of the adrenal has been associated with actual infection or toxic states. Eleven of the reviewed 12 cases showing recent changes had some infectious disease varying from limited lobular pneumonia to extensive suppurative peritonitis. It is the authors' impression that endocrine abnormalities control the evolution of focal necrosis. Diabetes mellitus was noted in 5 of the

cases, and no infectious process was present in 2. In 1 of the latter Cushing's syndrome was fully developed, and the diagnosis of basophilic adenoma of the pituitary was confirmed at necropsy. In the other instance an eosinophilic adenoma of the pituitary was noted. The authors believe that a physiologic component in the production of the necrotic lesions is indicated by the multiplicity of etiologic factors, the apparent significance of adocrine states and the gradation of such lesions in size and nature with involutional physiologic changes in the adrenal, and the negative bacteriologic and virus findings. The possible significance and the relationship of such lesions to Addison's disease and to Waterhouse-Friedrichsen syndrome and to intestinal ulceration is intimated.

American J. Obstetrics and Gynecology, St. Louis

45 547-730 (April) 1943 Partial Index

- Relationship of Estrogens and Progesterone to Edema of Normal and Toxic Pregnancies H. C. Taylor Jr., R. C. Warner and Catherine A. Welsh—p. 547
 Hyperthyroidism Complicating Pregnancy C. W. McLaughlin Jr. and I. S. McGookin—p. 591
 Action of Morphine in Obstetric Analgesia I. I. Snyder and I. M. K. Gehring—p. 604
 Fetal Ectopy During Labor: A Reliable Sign of Fetal Distress C. J. Lund—p. 636
 Continuous Caudal Anesthesia in Obstetrics N. Block and S. Reichberg—p. 645
 Response of Human Uterus to Epinephrine W. E. Brown and Violet M. Wilder—p. 649
 Problem of Abortion H. J. Olson, A. H. Isham, A. C. Mictus and R. M. Mitchell—p. 672
 Calcium and Quinine in Labor and Postpartum Hemorrhage B. F. Hart and A. Noble—p. 692
 Ovarian Autografts C. I. Kuhn—p. 704
 Dilution of Urethra for Irritable Vesical Neck J. C. Potter—p. 708
 Perineal Repair with Nonabsorbable Suture and Postoperative Sitz Baths A. P. Hudgins—p. 711
 Thrombocytopenic Purpura D. Phythyon and R. E. Lertz—p. 715

American Journal of Orthopsychiatry, New York

13 191-380 (April) 1943

- Modification of Rorschach Ink Blot Test for Large Scale Application Marguerite R. Hertz—p. 191
 Research in Orthopsychiatry 1942 Symposium J. Krasner and others—p. 212
 Infant Rearing and Problem Behavior W. Goldfarb—p. 249
 Orthopsychiatry and Profession of Education Section Meeting, 1942 O. B. Markey and others—p. 266
 Dynamics and Treatment of Speech Disorders J. A. Rose—p. 284
 Initial Experiences with Psychiatric Clinic in Rural Health Center W. F. Roth Jr. and F. H. Luten—p. 290
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 Alcoholism in Children R. S. Lourie—p. 322
 Effect of Morphine on Rorschach Pattern in Post-Addicts R. R. Brown—p. 339
 Grandma Made Johnny Delinquent C. A. Strauss—p. 343
 Sex Information of Younger Boys G. V. Ramsey—p. 347
 Treatment of Pseudo Social Boy Ruth Topping—p. 353

American Journal of Surgery, New York

60 1-158 (April) 1943

- Foreign Body Localization and Extraction: Description of Method More Accurate Than That Used by Army L. G. Cole—p. 3
 Early Laminectomy for Spinal Cord Injury Not Due to Subluxation F. Kennedy, P. G. Denker and R. Osborne—p. 13
 Multiple Carcinoma: Clinical Picture, Diagnosis and Prognosis H. Hellendall—p. 22
 Tumors in Region of Cauda Equina: Review of 25 Cases I. Cohen and A. Kaplan—p. 36
 Internal Fixation Device for Treatment of Intertrochanteric Fractures of Femur H. H. Thatcher—p. 44
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 Littre's Umbilical Hernia: Case Report W. E. Bird—p. 81
 Exploration of Common Bile Duct: Review of 165 Cases D. H. Hooker—p. 88
 Complications of Thyroid Surgery: Anatomy of Recurrent Laryngeal Nerve, Middle Thyroid Vein and Inferior Thyroid Artery C. A. Bachhuber—p. 96
 Complete Reconstruction of Auricle M. I. Berson—p. 101
 Sulfathiazole Anuria Cured by Decapsulation of Kidneys: Case Report M. L. Weinstein and E. L. Adams—p. 105
 Treatment of Shock and Fresh Wounds H. H. Ritter—p. 112

American Journal of Tropical Medicine, Baltimore

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- Tropical Medicine in Navy: Seventh Charles Franklin Craig Lecture R. F. McIntire—p. 141
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 Morphologic Studies of Plasmodium Falciparum Gametocytes of Different Strains in Naturally Induced Infections S. F. Kitchen and P. Putnam—p. 163
 Comparative Morphologic Studies of Plasmodium Falciparum Gametocytes in Various Induced Infections S. F. Kitchen and P. Putnam—p. 189
 Attempts to Hyperimmunize Convalescents from Vivax Malaria M. F. Boyd and S. I. Kitchen—p. 209
 Studies in Susceptibility of Certain Poikilothermic Animals to Yellow Fever Virus H. W. Lammert Jr.—p. 227
 Further Observations on Amebic and Bacillary Colitis in New Orleans Area J. S. D'Antoni—p. 237
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 Pinworm Infections Among Patients of an Indiana Hospital for Children W. H. Headlee—p. 281
 Blackwater Fever: Statistical Report on 25 Cases Seen on Hainan Island H. I. Burkwall—p. 285

Annals of Surgery, Philadelphia

117 481-640 (April) 1943

- *Restoration of Blood Flow in Damaged Arteries: Further Studies on Nonsuture Method of Blood Vessel Anastomosis A. H. Blakemore, J. W. Ford Jr. and P. L. Steiko—p. 481
 Intractable Duodenal Ulcer: Evaluation of Surgical Procedures J. W. Hinton—p. 498
 *Nitrogen Metabolism: Caloric Intake and Weight Loss in Postoperative Convalescence: Study of 8 Patients Undergoing Partial Gastrectomy for Duodenal Ulcers J. H. Mulholland, Co. Tai, A. M. Wright and V. J. Vinci—p. 512
 Preoperative Scrubbing in Abdominal Surgery: I. Experimental Studies J. K. Berman, A. D. Houser and W. A. Kurtz—p. 533
 Late Effects of Craniocerebral Injuries: Consideration of Criteria Necessary to Evaluate Possible Causes D. Munro—p. 544
 Mechanisms of Head Injury A. R. Moritz—p. 562
 Forensic Aspects of Burns: Special Reference to Appraisal of Terminal Disability R. H. Aldrich—p. 576
 Minimal Criteria Required to Prove Causation of Traumatic or Occupational Neoplasms S. Warren—p. 585
 Minimal Criteria Required to Prove Prima Facie Case of Traumatic Abortion or Miscarriage: Analysis of 1,000 Spontaneous Abortions A. T. Hertig, with Collaboration of W. H. Sheldon—p. 596
 Relation of Trauma to Diabetes E. P. Joslin—p. 607
 Relation of Trauma to Syphilis of Nervous System H. H. Merritt and H. C. Solomon—p. 623

Vitallium Tubes for Blood Vessel Anastomosis—Blakemore and his associates report the use of vitallium tubes as prosthesis in blood vessel anastomosis in dogs. Vitallium is a nonirritating alloy suitable for a vein graft or for bridging an artery or vein defect in a nonsuture method of vessel anastomosis. Carefully controlled experiments on dogs demonstrated that sulfathiazole by mouth contributes greatly to the success of delayed anastomoses of severed vessels in contaminated wounds. They administered sulfanilamide in alternate wounds in a series of seventy-seven anastomoses and found it to be of moderate but definite value. The nonsuture method was shown to be highly successful in anastomosing the small femoral arteries of dogs even in contaminated wounds twenty-four hours after section of the artery and without the use of anticoagulants. Vein graft anastomosis of a severed primary artery in the war wounded would prevent the loss of the extremity by gangrene if the anastomosis remained patent beyond the period of posttraumatic edema, up to fourteen days. Veins taken from one dog continued to function in another when used as transplants to bridge vessel defects. These experiments afford a prospect for the use of preserved veins as grafts for bridging vessel defects in the war wounded as an alternate to the use of homoplastic transplants.

Nitrogen Balance, Caloric Intake and Weight Loss in Postoperative Convalescence—Mulholland and his collaborators determined the nitrogen balance in 8 cases of duodenal ulcer after partial gastrectomy. Four patients were given the postoperative ward routine of infusions, occasional blood transfusion, and a gradually increased oral feeding. This group served as control. In another group of 4 cases a high caloric

and high nitrogen feeding was given to replace the nitrogen loss so that at the end of the postoperative period of ten to twelve days a nitrogen surplus was accumulated in the body. The nitrogen balance, body weight and plasma proteins were determined for both groups periodically throughout the convalescent period. The fluid intake and output were followed and the caloric and sodium chloride intakes were noted. The chief sources of nitrogen loss were recorded. The number of days of hospitalization of one group was compared with that in the other. All cases in the control group exhibited a cumulative nitrogen deficit, a progressive loss of body weight and a suggestive progressive fall of plasma protein concentration. In the group in which the caloric and nitrogen balance were maintained by tube feeding with an easily assimilable feeding mixture there were achieved a positive nitrogen balance, a cumulative nitrogen surplus and a progressive rise of body weight and of plasma proteins. There also seemed to be the minimum amount of postoperative asthenia. The authors stress the fallacy of expecting to maintain nutrition by blood transfusions and the necessity of a higher 'lower limit of normal' of plasma proteins for surgical patients.

Archives of Ophthalmology, Chicago

29 523-698 (April) 1943

- *Hereditary Corneal Dystrophy: History of Condition and Presentation of a Pedigree. S. Schutz—p. 523
- *Role of Ascorbic Acid (Vitamin C) in Secretion of Intraocular Fluid. J. S. Friedenwald, W. Buschke and H. O. Michel—p. 535
- Surgical Construction of Lacrimal Passage. L. P. Guy—p. 575
- Filaria Loa Removed from Upper Lid. S. R. Gifford and M. Konne—p. 578
- Cataract Complicating Corneal Scars After Perforating Ulcers. B. Samuels—p. 583
- Allergic Keratoconjunctivitis. C. S. O'Brien and J. H. Allen—p. 600
- George Berkeley and An Essay Towards New Theory of Vision. B. Chance—p. 605
- Effects Other Than Anti-Infectious of Sulfonamide Compounds on Eye. M. E. Alvaro—p. 615

Hereditary Corneal Dystrophy—Schutz directs attention to a hereditary type of corneal dystrophy which he recently observed in a family. Out of 15 adults and 6 children of this family 11 of the adults had the disease. One other member not examined is said by the family to have the disease. None of the 6 children presented the lesions. The condition is a hereditary disease with a mendelian dominance. Consanguinity is not a factor. It affects males and females equally, is bilateral, is more or less symmetrical and is central in position. The corneal surface is smooth and its sensibility is not diminished. There is no history of irritation and no evidence of inflammation. The visual acuity is unaffected in the younger members and only slightly so in the older. The reticular, nodular and ring shaped varieties may coexist in members of the same family and even in the same person. Bücklers classified hereditary corneal dystrophy into the crumblake, the macular and the lattice-like. In the crumblake type the visual acuity and corneal sensibility may be only slightly diminished late in life. It does not lead to blindness. The inheritance is dominant. In all the cases in the present series the disease was of Bücklers' type 1. The prognosis is good. The other two types lead to blindness. The macular type of corneal dystrophy leads to early diminution of visual acuity with diffuse and rapid clouding of the cornea and early loss of sensibility. Inheritance of this type is recessive and the lesion need not appear in every generation. The lattice-like corneal dystrophy produces irregularity of the cornea early in life with corresponding diminution of visual acuity and early loss of corneal sensibility.

Ascorbic Acid in Secretion of Intraocular Fluid—Friedenwald and his collaborators demonstrated that the interstitial tissue of the stroma of the ciliary processes contains a group of reducing substances, one component of which has been identified as ascorbic acid. These substances act as a mediating system facilitating the oxidation-reduction interaction between the stroma cells and the stroma-epithelium barrier. Elimination of vitamin C from the diet of guinea pigs leads to the disappearance of this substance from the ocular tissues long before any constitutional symptoms of scurvy develop. The loss of ascorbic acid from the secretory system in the eye results in a decrease in the rate of transfer of basic dyes from stroma to

epithelium and in a decrease in the rate of secretion of the intraocular fluid. Ascorbic acid is stored in the ciliary stroma, being reversibly bound by an acidophilic component of this tissue. Oxidation of ascorbic acid by the ciliary epithelium is probably a necessary step in the intraocular secretion of this substance. The secretory mechanism of the ciliary body in the cat conforms in pattern to that in the rabbit and in the guinea pig but the redox potentials of both epithelium and stroma are considerably more negative than the normal potential of ascorbic acid. Consequently ascorbic acid does not act as a mediator in this system.

Archives of Pathology, Chicago

35 503-648 (April) 1943

- *Visceral Lesions Associated with Chronic Infectious (Rheumatoid) Arthritis. A. H. Baggenstoss and E. F. Rosenberg. Rochester, Minn.—p. 503
- Shwartzman Phenomenon in Genesis of Pulmonary Abscess. Experimental Production of Abscesses in Lungs of Rabbits by Means of Strain of Gram Negative Anaerobic Bacilli Resembling *Bacillus Necrophorus* Employed as Lung Preparatory Factor with Notes on Some Factors Concerned in Pathogenicity. J. Cohen and S. E. Moolten. New York—p. 517
- Immature Botryoid Tumors of Cervix. E. E. Simpson. Oroville, Calif.—p. 535
- Pathologic Changes in Liver and Kidneys of Guinea Pigs Deficient in Vitamin C. W. O. Russell, St. Louis and C. P. Callaway. Boston—p. 546
- Fibrous Pleural Adhesions. E. B. Smith. St. Louis—p. 553
- Forssman's Carotid Syndrome. Contribution to Study of Anaphylactic Changes in Nervous System from Standpoint of Pathology. G. A. Jervis. Thiells, N. Y.—p. 560
- Neuroblastoma of Mediastinum with Pheochromoblastomatous Elements. H. R. Wahl and D. Robinson. Kansas City, Kan.—p. 571
- Effect of Mechanical Force on Skeletal Lesions in Acute Scurvy in Guinea Pigs. R. H. Folliis Jr. Baltimore—p. 579
- Histologic Observations on Changes in Brain in Rocky Mountain Spotted Fever. I. M. Scheinker. Cincinnati—p. 583
- Changes in Magnesium and Chloride Contents of Blood from Drowning in Fresh and in Sea Water. W. W. Jetter and A. R. Moritz. Boston—p. 601
- Leprosy from Histologic Point of View. G. L. Fite. Bethesda, Md.—p. 611

Visceral Lesions in Chronic Infectious Arthritis—Baggenstoss and Rosenberg studied at necropsy the anatomic changes in the viscera of 30 patients with rheumatoid arthritis. The mean age of the patients at death was 37.6 years, the youngest was 9, the oldest 81 years of age. 11 were less than 40. Rheumatic heart disease was present in 16 and other cardiac lesions in 8. Pulmonary diseases present included bronchopneumonia, fibrous pleuritis, bronchiectasis, pulmonary embolism and fat embolism. No characteristic hepatic lesion ascribable to rheumatoid arthritis was observed. The alterations present were hypertrophy, atrophy, chronic passive congestion, fatty change, central necrosis, amyloid deposits, subacute yellow atrophy, healed miliary tuberculosis and the serous hepatitis or Rossle and Eppinger. The lymph nodes and the spleen though occasionally enlarged during life, showed only various nonspecific inflammatory and degenerative effects: proliferation of reticulo-endothelial tissues, degeneration of lymph follicles, amyloid deposits, suppurative lymphadenitis, hypertrophy (or the spleen) and chronic passive congestion. A low grade nonspecific glomerulonephritis was present in 19. Other renal lesions present were chronic or subacute interstitial nephritis, non-suppurative pyelonephritis, amyloid degeneration, nephrolithiasis with acute pyelitis and dissecting aneurysm of the right renal artery. Various lesions of minor importance were encountered in the other organs.

Gastroenterology, Baltimore

1 335-448 (April) 1943

- Military Nutrition and Problems of Supply. G. H. Berryman and W. H. Chambers—p. 335
- Chronic Nonspecific Jejunitis with Unusual Features. W. R. Johnson—p. 347
- Fat and Vitamin A Absorption in Sprue and Jejunitis. D. Adlersberg and H. Sobotta—p. 357
- Bacteriologic Epidemiologic Immune and Chemotherapeutic Aspects of Bacillary Dysentery. E. Netter—p. 360
- Secretion of Acid by Gastric Mucosa. H. W. Davenport—p. 363
- Physiology of Pancreal Cell with Special Reference to Formation of Acid. J. S. Gray—p. 390
- Chemistry and Mechanics of Hydrochloric Acid Formation in Stomach. F. Hollander—p. 401

Illinois Medical Journal, Chicago**83 205-288 (April) 1943**

- Symposium on Industrial Health: We Have a Job to Do to Improve the Health of the Industrial Worker D. H. Green—p. 231
- Urgent Need for Better Local Industrial Health Organization C. M. Peterson—p. 234
- Medical Care of Executives W. C. Alvarez—p. 236
- What Can We Do to Keep Employees at Work? C. D. Selby—p. 242
- How the Small Plant Can Conduct a Health Program M. H. Kronenberg—p. 247
- Problems in Employing Physically Handicapped I. H. Albee—p. 251
- Employing the Physically Handicapped from Employer's Viewpoint G. P. Wardly—p. 257
- Effect of War on Maternal Welfare Program in Illinois F. H. Falls—p. 259
- Rejected Drafted and His Medical and Social Problems as They Relate to Community L. L. Strohl—p. 263
- Clinical Report of 3 Rectal Cases M. H. Streicher—p. 265
- Centrally Located Tumors of Frontal Parts of Brain W. R. Kirschbaum—p. 267
- Case of Associated Facial and Intracranial Hemangioma L. B. Shapiro—p. 272
- Nontuberculous Lesions Simulating Pulmonary Tuberculosis O. C. Schlack—p. 275

Indiana State Medical Assn Journal, Indianapolis**36 235-282 (May) 1943**

- Wartime Patient Phases of Industrial Ophthalmology E. O. Alvis—p. 235
- Review of Cases Admitted on Eye Service at Riley Hospital from 1936 Through 1942 Mary Alice Norris—p. 239
- Some Observations on Headaches of Ocular Origin H. L. Stanton—p. 243
- Laceration of Eyelids C. P. Clark—p. 245
- Eye Injuries in Home M. Mann—p. 247
- Undiluted Sulfonamide Drugs in Sinus Surgery J. J. Littell—p. 250
- Lake County's Five Year Plan and/or Lake County's All Out Medical Plan R. Waterson—p. 252

Iowa State Medical Society Journal, Des Moines**33 147-208 (April) 1943**

- Symposium on Pre- and Postoperative Care of Surgical Patient: Preoperative Care in Abdominal Surgery R. N. Bartels—p. 148
- Id. Fluid Requirements of Abdominal Surgical Cases E. L. Besser—p. 150
- Id. General Discussion of Some Aspects of Postoperative Care R. T. Tidrick—p. 152
- Effect of Acetylsalicylic Acid (Aspirin) on Gastric Mucosa Gastroscopic Study W. D. Paul—p. 155
- Visible Congenital Maldevelopments of Neurosurgical Character About Head and Spine O. R. Hyndman—p. 158
- Cesarean Section at University of Iowa N. E. Wentzler and J. H. Stout—p. 166
- Prevention of Recurrent Urolithiasis R. H. Flocks—p. 170
- Transportation of Psychotic Patient F. E. Coburn—p. 173
- Treatment of Large Stasis Ulcers by Pinch Skin Grafts E. J. Ringrose—p. 175
- Neuritis A. L. Saks—p. 178
- Severe Systemic Disease Occurring Secondarily to Streptococcal Skin Infection in Several Members of Same Family C. B. McIntosh—p. 181
- Effect of Acetone on Uptake of Oxygen by Muscle Strips and Liver Slices Kathryn K. Krauel and R. B. Gibson—p. 183
- Excision of Patella Preliminary Report S. M. Albert—p. 184

Journal of Nutrition, Philadelphia**25 309-410 (April 10) 1943**

- Vitellin, Casein, Liver and Muscle Tissue as Sources of Phosphorus for Rachitic Rat R. Bunkfeldt and H. Steenbock—p. 309
- Nutritional Dermatoses in Rat VIII Vitamin A Deficiency M. Sullivan and Virginia J. Evans—p. 319
- Nicotinic Acid Storage in Dog at Different Dose Levels of the Vitamin Susan Gower Smith, R. Curry and H. Hawfield—p. 341
- *Availability for Human Nutrition of Vitamin C in Raw Cabbage and Home Canned Tomato Juice Mary M. Clayton and Ruby A. Borden—p. 349
- Observations on Induced Riboflavin Deficiency and Riboflavin Requirement of Man R. D. Williams, H. L. Mason, Paul L. Cusick and R. M. Wilder—p. 361
- Fat Excretion by Normal Children H. H. Williams, Elizabeth N. Endicott, M. L. Shepherd, H. Galbraith and I. G. Macy—p. 379
- Effect of High Levels of Pantothenic Acid on Reproduction in Rat and Mouse A. Taylor, Dorothy Pennington and Juanita Thacker—p. 389
- Thiamine Assays of Foods Using Rat Growth Method C. D. Miller—p. 395
- Effect of Pantothenic Acid on Rate of Intestinal Absorption of Galactose in Rat J. R. Leonards and A. H. Free—p. 403

Vitamin C in Raw Cabbage and Home Canned Tomato Juice—Clayton and Borden investigated the availability of vitamin C in raw cabbage and home canned tomato juice on four young, healthy subjects. The utilization of the vitamin C

of each test food was compared with that of pure vitamin C tablets. The basal diet used was neutral in reaction and the subjects were saturated before each test period. Judging from the results of both blood and urine analyses, the vitamin C of both raw cabbage and tomato juice was utilized as well as, or possibly better than, that in the tablets. An average of 116 Gm of the cabbage or 208 cc ($\frac{7}{8}$ cup) of the tomato juice used in this experiment provided 50 mg of vitamin C.

Journal of Thoracic Surgery, St. Louis**12 305-396 (April) 1943 Partial Index**

- Bronchial Involvement in Metastatic Pulmonary Malignancy D. S. King and B. Castleman—p. 305
- Extrapleural Pneumothorax: Report of 38 Cases J. G. Russo—p. 316
- Traumatic Hemothorax with Special Reference to Chronic Persistent Types H. G. Smyth—p. 338
- Bronchial Adenoma with Metastasis to Liver W. M. Anderson—p. 351
- Thoracoscopy in Pulmonary Tuberculosis J. Goorwitch—p. 361
- Congenital Cysts of Mediastinum: Report of 3 Cases Including a Gastric Cyst H. A. Carlson—p. 376
- Self Retaining Scrupula Retracting for Thoracoplasty Without Use of Special Instrument O. C. Brantigan and T. B. Aycock—p. 394

Congenital Cysts of Mediastinum—Carlson discusses mediastinal cysts and cystic tumors believed to be the result of some aberration in embryologic development. The bronchial and gastrointestinal cysts, the entodermal cysts, differ from teratomas in that they do not contain tissue derived from ectoderm; they reproduce the structures of the bronchus, stomach or bowel, they occupy a posterior position in the mediastinum and often cause symptoms, serious complications or death in early infancy. They are believed to originate from the foregut, the respiratory buds or their derivatives (bronchial cysts) or from the omphalomesenteric duct (gastric and enteric cysts). By contrast, teratomas contain tissue derived from ectoderm (usually mesoderm, often entoderm). They have the structure which the name implies. They arise in the anterior mediastinum and frequently do not produce symptoms for a period of twenty to forty years. They are believed to develop from cells which have become segregated early in embryonic life. The author reports 3 cases. 1. A man aged 23 was found on x-ray examination of the chest to have a tumor mass suspected of being a dermoid cyst. The cyst was removed and was discovered to be a teratoma. 2. An 8 month old male infant had difficulty in breathing and died three days after hospitalization. The necropsy disclosed a bronchial cyst of the mediastinum with compression of the trachea and main bronchi, acute emphysema of the anterior portion of both lungs, acute bilateral hypostatic bronchopneumonia and acute catarrhal tracheobronchitis. 3. An infant aged 4 months had labored breathing and difficulty in swallowing. The removed structure proved to be a gastric cyst. The author discusses exteriorization and drainage of such cysts.

Journal of Urology, Baltimore**49 497-600 (April) 1943**

- Preparation and Properties of Human Fibrinogen Solutions H. Neurath, J. E. Dees and Hilda Fox—p. 497
- Properties of Human Fibrinogen Coagulum Preliminary Report J. E. Dees and Hilda Fox—p. 503
- Experimental Production of Various Renal Vascular Disorders F. M. Allen—p. 512
- *Kidney in Hypertension W. J. McMartin and T. McCurdy—p. 524
- Primary Carcinoma in Diverticulum of Bladder: Report of 4 Cases and Review of Literature B. S. Abeshouse and A. E. Goldstein—p. 534
- Prostatic Obstruction Complicated by Diverticula of Bladder P. Adams—p. 558
- Vasitis Nodosa: New Clinical Entity Simulating Tuberculosis of Vas Deferens J. A. Benjamin, T. D. Robertson and J. G. Cheetham—p. 575
- Bichloride of Mercury Poisoning H. A. Reif and H. F. Bramley—p. 583
- Contribution to Study of Tuberculous Bacilluria P. F. Albuquerque—p. 590
- Genitourinary Lesions in Lymphogranuloma Venereum W. E. Counts—p. 595

Kidney in Hypertension—McMartin and McCurdy maintain that hypertension may have its source in one kidney. They cite 4 cases of unilateral renal disease in which hypertension developed. They conclude that hypertension resulting from disease of one kidney is not the rule but is frequent enough to cause one to bear in mind the urologic tract as the source.

The background changes of hypertensive patients will regress toward normal if the responsible kidney is removed before arteriolar disease of the other kidney gets under way. Urologic examination should be done before referring the hypertensive patient for denervation operations or medical therapy. Patients who have had pyelolithotomy, nephrolithotomy, drainage of perinephric abscess, plastic operation on the pelvis of the kidney, nephrectomy and the like should have their blood pressure checked at regular intervals so that the onset of hypertension may be detected early and the source which may be the kidney previously operated on, removed.

Kentucky Medical Journal, Bowling Green

41 103-144 (April) 1943

- Treatment of Pulmonary Tuberculosis as Defense Measure O A Beatty—p 107
Some Problems in Tuberculosis as Seen in a Rural Practice R T Rount—p 113
United States Pharmacopeia and the War A E Simpson—p 116
Cirrhosis of Liver W C Gettelinger—p 119
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First Aid Care of Fractures R T Hudson—p 124
Fractures of Spine O Miller—p 125
Diagnosis and Treatment of Hip Fractures R Woodward—p 126
Differential Diagnosis of Gastric Ulcer and Gastric Carcinoma F M Stites Jr—p 128
Observations on Cancer of Stomach L W Frank—p 131
Prolapse of Sigmoid Due to Carcinoma Report of 2 Cases M H Pulskamp—p 135

Michigan State Medical Society Journal, Lansing

42 241-320 (April) 1943

- Poisoning in Infants Due to Common Cough Syrups J L Wilson—p 267
Tertiary Syphilis of Skin and Bone Coexisting with Granulomatous Halogen Skin Eruption H Pinkus and L Zlatkin—p 269
Management of Skull Fractures H E Mock—p 273
Relationship of Anesthesiology to Medical Practice P M Wood—p 274
Cases of Early Syphilis Suggested Outlines for Ambulatory Intensive Treatment L W Shaffer—p 279
Some Surgical Problems in Ulcer Treatment C F Vale—p 283
Nephritis and Nephrosis E T Bell—p 287
Choice of Operation in Cases Requiring Hysterectomy W C Danforth—p 290
Medical Aspects of High Blood Pressure (Hypertension) I H. Page—p 294
Therapy of Nevi Their Relationship to Skin Malignancies E F Traub—p 297

Nebraska State Medical Journal, Lincoln

28 101-132 (April) 1943

- Prostatectomy with Minimal Hospitalization without Preliminary Drainage E Davis—p 105
Early Care of Facial Injuries H A Boyne—p 111
Pneumonitis Resulting from Gasoline A Sachs and R L Egan—p 114

28 133-164 (May) 1943

- Soft Parts Dystocia J P Greenhill—p 136
Adequate Examinations of Uterine Cervix R J Stearns—p 142
Diagnosis and Management of Ectopic Pregnancies J P Redgwick—p 144
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Active Immunization Against Tetanus J Thomas—p 150
Bureau or Examining Boards Its Duties and Functions Jeanette Crawford—p 152
Recommendations for Venereal Disease Control Program in Industry Report of Advisory Committee on Control of Venereal Diseases Otis L Anderson—p 155

New England Journal of Medicine, Boston

228 443-472 (April 8) 1943

- *Diagnosis and Treatment of Ludwig's Angina Report of 20 Cases A C Williams and W C Guralnick—p 443
Survival for Four Years Following Dissecting Aneurysm of Abdominal Aorta D W Wallwork—p 451
Simple Tidal Drainage Unit D N Richards Jr—p 452

Diagnosis and Treatment of Ludwig's Angina—Williams and Guralnick report a series of 20 cases of Ludwig's angina treated at the Boston City Hospital from June 1939 to June 1942. The mortality in this series was 10 per cent. Mortality in a previous series of 31 patients was 54 per cent. Emphasis is placed on the role of teeth and dental procedures as etiologic factors. Some type of dental lesion was the initiating factor in 18 of the 20 patients (90 per cent). Streptococci were present in all and both streptococci and Vincent's organ-

isms in 8 of the 16 cases in which bacteriologic studies were made. Employment of both cultures and smears taken at operation is urged as a basis for the choice of dressings post-operatively. Zinc peroxide dressings are recommended when anaerobes are demonstrated. The authors advocate radical surgery as soon as the diagnosis is established, exposure of the trachea or a tracheotomy previous to the operation. Intravenous pentothal sodium is the anesthetic of choice. The use of sulfonamide drugs orally or parenterally is strongly favored. Dependence on sulfonamides without surgery, however, is discouraged. Under the regimen advocated the ordinary complications of Ludwig's angina have been eliminated.

228 473-498 (April 15) 1943

- *Resting Pulse and Blood Pressure Values in Relation to Physical Fitness in Young Men L Brouha and C W Heath—p 473
Diabetes Mellitus in General Practice J R Fowler—p 477
Addison's Disease Report of Fatal Case H A Lawson, L A Beck and R G Murphy—p 480

Pulse and Blood Pressure in Relation to Physical Fitness in Young Men—Brouha and Heath made studies on 265 college students. They found a wide variation in the pulse and blood pressure in normal, healthy young men. Although the values far exceed the usually accepted norms, they are nevertheless compatible with normal physiologic reactions to emotional stress and hard muscular work. There is no satisfactory relation between basal pulse, sitting pulse and physical fitness for strenuous exertion in normal healthy young men. There is no relation between sitting systolic or diastolic blood pressure and physical fitness for strenuous exertion in normal, healthy young men. Emotional factors are largely responsible for high resting pulse rates commonly found during the pre-induction medical examination of healthy young men. Resting pulses above 100 and sitting systolic blood pressures above 140 mm are not exceptional in medically normal subjects when exposed to some emotional strain, and in many of them they accompany an average or good physical fitness for hard muscular work. In normal young men no measurement of pulse or blood pressure taken at rest is indicative of capacity to perform hard work. When the resting pulse or blood pressure is unusually high it is recommended that the subject be submitted to a standard amount of strenuous exercise. The estimate of capacity to do hard muscular work should be based on the subject's actual ability to perform it and on the speed of recovery of his heart after exercise rather than on resting values of pulse and blood pressure alone.

New Orleans Medical and Surgical Journal

95 445-492 (April) 1943

- Cutaneous Manifestations of Systemic Disorders A B Loveman—p 446
Use and Abuse of Posterior Pituitary Extract in Obstetrics E L King—p 450
Carcinoma of Colon and Rectum 223 Cases from Charity Hospital of Louisiana at New Orleans from 1935 to 1941 S A Romano and W Trachtenberg—p 455
Results of Gastric Resection in Single Service at Charity Hospital L H Strug—p 464
Successful Suture of Stab Wound of Heart D B Williams—p 470
Histamine in Treatment of Duodenal Ulcer G McHardy and D Browne—p 472
Sinusitis in Diseases of Lower Respiratory Tract R H Riggs—p 475

New York State Journal of Medicine, New York

43 577-704 (April 1) 1943

- Aural Oral and Laryngeal Tuberculosis G E Wilson—p 580

43 705-800 (April 15) 1943

- Pathogenesis of Congenital Anomalies of Intrahepatic and Extrahepatic Bile Ducts Report of Case of Polycystic Disease of Liver and Case of Atresia of Bile Ducts S E Moellen—p 727
Certain Neuropsychiatric Aspects of Medicine in Emergency E H Adams—p 739
External Use of 30 to 50 Per Cent Sulfur in Petrolatum in Various Dermatoses E W Abramowitz—p 750

Northwest Medicine, Seattle

42 95-122 (April) 1943

- Soak Lake Water or Treatment of Thrombophlebitis Out and J L L—p 99
Psychosomatic Disorders H C Randolph—p 102
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Crush Injuries and Crush Syndrome W H Baermann—p 107
Heredity as Etiologic Factor in Chronic Asthma F Lemaire—p 110
Vogelin W R B O P—p 113 and V E T—p 115

Ohio State Medical Journal, Columbus

39 309-396 (April) 1943

- Anatomic Basis of Emotion A R Vonderahe—p 325
 Primary Cyst of Greater Omentum Report of Case with Fatal Blood Transfusion Reaction R W Jones—p 331
 Congenital Arteriovenous Aneurysm Report of Case Arising from Superficial Circumflex Iliac Vessels R K Finley and J M Shaffer—p 334
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 Control of Impetigo in the Newborn J K Hoerner—p 341
 Treatment of Pityriasis Rosea G W Binkley—p 344
 Pulsating Tumors of Sternum and Occiput Due to Metastatic Carcinoma of Thyroid Gland W L Mollie—p 346
 Uncommon but Characteristic Sign of Hyperthyroid Disease H D Lang—p 348
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 Cyst of Mesentery, Case Report G K Muhl—p 351
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39 397-504 (May) 1943

- Clinical Use of Stilbestrol J R Hollenbeck and P J Reel—p 413
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 Nonsurgical Treatment of Fubal Obstruction R M Inglis—p 429
 *Threatened Abortion Results of Treatment in 140 Cases W M Silbernagel and O P Burt—p 430
 Sulfonamides in Appendicitis From Cleveland Appendicitis Survey I H Budd and R M Watkins—p 433
 Patent Ophthalmocystic Duct J E Morgan—p 435
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 Under What Indications Should Serologic Tests for Syphilis When Positive Be Repeated by Several Techniques, Including Complement Fixation and Flocculation, at Least One of Which Is Quantitatively Titered in Order to Evaluate Whether a Positive Serum Reaction Is True or False? B S Kline—p 439
 Approach to Syphilis in Industry E G Baxter—p 441
 Massive Fatal Hemorrhage from Acute Ulcer at Cardioesophageal Junction T C Laipply—p 444

Threatened Abortion—The results of treatment of 140 patients with threatened abortion in 870 consecutive pregnancies form the basis of this report by Silbernagel and Burt. Vaginal bleeding, with or without cramping, was the only criterion for the diagnosis of threatened abortion. Bleeding due to local lesions was excluded. Basal metabolism determinations were made in every case and sufficient thyroid or strong solution of iodine was administered to bring the basal metabolic rate to approximately plus 5 per cent. At the first sign of bleeding the patient was immediately put on absolute bed rest. No opiates were used. An ice bag to the lower abdomen was used to control pain. If necessary barbiturates were given to provide rest and relaxation. This was the only treatment employed in a control group of 50 patients (357 per cent of the series). Of these 47, or 94 per cent, aborted. The authors report their experience with the parenteral administration of progesterone, the intramuscular injection of alpha-tocopherol acetate alone or in combination with the natural tocopherols and synthetic alpha-tocopherol acetate, the oral administration of natural tocopherols or of alpha-tocopherol acetate and the treatment with freshly extracted wheat germ oil by mouth. With the use of progesterone 182 per cent went to term. The authors feel that this is not a sufficient percentage of salvage in cases of threatened abortion to warrant the routine use of progesterone. A certain number of abortions are inevitable as the result of maternal, fetal or chorionic causes. Therapy of these is valueless. The intramuscular use of alpha-tocopherol acetate alone produced a salvage of only 20 per cent. Alpha-tocopherol acetate used alone, both intramuscularly and orally, produced a continuation of pregnancy in 66⅔ per cent. The intramuscular use of alpha-tocopherol acetate combined with the oral administration of the natural tocopherols produced a salvage of 85.7 per cent. The oral administration of alpha-tocopherol acetate alone allowed 16.7 per cent of the pregnancies to continue. This was nearly as effective as progesterone alone. The oral use of natural tocopherols produced a salvage of 42.8 per cent and the use of wheat germ oil alone saved 33⅓ per cent of the pregnancies.

Pennsylvania Medical Journal, Harrisburg

46 657-784 (April) 1943

- Resumption of Antisyphilitic Therapy Following Postarsphenamine Reactions H M Robinson—p 667
 Choice of Time and Type of Operation in Surgery of Early Life W E Ladd—p 677
 *Roentgen Treatment of Acute Bursitis of Shoulder J H Harris—p 683
 Traumatic Aphria and Workmen's Compensation Act J H Delaney—p 685
 Mental First Aid in Head Injuries F H Lewey—p 689
 Indications for Sinus Surgery J R Simpson—p 692
 Therapeutics of Heat M B Gerderber and S Sherman—p 695
 Observations on Routine Use of Modified Gwathmey Analgesia R B Wilson—p 700
 Silicosis—Medical Problem P G Bovard—p 705
 Influenza in Children G J Feldstein—p 708
 Cerebrospinal Fever (Meningococcus Meningitis) P F Lucchesi—p 713
 Review of Results from Hemorrhaphy G W Hawk and E A French—p 716

Roentgen Treatment of Acute Bursitis of Shoulder—Harris reports gratifying results from the roentgen treatment of 40 cases of acute calcified bursitis of the shoulder. The acute cases give the best results. The chronic cases are improved. The therapy consists in daily treatments for three or four days, 250 roentgens as measured in air is given in each treatment. The kilovoltage employed is unimportant, provided sufficient filtration is used. The author used 200 kilovolts with 0.5 mm of copper plus 1 mm of aluminum filtration and 120 kilovolts with 5 mm of aluminum filtration. The results have been equally good. Within twenty-four to thirty-six hours there was definite relief from pain, and by the end of the third day the severe pain has disappeared. There remains a stiffness which gradually subsides. Most patients use the arm in a normal manner in a week to ten days. The calcium is slowly absorbed. In the cases examined it has completely disappeared in three to four months.

Physiological Reviews, Baltimore

23 101-184 (April) 1943

- Malignancy in Relation to Organization and Differentiation N J Berrill—p 101
 Pathways of Glycolysis A Dorfman—p 124
 Influence of Estrogens and Androgens on Skeletal System W U Gardner and C A Pfeiffer—p 139
 Chronic Mountain Sickness C Monge—p 166

Public Health Reports, Washington, D C

58 541-588 (April 2) 1943

- Distribution of Health Services in Structure of State Government Chapter X State Health Department Organization J W Mountin and Evelyn Flock—p 541

58 589-624 (April 9) 1943

- Notes on Relation Between Coliforms and Enteric Pathogens R W Kehr and C T Butterfield—p 589
 Toxicity of Lead Azide L T Fairhall, W V Jenrette, S W Jones and E A Pritchard—p 607

58 625-660 (April 16) 1943

- *Outbreak of Dermatitis from Airplane Engine Covers L Schwartz and S M Peck—p 625
 *Murine Typhus Fever Control C R Eskey—p 631

58 661-688 (April 23) 1943

- Reported Whooping Cough Morbidity and Mortality in United States—p 661
 Sickness Absenteeism Among Industrial Workers, Final Quarter of 1942, with Note on Occurrence of Bronchitis and Pneumonia 1933-42 W M Gafaer—p 677

Dermatitis from Airplane Engine Covers—According to Schwartz and Peck, airplane engine covers are being extensively used to replace the usual antirust compounds with which engines are covered before they are shipped to the assembly plant. The covers are made of phtofilm, a material that has been in use for many years with no record of resultant dermatitis. Phtofilm has been recommended as a suitable material for sleeves and aprons to protect workers against industrial skin irritants. A chemical known as R M F was added to the special phtofilm for engine covers to prevent the phtofilm from deteriorating when exposed to light. An outbreak of dermatitis was observed among workers manufacturing airplane

engine covers made from this special phlofilm. Tests revealed that the R M F was the cause. This substance is both a primary irritant and a sensitizer. To prevent further attacks of dermatitis it is suggested that workers handling phlofilm containing the R M F should wear protective sleeves and aprons made of ordinary phlofilm vinylite, koroseal or laminated cellophane. The hands may be protected by gloves made of washable leather or finely knitted cotton. Persons on the job of heat sealing can protect their faces from the irritant fumes developed during the operation by the use of a protective ointment or the invisible glove type. Workers who continue to have dermatitis after observing the recommended precautions should be removed from further exposure to the material.

Murine Typhus Fever Control—Eskey states that during the period from 1932 to 1941 approximately 20,000 cases of murine typhus fever were recorded officially in the United States. Although the European or epidemic typhus has a much higher death rate than the murine typhus, the latter should not be regarded lightly. In a patient with murine typhus is more than 60 years old the chances of recovery are not good, young adults are usually acutely ill for two weeks. The febrile stage is commonly followed by a period of convalescence of two months or more before the patient fully regains his strength. Most cases of human infection with the rickettsiae of murine typhus are traceable to typhus infected domestic rats. Control of the disease therefore is based on the difficult task of eradicating the rodent reservoir of infection. During 1941 only 2 per cent of the reported cases occurred in states north of a line extending across the country at the level of the southern boundary of Kentucky. Only 18 per cent of the cases were reported from the area between this line and another line traversing the northern boundary of Louisiana, that is in the territory between 36° 30' and 33° north latitude. In the region south of 33° north latitude, murine typhus is most prevalent.

Radiology, Syracuse, N. Y.

40 327-432 (April) 1943

- Probable Incidence and Clinical Features of Virus Pneumonia P S Rhoads—p 327
Pathologic Changes in So Called Atypical Pneumonia O Saphir—p 339
Primary Atypical Pneumonia of Unknown Etiology P V McCarthy—p 344
Primary Atypical Pneumonia of Unknown Etiology F C Curtzweiler and B E Moore—p 347
Atypical Pneumonia of Probable Virus Origin C E Hufford and A A Applebaum—p 351
Echinococcus Cyst of Lung W A Evans Jr—p 362
Posterior Displacement of Calcified Pineal in Subtentorial Brain Tumors L E Hawes and S Mead—p 367
Stereoscopic Method for Localization of Intraorbital Foreign Bodies E P Griffin C Gianturco and S Goldberg—p 371
Study of Roentgen Ray Distribution at 60 140 Kv P Z J Atlee and E D Trout—p 375
Increased Filtration for Diagnostic Purposes S J Hawley—p 387
Dosage Calculations for Various Combinations of Parametrial Needles and Intracervical Tandems J F Nolan and Edith H Quimby—p 391

Review of Gastroenterology, New York

10 77-140 (Mar-April) 1943 Partial Index

- X-Ray Diagnosis of Primary Malignant Tumors of Small Intestine P C Swenson—p 77
Insufficiency of Ileocecal Valve C L Glaessner—p 91
Accurate Abdominal Diagnosis Peritoneoscopy in Private Practice R L Gorrell—p 100
Histidine-Histamine Antagonism Possible Mode of Action of Histidine in Peptic Ulcer L Felner—p 108
Practical Interpretation of Gastrointestinal Symptoms Based on Three Year Clinical Study Introducing New Concise History Sheet. A V Rossen—p 112
Liver Function in Arthritis Measured by Hippuric Acid Test. J S Hepburn P J Warter and Gladys Rosenstein—p 126
Congenital Absence of Gallbladder Case Report C H Drenckhahn and J C T Rogers—p 128

Liver Function in Arthritis—Hepburn and his associates studied the hepatic function of 28 arthritic persons by means of the hippuric acid test. The 28 patients fell into two groups—the osteoarthritic and rheumatoid arthritic. The arthritic in both groups showed no greater deficiency in liver function than would be shown by any other group of patients suffering from a systemic disease.

Surgery, Gynecology and Obstetrics, Chicago

76 385-512 (April) 1943

- Delayed Closure of Incisions Made at Closure of Colonic Stomas J deJ Pemberton and B M Black—p 385
Panaryngectomy for Advanced Carcinoma of Larynx A Brunschwig—p 390
Effect of Sectioning Various Autonomic Nerves on Rate of Emptying of Biliary Tract in Cat. F E Johnson and E A Boyden—p 395
Vaginal Hysterectomy W C Dantorth—p 411
Experimental Production of Bronchial Fistula in Rats and Rabbits A Carlson and W E Adams—p 416
Benign Tumors of Large Intestine Incidence and Distribution E B Helwig—p 419
Carbamide Sulfonamide Mixtures Use in Treatment of Compound Fractures and Traumatic Wounds F W Itteld—p 427
Tuberculosis of Ankle Joint End Result Study of 25 Cases S S Houkom—p 438
Some Manifestations of Regional Ileitis Observed Sigmoidoscopically R J Jackson and N D Smith—p 444
Effect of Estrogenic Substance on Uterine Motility During Late Pregnancy An Analysis of 133 Observations Made with Lorand Tocograph D P Murphy—p 446
Papillary Cystadenoma Lymphomatous of Parotid Gland D W Robinson and M S Harless—p 449
Metastatic Lesions of Sternum H B Macey and G S Phalen—p 453
Carbon Dioxide Snow Electrocautery Technique for Occlusion of Arteries Suggested Application to Arteriovenous Angioma of Brain J Ebin—p 456
Total Pneumonecomy J Johnson—p 460
Chronic Arthritis H Kelikian—p 469
Osteochondromas Arising from Base of Skull C F List—p 480
Results of Nephrectomy on Experimental Renal Hypertension H S Patton E W Page and E Ogden—p 493
Improved Operative Method for Obtaining Bony Fusion of Great Toe D H O'Donoghue and R Stauffer—p 498
Dusting Powder Granulomas Following Surgery W McK German—p 501

76 513-640 (May) 1943 Partial Index

- Intubated Ureterotomy New Operation for Ureteral and Ureteropelvic Stricture D M Davis—p 513
Intraperitoneal Administration of Sulfadiazine with Special Reference to Comparative Study with Sulfanilamide L Walter and W H Cole—p 524
Congenital Narrowing of Lumbosacral Space T H Vinke and E H White—p 531
Comparison of Effects of Tanning Agents and of Vaseline Gauze on Fresh Wounds of Man J W Hirschfeld M A Pilling and M E Maun—p 556
Struma Lymphomatosa Hashimoto's Disease B McSwain and S W Moore—p 562
Melanopithelioma (Melanosarcoma Melanocarcinoma Malignant Melanoma) of Extremities W H Bickel H W Meyerding and A C Broders—p 570
Schwannomas (Neurileiomas) in Head and Neck H E Ehrlich and H Martin—p 577
Sulfadiazine Treatment of Burns Comparative Study K A Meyer and R Gradman—p 584
Study of Extracellular Water Changes in Pregnancy L C Chesley—p 589
Internal Fixation in Injuries of Ankle H G Lee and T B Horan—p 593
Tannic Acid and Liver Necrosis J C Forbes and E I Evans—p 612
Injuries to Larynx and Trachea R L Vach and M Rothman—p 614

Sulfadiazine and Sulfanilamide Intraperitoneally—

Walter and Cole implanted sulfadiazine crystals in the peritoneal cavity and wounds of 68 patients operated on for various lesions most of which caused peritoneal contamination. A similar procedure using sulfanilamide was carried out on 62 patients. There was an incidence of 4.04 per cent of wound infection in the sulfadiazine group and of 14.05 per cent in the sulfanilamide group. Sulfadiazine appeared superior to sulfanilamide in the prevention of wound infection. One instance of wound disruption and 1 of fatal peritonitis in that series were probably not related to the use of the drug. There were no toxic manifestations and no evidence of delay in wound healing in the sulfadiazine group. A dose of 6 Gm was adopted as the routine 4 Gm being placed in the peritoneal cavity and 2 Gm in the layers of the wound. The studies on animals and on human beings revealed a much more persistent blood level with sulfadiazine than with sulfanilamide. Sulfadiazine is also less toxic. The longer persistence of the blood level of sulfadiazine over sulfanilamide makes the former drug superior for implantation in the peritoneal cavity and wound layers in a laparotomy. Use of sulfonamides in wounds contaminated by bowel resection has resulted in a much lower incidence of infection sulfadiazine being superior to sulfanilamide.

Melanopithelioma of Extremities—Bickel and his collaborators reviewed the clinical and pathologic material in a series of 155 cases in which diagnosis of melanopithelioma of an extremity was made at the Mayo Clinic during the twenty-four year period from 1916 to 1939 inclusive. In this series 29.8 per cent of the patients treated by excision survived five years or more. There were many cases in which the lesions were small and the patients were seen in the early stages of the disease. Amputation was the most common type of treatment for cases in which the lesion was more extensive and of a longer duration, yet in this group there was a five year survival rate of 21.1 per cent. None in the group treated by irradiation alone survived three years. A melanopithelioma may be present for a long time before the seriousness of its nature is recognized. The condition may be activated by middle-aged treatment. The treatment of choice is a wide excision with removal of regional lymph nodes or amputation. When tumors do not appear to be increasing in size or showing evidence of ulceration a wide local excision would appear adequate.

Tannic Acid and Liver Necrosis—Forbes and Evans point out that subcutaneous administration of tannic acid in rats results in liver necrosis. They suggest that liver necrosis noted in many cases of severe burns may have been due to the toxic action of the tannic acid rather than to toxic products arising from the burned tissue. Observations on six series of rats demonstrated the hepatotoxic action of subcutaneous tannic acid injections. No protective action resulted from either the oral or the subcutaneous administration of sulfanilamide or from the subcutaneous administration of xanthine.

Texas State Journal of Medicine, Fort Worth

38 699-748 (April) 1943

- Anal Fistulas Their Origin and General Management L. A. Bue — p 704
Surgical Treatment of Hydrocephalus C. C. Nash — p 709
Heart That Grows Old J. H. Musser — p 710
Laboratory Observations on Nonspecific Wassermann and Prezone Reactions M. Owen, B. Brooks and L. M. Tucker — p 714
Pathologic Changes of Thyroid Gland A. O. Severance and Sylvia Johns — p 717
Clinical Classification and X-Ray Therapy in Acute Pulmonary Infections R. C. Curtis — p 722
Classification of Acute Pulmonary Infections T. Smith — p 724
X-Ray as an Aid in Diagnosis of Acute Abdominal Conditions S. D. Whitten — p 726
Intestinal Obstruction in the Newborn R. P. O'Bannon — p 728

Virginia Medical Monthly, Richmond

70 227-278 (May) 1943

- Emotion and Its Home Front Reaction B. R. Tucker — p 230
Acute Cirrhosis of Liver T. D. Davis — p 233
The Kenny Concepts E. M. Fusco — p 236
Physician's Responsibility in Planned Parenthood H. H. Ware Jr — p 238
Pulmonary Diseases Caused by Dust H. F. Eason — p 242
Hypertensive Arterial Disease E. L. Copley — p 244
*Intra Group Incompatibilities in Whole Blood Transfusions R. B. Houlihan — p 251
Type 2 Pneumonia Not Responsive to Sulfa Preparations Case Report J. P. Kent — p 256
Social Forces Compel Professional Planning for Medical Economy F. I. Libby — p 257

Intra Group Incompatibilities in Whole Blood Transfusions—According to Houlihan, an appreciable number of transfusion reactions are caused by intra group incompatibilities. The detection of subgroups A₁ and A₂ should be performed routinely on patients receiving multiple transfusions and on patients in whom incompatibility due to the Rh factor has been eliminated. Most of the intra group reactions are due to Rh incompatibility. Every attempt should be made to employ the present methods for the detection of Rh agglutinogens and agglutinins. Serum containing Rh agglutinins can be used to detect the Rh antigen in donors and laboratory personnel. Rh agglutinins can be detected in the patients' serum by the cross matching tube technique of Landstemer and Wiener. An attempt should be made to check prior to the transfusion the Rh status of every patient who has had an irregular or pathologic obstetric course, whose history shows previous miscarriages or abortions of unexplained nature or who has given birth to infants with erythroblastosis.

War Medicine, Chicago

3 337-446 (April) 1943

- Wound Ballistics Mechanism of Production of Wounds by Small Arms Bullets and Shell Fragments G. R. Callender — p 337
Tropical Neuropsychiatry J. L. McCartney — p 351
Teaching of Physical Medicine in Relation to War Effort F. H. Krusen and F. C. Elkins — p 367
Classification of Personnel in British Army Preliminary Survey of Methods D. McG. Kelley — p 386
Acute Emotional Disturbances in Torpedoed Seamen of Merchant Marine Who Are Continuing at Sea Their Nature and Incidence S. Margolin, L. S. Kubie, M. Kanzer and L. Stone — p 393
Effect of Chlorination of Water on Viability of Cysts of Endameba Histolytica F. J. Brady, Myrna F. Jones and W. L. Newton — p 409

Western J Surg, Obst & Gynecology, Portland, Ore

51 135-176 (April) 1943

- Spontaneous Amputation and Subsequent Acute Torsion of Normal Left Uterus Tube and Fibroma of Right Ovary C. W. Barrett and A. F. Lish — p 135
Necessity of Repeated Examinations in Fitting of Contraceptive Diaphragms Nadine R. Kavinoky and Elizabeth U. Brown — p 140
Endocrine Diarrhea Clinical Review O. R. Wallerstein — p 143
*Vaginal Tampons in Menstrual Hygiene J. M. Singleton and H. F. Vanorden — p 146
*Vaginal Tampons for Menstrual Hygiene K. J. Karnaky — p 150
Endocrine Therapy in Adolescence E. L. Sevringhaus — p 153

Vaginal Tampons in Menstrual Hygiene—Singleton and Vanorden sent out a questionnaire on the subject to 3,400 members of obstetric and gynecologic societies and to about 500 doctors in general practice. Physicians were four to one against the use of menstrual tampons. Some few favored or permitted it with limitations, such as during the early and last days of menstruation, for esthetic reasons to dancers, actresses, for athletic events, and the like. There was an almost unanimous opposition to the use of tampons by virgins because of a feeling that it created sex consciousness and stimulated eroticism and the habit of masturbation. The difficulty of application was stressed. Tampons, if used, should be changed frequently, since blood clots often form on the tampon and may therefore cause a back flow of menstrual discharge through the uterus and tubes into the peritoneal cavity, this possible origin of endometriosis was repeatedly stressed. Twenty per cent of the physicians reported instances of pathologic changes varying from a mild vaginitis to a pelvic infection. Many instances of lost or retained tampons were recorded. There appears to be a definite potential source of infection in the habitual or occasional practice of menstrual tamponage. Preexisting infections may become aggravated.

Vaginal Tampons for Menstrual Hygiene—Karnaky carried out careful studies on 218 women who used tampons during their menstruation for one year and over. No irritation, discharge, vaginitis or cervicitis was found. A series of 42 women were instructed to insert a large tampon night and morning every day in the interval between their periods and during their menstruation. These tests ran from six months to two years. A bacterial culture was taken, the vaginal pH and the amount of glycogen were determined, and a vaginal biopsy was made and notes on the local examinations were recorded before, during and after the use of the tampons. These observations were carried out at two to four week intervals. With hardly an exception, the findings were favorable. The tampons did not block the flow nor did they irritate the vaginal tissue. Of the 110 young nurses, 95 per cent used tampons with satisfaction all through menstruation. Only 5 per cent could not use tampons in the middle of menstruation because of an excessive flow. The tampons are comfortable and overcome the problem of menstrual odor.

West Virginia Medical Journal, Charleston

39 105-136 (April) 1943

- Diabetes in 1942 F. N. Allan — p 105
Fractures of Shaft of Femur (Review of Treatment of Femoral Shaft Fractures) A. R. Lutz — p 111
Nontuberculous Pulmonary Disease W. V. Walker — p 114
Allergy L. E. Shrewsbury — p 121

39 137-184 (May) 1943

- Problems in Gastric Surgery R. McGinnis — p 137
Effect of Current Trends in Control of Medicine E. J. Carey — p 146
Robertson Test for Carcinoma Preliminary Report W. L. Harty and Betty Love — p 151
Newer Alloys in Surgery C. S. Venable and W. G. Slack — p 154

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

30 189-288 (Jan) 1943

- Osteogenic Crani in Tuberculosis of Hip Joint in Childhood E D Telford and J E Geddes—p 189
Hydronephrosis of Pelvic Ectopic Kidney R H F Brain—p 191
*Carcinoma of Lung Value of Sputum Examination in Diagnosis F J Sambrook Gower—p 193
Traumatic Cerebral Fungus J E A O Connell—p 201
Traction Injuries to Lateral Popliteal Nerve and Traction Injuries to Peripheral Nerves After Suture W B Highet and W Holmes—p 212
Treatment of Pancreatic Cysts J T Chesterman—p 234
Spinal Analgesia for Prostatectomy Review of 94 Cases with Novocain Dissolved in Spinal Fluid R P Hurlburt—p 235
Traumatic Ventricular Pneumocephalus Case D O Davies—p 237
Acute Diverticulitis of Jejunum G H C Owens—p 239
Air Arthrography in Lesions of Semilunar Cartilage C H Cullen and G Q Chance—p 241

Sputum Examination in Carcinoma of Lung—According to Sambrook Gower examination of sputum by the smear method of Dudgeon is of great value for the early diagnosis of malignant growths. The sputum should be expectorated first thing in the morning so that there is no contamination with food particles. The specimen is to be coughed up. Preservatives or disinfectants must not be added and the specimen is to be examined as soon as possible after collection. Specimens collected at bronchoscopy or coughed up shortly afterward are suitable for examination. Dudgeon advises that the sputum be poured on to an unglazed porcelain tile to concentrate it but the author found that by examining it in a large Petri dish on a black background it was easier to pick out portions for examination. Blood streaked fragments or the more solid portions are picked out with a platinum loop or scalpel and are spread thinly on a slide. Several slides are prepared from each sputum. They are fixed by immersing at once in a bath of Schaudinn's solution and leaving for twenty minutes, washing in 70 per cent alcohol containing a trace of iodine to remove excess mercury bichloride (two minutes) and then in distilled water. The slides are stained with Mayer's hemalum (one and one-half to two minutes) blued in tap water counterstained with eosin (two minutes) dehydrated and mounted in Canada balsam. They are then examined with the low power of the microscope and any suspected group of cells is submitted to a higher magnification. When the clinical evidence is strongly in favor of carcinoma several specimens of sputum should be examined before a negative report is made. A negative report does not exclude malignant disease. The author used this method in 93 cases of suspected neoplasm of the lung. In 64.3 per cent of the cases he succeeded in demonstrating malignant cells. The cells were found not only in advanced cases but also in a significant proportion of those in which the growth was still operable. The test is of value in establishing malignancy when other methods of investigation including bronchoscopy have failed and when it is desired to explore the chest, for patients too ill to be submitted to other methods of investigation and when the growth is masked by secondary inflammatory changes in the lung. It is urged that the test be employed more widely and that aspiration biopsy should be reserved for cases giving repeatedly negative sputum tests and should not be employed when surgical removal of the growth is envisaged.

British Medical Journal, London

1 557-590 (May 8) 1943

- Desoxycorticosterone in Addison's Disease Comparison of Different Methods of Administration D M Dunlop—p 557
Investigation of Hemolytic Transfusion Reactions P L Morrison—p 559
Lederle's Pertussis Antigen in Treatment of Whooping Cough Report of an Investigation R S W Baker—p 562
Castroradical Surgery in the Aged N C Tanner—p 63
Incidence of Pulmonary Tuberculosis of Adult Type in Royal Air Force Results of Mass Radiography of 75,000 Cases A G Evans—p 565

Journal Obst & Gynaec of Brit Empire, Manchester
49 581-728 (Dec) 1942

- *Clostridium Welchii Infection of Uterus Complicating Delivery Coralie Rendle-Short—p 581
Diet in Pregnancy W C W Nixon—p 614
Intrapelvic Tuberculosis J R Goodall—p 637
Comments on Third Stage of Labor R Christie Brown J V O Sullivan and J Sanctuary—p 646
Benign Ovarian Neoplasms and Postmenopausal Hemorrhage R B K Rickford and Eileen M Whapham—p 653
Premenstrual in Some Postmenopausal Complications J R Goodall—p 660
Problem of Puerperal Morbidity A Sadovsky A Brzezinski and A M Bromberg—p 664
On Labor in Young and Old Primiparae A M Bromberg and A Brzezinski—p 672
Pregnancy After Thoracoplasty F R Stansfield—p 682
Obstetric Injuries of Perineum I Magdi—p 687

Clostridium Welchii Infection of Uterus—Rendle-Short reviews the literature on gas gangrene infection of the uterus following abortion or delivery and reports 6 original cases. The acute abdominal pain jaundice foul vaginal discharge rapid pulse possibly vomiting or diarrhea make a dramatic picture particularly if there are the additional signs of hematuria abdominal discoloration and gas escaping from the vagina. The fetus may or may not be distended with gas. In nearly all cases infection comes from outside following some manipulation instruments being contaminated by fecal matter on the vulval hairs. In rare cases there has been no outside intervention and in such cases Clostridium welchii was probably present in the vagina. If the fetus is dead the danger of infection is much greater. There are two main clinical groups one postabortal and the other puerperal the postabortal being slightly more common. The symptoms depend on whether the infection is local or generalized. Survival occurs in most of the 'local' cases death occurs in well over 50 per cent of those with physometra or generalized infection. Modern treatment makes the outlook much better. Great care should be taken when intervention is necessary when a dead fetus is known to be present. Serum and sulapyridine should be given prophylactically in a potentially infected case. Treatment consists in the prompt giving of anti-gas gangrene serum together with sulapyridine as soon as the disease is suspected without waiting for a swab report. Dextrose and fluids should also be given.

Nature, London

151 399-426 (April 10) 1943 Partial Index

- Value of Micro-Organisms in Nutrition (Food Yeast) A C Thaxsen—p 406
Development of Biologic Science in Russia C S Koshlovants—p 403
Pioneers of Refrigeration E C Smith—p 412
*Development of Cold Agglutinins in Atypical Pneumonia J C Turner—p 419

Development of Cold Agglutinins in Atypical Pneumonia—Turner points out that in addition to the classic isoagglutinins that delineate the four primary blood groups of man there exist in many normal serums other substances which may cause clumping of erythrocytes. They are called cold agglutinins because in most instances their action appears only at low temperatures. Specific cold agglutinins concerned with the subgroups of type A blood have been distinguished. The cold agglutinins are, however otherwise considered to be non-specific as they will produce clumping of all human red blood cells irrespective of group. Since they likewise affect the cells of the individual in whose serum they appear they are sometimes named autoagglutinins. The detection of the cold agglutinins in 2 patients with atypical or virus pneumonia induced the author to search systematically for them in 22 cases of virus pneumonia. All the patients were soldiers in the overseas forces of the U S Army. Twenty nine men with various infections served as controls. No less than 10 pneumonia serums produced a hard solid disk or agglutinated cells. This is in sharp contrast to the delicate clumping usually seen in the controls none of which showed a disk. On the basis of observations in several examples of atypical non-pneumococcal pneumonia it appears likely that the titer of cold agglutinins in the serum rises during the acute period of this disease in contrast both to the convalescent phase and to the pneumococcal pneumonia.

Revista de la Asoc. Méd. Argentina, Buenos Aires

56 633-676 (Dec 15-30) 1942 Partial Index

- *Intrapleural Injections of Sulfanilamide and Antituberculous Serum in Putrid Empyema M R Cistex, I I Capdehourat and A Martinez Marchetti—p 633
- *Desoxycorticosterone Acetate in Enlargement of the Heart (Dietetic Medicamentous Cardiac Beriberi) R Dassen—p 613
- Kinesic Therapy Its Effects on Digestive Apparatus Experimental Study A Mabb and J M Nigera—p 650

Sulfanilamide and Antigangrene Serum for Putrid Empyema—According to Cistex and his collaborators the therapy of putrid empyema consists in repeated pleural punctures followed by injections of pure oxygen and of a mixture of sulfanilamide and antigangrene serum. A preliminary lavage of the pleural cavity with sulfanilamide in isotonic solution of sodium chloride in the proportion of 0.25 Gm of the former in 25 cc of the latter is indicated in the presence of thick pus. Pneumothorax is induced by intrapleural injection of 200 cc of air. In the presence of increased tension the air is removed during the puncture and an equal amount of pure oxygen is introduced. The mixture for each pleural injection consists of 4 Gm of sulfathiazole, 3 Gm of sulfapyridine, 1 Gm of sulfanilamide and 30 to 50 cc of polyvalent antigangrene serum. This treatment is given daily for twelve days, after which the serum is discontinued. The intrapleural administration of sulfanilamide is continued at intervals of two to four days or once a week until a cure is obtained as manifested by laboratory tests and by the sedimentation speed of the erythrocytes. Nausea, chills and dizziness are an indication for discontinuance of the serum treatment. The serum is temporarily contraindicated for patients with a bronchopulmonary fistula who require desensitization before recourse to the combined therapy. Blood transfusions, cardiac tonics and proper general care are indicated.

Desoxycorticosterone Acetate and Heart—Dassen warns against the simultaneous administration of desoxycorticosterone acetate and sodium chloride in the management of the crises of Addison's disease. The combined therapy produces a rapid dilatation of the heart, which, however, can be rapidly reversed through the omission of the adrenal preparation and its replacement with a diuretic followed by sodium chloride in 6 to 8 Gm daily doses. Desoxycorticosterone acetate alone is of value in the therapy of the addisonian crisis. The drug should be discontinued as soon as the crisis is over, after which sodium chloride is indicated. The patient should be placed on a diet containing large amounts of potassium for as long as he is subjected to the adrenal therapy and on a diet containing very small amounts of potassium when he is on the sodium chloride therapy. In the case reported the teleroentgenograms showed a rapid enlargement of the heart shadow during the combined desoxycorticosterone and sodium chloride therapy. The size of the heart diminished as soon as the desoxycorticosterone was omitted and a diuretic and sodium chloride were given.

Klinische Wochenschrift, Berlin

21 97-120 (Jan 31) 1942 Partial Index

- *Physiologic Examination of Metabolism in Hepatic Insufficiency with Especial Consideration of Blood Sugar Curve After Oral Tolerance Test with Galactose and Levulose H Gohr and A Schmitz—p 101
- Modification of Function of Corpus Luteum by Alpha Tocopherol (Vitamin E) During Normal Cycle H Winkler—p 105
- Quantitative Resorption Experiments with Pure Intestinal Toxins Resorption and Storage of Small Quantities of Indole in Small Intestine of Rats with Chronic Enteritis H Nicolai—p 108
- Practical Significance of Measurement of Venous Pressure During Pericarditis P Gomori—p 112

Blood Sugar in Hepatic Insufficiency—Gohr and Schmitz investigated the diagnostic value of the blood sugar curve following oral tolerance tests with 40 Gm of galactose or 40 Gm of levulose. The tests were compared with the sugar elimination in the urine, with the flocculation reactions of Takata, Bauer and Weltmann and with the clinical course. In hepatic lesions accompanied by ascites or edema the elimination tests often gave inaccurate information. The blood sugar curve is only slightly influenced by these disturbances and is therefore useful in such diseases as well as in the various types of jaundice. The curves are protracted in hepatic insufficiency and

often reveal an abnormal increase in the blood sugar values. The galactose curve shows greater deviations from the normal than does the levulose curve and is therefore of greater diagnostic value. Forty Gm of levulose is inadequate for a tolerance test. Both curves correspond somewhat to the precipitation reactions of Takata, Bauer or Weltmann and like these they indicate impairment of the hepatic parenchyma. Extrahepatic factors may exert their influence. The blood sugar curve following the galactose tolerance test together with the precipitation reactions permit a true estimate of the hepatic function. The lactic acid content of the blood was determined during the precoma and the coma of 2 patients with hepatic cirrhosis who died in hepatic coma. Considerably increased values were ascertained.

Zentralblatt fur Chirurgie, Leipzig

69 289-336 (Feb 21) 1942 Partial Index

- Prognosis in Wounds of Heart K Holubec and V Tolar—p 295
- Three Times Peptic Jejunal Ulcer Lateral Connection of Stomach and Descending Duodenum D E Schouten—p 303
- Experiences with Sulfonamide Therapy in Surgery, Particularly in Erysipelas N Liedberg—p 309
- Osteochondritis Dissecans in Ankle Joint H Aronsson—p 312
- *Excision of Ganglion Cervicale Superior in Peripheral Facial Paralysis G Placinteanu and D Dobrescu—p 323

Excision of the Superior Cervical Ganglion for Peripheral Facial Paralysis—Placinteanu and Dobrescu discuss the primary suture of nerve ends, transplantation of nerves, attachment of the peripheral end of the facial nerve to a neighboring cerebral nerve, the myoplastic method, the suspension method and the excision of the superior cervical ganglion in the treatment of traumatic peripheral facial paralysis. They are chiefly concerned with the procedure mentioned last, which was first employed by Leriche. Their first patient presented a paralysis of the left side of the face with extreme lagophthalmos and drooping of the left angle of the mouth. Electrical treatment was ineffective. Extirpation of the superior cervical ganglion was followed by reduction of the lagophthalmos, by miosis and hyperemia of the conjunctiva and of the paralyzed part of the face. The patient had a sensation of warmth and no longer felt the inertia of the paralyzed muscles. Complete closure of the palpebral fissure became possible in the course of time and the angle of the mouth could be voluntarily contracted. Three other cases are reported. The authors conclude that excision of the superior cervical ganglion is of real value in the treatment of peripheral facial paralysis. This sympathectomy is directed particularly against the lagophthalmos, which either disappears or is considerably reduced. If, as is sometimes the case, the paralysis of the angle of the mouth is not corrected, a myoplastic procedure might improve the results.

69 545-576 (March 28) 1942 Partial Index

- Operative Treatment of Irreparable Transverse Lesions of Spinal Cord and of Paralysis Due to Injury to Nerve Plexus R von Oppolzer—p 545
- *Study of Joint Effusions From Accidental Injury Including Traumatic Serous Knee Joint Effusions W Beyer—p 551

Traumatic Joint Effusions—Beyer performed eighty punctures in 50 cases of joint effusions. One hundred and sixty preparations were studied. On the third day after the accident a lymphocytosis was manifest. Other parts of the body were not involved. Beyer considers lymphocytosis as a manifestation of a normal course of healing of blood effusion and not as a manifestation of transition to a chronic effusion. Within fourteen to eighteen days at the earliest the change to a serous, amber colored, limpid effusion may develop from blood effusion. Unless the history and the clinical picture correspond, one should refrain from a diagnosis of a traumatic serous effusion. History previous to the accident should exclude pain in the knee joint or damage to the joint. The interval between accident and effusion should not exceed twenty-four to ninety-six hours. External signs of injury are helpful. Synovial cells and some lymphocytes but little or no polymorphonuclear leukocytes should be demonstrated on cytologic examination. Internal damage to the joint should be excluded. More frequent cytologic examinations for serous effusions are recommended.

Book Notices

Essentials of Industrial Health By C O Sappington M.D. Dr.P.H. Consulting Industrial Hygienist President Central States Society of Industrial Medicine and Surgery Chicago. Fabrikhold Price \$6.50 Pp 626 with 63 illustrations Philadelphia Montreal & London J B Lippincott Company 1943

The scope of industrial health has become so inclusive that it is not possible for one person to become a specialist in every branch of the subject. The author has drawn freely, with acknowledgment from literature to augment his experience in industrial health to compile this textbook. With this type of treatment, practical and pertinent data are presented in almost all phases with the retention of the uniform style and philosophy of the author.

The presentation of the material follows the Outline for the Teaching of Industrial Health prepared by the joint committee from the American Association of Industrial Physicians and Surgeons and the Council on Industrial Health of the American Medical Association. This has led to some unavoidable repetition but assured coverage in a manner suitable for the student. The principles and methods of industrial health contained in detail are informative to the practicing physician yet couched in language to be of use to laymen such as industrial personnel and attorneys.

The book is divided into three parts Industrial Health Administration, Industrial Hygiene and Toxicology and Industrial Medicine and Traumatic Surgery each with numerous subdivisions. Administrative functions with their application to the plant and individual worker are discussed. Health exposures and their engineering and medical control are treated in detail. Under the heading 'Industrial Medicine and Surgery' are discussions of placement of workers accidents occupational diseases, nonoccupational disability and workmen's compensation and rehabilitation.

The author makes no pretense of discussing the diagnosis and treatment of all occupational diseases but does deal at length with those which occur most frequently.

This is an accumulation of much of the best material which has been written on present day industrial health. As such it makes fairly complete general information on industrial health available in one volume. It should prove valuable in teaching the subject. The application of the procedures to small plants could have been given more emphasis.

Hemolytic Syndromes By William Dameshek M.D. Tibor J Greenwalt M.D. Russell J Tat M.D. and Camille Dreyfus M.D. A Reprint of an Exhibit Sponsored by the New England Medical Center Boston Mass. Presented at the 1942 Convention of the American Medical Assn. Atlantic City June 1942. Awarded Certificate of Merit for Correlation & Presentation of Facts. Paper Price \$1.50. No pagination. Boston 1942.

Physicians who have attended the annual sessions of the American Medical Association have often expressed a desire to have reprints or some of the meritorious scientific exhibits. This is a reprint of an exhibit on hemolytic syndromes presented at the 1942 session in Atlantic City. It consists of about forty charts diagrams and illustrations in loose-leaf form. Pertinent facts and theories concerning the physiology and pathology of blood destruction are presented in chart, diagram and outline form together with a brief review of the pathogenesis of hemolytic syndromes. The subjects of acute hemolytic anemia congenital hemolytic jaundice and familial nonhemolytic jaundice sickle cell anemia Mediterranean anemia, hemoglobinurias chronic hemolytic anemia Rh factor and erythroblastosis fetalis are also epitomized in diagrams illustrations and outline. Pertinent clinical and laboratory facts of the spleen and causes for its enlargement are presented in summary. Special procedures in studying hemolytic syndromes are indicated and a list of publications on pertinent hemolytic syndromes by the author and his workers are appended. The reprint of this exhibit material is most useful to physicians students and those interested in hematology. Much time and thought have obviously been taken in the preparation of this material, and the value of a reprint goes beyond that of a mnemonic. It is a provocative correlation of facts that should be stimulating to any student or medic.

Studien am menschlichen Sperma Von Charles A Joël Cloth Price 20 Swiss francs 12 marks Pp 154 with illustrations Basel Benno Schwabe & Co Verlag 1942

This interesting and compact book demonstrates that scientific research in Europe is not entirely devoted to the destruction of man. The text is elaborately written and excellently illustrated with various forms of sperm dyscrasias and morphology. A bibliography of 538 references accompanies the volume.

The first section of the book summarizes man's knowledge of the subject from the time of Leeuwenhoek. In speaking of the method of obtaining material the author stresses the fact that a week's continence should precede an examination of an ejaculate. The author makes it a practice to wait thirty minutes before examining a masturbated ejaculate in order to be sure that the sperm heads have had time to free themselves from the mucus. He stains all specimens with Ziehl's carbol fuchsin.

In the consideration of a diagnosis of necrospemia the author cautions and goes to great length to show that although the spermatozoa may appear to be motionless they may not be dead. After the addition of isotonic solution of three chlorides isotonic dextrose, isotonic solution of sodium chloride or buffer solution, the heretofore motionless spermatozoa may begin to move again in twenty-four hours and be completely revived. The author finds that to revive motionless spermatozoa and cause activity it is best to use 8 parts of 5.42 dextrose to 2 parts of eighth normal magnesium chloride solution. He adds 10 parts of this mixture to 1 part of ejaculate. The spermatozoa if alive will revive and become active. After ten minutes if there is no activity he makes a diagnosis then, and only then of necrospemia. This state of inactive but viable sperm he terms akinesis.

TABLE 3—Influence of Ferment Inhibitors on Motility of the Sperm

Ferment	Sperm	Sperm Plasma	Prostate	Seminal Vesicles
Cholinesterase	—	+	++	++
Monoamino-oxidase	—	+	++	++
Diamino-oxidase	—	++	+	+

In discussing morphology Joël rightly condemns Blass's heat fixation method because of the change or destruction of the cellular proteins which it causes. He considers supervital staining the method of choice in preparing specimens for microscopic examination.

Diamino-oxidase was first reported by Zeller in 1938 and it is identical with Best's histaminase and has a great deal to do with the sexual apparatus in man as well as in animals. Diamino-oxidase is found in the blood serum of pregnant women and in the liver of pregnant rats. It is also found in human spermatozoa, the human prostate, the semen and the seminal vesicles. When a ferment acts on polyamino-oxidase (spermedine) it breaks up into histamine, cadaverine, putrescine and agmatine during the process of which oxygen is absorbed. It is this absorption of oxygen that can be measured. The process of fertilization has some connection with the chemical diamino-oxidase. A test of the blood plasma during pregnancy shows increased quantities of diamino-oxidase.

The work of Belanochkin with inhibitors is mentioned and utilized. Some of these substances as potassium cyanide neutralize the substance diamino-oxidase. A rather detailed discussion of activators and inhibitors of spermatogenic activity is given. The results of the author's own research work presented in this volume are as follows:

- 1 The diamino-oxidase of human semen is present in the sperm plasma and not in the cellular elements.

- 2 Cholinesterase is also present only in the sperm plasma.

- 3 In the prostate there is very little diamino-oxidase but more of monoamino-oxidase and cholinesterase.

- 4 The seminal vesicles contain the same amount of monoamino-oxidase and diamino-oxidase as the prostate.

- 5 Carbonyl reactions (semicarbazide and dionedon) inhibit in small concentration the motility of spermatozoa and activate them in greater concentrations.

This volume furnishes a fund of information which could be of considerable value to students, teachers and investigators on the subject as a work of reference.

Neurology By Roy R. Grinker, M.D., Chairman, The Department of Neuropsychiatry of the Michael Reese Hospital, Chicago. With the assistance of Norman A. Levy, M.D., Associate Neuropsychiatrist, Michael Reese Hospital, Chicago. With a chapter on Brain Tumors by Paul C. Bucy, M.D., Professor of Neurology and Neurological Surgery, University of Illinois College of Medicine, Chicago. Third edition. Fabrikoid. Price \$6.50. Pp. 1136 with 116 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1943.

This book was first published in 1933, and the revisions, reorganizations and additions of new material enhance the value of the volume. The author continues in his "attempt at a correlation of certain biological data which are considered of importance to the study of the human nervous system in health and in disease." The first section deals with general embryologic, anatomic, physiologic and pathologic considerations, which provide a suitable introduction to the clinicopathologic descriptions of the major portion. While this introduction offers a source of review for the student who has already studied similar material in the past, it is not in itself an adequate source of material for the student to whom it is newly presented. Less effort at encyclopedic completeness and more emphasis on clinicopathologic presentations would be more useful. The pathologic descriptions are sometimes vague and sketchy and apt to be confusing because of lack of correlation of the reports of the various investigators. The author's effort, however, to correlate structure and function is an admirable one and on the whole ably presented.

To the chapter on pathology have been added a few pages on chemistry, and about this the author pointedly remarks: "Confidence that biochemical research alone will solve the problem of mental disease without the aid of dynamic psychology is, however, not justified in the light of a broader point of view. It represents a displacement from the old narrow concept that the etiology of personality deviations will be discovered in cell changes visible under the microscope (Nissl) to a modernized version that it will be discovered in a test tube." The psychosomatic approach to problems formerly considered as almost wholly physical or chemical indicates the modern trend of etiologic approach.

In the course of a few pages the author has done remarkably well in summarizing our present knowledge of electroencephalography. Recent developments in neurophysiology and experimental neurology, including the newer observations on hypothalamic functions and corticohypothalamic relations, are adequately treated. The operation of prefrontal lobotomy as performed by Freeman and Watts is mentioned, but those authors would probably take exception to the statement that "the procedure is not recommended except as a last resort and is still in its experimental stage." The chapter on the extrapyramidal motor system is largely rewritten, Bucy's recent review of the neurologic mechanisms of athetosis and tremor being used as the nucleus of the exposition on extrapyramidal dysfunction. Too much emphasis is placed on the efficacy of the "Bulgarian cure" of parkinsonism. In the discussion of aphasia the author emphasizes the clinical formulations of Henry Head, but not enough detail of the technic of examination of the aphasic patient and of the interpretation of findings is given. The average medical student finds this a difficult subject to comprehend and is usually at a loss as to the methods of approach to the aphasic patient. The section on intracranial tumors is written by Paul C. Bucy and is a clear, succinct review of the subject and written in a style that is not too difficult for the initiate in neurology to understand.

Recent developments in clinical neurology, such as the use of the sulfonamides in therapy, the Sister Kenny treatment of poliomyelitis, St. Louis type of encephalitis, equine encephalomyelitis, Guillain-Barre syndrome, nutritional and vitamin deficiencies, herniated nucleus pulposus and the use of the electroencephalogram and arteriography in neurologic diagnosis are all discussed in an appropriate fashion for a textbook of this kind.

The illustrations are good and many new tables culled from the literature have been added, some good and others so detailed as to be confusing to the average student. The references are carefully selected and informative and the index is excellent. The book can be well recommended.

Sulfanilamidoterapia local Por el Doctor Juan Naslo. Facultad de ciencias medicas del Litoral. Paper. Pp. 150 with illustrations. Buenos Aires: Editorial Aniceto López, 1942.

The author outlines his own experiments in the Pharmacologic Institute of the Faculty of Medicine of the Litoral. At the same time he describes his research work in the clinics of the Rosario Hospital of Buenos Aires. The work deals with the sulfonamide compounds locally applied. The experimental section deals with all kinds of wounds, aseptic and septic, experimentally provoked. Some of them were infected with several strains of streptococci and staphylococci, with the addition in some instances of foreign bodies, and at times suturing and treating at different periods. The group of animals amounted to 185. Experimentally he made wounds, general and localized peritonitis, burns and fractures of all types. The clinical section deals with an enormous group of surgical diseases as well as with some localized lesions in the specialties of dermatovenereology, ophthalmology, odontology, otolaryngology and orthopedics. The number of patients treated is also extensive. All kinds of bacteriologic and bacteriologic controls were practiced. There is also a description of the effects of the drugs on each strain *in vivo* as well as *in vitro*, and the author succeeds in giving the reader a complete idea of how to treat each disease and how to use each sulfonamide drug.

American Agriculture, 1899-1939. A Study of Output, Employment and Productivity By Harold Barger and Hans H. Landsberg. National Bureau of Economic Research, Inc. Number 42. Cloth. Price \$3. Pp. 110 with 17 illustrations. New York: National Bureau of Economic Research, Inc., 1942.

In wartime the place of agriculture in the national economy has assumed unusually widespread interest. Discussions of our ability to function as a bread basket for the world are heard with increasing frequency on the radio, in the press and on the streets. For those who would attempt to evaluate the plethora of proposals which crop up, the present volume should prove highly valuable. The number of persons gainfully employed in agriculture appears to have remained substantially constant over the period studied, although farm production has gone up approximately 50 per cent. This trend in production barely keeps pace with the population growth, thus it may be seen that output per worker has risen. Compared with the increase in output of manufactured goods, which show an increase of some 400 per cent within the period studied, agriculture makes a poor showing. Publication of the present volume was made possible by investigations conducted by the National Bureau of Economic Research, Inc., under grants from the Maurice and Laura Falk Foundation of Pittsburgh.

Clinical Diagnosis by Laboratory Methods. A Working Manual of Clinical Pathology By James Campbell Todd, Ph.D., M.D., and Arthur Hawley Sanford, A.M., M.D., Professor of Clinical Pathology, University of Minnesota (The Mayo Foundation). Tenth edition. Cloth. Price \$6. Pp. 911 with 380 illustrations. Philadelphia & London: W. B. Saunders Company, 1943.

During the last thirty-five years clinical pathology has undergone marvelous development. It is now a recognized specialty in medicine with some thousands of physicians who devote themselves exclusively to its practice. Each year new techniques are developed which throw still further burdens on the laboratory as the handmaiden of medical skill. An especially new phase is the use of the laboratory as a guide to therapy as occurs in the administration of the sulfonamides or vitamin K. The isolation of viruses, the classifications of Rickettsia, the determination of blood groups and the use of physical methods such as photometric technics are further examples of the great progress in this field. Moreover, new techniques are now submitted promptly to comparative studies and officially evaluated, as, for instance, the multiple serodiagnostic methods used in syphilis. All these techniques are described in this work. The present edition is, moreover, enriched with seventy-two new illustrations. Early in its career this book was accepted as a standard in its field. The intensive consideration given by the authors to maintaining its quality has made its utility still greater. The appendices, which deal with office laboratory methods and equipment, staining solutions, normal solution weights and measures and the laboratory findings in important diseases, add greatly to its practicality. The detailed index, occupying more than fifty pages, enables constant, ready use.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

EFFECTS OF MENSTRUATION, PREGNANCY AND ANESTHESIA ON PERMANENT WAVES

To the Editor—I would be interested in your opinion of the oft repeated claims by hairdressers that (1) permanent waves are not so successfully given to a pregnant person as to one not pregnant (2) permanent waves are not so successfully given within four weeks of an ether anesthetic as prior to the anesthetic and (3) permanent waves are not successfully given when the menses are present.

M D Colorado

ANSWER—Of the many explanations given by hairdressers for the failure of permanent wave manipulations, the three cited seem to be among the most reasonable. With regard to statements 1 and 3 it has been shown by Basler (*Menstruation und Haarwurzeliestigkeit, Med Klin* 35 1111 1930) by careful measurement of the pull needed to epilate hairs on the forearm and other parts of the skin that the force necessary varies during the menstrual cycle. Just before the flow is due the hair becomes more firmly fixed in the skin and a greater weight was necessary in Basler's apparatus in order to loosen it. As menstruation began the amount of weight needed decreased until at the end of the monthly period it was considerably lower than normal. After the menstrual flow ceased, the firmness with which the hair was fixed in the skin returned to normal. In 1 case the weight necessary to loosen the hair increased to 24 Gm just before the period, went down to 9 Gm at the end of the period and then soon returned to normal, a point between these two extremes. Basler attributes this weakening of the connection between the hair and the skin to the increased succulence of the skin during menstruation. If this change occurs also in the scalp as is reasonable to surmise, it takes little imagination to think that it may affect the way in which the hair responds to the manipulations intended to produce the permanent wave.

With regard to statement 2, one must consider in connection with any administration of ether the condition operation or parturition which called for anesthesia. It is known that such events may rarely be followed in the course of one or several months by a partial, usually temporary, alopecia. Whether caused by the operation or the anesthesia or both, it is possible that the hair in a much larger percentage of women may be affected by such disturbances so that it reacts badly to the efforts of the hairdresser.

Thus, while there is no definite proof of the claims made, meager knowledge of the changes in the skin and hair during menstruation and pregnancy and following parturition and surgical operations for which ether anesthesia was used seems to favor the possibility that such claims are correct.

HEALING OF FRACTURES IN OSTEITIS DEFORMANS

To the Editor—A patient aged 50 has a transverse fracture of the upper third of the left femur at the site of a previous fracture in 1937. Then as now he was suffering from osteitis deformans. The bone is now considerably deformed but reduction has been satisfactory. Will you please give me any suggestions you can to assist in getting firm union in this bone? His present reduction is being maintained by a plaster spica cast from the breast to the toes.

M D Ontario

ANSWER—As a rule fractures of patients who have osteitis deformans (Paget's disease) unite and in this case in which there is a transverse fracture of the upper third of the left femur chances are in favor of union being obtained. Care should be taken to keep the leg held quiet sufficiently long and in proper position to make certain that union is present before weight bearing is permitted. The usual indications of firm union are lack of tenderness and pain on pressure at the site of fracture and bony trabeculations crossing the line of fracture in the x-ray films. Every effort should be made to insure this union as bone grafting is not as successful in this type of case as in normal conditions.

VARIATIONS IN ORAL TEMPERATURES AND TUBERCULOSIS

To the Editor—Like most physicians who have practiced only in hospitals I have seldom had occasion to deal with the practical aspects of recording oral temperatures. During the past few months however while convalescing at home from a small pulmonary tuberculous lesion I have naturally made numerous recordings of my own temperature and have found that the matter is somewhat more complicated than I had heretofore suspected. Using three different apparently accurate thermometers I have found that the maximum reading is never reached until after the lapse of at least six minutes and often only after the lapse of ten to twelve minutes. This occurs if the thermometer has not been used for several hours. If on the other hand the mercury is shaken down after a recording and the temperature immediately taken a second time, the previous maximum reading will be reached in two minutes or less. (The practical implication of the latter observation is that if the same thermometer should be used on a number of patients in succession and recordings made at the end of the customary three minute period, only the temperatures of the second and succeeding patients would be true maximums.) A typical series of readings would be 94.0 F (initial reading) 98.3 F (three minutes) 98.5 F (five minutes) 99.2 F (ten minutes) and 99.3 F (twelve minutes). In a second recording taken immediately afterward the maximum of 99.3 F would be reached in two and one-half minutes. I have been particularly careful in making these observations not to cause any friction between my tongue and the bulb of the thermometer. I fully appreciate that when dealing with temperatures of 100 F and over this situation may not obtain, or if it does it is of no consequence. I do feel however that it is of the utmost importance to know whether a patient's true temperature is 98.4 F or 99.3 F particularly when the diagnosis or the state of activity of such a disease as tuberculosis is involved. If my own temperature had been taken during the past few months in the conventional manner that is using a three or even a five minute period it would have been recorded invariably as 98.6 F or below whereas after twelve minutes it has been almost invariably between 98.9 F and 99.3 F usually at 99.0 F. The higher value is of course the one which would have been recorded had my temperature been taken with a thermometer that had been used immediately before on other patients. These minute variations would seem far less important to me if it were not for the fact that this questionable low grade fever is the only objective sign of possible activity of my tuberculous process now present other than a pulse rate varying between 80 and 96. At least six competent radiologists and phthisiologists have declared that I have shown no evidence of activity for a number of months their almost unanimous opinion is that I can now begin a normal mode of life. One has taken the extreme view that my apical shadow represents a pleuritis rather than a parenchymal lesion and that my initial symptoms were probably due to a bronchitis rather than to a tuberculous process. All these men I am certain would attach great significance to my temperature range if it occurred after the usual three or five minute period but when I inform them that it occurs only after ten to twelve minutes they are inclined to dismiss it as of no importance. It is of added interest that during the five months I spent in the hospital my temperature after the third day was never recorded on the chart as being above 98.6 F during the same period my own unofficial readings were frequently above 99.0 F provided I kept the thermometer in my mouth several minutes longer than the nurse was accustomed to do. Will you kindly furnish me with an opinion of the possible significance of these slight elevations as well as with any appropriate references to the literature?

M D Massachusetts

ANSWER—The temperature of various organs or the body differs from time to time, depending on such factors as activity. Obviously, thermometer readings from the axilla the mouth or the rectum are not true body temperature. Nevertheless rectal and oral temperatures serve the usual clinical purpose of determining whether significant fever is present. Oral temperature recordings are influenced to a considerable degree by the atmospheric temperature. There are numerous causes of so-called slight elevations due to nervousness activities of the digestive system or general body activities. Persons with active tuberculosis have reported temperature readings of a half degree higher on one side of the mouth than the other. This probably is due to the same phenomenon as results in the so-called hectic flush of one cheek or the burning sensation of a given part of the body such as the lobe of one ear or the chest wall. This phenomenon has been explained on the reflex basis. When the sensory fibers of the trigeminal nerve are stimulated dilatation of the vessels occurs in the areas which these fibers supply. The irritation produced by disease in the lung results in stimuli which pass over the afferent fibers of the vagus nerve. In the trigeminal nerve there are dilator fibers of cerebral origin. Thus the impulses carried over the vagus nerve from the area of the disease pass reflexly over the trigeminal nerve and result in dilatation of the blood vessels.

The 98.6 F which is generally considered as the normal oral temperature is really an average and was determined by taking the temperatures of large numbers of persons apparently in good health. Many were below and many were above this level. Some individuals who are in excellent health have normal oral temperatures of or slightly above 99 F.

The observation made with reference to the increased time the temperature recording after having the thermometer in the mouth much longer than the usual time has been made by many

It is usually due to the fact that when the mouth is kept closed for several minutes the temperature rises because of the absence of influence of the atmospheric temperature and in time closely approximates the rectal temperature. On the same basis one may explain the fact that when the thermometer is removed and the mercury is quickly shaken down and is immediately replaced there is little opportunity for the mouth temperature to be reduced by the atmospheric temperature. Most clinicians agree that a mouth temperature of 99 F or even slightly higher is well within normal limits when the thermometer is retained in the mouth from five to ten minutes, and therefore this is no indication whatever of the activity of a tuberculous process. If there is no other evidence of active tuberculosis the temperature readings mentioned should not be considered significant.

LENGTH OF STORAGE IN "DEEP FREEZE" COMPARTMENT

To the Editor—As a direct result of wartime economy and probably to be carried into the peace which follows, foods are being stored in "deep freeze" compartments at temperatures from 10 to 20 degrees below zero. The idea, of course, is that these foods can be kept at these temperatures indefinitely. To all appearance, meats and vegetables taken out of these compartments at any time are absolutely fresh and in excellent condition. However, most sales pamphlets which advertise these "deep freezers" claim that fish should not be kept more than four months and meat more than eight months. Fish, so it is claimed, undergoes a chemical change which takes place in storage. As a result of these suggestions, much meat and fish throughout the country is thrown away at the end of this period in order to avoid the "poisoning" effect which supposedly sets in. I think this idea should either be confirmed or emphatically denied on the basis of facts. My own thought is that at the low temperature which is created in these compartments, animation is completely suspended and that no chemical deterioration takes place.

Paul Lahvis, M D, Gowanda, N Y

ANSWER—There are no changes in properly prepared frozen and stored fruits, vegetables or meats which develop poisonous products during frozen storage. Fish, after several years' storage, might be indigestible or unpalatable but not poisonous.

Quality deterioration on prolonged storage does occur and is faster at 5 and 10 F than at 0 and -10 F. Deterioration, chiefly the development of rancidity, is more pronounced with fatty or oily products such as fish or pork and is accelerated by widely fluctuating storage temperatures and faulty packaging.

Because of this deterioration in quality and for economic reasons, producers of frozen foods try to move their products within a reasonable period of time, usually four to six months for pork and eight to ten months for most meats. Foods which are held longer than this do not develop harmful properties, and often the deterioration is so slight that only an expert can detect the change. Discarding good meat or fish is wasteful practice and should be strongly condemned.

SULFATHIAZOLE OINTMENT FOR THE EYE

To the Editor—I am convinced after repeated observations on patients that the sulfathiazole ointment or cream such as is flooding the world's market today is harmful to the eye when introduced into the conjunctival cul-de-sac. One application produces sufficient annoyance to convince me that it is not a harmless agent. Many applications and rubbing produce a keratoconjunctivitis not unlike the virus conjunctivitis of the West Coast. Any one may readily elicit this experience if he will place a small amount of the grease in the eye, and there is ample evidence that this drug acts as an escharotic. T J Dimitry, M D, New Orleans

ANSWER—There are three types of inflammation from sulfathiazole ointment in the eye which can be readily defined. The first is a typical allergic reaction with dermatitis of the eyelids which disappears without residual effects as soon as the drug is discontinued. The second is a conjunctival inflammation produced by an irritating base such as the vanishing cream base occasionally used in preparations designed for the skin only. The third is a mild traumatic reaction from improperly prepared ointment containing large crystals. The suggestion that sulfathiazole ointment as prepared for eye use acts as an escharotic is false. This also applies to the statement that many applications produce a keratoconjunctivitis like the epidemic keratoconjunctivitis of the West Coast. As with the other sulfonamides, sulfathiazole ointment is being used indiscriminately and unnecessarily in many cases, but the only apparent danger from this is the sensitization of certain individuals so that the drug cannot be used by mouth when indicated by pneumonia or other serious illness. These cases of sensitization are rare, however. Damage to the eye resulting from the use of sulfathiazole ointment has not been observed in an extensive experience with the local use of this drug. It would be well to have commercial preparations labeled carefully so that ointment bases designed only for cutaneous use would not be employed in the eye. The correspondent may have been using one of the cutaneous preparations.

ALLERGY TO CERTAIN FOODS DEVELOPED AFTER APPENDECTOMY

To the Editor—In November 1942 I had an appendectomy. Three weeks later I suddenly began to have angioneurotic edema. This has persisted, involving various parts of my body. I had a number of intradermal tests, but most of the reactions were negative. However, by means of elimination diets I have found that I am sensitive to wheat, chocolate, eggs, bananas and milk. What puzzles me is the reason for this. In the past I occasionally would have a hive or two following ingestion of eggs. I also have had dust allergy but never angioneurotic edema. In the way of therapy I find that if I watch my diet I am symptom free. I have tried histamine, histaminase and calcium, but the allergy persists. I might mention that my father-in-law, who underwent an appendectomy one week prior to me, has hives on eating fish. He never had before. Can you explain this phenomenon?

M D, Pennsylvania

ANSWER—No one can say why angioneurotic edema suddenly develops in certain individuals. It is undoubtedly due to sensitivity to certain foods or drugs. It frequently happens, however, that sudden overindulgence in a food will bring on symptoms which would not have occurred had the food been eaten in moderate amounts. Quinine is one of the most common causes, but other drugs may be responsible. As this patient has learned by means of elimination diets that he is sensitive to wheat, eggs, chocolate, bananas and milk and has no symptoms when he avoids these, it would be wise to continue avoiding them for a month or two. The foods should then be tried one at a time in fairly large quantities and at intervals of a week or two. In testing, it would be wise to try the food in a cooked form rather than in a raw state. If no symptoms occur from boiled milk, for example, then raw milk can be tried. Recipes for wheat free foods may be obtained from the Ralston Purina Company.

IRRADIATION FOR CANCER IN PRESENCE OF TUBERCULOSIS

To the Editor—Is active pulmonary tuberculosis a contraindication to the use of high voltage roentgen irradiation for (1) cancer of the lung or (2) cancer in other organs of the body?

Nathan Sedofsky, M D, Oteen, N C

ANSWER—1 Since cancer of the lung is not curable by radiotherapy and since the palliative help which can be expected is distinctly limited, one should hesitate to irradiate a carcinoma of the lung in the presence of active pulmonary tuberculosis. The chances of harming the patient under these circumstances would seem to be greater than any hope of benefit.

2 Whether to irradiate cancer in another organ of the body depends both on the site of the cancer and on the chances of cure or prolonged palliation under the special circumstances that are encountered. Obviously, one must weigh the chances of improving the neoplastic condition against the chances of causing harm to the active pulmonary lesion.

DIETHYLSTILBESTROL

To the Editor—I read with interest the question and answer in *The Journal*, May 22, 1943, entitled "Contraindications for Diethylstilbestrol." I was especially interested in some of the contraindications, such as excessive menstrual flow and prolonged menstrual flow. It has been discovered that diethylstilbestrol is the most efficient drug yet for the treatment of the two conditions (Karnaky, K J. *South M J* 32: 813 [Aug] 1939, 33: 1045, 1285 [Dec] 1940, 35: 838 [Sept] 1942, *Texas State J Med* 36: 379 [Sept] 1940, *J Nat M A* 32: 235 [Nov] 1940, *M Times* 60: 199 [May] 1941, *Am J Obst & Gynec* 43: 385 [March] 1942, McGinn, E J. *J Clin Endocrinol* 2: 302 [May] 1942, Cuyler, W K, Hamblen, E C, and Davis, C D, *ibid* 2: 438 [July] 1942). It has been found in the Jefferson Davis Hospital, Department of Obstetrics and Gynecology, Research Division, that diethylstilbestrol will stop uterine bleeding quicker than the time it takes to get the patient to the hospital, prepare the patient for and then perform the dilation and curettage of the uterus. For uterine bleeding with or without fibroids, give five 5 mg diethylstilbestrol (plain) tablets by mouth and follow with two to three 5 mg tablets every fifteen minutes until the bleeding stops. Then give one 5 mg tablet every night for thirty nights, plus desiccated thyroid to tolerance dose and one lipiodine tablet every morning for sixty mornings. In cases of excessive menstrual flow and all menstrual disorders due to an endocrine cause or causes whether it is spotting, amenorrhea or flooding the treatment is the same. After the uterine bleeding stops, the uterus can be examined by taking an endometrial biopsy under a general anesthetic and the tissue examined for signs of malignancy. If the patient continues taking diethylstilbestrol she will become tolerant to the drug in five to six days. If she becomes too nauseated she can insert one 1 gram pentothal sodium rectal suppository every three to four hours. I have been unable to find any harm from diethylstilbestrol after giving it to 3,227 patients during the past five years. It did not stimulate malignant cells.

Karl John Karnaky, M D, Houston, Texas

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THE SACRO-ILIAC JOINT AND PAIN OF SCIATIC RADIATION

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ANN ARBOR, MICH

The cause of pain of sciatic radiation has long been a subject of investigation, and the causative factors advanced for this condition are legion. My interest was drawn to the role of the sacro-iliac joint in its relation to the components of the sacral plexus by the high incidence in anatomic specimens of hypertrophic arthritic changes with spur formation in the region of the anterior surface of the joint particularly in the area traversed by the lumbosacral trunk. It is my purpose in this paper to present the anatomy of this region and the data relating to the arthritic changes in the sacro-iliac joint as determined by dissections on 64 cadavers.

The involvement of the lumbosacral trunk by disease of the sacro-iliac joint due to their close anatomic relationship was first demonstrated in 1861 by John Hilton¹ in his lectures to the Royal College of Surgeons at which time he presented a clinical case which he ascribed to this condition. In 1905 Goldthwait and Osgood² discussed arthritis of the sacro-iliac joint both its atrophic and its hypertrophic forms, the latter being in their opinion, far more common. These authors believed that the referred pains in this condition were "undoubtedly due to pressure of the hypertrophic tissue upon the lumbosacral cord as it passes over the articulation." Albee³ in 1909 dissected the sacro-iliac region of 50 specimens and concluded that the proximity of the lumbosacral trunk to the joint in its lower one third explained the presence of persistent pain in the distribution of the sciatic nerve. In 1925 Dantorth and Wilson⁴ described the anatomy of the region as observed in 12 cadavers. They believed that nerve pain due to joint disturbance might be produced at the point at which the fourth and fifth lumbar nerves cross the sacro-iliac joint at its lower margin, although it was their opinion that such involvement is more likely to take place in the lumbosacral region owing to the enclosure of the nerves in the bony intervertebral foramina. Yeoman⁵ in 1928 presented 100 clinical cases

of sciatica, 36 per cent of which he attributed to arthritis of the sacro-iliac joint as demonstrated by roentgenograms of the joint. However, he described the piriformis muscle as lying between the lumbosacral trunk and the joint at its lower margin and attributed sciatica as being produced in these cases by a peri-arthritis involving the anterior sacro-iliac ligament and piriformis muscle and the latter involvement in turn affecting the sciatic nerve. This anatomic relationship was not found in any of the dissections in the present study, as will be discussed later. In 1930 Sashin,⁶ basing his work on 257 postmortem examinations in which both sacro-iliac joints were removed, emphasized that nothing except the thin anterior portion of the joint capsule intervenes between the lumbosacral trunk and the joint space. Reviewing 1,559 human skeletons in the Hamann

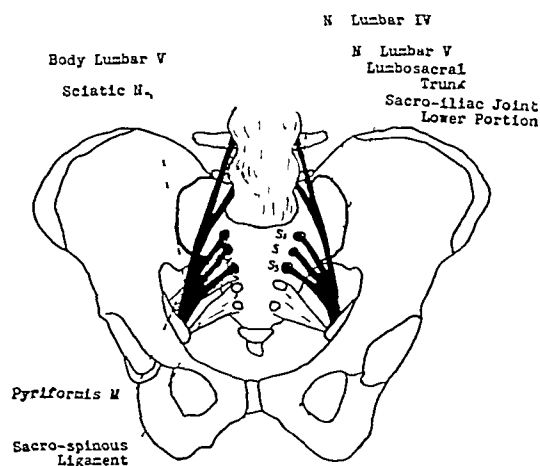


Fig 1.—Diagram of pelvis showing formation of sacral plexus with lumbosacral trunk passing over lower sacro-iliac joint.

Museum of Anthropology, Willis⁷ in 1933 noted the high incidence of bone changes in the sacro-iliac joint. In 1934 Freiberg and Vinke⁸ referred to Yeoman's work and emphasized his description of the piriformis muscle lying between the lumbosacral trunk and the joint. They believed that the irritated piriformis was responsible for sciatica in some instances and based their opinion on their dissections on 14 cadavers. Casuccio⁹ in 1938 studying 16 unembalmed bodies affirmed the direct and constant relationship of the lumbosacral trunk to the sacro-iliac joint.

Dr. Rollo E. McCotter, professor of anatomy, assisted the author in this study.

From the Departments of Anatomy and Surgery, University of Michigan Medical School.

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ANATOMY

As illustrated in figure 1, the anterior portion of the sacro-iliac joint produces a curving line which swings most lateralward in the region of the ala of the sacrum and then passes downward and medially at its lowermost end. The joint is covered anteriorly by the

inferior gluteal vessels pass between the second and the third sacral nerve to reach the thigh through the infrapiriformic space.

COMMENT

In the present study the anterior sacro-iliac regions of 64 embalmed bodies were dissected. The relationship of the lumbosacral trunk to the sacro-iliac joint was determined in all specimens and the degree of arthritic lipping of the joint was noted and classified as to severity. In all specimens the lumbosacral trunk crossed the lower one third of the sacro-iliac joint and lay directly on the joint.

The observations relative to the arthritic changes in the joint are contained in table 1. It appears significant that 25 per cent of the bodies examined showed well defined lipping of the joint anteriorly. In many of these the joint line was extremely rough and jagged and in most of the cases the lumbosacral trunk was pushed forward and was forced to angulate over this process, as shown in figures 2 and 3. Indeed in at least 2 of the specimens there was an actual groove in the posterior surface of the trunk at the point at which it was in contact with the joint. Sashin suggested that such a process might affect the nerve not only by direct pressure but also by osteophytes extending into the nerve itself.

The fact that 13 of the cases showed no spur formation does not necessarily exclude arthritis of the joint but merely excludes arthritis of the hypertrophic type which might affect the adjacent structures by direct bony extension. Indeed Sashin in a series of 257 post-mortem examinations found arthritic changes in all

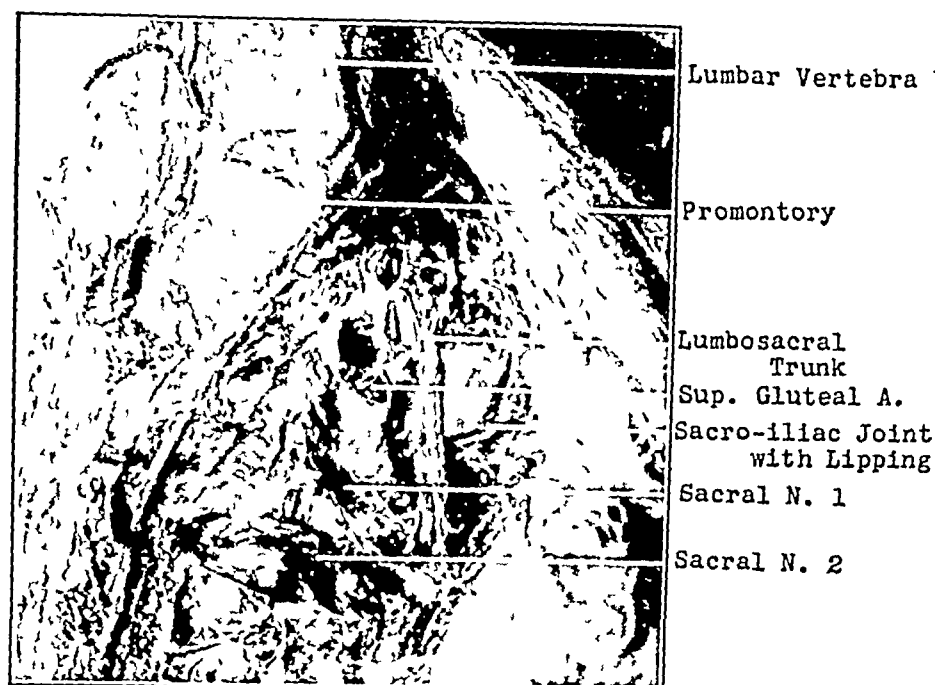


FIG. 2—Appearance of dissection of pelvis, showing lumbosacral trunk forced to angulate over hypertrophic lipping of lower one third of sacro-iliac joint.

anterior sacro-iliac ligament, which is a very thin structure of little strength. It is through this weak anterior capsule that exudate breaks in suppurative sacro-iliac joint disease.

The sciatic nerve is formed by the fourth and fifth lumbar and first, second and third sacral nerves. The fourth lumbar nerve splits into a larger upper segment which contributes to the lumbar plexus and a smaller lower segment which passes downward to unite with the fifth lumbar nerve over the ala of the sacrum. This point of union is not constant and may occur at a slightly higher or lower level. The nerve trunk thus formed is the lumbosacral trunk, which courses downward, lying on the anterior surface of the sacrum just medial to the sacro-iliac joint until the lower one third of that articulation is reached, where the joint line passes medially. There the lumbosacral trunk crosses the joint and lies directly on the capsule. In very broad pelvises the trunk may remain medial to the joint, but this was not seen in any of the 64 bodies examined. Although the piriformis may have a few fibers of origin from the very lowermost portion of the capsule of the sacro-iliac joint, it always occupied a medial position to the lumbosacral trunk at the level at which the latter traversed the joint in all of our specimens.

The first, second and third sacral nerves pass laterally from their respective foramina anterior to the piriformis and unite with the lumbosacral trunk to form the sacral plexus. The hypogastric vessels lie anteriorly to the sacral plexus with the superior gluteal vessels passing between the trunk and the first sacral nerve (fig 2) to leave the pelvis through the suprapiriformic space. The

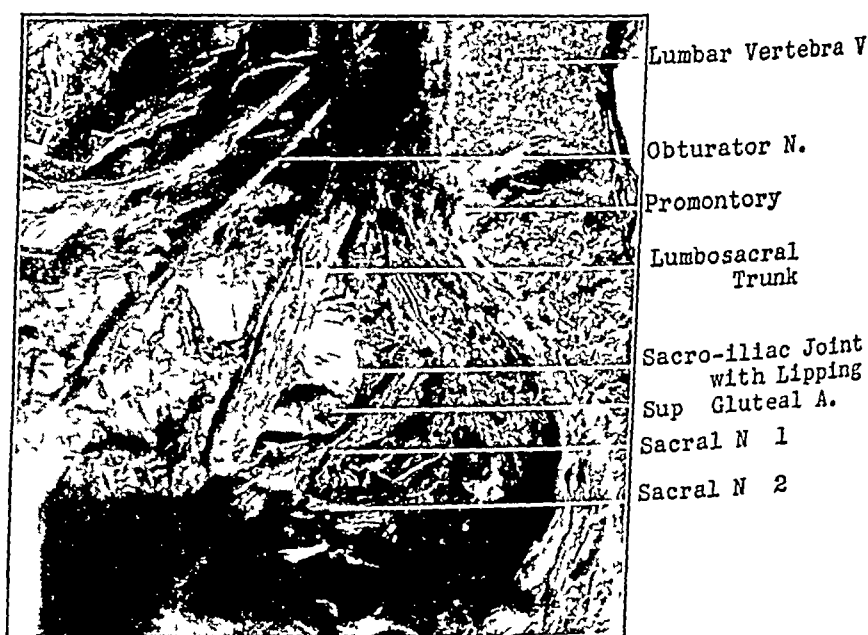


FIG. 3—Lipping of sacro-iliac joint pushing lumbosacral trunk forward. All hypogastric vessels with the exception of the superior gluteal artery have been removed.

sacro-iliac joints in persons over the age of 60. Although hypertrophic changes were not found in 7 of the bodies over the age of 65 in the present investigation (table 2), this does not rule out degenerative changes in these joints.

On the whole, those showing moderate involvement were not considered as apt to produce any considerable

effect on the trunk. Willis describes two types of osteogenic change in the sacro-iliac joint (1) a smooth calcification of the anterior sacro-iliac ligament and (2) an irregular lipping at the periphery of the joint. The minimal cases in the present study would fall in this first group, as we placed all joints with a small

As only 10 of the specimens were from females, no significant comparison could be made as to sex distribution of this condition. Willis found sacro-iliac ankylosis to be 3 times as frequent in the male as in the female. Sashin concludes that in men the process starts earlier and proceeds faster and with greater intensity than in women. Willis found that the incidence of sacro-iliac ankylosis was twice as great in Negro as in white subjects.

This spur formation is demonstrable by x-ray as is shown in figure 5, which is a roentgenogram of a dissected pelvis known to have a 3 plus lipping. In order to demonstrate the point on the joint over which the lumbosacral trunk passes, it is necessary to alter slightly the routine technic of pelvic roentgenography. It is necessary that the x-ray tube be placed at a so-called negative angle of approximately 20 degrees, i. e., with the tube at 20 degrees from the perpendicular and toward the head. The usual technic outlines the joint a short distance below the point in question.

CONCLUSIONS

1 The lumbosacral trunk was in direct contact with the sacro-iliac joint at the point at which it traverses the joint in its lower one third in all of the 64 specimens studied.

2 The upper portion of the origin of the piriformis muscle was found to lie medial to the lumbosacral trunk in this study and never to lie between the trunk and the joint.

3 Hypertrophic arthritis in the form of severe spur formation on the anterior line of the sacro-iliac joint

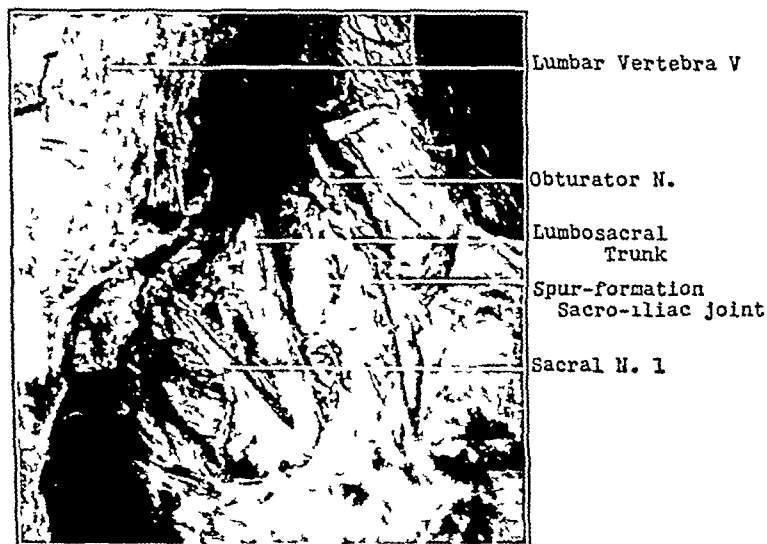


Fig. 4—Hypertrophic spur formation involving only the middle one third of the sacro-iliac joint. The lumbosacral trunk lies medial to the spur and would be unaffected by it.

degree of smooth elevation of the anterior joint line in this classification. These cases could not conceivably produce sciatic pain by direct pressure on the nerve.

Casuccio in studying 65 patients with sacro-iliac joint disease found that 46 per cent had sciatica. He pointed out that the reason that this percentage is not higher is that the joint line is long and the diseased portion may not be in contact with the trunk. That well defined spurring of the joint may not encroach on the lumbosacral trunk at all is illustrated in figure 4, in which the

TABLE 1—Degree of Hypertrophic Arthritis of Sacro-Iliac Joints as Determined in Dissections of 64 Embalmed Bodies

	Number	Per Cent
No lipping	13	20.3
Minimal	22	34.4
Moderate	13	20.3
Severe	16	25.0

TABLE 2—Age Distribution of Arthritic Changes in the Dissected Specimens

Age	None	Minimal	Moderate	Severe	Total
20-40	3	4	3	1	11
40-60	2	11	5	8	26
60-94	7	5	4	7	23

hypertrophic change is limited to the middle one third of the joint and therefore lies lateral to the trunk. The lower one third of the joint must be involved in the arthritic process if the lumbosacral trunk is to be affected.

In the main the hypertrophic changes were found to be more pronounced in the older age groups as has been shown by Sashin and others. It is not by any means confined to persons of advanced age, however, as one of the specimens in this study showing very pronounced spur formation was that of a man of 35.



Fig. 5—X-ray appearance of dissected hemipelvis. X-ray tube is to spur formation in lower one third of the sacro-iliac joint at the exact point at which the lumbosacral trunk crosses the joint.

was found to be present in 25 per cent of the bodies that were studied. Most of these were considered capable of producing direct irritation of the lumbosacral trunk.

4 Hypertrophic sacro-iliac arthritis is more frequently found in the older age groups but is often encountered in younger persons

5 Hypertrophicipping of the joint in its lower one third where the lumbosacral trunk crosses it can readily be determined by anteroposterior roentgenograms of the pelvis

THE TREATMENT OF EARLY SYPHILIS

BY THE CONCURRENT ADMINISTRATION OF
ARSENIC AND BISMUTH IN A PERIOD
OF FIVE DAYS

HERBERT RATNER, MD
CHICAGO

The five day treatment of early syphilis warrants special consideration at this time, for it has certain undeniable advantages. It apparently "cures" a majority of patients, it affords rapid control of infectiousness, it gives no opportunity for lapse in treatment and there is a considerable saving to the patient in both time and expense. An effective "speed-up" method of treatment is desirable at this time, for it may be anticipated from statistics of past wars and the experience of England in the last year that there will be a sharp increase in syphilis. The question of the safety of the method has been the greatest drawback to its general adoption, for the incidence of cerebral reactions, some fatal, far exceeds the recorded incidence of similar reactions from standard treatment. Proponents of the five day method suggest, however, that the reports of fatalities from conventional treatment are not a true reflection of their actual incidence, and furthermore that the risk involved with the rapid method is far outweighed by the serious late complications of syphilis which result from inadequate standard treatment.

At the Cook County Hospital the five day method was instituted as a clinical experiment to corroborate the promising results of Chargin, Hyman and Leifer.¹ From August 1940 to January 1943, 481 cases were studied. The therapeutic results thus far have been encouraging. There were no fatalities in the group, although there were 3 instances of cerebral reactions.

In the beginning of the study mapharsen was the sole drug employed and it was administered by continuous intravenous drip. At the end of the first year our statistics indicated failures from one course of such treatment in approximately 12 to 15 per cent of the cases. In the hope of reducing this percentage of failures, the technic was then modified so that a bismuth compound was administered in addition to the mapharsen, daily intramuscular injections of soluble bismuth being employed in order to retain the "five day" feature of the treatment.

Though the interval is perhaps too short to permit a conclusive statement, it appears that the incidence of failures from one course of treatment has thereby been reduced from 15 per cent to approximately 4 per cent. The earlier failures, it was noted, occurred almost

entirely in persons who had reported relatively late with eruptions of secondary syphilis. At first, therefore, bismuth was administered only to those with eruptions of secondary syphilis, but it was soon apparent that the bismuth was well tolerated, there being no increase in untoward symptoms. The concurrent use of arsenic and bismuth was then established as routine for all cases of early syphilis. It is of interest that Clausen, Longley and Tatum² later presented evidence from experiments with animals which indicated that the therapeutic effects from combining arsenic and bismuth were enhanced, "additive" to use Tatum's expression, and the combination caused no increase in toxic effects.

CLINICAL MATERIAL

The entire group numbered 481 patients, two thirds of whom were Negroes. There were 265 men and 216 women, 28 of them pregnant. With the exception of 12 cases of early syphilis, 1 congenital case and 1 of tertiary syphilis affecting the eye, every patient presented either a dark field positive chancre or an eruption of secondary syphilis. The oldest patient was a man of 48 and the youngest a girl of 14, the majority were in the early twenties.

TECHNIC

Before treatment the physical status of each patient was determined with the help of laboratory studies which included blood serologic tests, particularly the Kahn quantitative test, a complete blood count, urinalysis including tests for urobilinogen, icterus index, blood chemical determinations and a roentgenogram of the heart. The test for urobilinogen was found to be a most valuable procedure as an indication of the "course of events," and it became a rigid rule never to begin treatment until the morning specimen of urine had been tested for the presence of urobilinogen.

The daily dose of arsenic, regardless of age, weight or sex of the patient, was 0.24 Gm of mapharsen dissolved in 2,000 cc of 5 per cent dextrose solution. The supply for the entire day was made up in the morning and, with the solution maintained at room temperature, it was administered intravenously by the drip method for a period of about eight hours. A vein on the dorsum of the hand or one on the outer surface of the forearm near the wrist was selected in order to permit free motion of the elbow. The arms were alternated each day. The needles employed were the number 20 deep injection type, 1½ inches long. They were inserted up to the hub and then transfixed to the skin with adhesive tape. In addition, soluble bismuth sodium tartrate was injected intramuscularly into the buttocks in an amount equivalent to 22 mg of bismuth each day for the five days.

The patients required no special preparations before treatment. On the first day solid food was withheld to alleviate nausea, but thereafter the patients received the ordinary ward diet. After completion of the day's treatment they were permitted to be up and about.

On the sixth day the blood was again examined serologically and also the spinal fluid. The patients were discharged from the hospital the following day and instructed to return at monthly intervals for examination, particularly for serologic studies by the quantitative method. The clinical application of the

From the Department of Dermatology, Cook County Hospital and Northwestern University Medical School. This study was sponsored by the Department of Public Health State of Illinois.
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quantitative test is a relatively recent advance which has proved invaluable as a therapeutic index, for only by frequent observations of the progressive rise or fall of the serum titer of a patient's blood can one make an intelligent appraisal of his serologic status—whether serostast, improving or relapsing.

UNTOWARD SYMPTOMS AND REACTIONS

The reactions in general though troublesome, were of a minor nature. The most common complications were fever, nausea and pain up to the arm, which were usually most annoying on the first day of treatment. The pain occurred in about 60 per cent of the patients, nausea and vomiting in 75 per cent and fever in 45 per cent. These symptoms usually appeared during the fourth hour of treatment and continued for one day only but in a few instances they recurred on each of the five days. A secondary fever on the sixth day occurred in 30 per cent of the cases and lasted at most for a period of but three days. In addition our statistics indicated the incidence of mild headache in 25 per cent of the cases, restlessness in 4 per cent, 3 cases of precordial oppression,³ which was instantly relieved by the administration of atropine, transitory albuminuria in 5 per cent of the cases, cutaneous Herxheimer reaction in 4 per cent, 1 case of erythema multiforme on the second day, 1 of follicular purpura on the seventh day and several cases of morbilliform eruption, none of which necessitated interruption of treatment. Slight numbness and tingling of the hands and feet developed in 5 per cent of the cases in the second week after treatment and persisted for two or three weeks thereafter. It constituted a bothersome complaint in only 1 instance that of a woman treated during the third month of pregnancy.

Serious reactions did occur however in 4 Negro men who had received treatment with mapharsen only.⁴ In 2 of them there developed encephalopathy with transitory hemiparesis after treatment had been completed on the sixth day in 1 case, on the ninth in the other. A third patient experienced a single convulsion after three days of treatment, and the fourth patient on the completion of the first day of treatment during which he had received only 0.24 Gm of mapharsen suffered an overwhelming reaction with acute glomerulonephritis, anuria, uremia, hepatitis and pericarditis.⁵ All 4 of these patients recovered with no apparent sequelae and in each case there was a serologic reversal of the blood.

Aside from these 4 cases with serious reactions treatment had to be discontinued in 21 other instances because of the development of disturbing symptoms. Among them were 3 cases in which albuminuria developed apparently from a brand of bismuth that was soon discarded, 1 case of phlebitis, 8 cases of persistent fever of more than 101.4 F, and 9 cases in which treatment was suspended because of symptoms such as disorientation, drowsiness, crying spells, muscular aches, weakness and fainting. In all treatment was discontinued in 65 per cent of the cases because of the development of various reactions. All these cases

occurred early in the course of the study when caution and apprehension influenced the interpretation of symptoms. As the study developed the number of cases in which treatment had to be discontinued became considerably smaller. The incidence and severity of nausea and vomiting were decreased by withholding solid food on the first day, and the administration of 15 minims (1 cc) of essence of peppermint every four hours afforded quick relief to many patients. The free use of sedation with a mixture of chloral hydrate 15 grains (1 Gm) and sodium bromide 30 grains (2 Gm) every four hours was also effective in the more bothersome cases, and it seemed too to lessen the severity of the arm pain. The most beneficial single measure, however, was the inflexible rule to 'Discontinue therapy for the day on the development of any of the following: increasingly severe headache, pernicious nausea, repeated vomiting, undue restlessness, change in personality, temperature of 101.4 F or any other unusual symptoms. Immediately administer 200 to 400 cc of 25 per cent sucrose intravenously. If the symptoms persist follow with 2,000 cc of 10 per cent dextrose intravenously, this in turn to be followed by 2,000 cc of isotonic dextrose and saline solution subcutaneously. If on the following day the symptoms have not completely disappeared, again administer 200 cc of 25 per cent sucrose intravenously prior to the administration of mapharsen.' In cases in which treatment had to be interrupted temporarily, that day's unused mapharsen was then added to and distributed evenly over the course of the remaining days of treatment.

The immediate discontinuation of the therapy for the day on the development of such reactions and the free use of sucrose intravenously have undoubtedly been the most important factors in reducing the incidence of serious reactions, particularly the ominous cerebral reactions.

Exfoliative dermatitis, nitritoid reactions or blood dyscrasias did not occur in our series nor was there a case of liver damage except for the one unusual case which properly should not be charged against the five day technic. And most important there were no fatalities.

RESULTS

Early Syphilis—The series of cases studied totaled 481. Of this number 421 completed the full course of five day treatment, 310 of them with mapharsen alone and 111 with the combination of mapharsen and bismuth. Of the 60 patients who did not receive the full treatment 3 per cent were rejected after preliminary examinations on medical grounds, 65 per cent reacted unfavorably to the treatment and in the remainder treatment was withheld or suspended for nonmedical reasons and have no bearing on the study.

In the group of 310 cases which were treated with a single course of mapharsen alone 200 were observed for a period of five months or longer. One hundred and forty-nine of them became seronegative and 23 were progressing satisfactorily as shown by steadily decreasing serologic titers. Nineteen of the 200 cases resulted in serologic relapse in 3 others which were listed as cases with an unsatisfactory result there was a question as to whether they represented remissions, there was also 1 case of serologic fastness, and in the

³ Falk, A. B. and Rattner, Herbert. Precordial Oppression. A Disconcerting Reaction Encountered in the Five Day Treatment of Syphilis. *Arch. Dermat. & Syph.* 46: 283 (Aug.) 1942.

⁴ Rattner, Herbert. The Five Day Treatment of Syphilis. *Illinois M. J.* 51: 29 (Jan.) 1942.

⁵ Rattner, Herbert and Falk, A. B. Severe Arterial Reaction Encountered in the Five Day Treatment for Early Syphilis. *J. A. M. A.* 118: 1368 (April 18) 1942.

⁶ The "discontinuation" technic was suggested by the following: Lieut. Alfred B. Falk, M. C. A. U. S.

remaining 5 cases the results were still pending. In summarizing, to date, one course of five day treatment for early syphilis with arsenic alone gave results that were satisfactory in 86 per cent of the cases, failures in approximately 11.5 per cent, and the results were still pending in 2.5 per cent.

Of the group of 111 cases treated with one course of mapharsen and bismuth used concurrently, 35 were not evaluated because of a too brief period of observation. Of the remaining 76 cases, 50 became serologically negative, 21 showed progressive serologic improvement and there was 1 case of serologic relapse. The outcome in 4 others is still questionable and in the interest of conservatism they were listed as failures. Thus, to date, satisfactory results were obtained in 93.5 per cent of the cases and failures in 6.5 per cent of those who received one course of treatment with the combination of arsenic and bismuth. Further study of the questionable cases, we have reason to believe, will show this estimate to be too conservative.

Pregnancy^{6a}—Twenty-seven pregnant women received the treatment, 4 of them for primary syphilis, 15 for eruptions of secondary syphilis and 8 for latent syphilis of less than four years' duration. Ten received arsenic alone and 17 had the combined treatment. Twenty-six cases resulted in the birth of a full term, normal infant, 1 syphilitic infant was born of a mother who, after responding successfully to one course of treatment, acquired a second infection while the infant was still in utero. In addition, there were 5 women who had been treated for early syphilis by the five day method who subsequently became pregnant and, though no additional treatment was given, each has since given birth to a normal infant, in 1 case twenty months after completion of the five day treatment.

Retreated Cases—Twenty-three patients were retreated because of relapse, reinfection or serofastness. In none of them was there an allergic reaction or any other complication due to the second course of treatment. Eight of this group attained seronegativity, 9 cases showed satisfactory serologic improvement, 3 were still pending, although the serologic titer was showing a progressive fall, 1 case was lost from observation. From the very beginning of the study difficulty was encountered in deciding whether certain cases were examples of relapse or reinfection. The practice at first was to classify them all as failures, a practice which Schoch has criticized as being unwarrantedly conservative. None of the cases fulfilled the established criteria for reinfection, yet in many of them certain factors weighed the scale of evidence in favor of reinfection. There was, for example, the instance of a woman who received the five day treatment for an eruption of secondary syphilis. No primary lesion was observed by us. She became serologically negative and gave repeated negative tests for a period of four months. She then disappeared from observation and four months later returned with a chancre on her lip. She insisted, and she was not unintelligent, that there previously had not been a sore on her lip and it was the opinion of the entire staff that, despite the lack of established criteria, this case represented one of reinfection.^{6b} It

was soon noted that several other cases presented similarly doubtful circumstances, and, finally after careful weighing of the facts in each instance, the label of reinfection was given to 15 cases. All of them, after attaining seronegativity, gave repeated seronegative tests for several months. Each of them then presented new clinical evidence of early syphilis and a history very strongly suggestive of a new infection. Furthermore, although we have no tangible evidence for it, we are inclined to agree with Schoch, who has stated that in patients who have received rapid treatment "reinfection can take place in the face of reagin still remaining from the first infection."⁷

Additional Notes—The spinal fluid was examined in 420 cases. Slight abnormalities in the colloidal gold curve were noted in 10 cases, and in 12 cases there was an insignificant increase in the cell count. The spinal fluid was again examined one year after the attaining of blood seronegativity in 18 cases. All gave normal findings. The spinal fluid also of the 23 patients who had received the second course of treatment was reexamined. All were normal except 1, a young Negro woman treated for serologic relapse whose spinal fluid findings indicated a definite paretic curve six months after the first treatment.

Twenty-seven patients were treated in the seronegative chancre stage. Eight of these failed to return for observation. Of the remainder all but 1 remained seronegative, the longest observation being twenty six months. In the 1 case which was lost from observation for five months the history strongly suggested a new infection. Incidentally, of the 151 cases dropped from the study because of insufficient observation 19 had been treated for seronegative primary syphilis and 23 others had already attained seronegativity.

The best results were obtained in patients who reported for treatment early in the course of the disease, for serologic relapses occurred in only 2 of the 135 patients who had been treated for chancre. In the successful cases seronegativity usually occurred in the tenth week after treatment. In 1 case, however, the blood test did not give a negative reaction until twenty-two months after treatment. Among the patients who suffered relapse were a husband and wife who were treated for early syphilis within three weeks of each other. Other patients had been treated successfully at the same time and with the same lot of drug, yet both husband and wife exhibited lesions of cutaneous relapse.

There were no cases in which there was an appreciable alteration of the blood chemical findings, the blood picture or the icteric index. In 6 patients in whom five day treatment was interrupted because of the onset of complicating symptoms, daily injections of mapharsen by the syringe method were later well tolerated.

COMMENT

The method, to judge from the results of the experiment at the Cook County Hospital, has much to recommend it but there are certain disadvantages that cannot be disregarded. Of most importance is the danger of serious cerebral reactions, 1 case of a single convulsion and 2 of encephalopathy, in our group of 424 cases. Five of the patients who needed a second course of treatment refused it because of the nausea, headache and arm pain that they suffered the first time.

6a. Rattner, Herbert. The Treatment of Syphilis in Pregnancy by the Five Day Massive Dose Method, *Am J Obst & Gynec*, to be published.

6b. "Established criteria" require among other things that the new lesion be at a "site other than that of the primary lesion of the first infection."

7. Schoch, A. G., and Alexander, L. J. Reinfection or Syphilis? A Newer Concept of Reinfection Encountered with Ten Days' Treatment of Early Syphilis Controlled by Quantitative Serologic Tests. *Syph, Gonorr & Ven Dis* 27:15 (Jan) 1943.

The treatment can be adapted to routine measures, for the dosage is the same regardless of the age or weight of the patient, and even the treatment of the reactions may be standardized, for they are relatively few in kind. The essential laboratory aids are simple to perform. Relatively little active nursing care is required, because the patients are permitted to leave the bed at the conclusion of the day's treatment. It is important, however, that the nurses be acquainted with the procedure, and the patients should be under their constant observation for early signs of reactions.

With this procedure there is no lapse of treatment. This is most important, for the dangers of inadequate treatment have often been stressed. Indeed, Padgett's⁸ careful study of long-term results in early syphilis led him to conclude that, "if continuous treatment cannot be given, no treatment is the desideratum." And it is known that the vast majority of infected persons, because of sheer ennui, do not persist through the lengthy course of conventional continuous therapy.⁹

There is much to be said also for the fact that the patient can have the treatment completed in one week. This feature alone has aroused an enormous interest. The patient, shocked as he usually is to learn that he has the disease, is psychologically conditioned to give complete cooperation before his remorse wears away, and the feckless one's cooperation can usually be sustained for a period of one week, though rarely longer.

However appealing the five day feature, of greater significance are the statistics which indicate that satisfactory results were obtained to date in approximately 95 per cent of the cases.

SUMMARY

1 The five day treatment method was studied in 481 cases of syphilis. Of this number 421 completed the full course of five day treatment, 310 of them with mapharsen alone and 111 with a combination of mapharsen and bismuth used concurrently.

2 There were no fatalities in the group, but there were 3 instances of serious cerebral reactions and a high incidence of unimportant minor reactions. Treatment was discontinued in 6 per cent of the cases because of the development of complicating symptoms. Three per cent of the candidates were rejected as unsuited for the treatment because of physical defects.

3 The study emphasized the value of reliably performed quantitative serologic tests as a therapeutic index and focused attention on the questions of reinfection and superinfection. In the group studied there were at least 15 instances of reinfection.

4 The period of observation is too short to permit final conclusions, but the results to date indicate that the use of mapharsen alone produced satisfactory results from one course of treatment in 86 per cent of the cases, one course of the arsenic-bismuth combination produced satisfactory results in approximately 95 per cent of the cases, and a second course of treatment administered usually six months after the first course apparently "cured" practically all of those who failed the first time.

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⁸ Padgett, Paul. Long Term Results in the Treatment of Early Syphilis. *Am J Syph Gonorr & Ven Dis*, 24: 692 (Nov.) 1940.

⁹ Sadusk, J. F., Jr., Craig, Branch, Jr., Broekens, Norris, Poole, A. K., and Strauss, M. J. Observations on the Massive Dose Arsenotherapy of Early Syphilis by the Intravenous Drip Method. *Yale J Biol & Med*, 14: 533 (March) 1942.

THE USE OF PROSTIGMINE IN THE TREATMENT OF POLIOMYELITIS

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In recent years radical changes in the therapy of poliomyelitis have been advocated which have stimulated reinvestigation of the pathologic physiology of the disease. The Kenny concept has placed emphasis on neuromuscular changes which obviously cannot be explained by the well recognized lower motor neuron paralysis in this disease.¹ "Muscle spasm" and "incoordination" have been shown to be frequent and prominent symptoms of poliomyelitis.

"Muscle spasm" consists of at least two phenomena involving muscular hyperactivity in tonus and proprioceptive reflexes. The first phenomenon is a muscular rigidity or hypertonus which results in deformity (as in "foot retraction" or "foot drop") and limitation of passive motion (as in the rigidity of the back). The second type of change, which has been called "muscle spasm," is a limitation of passive motion which is at least in part the result of hyperirritable stretch reflexes in the muscles involved. As an example, in straight leg raising in subacute cases little or no resistance to passive motion is noted until a certain point is reached, when a decided resistance develops suddenly, associated with contraction and pain in the hamstring muscles. This appears to be a stretch reflex, the "trigger mechanism" of which is set at a lower level than normal. These changes in the muscles persist unchanged for months in many cases unless proper treatment is instituted early in the course of the disease.

Experimental studies on the mechanism of these phenomena have demonstrated that they have a neurogenic basis.² The muscular rigidity and hyperirritable stretch reflexes disappeared temporarily during spinal anesthesia in patients with poliomyelitis. On the other hand, intravenous pentothal anesthesia produced relatively little effect on the muscle spasm. These studies suggest that muscle spasm may be the result of changes produced in the gray matter of the spinal cord by the virus invasion. This view is corroborated by electromyographic recordings from hypertonic muscles in cases of poliomyelitis.³

An analysis of available sections of the spinal cord from 78 patients with poliomyelitis who died in the acute stage of the disease has revealed that inflammation about the internuncial neurons in the gray matter of the spinal cord occurred in almost every case and that injury to internuncial neurons appeared to be prominent in many cases.⁴ On the other hand little or no injury to anterior horn cells was observed in about 40 per cent

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¹ Kenny, Elizabeth. The Treatment of Infantile Paralysis in the Acute Stage. Minneapolis: Bruce Publishing Company, 1941. Cole, W. H. and Knapp, M. E. Kenny Treatment of Infantile Paralysis. *Proc Am Surg Report*, J. A. M. A. 116: 257 (June 7) 1941.

² Kabat, Herman and Knapp, M. E. The Mechanism of Muscle Spasm in Human Poliomyelitis. *To be published.*

³ Schwartz, R. P. and Bowman, H. D. Muscle Spasm in the Acute Stage of Infantile Paralysis as Indicated by the Clinical and Electromyographic Potentials. *J. A. M. A.* 119: 923 (July 14) 1942.

⁴ Kabat, Herman and Grenell, R. G. The Pathology of the Spinal Cord in Human Poliomyelitis. *To be published.*

of the cases, while the other 60 per cent showed more or less pronounced destruction of the large motor neurons. In 1 case which had shown decided muscle spasm, the internuncial injury was severe while the anterior horn cells appeared to be unaffected. It has also been demonstrated in experiments on dogs that a localized lesion of the internuncial neurons in the spinal cord produced hypertonus of skeletal muscles similar to that observed in clinical poliomyelitis.⁵ The significance of the internuncial lesion becomes clear when one realizes that practically all impulses through reflex arcs as well as from higher centers, including the pyramidal tracts, must be relayed through the internuncial neurons to excite the large motor neurons in the anterior horn. In other words, an internuncial lesion should interfere with and disorganize synaptic transmission to the anterior horn cells. The muscular hypertonus and proprioceptive reflex hyperirritability could therefore be considered release phenomena resulting from removal or inhibition from anterior horn cells due to synaptic disorganization. "Incoordination" may also be explained, at least in part, by such synaptic disorganization resulting from injury to the internuncial neurons. The common occurrence of the internuncial lesion in poliomyelitis is further substantiated by the observation of Minckler⁶ that synaptic terminals on the surface of the anterior horn cells were degenerated as a result of injury to internuncial neurons in 8 cases of poliomyelitis studied by special staining methods.

THE EFFECTS OF PROSTIGMINE ON MUSCLE FUNCTION IN POLIOMYELITIS⁷

It is now generally believed that the fundamental effect of physostigmine and prostigmine is to depress the function of an enzyme called cholinesterase.⁸ This enzyme is responsible for the rapid splitting of acetylcholine, rendering this powerful substance physiologically inactive. By inhibiting cholinesterase, prostigmine allows acetylcholine to accumulate to a greater extent than normal at synapses, parasympathetic nerve endings and myoneural junctions and in the blood and in that way produces profound physiologic changes throughout the body.

In myasthenia gravis, prostigmine has a striking effect in relieving fatigue of skeletal muscles.⁹ In postencephalitic Parkinson's disease, administration of prostigmine aggravates the muscular rigidity and tremor to a large extent.¹⁰ Fibrillation of denervated muscle is increased by the drug.¹⁰ Even in normal persons fascicular twitchings may be induced.⁸ All these actions of prostigmine have been attributed to the inhibition of cholinesterase at the myoneural junction of skeletal muscle.

The effects of prostigmine on muscle function in poliomyelitis have been studied in a series of 24 patients ranging in age from 2 to 46 years. The time from the onset of paralysis varied from three weeks to seventeen months. In 20 patients the effects of prostigmine were observed within an hour after sub-

cutaneous injection of 0.5 to 2.5 mg of prostigmine methylsulfate. The effects of oral prostigmine bromide have also been observed in these patients.

Early in the course of this investigation it was noticed that effects on the function of skeletal muscle were more severe with larger doses of the drug, producing unpleasant parasympathetic symptoms. Atropine sulfate given simultaneously with the prostigmine was found to eliminate these unpleasant parasympathetic effects while not producing any apparent inhibition of the important effects on muscle function. This made it possible to give larger doses of prostigmine together with atropine, producing more pronounced muscular effects and no unpleasant symptoms whatever. This combination of prostigmine and atropine has been used routinely in treatment. This will be discussed in more detail later.

The most significant effect of prostigmine on patients with poliomyelitis was the relaxation of muscle spasm. The decrease in hypertonus was accompanied by a decrease in muscle pain. There was also evidence that prostigmine decreased "incoordination" and in some instances increased active muscular contraction.

The muscle spasm was measured quantitatively by recording the range of passive motion allowed by various muscle groups before and after injection of prostigmine. Measurements were made by means of a goniometer and the range of passive motion was recorded in angles. The error in measurement is about ± 2.5 degrees. The increase in range of passive motion observed within an hour following injection of prostigmine in poliomyelitis patients is shown in table 1. These data show that the range of passive motion is increased significantly by this drug. The patients reported that their motions felt "looser." In some cases deformities decreased or disappeared. The hypertonic muscles also felt more elastic and less rigid to the examiner, and tendons and muscles stood out less noticeably and were softer and less painful on palpation.

A striking fact was that the extent of relaxation varied greatly in different muscle groups in the same patient. In some patients one pectoral muscle relaxed noticeably while the corresponding muscle on the opposite side showed no change in spasm. In others, the soleus relaxed while there was no change in the overlying gastrocnemius muscle in the same leg. Many other examples may be cited of localization and specificity in the action of prostigmine, although the drug is presumably distributed equally throughout the body.

Several types of deformities have decreased or disappeared following administration of prostigmine. In several instances "foot drop" due to hypertonus in the posterior calf muscles has been improved or eliminated. In 2 instances flexion deformity of the hand greatly decreased within an hour after subcutaneous injection of the drug. In 3 an elevated shoulder resulting from hypertonus of the upper trapezius has come down to a more normal position following prostigmine. These observations are the more significant since these deformities had been present for at least four months.

The increase in active motion observed following prostigmine seemed in some cases to be related to the decrease in muscle spasm in the antagonists. Six months after the onset of poliomyelitis in 1 instance active motion appeared for the first time in finger extensors one hour after subcutaneous injection of prostigmine and was accompanied by decided relaxation of the flexor muscles. Another patient at five and one-half months after the onset was able to raise his head from the table in the supine position for the first

⁵ Kabat, Herman, and Grenell, R. G. Muscle Hypertonus from Temporary Arrest of Circulation of the Spinal Cord, to be published.

⁶ Minckler, Jeff. Pathologic Alterations in Surface Relationships and Morphology at the Human Synapse, *Am J Path* 18: 1061 (Nov) 1942.

⁷ Some of the prostigmine used in this investigation was supplied by Hoffmann-La Roche, Inc.

⁸ Sollmann, Torald. A Manual of Pharmacology, ed 6, Philadelphia, W. B. Saunders Company, 1942.

⁹ Milhorat, A. T. Studies in Diseases of Muscle IX. Effect of Quinine and Prostigmine Methyl Sulfate on Muscular Rigidity in Paralysis Agitans, *Arch Neurol & Psychiat* 45: 74 (Jan) 1941.

¹⁰ Magladery, J. W., and Solandt, D. Y. Relation of Fibrillation to Acetylcholine and Potassium Sensitivity in Denervated Skeletal Muscle, *J Neurophysiol* 5: 357 (Sept) 1942.

time two days after initiation of prostigmine therapy. Other examples of increased active motion in arms, legs and trunk will be mentioned later in the discussion of treatment.

As mentioned in the introduction, "incoordination" of muscles, resulting presumably from disorganization of synaptic connections in the spinal cord is a frequent occurrence following poliomyelitis. In 1 case passive abduction of the arm resulted in jerky contractions of the biceps, wrist extensors and trapezius muscles. In some cases active or passive flexion of the thigh produced contractions in the adductors, sartorius or glutei. Hyperirritability of reflex arcs was so severe in 1 case that light tapping of the ribs produced a reflex twitch of both pectoral muscles, more severe on the ipsilateral side. In all types of "incoordination" in poliomyelitis patients, the abnormal muscle contractions in the superfluous muscles are frequently characterized by fascicular twitchings. "Incoordination" appeared to be definitely decreased in some patients by prostigmine.

Spontaneous fascicular twitchings following administration of prostigmine were observed in only 4 patients,

of action of the drug at the myoneural junction. These data suggest that the beneficial action of prostigmine observed in poliomyelitis may be the result of its inhibitory action on cholinesterase affecting synaptic function in the spinal cord. According to Sollmann,⁸ with increasing doses of physostigmine in animals the drug first affects the spinal cord and then the bulbar centers, and even with toxic doses consciousness is maintained until the end.

In order to demonstrate more conclusively the action of prostigmine on the spinal cord, the drug was injected intraspinaly in 3 patients. The relaxation of muscular hypertonus was very much greater than had been observed following subcutaneous prostigmine. Furthermore, while the effect on muscle function was coincident with the parasympathetic actions following subcutaneous administration of the drug, the muscular relaxation appeared earlier than the parasympathetic effects following intraspinal prostigmine. The effects on muscle function preceded significant absorption of the drug into the general circulation. This rules out an effect on the myoneural junction of skeletal muscle.

TABLE 1—Degrees Increase in Passive Motion in Poliomyelitis Produced by Subcutaneous Prostigmine in One Hour

Patient	Age of Patient	Time Since Onset	Straight Leg Raising		Knee Flexion		Knee Flexion Prone		Dor. flexion of Foot (Knee Straight)		Dor. flexion of Foot (Knee Flexed)		Abduction of Leg	Abduction of Arm		Abduction of Arm (Arm Externally Rotated)		Forward Flexion of Arm		External Rotation of Arm	
			Right	Left	Right	Left	Right	Left	Right	Left	Right	Left		Right	Left	Right	Left	Right	Left	Right	Left
C. G.	20	3 wk	12	3	17	18			1	10	10	0	5								
A. K.	7	3 wk	10	20	10	10			4	10	5	5	50								
V. B.	5½	1 mo	13	10					0	10	7	0	5								
W. T.	20	2½ mo	17	10	6	4	40	36	10	7	5	2	14	0	25	0	5		0		
M. G.	13	3 mo	6	3	0	3			0	10	0	2	5	10	25	30	15				
F. B.	30	3½ mo	25	22					12	15	5	0	1	0	10	15	5				
G. H.	25	5 mo	13	15	15	17			10	0	11	0	10	17	5	20	10				
E. F.	12	4 mo	8	11			11	5	5	4	5	2	5								
A. Z.	11	5 mo	10	15					0	2	5	2	3								
R. P.	18	4½ mo	10	10	0	4			0	2	5	2	3	1	5	5	3				
L. J.	44	5½ mo	10	12	2	3			0	5	5	0	15			8	3	25	21	23	15
M. O.	46	5 mo												14	5						
R. L.	8	5½ mo	21	17			25	26	5	6	5	10	15								
L. W.	6	5½ mo	4	10					0	2	0	0									
B. O.	17	6 mo																			
A. E.	30	6 mo	16	11	17	5	15	45	0	0	0	0	10	10	14		25	2	6		12
F. K.	14	6 mo	12	6			55	6	0	13	6	11	0								
P. S.	10	16 mo	18	0			0	0	3	1	3	6	5								
M. P.	22	16 mo	13	0			10	25	0	2	3	10	0								
D. H.	17	17 mo	17	13	3	7			4	4	0	0	4			25	2	12	5		

all of whom were between 14 and 20 years of age. Fascicular twitchings from prostigmine were noted only in the face, upper part of the trunk and arms. In no instance were fascicular twitchings induced by prostigmine in a paralyzed muscle or a muscle in spasm even in cases in which motor denervation had produced well defined atrophy. The fascicular twitchings from prostigmine occurred one-half to one hour after administration of the drug, rarely persisted for more than an hour and were never followed by harmful after-effects.

The question arises as to the locus and mechanism of action of prostigmine in poliomyelitis. The fact that elimination of parasympathetic actions of the drug by atropine does not interfere with the effects on muscle function demonstrates conclusively that the muscular action is not secondary to general parasympathetic effects. The evidence also is clear that the changes in muscle function observed are not the result of the action of prostigmine on the myoneural junction in skeletal muscle. Accumulation of acetylcholine due to inhibition of cholinesterase at the myoneural junction could only increase hypertonus of skeletal muscle, while administration of prostigmine in poliomyelitis patients significantly decreased muscle spasm. The inhibition of hyperirritable stretch reflexes by prostigmine as well as the inhibition of "incoordination" cannot be the result

as the factor responsible for the muscular relaxation and points to the spinal cord as the locus of action of the drug. Kremer¹¹ has recently demonstrated depression of deep reflexes and spasticity from intrathecal injection of prostigmine in man. The effect is a local one on spinal centers.

These studies suggest, therefore, that prostigmine has important effects on the spinal cord in man which appear to be of value in the therapy of a disease of the spinal cord, poliomyelitis. They also suggest that the spinal cord may be more sensitive to prostigmine than the myoneural junction regardless of the route of administration. The depression of muscular hypertonus, stretch reflexes, "incoordination" and reflex hyperirritability after oral or subcutaneous administration of prostigmine seem to be the result of spinal action of the drug with no evident action on the myoneural junction. The increase in active motion observed following prostigmine may be due also to the action on the spinal cord rather than on the myoneural junction. Merlis and Lawson¹² have observed in dogs that following intravenous or intraspinal physostigmine

11 Kremer, Michael. Action of Intrathecaly Injected Prostigmine on Acetylcholine and Esereine on the Central Nervous System. *Ann. Quart. J. Exper. Physiol.* 31: 357 (July) 1936.

12 Merlis, J. K., and Lawson, H. Effect of Prostigmine on the Reflexes in the Dog. *J. Neurophysiol.* 2: 6 (Nov.) 1937.

the flexion reflex was augmented while the knee jerk was depressed. They proved that these effects on reflexes resulted from the action of the drug on the spinal cord and that atropine failed to antagonize this spinal action.¹² Changes in reflexes were obtained with doses of physostigmine which did not affect the myoneural junction. The experimental evidence of these investigators also demonstrated that fascicular twitchings are due to the action of physostigmine on the spinal cord rather than on the myoneural junction. This view is supported by the observation previously mentioned that fascicular twitchings were never induced by prostigmine in paralyzed muscles in poliomyelitis patients, although denervated muscle is hypersensitive to acetylcholine.¹⁰

The mode of action of prostigmine on the spinal cord in man appears to be complex, the drug inhibiting some reflexes and augmenting others. In general, the proprioceptive functions such as muscle tonus and stretch reflexes appear to be inhibited by prostigmine in man, while active motion may be augmented. Merlis and Lawson¹¹ observed in dogs that physostigmine augmented reflexes from stimulation of the skin, such as the flexion reflex and the crossed extension reflex, while depressing the knee jerk (a modified stretch reflex, proprioceptive). They came to the conclusion that physostigmine acts on the synaptic connections to the anterior horn cells by influencing the function of the internuncial neurons. It will be recalled that evidence has been presented earlier that muscular hypertonus, hyperirritable stretch reflexes and "incoordination" in poliomyelitis may be related to a lesion of internuncial neurons. The beneficial action of prostigmine in poliomyelitis may therefore depend on localized action of the drug at exactly the site of abnormal function in the spinal cord. The fact that prostigmine relaxed spasm in some muscles and not in others in the same individual may perhaps be related to local differences in pathologic involvement of internuncial neurons and derangement of synaptic function in the spinal cord in poliomyelitis.

PROSTIGMINE AS AN ADJUNCT IN THE TREATMENT OF POLIOMYELITIS

Twenty patients suffering from poliomyelitis were given prostigmine subcutaneously, orally or by both routes as an adjunct in therapy. In almost all cases hot fomentations were continued throughout the period of prostigmine administration. Two of these patients were at the Gillette State Hospital for Crippled Children, St. Paul, 4 at the Elizabeth Kenny Institute, Minneapolis, 1 at St. Barnabas Hospital, Minneapolis, and 13 at the University of Minnesota Hospital, Minneapolis. Seventeen of the patients were in subacute stages of the disease, ranging from two to six months following the onset. There were 2 patients with acute poliomyelitis at three to four weeks after onset and 1 with chronic poliomyelitis at sixteen months after onset.¹³

The improvement following prostigmine was clearly demonstrable in many subacute cases despite the continuation of the other forms of therapy. The acute cases showed improvement immediately after initiation of prostigmine therapy that was apparently more rapid than the improvement usually noted in such cases with

hot fomentations alone. However, this is difficult to evaluate since the patients were progressing satisfactorily with the hot fomentations. A large series of acute cases will be necessary to establish the value of prostigmine. The 1 case studied sixteen months after the onset showed definite improvement, but more such cases must be investigated before one can say that prostigmine is of value in the chronic stage.

The usual procedure was to begin by careful examination of the patient including measurements of limitation of passive motion in angles. The progress of the patient under prostigmine therapy could be evaluated quite accurately by repeated measurements of range of passive motion. The treatment was begun by studying the effects of hypodermic injection of prostigmine. The prognosis could be estimated roughly by the improvement resulting from a single subcutaneous injection. The doses used were as follows: for adults, 1.5 to 2 mg of prostigmine methylsulfate together with $\frac{1}{100}$ grain (0.6 mg) of atropine sulfate, for children of 8 to 13 years, 1 mg of prostigmine with or without $\frac{1}{200}$ grain (0.3 mg) of atropine, for children of 2 to 6 years, 0.5 mg of prostigmine without atropine. With these doses the beneficial effects on muscle function were usually observed with no serious toxic symptoms. Subcutaneous injections were more effective than oral administration and were repeated when necessary in patients who did not respond rapidly.

Oral administration of prostigmine was begun in most cases after an initial injection of the drug, but in some cases oral doses alone were used. For adults the usual dose was gradually built up to prostigmine bromide 45 mg and atropine sulfate $\frac{1}{100}$ grain (given simultaneously) three times a day. The children of 12 to 14 years received prostigmine bromide 30 mg and atropine sulfate $\frac{1}{200}$ grain three times a day. Younger children were given prostigmine bromide 15 mg two to five times a day without atropine. These doses usually did not cause toxic or unpleasant symptoms but the balance of prostigmine and atropine had to be adjusted carefully to the individual patient to avoid such symptoms. Patients have taken these doses for two months without unpleasant or harmful effects, and almost all patients showed some improvement in muscle function from the drug.

The increase in range of passive motion resulting from prostigmine therapy is summarized in table 2. It will be noted that the improvement varied from patient to patient and in different muscles of the same patient. It seems likely that these differences in response to prostigmine may be related to local differences in the severity of disorder of the spinal cord.

REPORT OF CASES

CASE 1—F. B., a woman aged 30, was started on treatment one week after the onset of poliomyelitis. She had involvement of all four extremities at the onset and had difficulty in swallowing for three weeks. Three and one-half months after the onset she was unable to sit up and had pronounced weakness of both lower extremities, bilateral "foot retraction," limitation in range of passive straight leg raising and abduction of the lower extremities and stiffness of the back. There was considerable pain in the muscles on stretch or pressure. She was given two subcutaneous injections of prostigmine and atropine in one week and was then treated with oral prostigmine and atropine for two weeks, the medication being given in addition to hot fomentations. At the end of this time she was able to sit up easily, the foot retraction had disappeared, the back was much looser and passive abduction and straight leg raising were normal. She was able to stand and walk by

¹³ At our suggestion 4 patients were treated with prostigmine at the Wesley Memorial Hospital in Chicago. The results have been made available through the courtesy of Dr. Compere and are included in table 2. Dr. Bennett has treated 40 subacute cases of poliomyelitis with prostigmine at our suggestion at Warm Springs, Ga., with encouraging results.

herself without support. Despite discontinuance of the drugs and the hot packs, the patient returned the considerable improvement. There appeared to be definite acceleration of recovery from administration of prostigmine.

CASE 2—D G, a boy aged 9 years, was started on treatment two weeks after the onset of poliomyelitis. At five months after the onset, weakness of the muscles of the right arm and shoulder and sharp limitation of passive abduction and forward flexion were present. The patient was given oral prostigmine in addition to hot fomentations for five weeks. After two weeks he showed a great increase in range of passive abduction and forward flexion and some increase in strength in the right arm. At the end of the period of treatment with the drug, the limitation of passive motion had practically disappeared and there was a considerable increase in active motion in the deltoid, pectoral and coracobrachialis muscles in the right arm. The improvement was retained after the prostigmine therapy had been discontinued. The improvement appeared to be accelerated by prostigmine.

CASE 3—B C, a girl aged 17 years, was started on treatment ten days after the onset of poliomyelitis. Six months after the onset the patient had paralysis of the left arm with sharp limitation of passive abduction, forward flexion and external

rotation of both arms. There was rigidity of the back and the back of the neck, elevation of the right shoulder, great limitation of passive abduction, forward flexion and external rotation bilaterally at the shoulders. There was spasm of the triceps and biceps and flexion deformity of the hands. While continuing with hot fomentations, the patient was given an injection of prostigmine and atropine, and then the drugs were administered orally for a period of three weeks. At the end of this time there was considerable improvement in abduction, forward flexion and external rotation. The shoulder elevation had decreased, the biceps was relaxed and the flexion deformity of the hands had practically disappeared. There was no change in the triceps and little improvement in the rigidity of the back. There appeared to be acceleration of recovery due to administration of the drug.

CASE 5—R L, a boy aged 8 years, was treated beginning three days after the onset of poliomyelitis. Five and one-half months after the onset he had paralysis of both lower extremities and was unable to sit up, to turn over in bed or to raise his head while lying in the supine position. He had no contraction of the abdominal muscles in attempting to sit up, could not support himself with his arms either in the sitting position or in the prone position, and had decided weakness of the

TABLE 2—*Degree Increase in Passive Motion Produced by Prostigmine Therapy Together with Hot Fomentations*

Patient	Age of Patient	Time Since Onset	Period of Prostigmine Therapy	Straight Leg Raising		Knee Flexion		Knee Flexion Prone		Doriflexion of Foot (Knee Straight)		Doriflexion of Foot (Knee Flexed)		Abduction of Leg	Abduction of Arm		Abduction of Arm (Externally Rotated)		Forward Flexion of Arm		External Rotation of Arm	
				Right	Left	Right	Left	Right	Left	Right	Left	Right	Left		Right	Left	Right	Left	Right	Left	Right	Left
A K	8	3 wk	1 mo	39	29	30	30			8	10			25								
V B	3½	1 mo	2 wk	13	15					0	8			10								
W T	20	2½ mo	3 wk	8	4	0	0	30	40	15	10	11	0	15	13	45	22	24	0	0		
E S*	17	2½ mo	2 wk			25	80			10	25											
M G	13	3 mo	8 wk	23	15	31	30			6	15	14	15	15	32	38	47	66	25	44		
E F	12	3 mo	6 wk	9	9	40	30			14	15	6	19	19	20	25	44	55				
F B	10	3½ mo	3 wk	50	55					22	26	15	17	33								
R P	18	4½ mo	1 mo	21	23	12	13							22								
O M	20	4½ mo	2 wk	9	19									3								
T G	2	4½ mo	1 mo							15	16	21	12	18	25	5	43	24	25	35		
G H	25	5 mo	8 wk	18	21	16	0	35	0	18	16			18	25	5	43	24	25	35		
M C	46	5 mo	3 wk												19	25	27	19	50	22	19	26
D G	9	5 mo	5 wk												20		50		50			
A Z	11	5 mo	3 wk	11	15									7								
P V*	11	5½ mo	2 wk	25	10	20	5	5	30					10	5	55						
S R*	11	5½ mo	2 wk							25												
L J	44	5½ mo	4 wk	20	26	27	31							17	11	50	7	32	10	12		
R L	8	5½ mo	3 wk	40	28			0	0	11	9	16	19	10								
R C*	25	6 mo	2 wk	70	25	0	25			10	5				20	15			30	0		
C W	9	6 mo	6 wk													25		75		48		
F K	14	6 mo	3 wk	20	19					2	9	0	0	11								
B C	17	6 mo	3 wk													46		65		19		24
A E	6	6 mo	3 wk	0	0	0	0	0	0	0	0	0	0	0	0	0						
M F	22	16 mo	1 wk	5	5			20	18	0	6	5	10						5	2		

* These patients were treated at our suggestion at the Wesley Memorial Hospital, Chicago, and the data have been made available through the courtesy of Dr. E. L. Compere.

rotation at the shoulder. There was considerable spasm in the left upper trapezius, in the wrist and finger flexors and in the triceps. The patient had a decided flexion deformity of the hand and the examiner was unable to straighten the fingers or extend the wrist. Considerable pain resulted from passive stretch of the hypertonic muscles. She was given one injection of prostigmine and atropine and then treated with oral doses of these drugs for two weeks, during which time the hot fomentations were continued. Within one hour after the injection the flexion deformity of the hand, which had been present for six months, completely disappeared. At the end of two weeks of therapy there was considerable improvement in passive abduction, forward flexion and external rotation at the shoulder. The triceps, trapezius, wrist and finger flexors were greatly relaxed. The most striking observation was the complete disappearance of the flexion deformity of the hand, which remains in normal alignment. In addition the patient showed weak active flexion and extension of the ring finger, which she had been unable to perform previously. Ten days later another injection of prostigmine and atropine produced further significant improvement within a few hours. Recovery appeared to be more rapid as a result of the administration of prostigmine.

CASE 4—M C, a woman aged 46, was started on treatment five months after the onset of poliomyelitis. Five and one-half months after the onset the patient had considerable involve-

ment of both arms. There was rigidity of the back and the back of the neck, elevation of the right shoulder, great limitation of passive abduction, forward flexion and external rotation bilaterally at the shoulders. There was spasm of the triceps and biceps and flexion deformity of the hands. While continuing with hot fomentations, the patient was given an injection of prostigmine and atropine, and then the drugs were administered orally for a period of three weeks. Along with drug administration he received hot fomentations for the first week only. For the following two weeks he was given the drug and manipulations but the hot fomentations were discontinued because of boils. At the end of three weeks the patient was able to sit up by himself and turn easily in bed. He could easily raise himself with his arms in the prone position and could raise his head from the table in the supine position. There was considerable improvement in active motion in the erector spinae, teres major and rhomboid muscles bilaterally. There was also great improvement in contraction of the abdominal muscles in attempting to sit up. The back was looser and the lumbar lordosis less severe. There was great relaxation of muscle spasm in all of the muscles involved except the sartorius, which showed little improvement. Very striking in this case was the first appearance of the ability voluntarily to raise his head from the table two days after the administration of prostigmine was started. The abdominal muscles contracted at the first time when he attempted to sit up one week after the medication was begun. Prostigmine appeared to accelerate recovery.

CASE 6—W T, a man aged 20, was started on treatment one month after the onset of poliomyelitis. Two and one-half months after the onset there was paralysis of both lower extremities and great weakness of the upper extremities. There was great rigidity of the back and limitation of passive motion resulting from spasm in the hamstrings, gastrocnemii, adductors, rectus femoris and quadriceps in the lower extremities and in the pectoralis, latissimus dorsi and trapezius muscles in the upper extremities. After one injection of prostigmine and atropine he was given these drugs by mouth for three weeks along with hot fomentations. At the end of this time the patient noted increased power in the upper extremities and improvement in turning over in bed and in sitting up. There was decreased spasm in the gastrocnemii, adductors and rectus femoris while the hamstrings relaxed only slightly and there was no improvement in the quadriceps. There was considerable improvement in passive abduction but no change in forward flexion at the shoulder and little improvement in the back. The drug appeared to speed up recovery in this case.

CASE 7—A M K, a girl aged 8 years, was started on treatment two weeks after the onset of poliomyelitis. At the time of admission she was walking with support. There was weakness in the lower extremities, although all muscles could contract except the toe extensors on the left. Three weeks after the onset there was spasm in the hamstrings, adductors, quadriceps, posterior calf muscles and the back. She was given several injections of prostigmine and oral prostigmine over a period of one month during which time hot fomentations were continued. There was rapid relaxation of the muscular hypertonus. The impression was obtained that the release of muscle spasm was more rapid than had been observed with hot fomentations alone. The day after adequate oral dosage of prostigmine was instituted the range of passive straight leg raising suddenly increased 15 degrees and 20 degrees on the two sides.

CASE 8—R P, a youth aged 18, was started on treatment one month after the onset of poliomyelitis. On examination four and one-half months after the onset the patient had decided limitation of passive motion in the hamstrings, quadriceps and adductors as well as rigidity of the back. He was given one injection of prostigmine and then oral prostigmine for one month, during which time the hot fomentations were continued. There was considerable improvement in the muscular hypertonus, although the progress in this case was not too encouraging.

CASE 9—V M B, a girl aged 5½ years, was started on treatment two weeks after the onset of poliomyelitis. At five weeks after the onset there was limitation of passive motion due to spasm in the hamstrings, adductors and posterior calf muscles and the back. The patient was given one injection of prostigmine and then the drug was administered orally for two weeks along with hot fomentations. The prostigmine may perhaps have increased the rate of relaxation of spasm in this acute case.

CASE 10—C W, a boy aged 9 years, was started on treatment one week after the onset of poliomyelitis. When examined six months after the onset he had paralysis and atrophy of the left upper extremity. There was decided limitation of passive abduction and forward flexion at the left shoulder. He was treated with oral prostigmine for six weeks along with hot fomentations, resulting in considerable improvement in the range of passive abduction and forward flexion, with little improvement in active motion. Relaxation of muscle spasm appeared to be accelerated by prostigmine.

CASE 11—A Z, a boy aged 11 years, was started on treatment two days after the onset of poliomyelitis. At five months after the onset there was little residual paralysis except in the abdominal muscles. However, limitation of passive motion was still present in the hamstrings, adductors and back. In attempting to touch the toes with the knees straight, the patient could only reach to within 6 inches of his toes. He was unable to sit up straight with the knees straight because of the limitation imposed by his hamstring muscles. After an injection of prostigmine the drug was given orally for one week, during

which time the hot fomentations were discontinued because of boils. After only one week of treatment with this drug, he could sit up straight with the knees straight and was able to touch his toes easily without bending his knees. There was considerable improvement in range of passive motion of straight leg raising and abduction, and there was a greater arch in flexion of the back. The drug therapy appeared to accelerate recovery.

CASE 12—M F, a woman aged 22, had a residual paralysis of the left leg and weakness of the right leg sixteen months after the onset. Because there was residual limitation of passive motion due to contraction of the hamstrings, posterior calf muscles and rectus femoris, the patient was given prostigmine. In attempting to touch the toes while standing with the knees straight, the fingers were 8 inches from the floor. One hour after an injection of prostigmine and atropine, the patient for the first time in sixteen months, was able to touch the floor with the knuckles of the proximal phalanges owing to relaxation of the hamstring muscles. Oral prostigmine and atropine were given for one week along with hot fomentations. At the end of this time there was improvement in the range of passive motion because of relaxation of the hamstrings, posterior calf muscles and rectus femoris.

This case demonstrates that prostigmine may be effective in the chronic stage of the disease in some patients. In one other patient at sixteen months after the onset one injection of prostigmine caused relaxation in the hamstrings of one leg, but none of the other contracted muscles relaxed at all. In another patient at one and one-half years after the onset there was considerable relaxation of the hamstring and the shoulder muscles within an hour after injection of prostigmine and atropine. This leads one to hope that at least some of the more chronic cases may respond to this treatment.

CASE 13—M G, a girl aged 13, was started on treatment two weeks after the onset of poliomyelitis. She had paralysis of the entire body, widespread severe spasm and severe pain and tenderness at the onset. Three months after the onset the patient had well defined weakness and paralysis of the muscles of all four limbs, severe rigidity of the back and spasm of the hamstrings, quadriceps, posterior calf muscles and adductors in the lower extremities and in the pectoral and latissimus dorsi muscles in the upper extremities. She was unable to sit up, roll over in bed or use her arms effectively. Beginning three months after the onset she was given oral prostigmine and atropine for five weeks along with hot fomentations. Then she was given oral prostigmine and atropine and a subcutaneous injection of these drugs every evening for another week and oral medication alone for an additional two week period. At the end of this time the patient could sit up and turn over with ease. She could use her arms much better although they were still weak. There was great relaxation of spasm in the hamstrings, quadriceps, posterior calf muscles and adductors. The rigidity of the back was much improved, as was the spasm in the shoulder muscles. The drug appeared to accelerate recovery.

CASE 14—F K, a boy aged 14, was started on treatment one day after onset of paralysis. On admission he had complete paralysis of both lower extremities. Six months after the onset he had severe atrophy and paralysis in the muscles of the lower extremities. He had moderate spasm in the hamstring, gastrocnemius and adductor muscles and rigidity of the back. He was unable to sit up straight with the knees straight. Beginning six months after the onset he was given oral prostigmine and atropine for three weeks along with hot fomentations with some improvement. The drugs were discontinued for ten days and then he was given daily injections of prostigmine and atropine for one week. At the end of this time there was decreased spasm in the hamstring, gastrocnemius and adductor muscles and slight improvement of the back. He was able to sit up straight with the right knee straight and with the left knee slightly flexed. There was no improvement in active motion. The drug therapy apparently speeded up recovery.

CASE 15—L J, a man aged 44, was admitted to the hospital one day after onset of paralysis. On the way to the hospital the ambulance collided with a street car and he suffered a head injury. Proper treatment could not be carried out effectively for one month after the onset because of delirium. Five and one half months after the onset the patient had paralysis and atrophy of the muscles in the lower extremities and decided weakness and some atrophy in the right arm. There was severe spasm in the back, the hamstring quadriceps and adductor muscles in the lower extremities and in the shoulder muscles particularly on the right side. The right shoulder was elevated by upper trapezius hypertonus and there was severe spasm in the pectoral and latissimus dorsi muscles. Six months after the onset after two injections of prostigmine and atropine in the course of one week oral administration of the drugs was begun and continued for three weeks. At the end of this period the patient was given an intraspinal injection of prostigmine. The medication was given along with hot fomentations. At the end of the period of drug therapy there was considerable relaxation of the spasm in the hamstrings quadriceps adductors in the lower extremities and in the right shoulder muscles as well as a moderate decrease in rigidity in the upper part of the back. The patient was able to hold his knees drawn up in bed while formerly they had to be supported with pillows. There was increased active motion and strength in the right arm. There appeared to be some acceleration of recovery as a result of prostigmine administration.

CASE 16—E F, a boy aged 12 was started on treatment one month after the onset of poliomyelitis. Three and one-half months after the onset he was unable to sit up and had decided weakness of the lower extremities. He had severe spasm of the hamstring gastrocnemius adductor and back muscles and slight residual spasm in the shoulder muscles. There was still considerable pain on stretching the muscles. Three and one-half months after the onset treatment with oral prostigmine and atropine was begun along with hot fomentations. After ten days the treatment was discontinued temporarily because the patient had an upper respiratory infection. After two weeks oral prostigmine was resumed with occasional injections of prostigmine and atropine. At the end of the period of drug therapy the patient was able to sit up and had improved active motion in both upper and lower extremities. There was considerable improvement in the rigidity of the back and in the spasm of the hamstring, gastrocnemius and adductor muscles in the lower extremities while the hypertonus had disappeared from the upper extremities. The recovery appeared to be accelerated by drug therapy.

CASE 17—O M, a man aged 30 was started on treatment one month after the onset of paralysis. Four and one-half months after the onset the patient had moderate paresis of the lower extremities especially the right. There was still moderate rigidity of the back and spasm of the hamstring and adductor muscles, so that the patient was unable to sit up straight with the knees straight. He was given oral prostigmine and atropine along with hot fomentations for two weeks. At the end of this time he could sit up straight with the knees straight. There was much improvement in the rigidity of the back and in the spasm of the hamstring and adductor muscles. There was no significant change in active motion. The patient appeared to benefit from prostigmine therapy.

CASE 18—G H, a woman aged 25 was started on treatment six weeks after the onset of paralysis. She had severe involvement of all four extremities at the onset more pronounced in the left arm and leg. Five months after the onset she had weakness of the upper extremities and paralysis of the lower extremities. She was unable to sit up support her body on her elbow in bed or roll over. There was very pronounced rigidity of the back and severe spasm in the hamstring gastrocnemius soleus quadriceps and adductor muscles in the lower extremities and in the shoulder muscles particularly on the left. Five months after the onset prostigmine and atropine therapy was begun and continued along with hot fomentations for eight weeks. At the end of this time there was considerable improvement in active motion in the upper extremities with almost complete disappearance of the hypertonus in the shoulder.

One week after drug therapy was begun, the patient noticed that she could lift her trunk on her elbow and could support her weight, which she had tried to do many times before and had never succeeded in accomplishing. There was great improvement in the spasm in the hamstring, quadriceps gastrocnemius soleus and adductor muscles and some improvement in rigidity of the back. The drug therapy appeared to accelerate recovery.

CASE 19—A E, a man aged 36, had a very severe involvement of the entire body and was only able to move his head fingers and toes weakly. While he had been admitted to another hospital one day after the onset his treatment was inadequate. When first seen six months after the onset he had paralysis of all four extremities and was able to move only his fingers and toes. He had an extreme degree of rigidity in the back, severe spasm in the hamstring and quadriceps muscles in the lower extremities and pectoral latissimus dorsi triceps and pronator muscles in the upper extremities. He was given oral prostigmine and atropine as well as frequent injections of these drugs for three weeks, along with hot fomentations. He showed practically no improvement either in active motion or in relaxation of muscle spasm. There was temporary relaxation after injection of prostigmine and atropine but the improvement was not retained.

CASE 20—T G, a boy aged 2 years, began treatment five weeks after the onset of poliomyelitis. Four and one-half months after the onset the patient had paralysis of the muscles of the left leg and weakness of the left soleus and quadriceps muscles. There was also a foot drop on the left with pes cavus due to hypertonus in the plantaris and soleus muscles. Oral prostigmine was given along with hot fomentations for two weeks and then repeated injections of prostigmine were given for another ten days. There was no improvement in active motion and relatively slight relaxation of the hypertonus.

It is difficult to evaluate the improvement resulting from therapy in poliomyelitis. The disease is variable in the distribution and severity of involvement as well as in its course. Therefore it is often a problem to predict accurately the rapidity of recovery that would have ensued had treatment not been given. An additional variable was introduced in this investigation by the fact that hot fomentations were continued during the period of prostigmine therapy. In several cases rapid progress was seen with prostigmine although the hot fomentations were discontinued during this period. The rapidity of improvement with prostigmine therapy in some cases suggests definite therapeutic benefit from the drug. In other cases one could not be certain that the improvement was due to the drug, 2 patients with severe involvement showed little recovery.

SUMMARY AND CONCLUSIONS

- 1 Prostigmine decreases skeletal muscle hypertonus and proprioceptive reflex hyperirritability ("muscle spasm") in patients with poliomyelitis. It also reduces 'incoordination'. These effects may be evident one hour after subcutaneous administration of the drug. These actions of prostigmine apparently depend on alteration of function of synapses in the spinal cord and are not antagonized by atropine.

- 2 Prostigmine has been given a preliminary trial as an adjunct in the treatment of poliomyelitis. The approach to therapy has been based on the Kenny concept of the disease. In a series of 20 patients most of whom were in the subacute stage of the disease the results have been encouraging. The drug significantly increased the range of passive motion decreased or eliminated deformities in some instances by relaxation of hypertonus and in some cases improved active motion. In a number of instances muscle spasm has shown more rapid improvement when prostigmine was added to the Kenny routine. In a majority of cases the drug appeared to accelerate recovery.

THE RELIABILITY OF CHEMICAL TESTS FOR ALCOHOLIC INTOXICATION

THE IMPORTANCE OF THE SELECTION OF PROPER MATERIAL FOR ANALYSIS

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The successful prosecution of violators of the drunken driver laws is dependent on an accurate medical diagnosis and the proper presentation of the evidence in court. Many physicians have found by painful experience that the usual symptoms of alcoholic intoxication do not necessarily establish this diagnosis. It is essential not only to examine the suspect thoroughly but also to demonstrate the presence of enough alcohol in the body tissues to produce these symptoms, for it may be necessary to prove beyond a reasonable doubt that the impairment of the ability of the driver to operate a motor vehicle was the result of the effects of alcohol and was not due to other drugs or to such conditions as fatigue, injury or disease.

The reliability of chemical tests for intoxication has been the subject of much dispute, but the results of our studies indicate that there is a definite correlation between the degree of intoxication determined clinically and the alcohol content of properly selected body fluids. The severity of the symptoms of alcoholic intoxication in human beings under the usually encountered conditions has proved to be practically proportional to the venous blood alcohol concentration within the limits of normal biologic variation. A study of the literature on this subject, the results obtained in a series of experiments and our experience with drunken drivers have convinced us that the chemical analysis of venous blood for alcohol is the most valuable aid in the diagnosis of intoxication because it can furnish definite objective evidence of intoxication and, of equal importance, evidence of sobriety.

Since June 1938 the Kingston Police Department has routinely used chemical tests of blood and urine in all of its drinking driver cases. The suspects were given a thorough clinical examination by the police surgeon (C B VanG) and specimens of both urine and venous blood were obtained whenever possible. The specimens were examined (L D E) by the methods of Heise,¹ and in cases which might come to trial in the courts the results were checked by another reliable method.² In our study of 101 cases we were voluntarily given permission to obtain 79 specimens of urine and 98 specimens of blood, while in 76 of these cases specimens of both blood and urine were secured.

The results of this procedure have been very satisfactory from the medical standpoint because in every case in which the examining physician made a diagnosis of intoxication he was confident that the person was not

being unjustly accused. The physician believed several persons to be sober, and these opinions were confirmed by the finding of little or no alcohol in the specimens examined. The blood alcohol level has indicated the degree of intoxication in all but a few cases, and furthermore the physician has learned how to predict the blood alcohol concentration with a high degree of accuracy. The medicolegal value of this routine is demonstrated by the fact that 70 per cent of those accused of driving while intoxicated entered pleas of guilty. Several persons who stoutly maintained their innocence pleaded guilty on being told that the concentration of alcohol in the blood indicated that they were intoxicated. The number of convictions in court, however, has been disappointing. Only 1 of the 8 drivers tried in the city court has been convicted, although the 2 drivers tried in the county court were found guilty.

CORRELATION OF ALCOHOL CONCENTRATION AND SYMPTOMS

The use of chemical tests for intoxication depends on a proportionality between the severity of the symptoms and the concentration of alcohol in the material tested. The existence of this proportionality has been the subject of much controversy and discussion.

The American Medical Association's Committee to Study Problems of Motor Vehicle Accidents³ has reported that "the concentration of alcohol in the blood is one of the best criteria of intoxication because blood alcohol concentrations closely parallel detrimental effects noted in carefully conducted experimental tests. Although this relationship is not mathematically exact because of slight variations resulting from inherent differences in human beings, it is sufficiently accurate for practical purposes." The committee concluded that a blood alcohol concentration of greater than 0.15 per cent is conclusive evidence of intoxication and that levels of from 0.05 per cent to 0.15 per cent are often associated with mild intoxication. It was recommended that drivers having blood alcohol concentrations of less than 0.05 per cent should not be prosecuted. The National Safety Council's Committee on Tests for Intoxication⁴ has come to similar conclusions, and practically identical interpretations have been incorporated into the laws of several states.

Mozes and Katonak⁵ go so far as to state that, "as far, at least, as the operation of a motor vehicle is concerned, the alcohol concentration of various body fluids and expired air furnishes a far more reliable index of the degree of alcohol influence than the most careful and detailed clinical study." There are investigators, however, who believe that there is only a very general correlation with distinct exceptions in individual cases,⁶ while still others are convinced that there is little, if any, correlation between alcoholic concentrations of body fluids and the symptoms.⁷

³ Report of the Committee to Study Problems of Motor Vehicle Accidents, J A M A 112:2164-2166 (May 27) 1939.

⁴ The 1938 Report of the Committee on Tests for Intoxication, National Safety Council, Chicago.

⁵ Mozes E B and Katonak L J. One Hundred Drunken Drivers Ohio State M J 37:21-24 (Jan) 1941.

⁶ Newman H W. Acquired Tolerance to Ethyl Alcohol, Quart J Stud on Alcohol 2:453-463 (Dec) 1941. Newman, Henry, and Fletcher Edwin. Effects of Alcohol on Driving Skill J A M A 115:1660-1662 (Nov 9) 1940. Mirsky A, Piker P, Rosenbaum M, Lederer H. "Adaption" of the Central Nervous System to Varying Concentrations of Alcohol in the Blood, Quart J Stud on Alcohol 2:35-45 (June) 1941.

⁷ Russum, B C. Present Status of Tests for Acute Alcoholism, Nebraska M J 21:167-172 (May) 1936. Alcohol in the Motorist's Blood, annotations, Lancet 1:322 (Feb 17) 1940. Smith S. Stewart, C P. Diagnosis of Drunkenness from Excretion of Urine, Brit Med J 1:87-90 (Jan 16) 1932.

¹ Heise, H A. The Specificity of the Test for Alcohol in Body Fluids. Am J Clin Path 4:182-188 (March) 1934.

² Guttler, A O, and Freireich, A W. Determination of Alcoholic Intoxication During Life by Spinal Fluid Analysis, J Biol Chem 92:199-209 (July) 1931. Harger, R N. A Simple Micromethod for the Determination of Alcohol in Biologic Material, J Lab & Clin Med 20:746-751 (April) 1935.

This wide divergence of opinion might be explained by the observations of Mellanby and others⁸ that the symptoms are more severe at a particular blood alcohol level when the concentration is increasing than when it is decreasing. To our knowledge this effect has not been demonstrated by work in which there has been a critical selection of specimens for analysis and when human subjects were drinking alcoholic beverages in repeated small amounts in the usual manner. It is more probable that this disagreement is largely the result of the following:

1 Many of the investigations reported have consisted of experiments on laboratory animals only. Obviously conclusions drawn from such experiments are not necessarily applicable to man.

2 Some of the results reported after experiments on human beings may not be applicable to the usual intoxicated driver because these results were obtained under severe and unusual conditions by having the fasting subjects ingest large amounts of alcohol in a short period of time. These conditions are not encountered in the customary use of alcohol.

3 The criteria used for judging intoxication have undoubtedly varied from one investigator to another.

4 The alcoholic content of the various body fluids and tissues and of the breath are not comparable under all conditions. The disregard of this fact is undoubtedly responsible for many of the discrepancies found in the literature.

CHOICE OF MATERIAL FOR ANALYSIS

Since alcoholic intoxication is usually manifested by a wide variety of mental disturbances and neuromuscular incoordinations, it is reasonable to assume that if there is any proportionality between the degree of intoxication and the alcohol content of any tissue such a relationship would involve the central nervous system. The existence of such a relationship in both dogs and human beings has been demonstrated by Gettler,⁹ who found that when the alcohol content of the brain reached a level of approximately 0.25 per cent there was a resulting gross lack of neuromuscular coordination which was manifested by a staggering gait. Slight symptoms appeared at a concentration of approximately 0.10 per cent and became more noticeable as the concentration of alcohol increased.

Obviously the alcohol content of the brain of a living individual cannot be determined directly and for this reason various other body fluids and excretions have been analyzed on the assumption that their alcohol contents reflect that of the brain. Most American investigators have hesitated to obtain specimens of blood in medicolegal cases and have therefore calculated the blood alcohol concentration from the results of the analysis of urine or of expired air. The committee of the American Medical Association³ states that the relationship between the concentrations of alcohol in the blood, urine, saliva and breath are sufficiently definite so that chemical tests of any one of these materials can furnish a "reliable measure of the degree of alcoholic influence." The existence of such relationships under all conditions however is questionable. In the light of the very definite critical levels of blood alcohol concentration now widely used for the interpretation of the results of the chemical analysis for alcohol the relative errors involved in the use of urine, breath and blood are of great importance.

Urine.—A number of investigators have determined the ratio of the alcohol concentration of the urine to that of the blood by experimental methods. Some of the early workers¹⁰ reported that the alcohol concentrations of urine and blood are practically identical. Miles¹¹ using very low blood alcohol concentrations concluded that the urine-venous blood alcohol ratio is near unity in the first half hour after the ingestion of alcohol but that then "for an hour or more" it is 1.35 to 1.50. He obtained individual ratios of from less than 1.1 to more than 2.1. Southgate and Carter¹² using blood alcohol concentrations of from approximately 0.10 to 0.20 Gm per hundred cubic centimeters, determined this ratio at one, two and one-half and six and one-half hours after the ingestion of alcohol. They stated that "when alcohol is drunk on an empty stomach the ratio of these concentrations of alcohol after one hour is a fairly constant figure of the order of 1.35. In a series of experiments in which the subjects had also ingested food the average value for this ratio after two and one-half and six and one-half hours was 1.40:1 with a range of 1.25 to 1.67. They concluded that the concentration of alcohol in the urine is proportional to that of the blood "under all conditions so far examined." This average value of approximately 1.35:1 has been widely quoted as being that of the usual urine-blood ratio¹³ and the National Safety Council advises the use of this ratio in the interpretation of the urine alcohol concentration.

Similar although slightly lower average ratios have been obtained by the examination of intoxicated drivers and alcoholic hospital patients when the specimens were obtained at varying unknown intervals after the social use of alcohol. Bavis¹⁴ reported an average ratio of 1.17:1. We have calculated from his data that the range of values was 0.81 to 1.65. Jetter¹⁵ obtained an average urine-venous blood ratio of 1.23:1 with a range of 1.0 to 2.3. Mozes and Katonak¹⁶ reported an average urine-blood ratio of 1.16:1. Their data indicate a range of values of 0.63 to 1.77. Stratton¹⁷ has reported the following very definite relationship between the urine alcohol content and that of the brain. The percentage of alcohol in the brain equals 0.84 times the percentage in the urine minus 0.04 per cent of alcohol.

We have obtained a similar average urine-venous blood alcohol ratio of 1.26:1 in a series of 76 drinking drivers. The range of values was 0.69 to 1.71. Chart 1 demonstrates the degree of correlation between the blood and urine alcohol concentrations that may be expected in drinking driver cases.

Although all the reported average ratios are of the same order of magnitude as the average value obtained by Southgate and Carter under strictly controlled conditions it is evident that this ratio may vary widely from the average in the individual case. For this reason any blood alcohol level calculated from the

8 Mellanby, Edward. Alcohol: Its Absorption Into and Disappearance From the Blood Under Different Conditions. British Medical Research Committee Special Report Series 31 (1917) p. 1. Mirsky, Piker, Rosenbaum and Lederer.
9 Gettler, A. O. and Tiber, A. The Alcoholic Content of the Human Brain. Arch. Path. & Lab. Med. 3: 215-220 (Feb.) 1927.
10 Gettler, A. O. and Freireich, A. W. The Nature of Alcohol Tolerance. Am. J. Surg. 27: 320-333 (Feb.) 1925.

10 Chabanier, H. and Ibarra-Lorin, E. Du mode d'excretion par le rein des alcools ethylique et methylique. Compt. rend. Soc. de biol. 79: 3 (1916). Bogen, Emil. Drunkenness. A Quantitative Study of Acute Alcoholic Intoxication. J. A. M. A. 59: 105-110 (Oct.) 1917.

11 Miles, W. R. The Comparative Concentrations of Alcohol in Human Blood and Urine at Intervals After Ingestion. J. Pharmacol. & Exper. Therap. 20: 260 (Nov.) 1920.

12 Southgate, H. W. and Carter, C. The Excretion of Alcohol in the Urine as Guide to Alcoholic Intoxication. Brit. J. 1: 463 (March 13) 1926.

13 Bavis, D. F. and Arnold, M. F. Tests of Blood and Urine of Drunken Drivers. Nebraska M. J. 1: 100-102 (June) 1927. Technical Report of the Committee on Traffic Laws and Regulations.

14 Bavis, D. F. One Hundred and Fifty Five Drinking Drivers. A Blood and Urine Study. J. Lab. & Clin. Med. 25: 513-515 (May) 1935.

15 Jetter, W. W. Studies on Alcohol Intoxication. The Blood and Urine Alcohol Concentrations in Cases of Acute Alcoholic Intoxication. J. Clin. Med. 1: 100-102 (June) 1927.

16 Mozes, M. S. 196: 4 (Oct.) 1927.
17 Stratton, Frank. Calculating the Blood Alcohol Concentration from the Urine. J. M. J. 1: 100-102 (June) 1927.

concentration of alcohol in the urine may vary greatly from the true value. This fact was pointed out by Haggard and his associates,¹⁷ who stated that, although the concentration of alcohol in the metenal urine is proportional to that simultaneously in the blood, the concentration in the bladder urine may not show this correspondence because the metenal urine is immediately mixed with urine which has previously accumulated in the bladder. They obtained an average urine-capillary blood alcohol ratio of approximately 1.3:1 when urine was voided at thirty minute intervals, but the ratio tended to be somewhat lower during the first hour after the ingestion of alcohol while rapid absorption was taking place. If the specimens of urine were collected at intervals of greater than thirty minutes, the ratios varied considerably. They suggested that after the first hour fairly reliable estimates of the alcohol concentration of the blood may be made from that of the urine by having the subject empty his bladder, discarding this specimen and examining another specimen voided thirty minutes later. Unfortunately, it is frequently impossible to secure even a single specimen of urine from a drunken driver. No doubt the difference in the times of collection of specimens of bladder urine is an important reason for the wide range of ratios obtained in medicolegal cases.

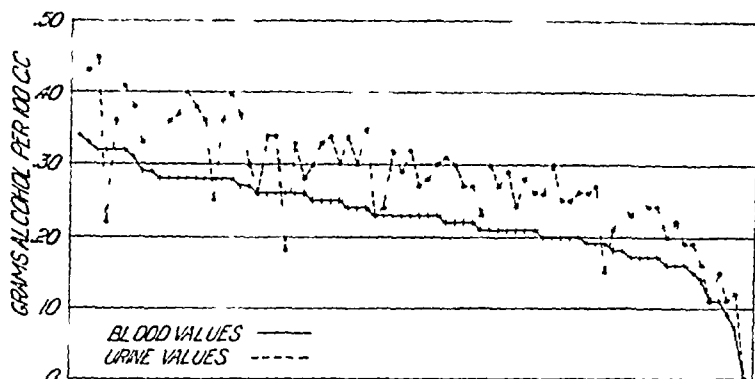


Chart 1—Venous blood and urine alcohol concentrations in 76 cases

The possibility of a great variation between the alcohol content of blood and that of urine in the individual case becomes of great importance in drinking driver cases in view of the very definite critical levels of blood alcohol concentration that have been recommended. A small urine to blood conversion error at a blood alcohol concentration near one of the critical levels may profoundly influence the medical and the legal interpretation of the results. The difficulties that may thus arise are demonstrated by some of our experiments.

In 1 case the actual venous blood alcohol concentration was 0.18 Gm per hundred cubic centimeters and the concentration in the urine was 0.14 Gm per hundred cubic centimeters thirty minutes after the ingestion of six highballs over a period of two hours. The bladder had last been emptied just prior to the ingestion of the last drink. The blood alcohol concentration calculated from that of the urine by the use of a ratio of 1.3:1 was 0.11 Gm per hundred cubic centimeters. This calculated value is below the 0.15 per cent critical level, although the actual blood concentration was well above this level.

In another experiment the specimens were obtained ten minutes after the ingestion of four highballs over a

period of three hours. The urine had accumulated in the bladder for a period of one and one-half hours. The venous blood alcohol concentration was 0.11 Gm per hundred cubic centimeters, the urine concentration was 0.07 Gm per hundred cubic centimeters and the calculated blood value would be approximately 0.05 Gm per hundred cubic centimeters. In this case the calculated value lies just at the lower critical level, although the actual concentration exceeded this by 120 per cent and the subject was slightly intoxicated.

Apparently the extent of the possible errors involved in the calculation of the blood alcohol content from that of the urine has not been realized by many investigators. Since such calculated blood alcohol levels may be grossly inaccurate, any precise conclusions drawn from these figures are unjustified. A widely quoted statement of the Committee on Tests for Intoxication⁴ is an example of such a conclusion. The committee has calculated from the data of Holcomb¹⁸ that the average driver with a blood alcohol concentration of 0.15 per cent or more is fifty-five times more liable to have a personal injury accident than is a driver with no alcohol in his blood. At 0.11 to 0.15 per cent the chances are calculated to be 15 to 1, at 0.07 to 0.11 per cent they are 5 to 1, and at concentrations of less than 0.07 per cent they are said to be 3 to 1. That there is such a general increase of liability to be involved in accidents with increasing blood alcohol concentrations cannot be denied, but, since the blood alcohol concentrations were calculated from those of urine or of breath, the actual mathematical relationship reported is questionable.

Breath—Bogen¹⁹ was one of the first investigators to study the correlation between the concentration of alcohol in the breath and that in the blood and urine. He reported that the alcohol content of 2 liters of expired air was slightly greater than that of 1 cc of urine. Later Harger and his co-workers¹⁹ developed a method for the analysis of expired air which was based on the assumption that the quantity of alcohol in 2,000 cc of alveolar air is equivalent to that in 1 cc of blood. In this method both the amount of alcohol and that of carbon dioxide in a specimen of expired air are determined, and the amount of alveolar air contained in the expired air is calculated on the assumption that 2,000 cc of alveolar air contains 190 mg of carbon dioxide. Tests made on a series of 121 persons showed a good average correlation between the amount of alcohol in 1 cc of blood and the amount accompanying 190 mg of carbon dioxide in the breath, but there were variations of as much as 50 per cent in individual cases. This method has been widely used in the chemical diagnosis of intoxication.²⁰

Jetter and Forrester²¹ have developed a method based on similar physiologic principles with the exception that the amount of alcohol accompanying 200 mg of carbon dioxide is determined. They emphasize a number of possible errors both technical and those relating to the test subject. The authors point out that there may be a normal variation of 15 per cent from the average carbon dioxide content of alveolar air and that this variation may be still greater under abnormal conditions such as acidosis and the alkalosis following emesis. The

18 Holcomb R L. Alcohol in Relation to Traffic Accidents. *J A M A* 111:1076-1085 (Sept 17) 1938.

19 Harger R N, Lamb E B and Hulpieu, H R. *Rapid Chemical Test for Intoxication Employing Breath*, *J A M A* 110:779-785 (March 12) 1938.

20 Mozes and Katonak. Holcomb. *The Perchlorate Method for Determining the Concentration of Alcohol in Expired Air as a Medicolegal Test*. *Arch Path* 32:828-842 (Nov) 1941.

17 Haggard, H W, Greenberg, L A, Carroll, R P, and Miller, D P. The Use of Urine in the Chemical Test for Intoxication, *J A M A* 115:1680-1683 (Nov 16) 1940.

average degree of correlation between the results of blood and breath analyses by their method was good but their data show individual errors of as much as 100 per cent especially at low blood alcohol levels

Recently Haggard and his associates²² have stated that the coefficient of distribution of alcohol between air and blood is not 1:2,000 but 1:1,300. They also state that the alcohol concentration in lung air cannot be correctly calculated from that in mixed expired air on the basis of their respective carbon dioxide contents

In addition to the technical errors inherent in the methods now in general use there is the disturbing possibility, especially at low levels during the rapid absorption of alcohol, that the alcohol concentration of the blood circulating through the lungs may not represent that of the brain. It is apparent therefore, that much of the work reported in the literature in which the blood alcohol concentration has been calculated by analysis of the breath will not be known for its accuracy

Blood—Because of the possible and probable errors involved in the indirect estimation of the blood alcohol concentration from that of urine or of expired air it is probable that the analysis of the blood itself will demonstrate a closer correlation between the blood alcohol concentration and the severity of the symptoms. Especially will this be true if the alcohol content of the specimen examined is proportional to that of the brain

Various values have been given for this blood-brain alcohol ratio. Bogen²³ stated that the alcohol concentration in the brain reaches a slightly higher level than that in the blood. Holcomb¹⁸ stated that after absorption the blood-brain ratio is 1.2:1. Stratton¹⁶ reported the blood-brain alcohol relationship in a series of 200 human cases to be as follows: "Percent alcohol Brain equals minus 0.02 per cent plus 1.01 (per cent alcohol Blood)." Newman and Lehman²⁴ have found that the cardiac blood-brain alcohol ratio is approximately 1.37:1 in rats

This variety of opinion as to the relative alcohol concentrations of blood and brain might be explained by the statement of Haggard and Greenberg²⁵ that during the absorption and distribution of alcohol throughout the body the concentration in the blood leaving the brain through the jugular vein is the most reliable easily available indicator of the brain alcohol concentration. They have demonstrated the possibility of considerable variation between the alcohol contents of blood drawn from different sources by an experiment performed on a dog. Alcohol was administered to the fasting animal in a dosage of 3 Gm per kilogram of body weight, and the alcohol concentrations in specimens of blood obtained from various sources were determined at intervals. Under these extreme conditions the concentration in the arterial blood rose abruptly and that in the jugular blood increased more slowly while that in the blood from the femoral vein lagged so far behind that it was less than half that of the arterial blood at thirty minutes after ingestion. The

concentration in the blood from a skin capillary was slightly higher than that of the jugular blood during rapid absorption. With a decrease in the rate of absorption the four concentrations approached one another in value until they were practically identical after ninety minutes. The authors conclude that the alcohol content of blood drawn from a limb vein during the period of active absorption has "no general significance."

This extreme statement is not supported by the findings of Harger and his associates²⁶. These investigators determined the speed with which various parts of the body reach equilibrium in the storage of alcohol by administering varying amounts of alcohol to 53 dogs either intravenously or by mouth. Groups of from 3 to 7 animals were killed at intervals and the alcohol concentrations in various parts of the body were determined. The majority of these dogs were subjected to

TABLE 1—The Concentration of Alcohol in Blood and Brain of Dogs

Number of Dogs	Alcohol Administered Gm per Kg Body Weight	Time After Ingestion Min	Average Blood Alcohol Gm per 100 Cc	Average Brain Alcohol Gm per 100 Gm	Average of Blood Brain Ratios	Range of Ratios per Cent	Average Alcohol Absorbed per Cent
A. Calculated from Data of Harger and His Associate ²⁶ Blood Obtained from Saphenous Vein							
4	0.5	30	0.049	0.0.0	0.93	1.01 ± 7	93.3
4	1.0	60	0.123	0.119	1.03	0.99 ± 11	91.9
3	6.0	30	0.387	0.379	1.01	1.05 ± 7	90.9
4	3.0	15	0.214	0.204	1.05	1.04 ± 6	92.3
4	3.0	30	0.302	0.290	1.25	1.27 ± 17	97.5
7	3.0	60	0.326	0.270	1.24	1.23 ± 14	99.9
4	3.0	90	0.342	0.261	1.35	1.39 ± 19	93.2
7	3.0	120	0.371	0.292	1.29	1.23 ± 11	96.9
4	3.0	150	0.363	0.307	1.21	1.18 ± 8	99.0
4	3.0	720	0.235	0.175	1.35	1.33 ± 3	
30	3.0	30-720			1.23	1.31 ± 7	
4	3.0	120	0.413	0.276	1.31	1.33 ± 11	
(intravenous)							
4	3.0	150	0.351	0.275	1.23	1.24 ± 6	
(intravenous)							
B. Calculated from Data of Gettler and Freireich ²⁷ Source of Blood Not Given							
1	4.2	45	0.197	0.155	1.29		
8	1.9-5.6	45-147			1.14	1.17 ± 14	
4	2.3-5.6	57-147	0.255	0.225	1.11	1.11 ± 5	
(abstainers)							
4	1.9-4.9	45-146	0.179	0.150	1.17	1.17 ± 14	
(habitues)							

the same severe conditions which had been employed by Haggard. A summary of some of the results as calculated from their data is presented in table 1.

A study of the average values for each group of animals indicates that during the early rapid absorption of alcohol under these extreme conditions (3 Gm of alcohol per kilogram) the brain alcohol concentration increased more rapidly than that of the blood in the saphenous vein. This would be expected from the findings of Haggard and Greenberg.²⁵ After only fifteen minutes however the venous blood concentration had overtaken that of the brain and at thirty minutes, although absorption was but 57.5 per cent complete and both concentrations were still increasing the blood and brain were already in alcoholic equilibrium. The actual alcohol concentrations obtained were somewhat greater than those reported by Haggard but the slope of the curve obtained by plotting time against the alcohol concentration of the blood taken from the superficial

²² Haggard H. W., Greenberg L. A. and Miller D. P. The Alcohol Content of Lung Air as an Index of Alcohol in the Blood. *J. Lab. & Clin. Med.* 26: 1527-1541 (June) 1941.

²³ Bogen Emil. Tolerance to Alcohol: Its Mechanism and Significance. *California & West. Med.* 44: 262-271 (April) 1936.

²⁴ Cited by Jettner W. W. A Critical Survey of Various Chemical Methods for Determining the Alcohol Content of Body Fluids and Tissues with Their Physiological and Medicolegal Significance. *Quart. J. Stud. on Alcohol* 2: 312-343 (Dec.) 1941.

²⁵ Haggard H. W. and Greenberg L. A. Studies on the Absorption, Distribution and Elimination of Alcohol. II. The Excretion of Alcohol in Urine and Expired Air and the Distribution of Alcohol Between Water, Blood and Urine. *J. Pharmacol. & Exper. Therap.* 55: 150-166 (Oct.) 1934.

²⁶ Harger K. N., Haggard H. W., Miller D. P., Greenberg L. A. and Jettner W. W. The Effect of Various Factors on the Rate of Absorption of Alcohol. *J. Biol. Chem.* 120: 67-74 (1937).

saphenous vein is similar to that obtained by Haggard with blood returning from the brain through the jugular vein, it does not resemble the curve of the blood from the deep femoral vein. The average blood-brain alcohol ratio at equilibrium was approximately 1.28:1, but it should be noted that there was considerable variation between individual animals in the same group. Even when the effects of varying rates of absorption were eliminated by the intravenous administration of alcohol, the individual ratios of this small group of animals varied by as much as 11 per cent from the mean. A disregard of this normal biologic variation has undoubtedly been a source of considerable confusion.

Gettler and Freneich⁹ have performed a series of somewhat similar experiments on 8 dogs, 4 of which had been accustomed to the daily ingestion of alcohol over a period of six to twenty-four months. The fasting dogs were given amounts of alcohol varying from 1.9 to 5.6 gm per kilogram of body weight and they were then killed at intervals of from forty-five to one hundred and forty-seven minutes. Some of their results have

TABLE 2—Human Blood and Brain Alcohol Concentrations

	Brain Gm per 100 Gm	Blood, Gm per 100 Cc	Blood Brain	Stomach Contents, Gm per 100 Gm	Minimum Time After Last Drink, Hours
1	0.040*	0.040	1.00	0.040	7
2	0.10	0.12	1.20	0.42	2
3	0.10*	0.10	1.00	0.09	2
4	0.12	0.14	1.17	0.60	
5	0.150	0.145	1.12	0.34	3
6	0.14	0.18	1.29	1.26	
7	0.15*	0.15	1.00	0.17	1½
8	0.15	0.15	1.20	1.09	
9	0.16	0.21	1.31	2.40	
10	0.18	0.20	1.11	1.00	
11	0.19	0.20	1.05	0.74	
12	0.19*	0.18	0.95	0.23	7
13	0.22	0.24	1.09		1
14	0.22	0.24	1.09	0.50	
15	0.26	0.29	1.12	0.61	
16	0.26	0.23	0.88	1.40	
17	0.27*	0.28	1.04	0.38	4
18	0.28	0.28	1.00	1.20	
19	0.39*	0.42	1.08	0.40	2
20	0.62†	0.94	1.52	3.20	

Average blood-brain ratio in first 19 cases 1.09

* Cases in which absorption had practically ceased; average ratio, 1.01:1

† Extreme case; drank 5 pints of liquor

also been presented in table 1. The source of the blood analyzed is not stated, but at forty-five minutes from the time of the ingestion of a single large portion of alcohol the ratio of the alcohol content of the blood, whatever its source, to that of the brain was essentially that obtained by Harger and his associates with blood from the saphenous vein. The average ratio for all dosages and times was also similar to that obtained by Harger. Apparently the blood-brain ratio was not affected by the drinking habits of the dogs.

Gettler and Freneich⁹ have also reported the results of the analyses of the blood and brain in a series of 15 human cases coming to autopsy. The source of the blood is not stated. They found a considerable variation in the blood-brain ratio, especially at very low alcohol concentrations, in which the effects of varying rates of absorption and the existence of minor technical errors would tend to accentuate any differences between such ratios. If the three sets of data which involve alcohol concentrations of 0.02 per cent or less are omitted there is less variation, and the average ratio is found to be 1.05:1, with a range of 0.63 to 1.47.

We have determined the alcohol concentration of the brain and that of the blood in the right ventricle in a

series of 20 coroner's cases, and the results obtained have been presented in table 2. In most instances the autopsies were performed within two to three hours of the time of death. Most of these persons had been involved in automobile accidents, and 9 of them were killed instantly while others died after varying periods of time. Undoubtedly this series of cases represents a fair cross section of the various stages of absorption and of the alcohol concentrations usually encountered in medicolegal work. The 3 persons who lived more than four hours after taking their last drink were undoubtedly in a state of alcoholic equilibrium. The average ratio (grams of alcohol per hundred cubic centimeters of cardiac blood to grams of alcohol per hundred grams of brain) in these 3 cases was 1:1. In each of 6 cases, including these 3, the alcohol concentration of the stomach contents was less than 0.2 per cent higher than that of the blood. The average ratio in these 6 cases in which absorption had practically ceased was 1.01:1, while the average ratio in the other 14 cases in which the stomach contents contained higher percentages of unabsorbed alcohol was 1.15:1. Apparently the blood-brain equilibrium ratio in human beings is lower than that in dogs and that in rats.

The cardiac blood-brain ratios in the entire series of cases representing various stages of absorption varied from 0.88 to 1.52:1. The one extremely high ratio was obtained in a person who died while rapid absorption was still taking place after he had ingested 5 pints of liquor on a wager. With the exception of this 1 case, which is not typical of persons driving automobiles, the maximum difference between the alcohol concentration of cardiac blood and that of the brain in any 1 case was 0.05 per cent of alcohol. The average blood-brain ratio was 1.09:1 with a range of values of 0.88 to 1.31:1.

The data in tables 1 and 2 indicate that even during rather rapid absorption of alcohol in dogs there is a practically constant relationship between the concentration of alcohol in the brain and that in the blood of a superficial vein. In human beings, in the stages of absorption sometimes encountered in medicolegal work, the alcohol concentration of arterial blood may be significantly higher than that of the brain. Under the usual conditions of relatively slow absorption, however, the concentration in the brain tends to lag only slightly behind that of arterial blood. The concentration of alcohol in the blood of a superficial vein may also lag slightly behind that of arterial blood, but under the usual conditions of social drinking the diffusion of alcohol from the capillary blood to the tissues probably keeps pace with the relatively long gradual process of absorption. The results obtained with dogs under extreme conditions would indicate that in drinking drivers the concentration in the venous blood obtained from the usual source, although slightly less than that of arterial blood, is probably essentially that of the brain. It is apparent, therefore, that the concentration of alcohol in venous blood is the best indicator of brain alcohol concentration in common use. Under the usual conditions in which the specimen is obtained some time after the ingestion of the last drink, both capillary and venous bloods will probably give practically identical results. At concentrations near the legal critical levels, however, the use of capillary blood may possibly result in an unjustified accusation, whereas any slight error involved in the use of venous blood would tend to favor the driver.

In the light of this information we believe that the critical levels of blood alcohol concentration now so widely employed should be the basis of precise interpretations only when venous blood has been analyzed. At concentrations definitely above the critical levels, however, the other frequently used body materials—capillary blood, urine or breath—will undoubtedly furnish valuable confirmatory evidence of intoxication.

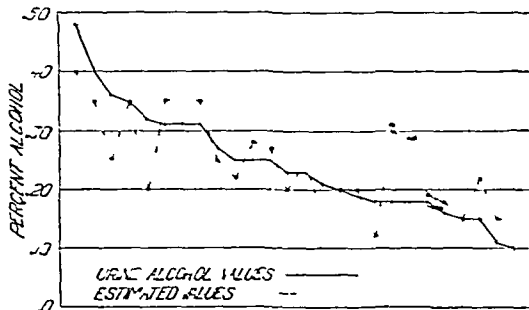


Chart 2.—The results obtained by Heise and Halporn in 26 cases injured. ** urine obtained two and one-half hours later.

VENOUS BLOOD ALCOHOL CONCENTRATION AND THE DEGREE OF INTOXICATION

An individual becomes intoxicated by a gradual process and not through a series of definite stages, and for this reason it is frequently difficult to determine the precise extent of this gradual deterioration of physical and mental function. This is especially true because of the fact that the signs and symptoms of intoxication may be altered by such other factors as fatigue and the emotional stability of the individual. Another factor, well known to many drinkers, is the ability of a moderately intoxicated person to increase his self control to some extent under conditions of stress such as those involved in being examined by a police surgeon.

The effect of alcohol on various physical and neurologic functions may be measured rather accurately under controlled conditions in the laboratory, although these precise measurements do not necessarily demonstrate the total effect of alcohol on the individual. In police cases, however, the examining physician must simply observe a series of signs and symptoms and then come to some conclusion as to the intoxication or sobriety of the driver.

We have attempted to correlate the apparent degree of intoxication so determined with the venous blood alcohol concentration in a series of 85 police cases. The clinical examination was based on the recommendations of the National Safety Council, and it included various practical tests of neuromuscular coordination and memory, a search for evidences of disease or injury as well as general observations of the subject and estimates as to the degree of his general orientation and emotional stability. Each such observation is not quantitative, but we believe that the total impression gained by an experienced observer from a thorough examination affords a rather accurate index of the degree of intoxication.

Obviously any correlation between alcohol concentration and the degree of intoxication will depend on the criteria used in making the diagnosis. We have obtained a fairly definite impression as to the extent of various objective and subjective symptoms at different venous blood alcohol concentrations by experimental methods. These impressions as well as those obtained by a study of the literature and by our experience with fatal

cases have constituted the basis of our criteria for intoxication although these criteria were undoubtedly slightly modified with increasing experience. Our diagnoses have been made conservatively in light of the fact that these were medicolegal cases and that we might be called on to demonstrate definite evidences of intoxication in court.

The diagnosis of 'intoxication' has been made at a point at which slight but definite signs of physiologic and behavior abnormalities are evidenced to a critical observer even under the watchful eye of a police officer. We believe that at this point the effects of alcohol are of such a degree of intensity as definitely to impair the ability of an individual to operate a motor vehicle with safety. This state was found to occur at a blood alcohol concentration of approximately 0.15 Gm per hundred cubic centimeters or less. This level undoubtedly is higher than the lowest point at which there is a definite impairment of ability to drive an automobile, but it is a practical level for use in medicolegal cases. In some cases there were slight outward signs of intoxication at levels as low as 0.05 to 0.07 Gm per hundred cubic centimeters, although even at this concentration the subjective symptoms were often considerable. When the alcohol level increased to approximately 0.18 to 0.23 Gm per hundred cubic centimeters, even an uncritical observer could notice such definite evidences of intoxication as slight muscular incoordination, thick speech and personality changes. The sense of time was frequently disturbed but the individual was usually rational. As the concentration continued to increase the extent and number of these changes also increased and the individuals became irrational, unsteady and confused. By the time the concentration had reached a zone of approximately 0.27 to 0.32 Gm per hundred cubic centimeters the neuromuscular incoordination resulted in a very definite staggering gait and the depressant action of alcohol was evidenced by a condition bordering on stupor. These degrees of intoxication, which were found by rather crude methods, correspond very closely with those described by Muehlberger.²²

We have concluded that there is a very definite correlation between the degree of intoxication and the venous blood alcohol level, although there is some variation in the degree of intoxication of persons who have the same blood alcohol concentration. This is to be expected in view of the normal biologic variation between individuals. Another probable reason for the observed variation is the fact that each diagnosis involved the judgment of the examiner as well as his observations. Undoubtedly the accuracy of these judgments was affected to some extent not only by the effects on the driver of such factors as apprehension and injury, but also by the physical condition of the examiner at the time. Many of these drivers were examined in the early hours of the morning when the effects of a night

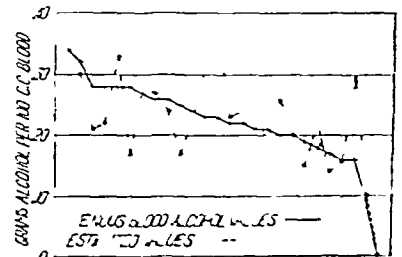


Chart 3.—Results obtained in the first case injured.

on both driver and examiner would tend to be pronounced. In spite of the many sources of error, the blood alcohol concentration corresponded with the estimated degree of intoxication in nearly every case.

We have attempted to express this correlation mathematically by following a procedure used by Heise and Halporn.²⁸ These investigators determined the urine alcohol content of 200 drunken drivers examined by them. They then expressed the correlation between the observed symptoms and the urine alcohol concentration in the next 26 cases by guessing the alcohol content of the urine. The average correlation between the estimated values and the values obtained by analysis of the urine was good, although there were considerable differences in several cases. We have plotted their data in chart 2.

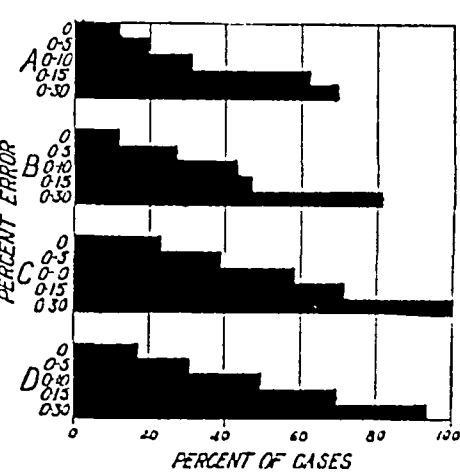


Chart 1—Accuracy with which alcohol concentrations have been estimated. A, Heise and Halporn using urine; B, results obtained by us in our first 26 cases using venous blood; C, results obtained in our last 31 cases using venous blood; D, results obtained in our last 59 cases using venous blood.

The data from our first 26 cases have been plotted in charts 3 and 4. It can be seen from charts 2, 3 and 4, that the blood alcohol values in the first 26 cases were estimated with approximately the same degree of accuracy as that obtained by Heise and Halporn with urine. As the examiner acquired more experience, however, he was able to estimate the concentration with increasing accuracy. This is demonstrated in chart 5, in which the data on the remaining 59 cases are plotted. The one very low estimate was made after the examination of a man who spoke and understood English with difficulty, consequently it was nearly impossible to come to any definite conclusion as to his exact condition, so

and those in the last 31 cases is expressed mathematically in chart 4.

The results of this study indicate that, even though this series of individuals represented a wide range of ages, blood alcohol concentrations, times and drinking habits, there was a very definite correlation between the concentration of alcohol in the blood obtained from a superficial vein in the arm and the degree of intoxication. In each of the last 31 cases the variation between the apparent degree of intoxication, as represented by an estimated alcohol concentration, and the venous blood alcohol concentration was less than 30 per cent. In 71 per cent of these cases the variation was less than 15 per cent. As is to be expected, the correlation existing between the severity of the symptoms and the alcohol concentration of venous blood is considerably greater than that between the symptoms and the concentration in the urine.

SUMMARY AND CONCLUSIONS

1 The chemical determination of alcohol in properly selected specimens is of great value in the diagnosis of intoxication. It also supplies definite objective evidence for use in court.

2 The disagreement in the literature as to the correlation between the degree of intoxication and the blood alcohol concentration is at least partially due to the selection of improper material for analysis.

3 The relationship between the concentration of alcohol in urine and that in blood may vary widely in medicolegal cases. The blood alcohol concentration cannot be calculated from that of urine.

4 The estimation of the blood alcohol concentration by the use of the popular methods of breath analysis is subject to considerable error.

5 The existence of a practically constant ratio between the alcohol concentration of the blood in a superficial vein and that of the brain under the conditions usually encountered in the examination of drinking drivers is indicated by evidence from the literature. Further evidence is afforded by our observations which show the existence of a definite correlation between the apparent degree of intoxication and the venous blood alcohol concentration. This blood-brain alcohol ratio at alcoholic equilibrium is approximately 1:1 in human beings.

6 The interpretation of the blood alcohol concentration recommended by the American Medical Association, the National Safety Council and several state laws adequately expresses the correlation between the degree of impairment of the ability to operate a motor vehicle and the alcohol concentration of venous blood. It is suggested, however, that definite recommendations concerning the use and interpretations of breath and urine alcohol determinations be made only after further study. For the present, precise interpretations based on the recommended critical levels of blood alcohol concentration should be made only after the analysis of venous blood itself.

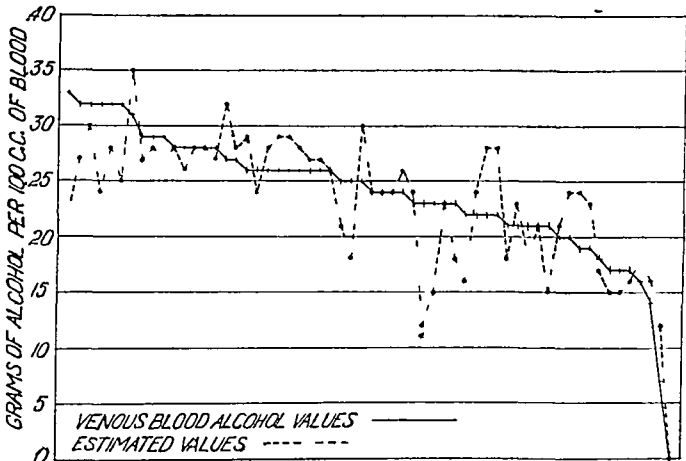


Chart 5—Results obtained in the last 59 cases, * patient who spoke and understood English with difficulty.

he was said to be in a subclinical stage of intoxication, and he was held on another charge. The accuracy with which the estimates have been made in a series of 25 consecutive cases is shown in chart 6. The increase in accuracy between the estimates in the first 26 cases

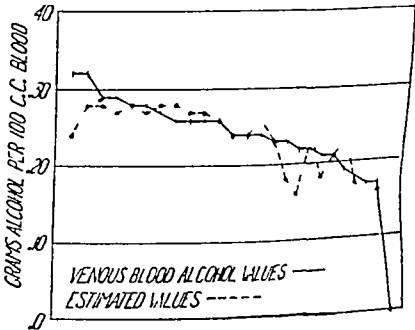


Chart 6—Results obtained in 25 consecutive cases included in the last 31.

28 Heise, H. A., and Halporn, Benjamin. *Medicolegal Aspects of Drunkenness*, Pennsylvania M. J. 36: 190-195 (Dec.) 1932.

WOUND HEALING AND INFECTION
AFTER LOCAL IMPLANTATION
OF SULFONAMIDE POWDER

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The practice of implanting sulfonamide powder in the wounds of compound fractures after debridement is now well established and is a routine procedure in most hospitals in this country. However, the routine implantation of sterile sulfonamide powder in clean operative wounds for the purpose of preventing infection has not been generally adopted. It is my belief that this is the most important addition to surgical technic since the introduction of rubber gloves and I cannot understand why surgeons have not adopted the method as a routine procedure. It cannot be because they do not encounter operative infections, because I believe that under present conditions the incidence of operative infections is in the neighborhood of 5 per cent. It may be because many surgeons believe that the local implantation of the drug is dangerous or that it interferes with wound healing or that it does not reduce the incidence of operative infections.

In order to prove that the procedure is not dangerous, that it does not delay wound healing and that it does tend to lower the incidence of operative infection, I shall report in this paper all the complications which occurred in 600 consecutive cases in which sulfonamide powder was implanted in operative wounds. This series includes only clean operations in the field of orthopedic surgery and does not include cases of infection, contaminated wounds or compound fractures. All are cases which I followed after performing the operation. If the cases of other members of the orthopedic service were included the series could be enlarged, but the records of consecutive cases would be difficult to obtain and inaccuracies might result.

In February 1939 I examined some of the patients of Jensen, Johnsrud and Nelson¹ and was so impressed by their results that I immediately adopted their method of implanting sulfanilamide powder in compound fractures after debridement. Experiments were performed in an effort to determine whether or not the local implantation of the drug was harmful.² These experiments showed that sulfanilamide, sulfathiazole and mixtures of the two drugs in various proportions were well tolerated by the tissues of laboratory animals and could be implanted in wounds in joints, tendon sheaths or body cavities without danger. Unless an unnecessarily large amount of the drug was used there was no appreciable interference with the healing of the wounds.

In May 1939 I began implanting the sterile sulfanilamide powder in clean operative wounds, and data on the first 150 patients were published.³ In January 1941

sterile sultathiazole powder was substituted for sulfanilamide and this was used in 100 consecutive cases. Then sterile mixtures of the two drugs in various proportions were used in a similar series.

The series now includes over 600 cases, and the postoperative complications which occurred were three deaths, two infections, one separation of wound edges, five hematomas requiring evacuation, two hematomas evacuated and resutured, two stitch abscesses and no toxic symptoms except fever.

The three hospital deaths which occurred in the series were in no way related to the use of the drug or to infection. The first occurred in a man aged 58 with disabling osteoarthritis of the hip. An acetabuloplasty and an obturator neurectomy were performed. The convalescence was uneventful. On the eighth postoperative morning he was found dead in bed. A complete postmortem revealed only a small amount of atelectasis in the left lower lobe of the lung. The cause of death is unknown. The wounds were healing normally. The second death was of a woman aged 64 who weighed over 300 pounds (over 136 Kg.) and who had a fracture of the hip. This was reduced by the open method and nailed under general anesthesia. The postoperative convalescence was unsatisfactory in that the patient suffered with distention and nausea and did not take fluids or food well by mouth. In spite of much intravenous fluid she died on the eighth postoperative day. The postmortem revealed acute myocarditis, colitis and atelectasis in the right lung. The wound was healing normally. The third patient who died was a senile man aged 84 whose fractured hip was nailed by the open method under local anesthesia. The patient was irrational and incontinent and frequently removed the dressing from his wound. Several stitch abscesses developed along the suture line. He died in his sleep on the sixty-third postoperative day. The postmortem revealed senile arteriosclerosis and pulmonary edema. At this time his wound was healed and he was walking a little without support, as he would not try to use crutches.

The two infections were late, mild and avoidable. The first occurred in a boy aged 4 years who had a large lymphangioma removed from the thigh. He returned to the hospital eighteen days after the operation with fever and a large collection of lymph in the wound. This was evacuated by forcing a hemostat through the thin scar, and the wound healed promptly. The second occurred in a man aged 42 who suffered a severely comminuted subtrochanteric fracture of the femur. This was reduced under local anesthesia and the fragments were fixed with a Neuteld nail. A hematoma developed in the distal portion of the wound and on the fifteenth postoperative day this was evacuated and found to be infected. The infection was superficial to the deep fascia and the wound healed promptly after it was evacuated. The first infection could have been prevented by the pressure dressing which the parents were instructed to keep on and the second by an early evacuation of the hematoma.

The 2 patients with stitch abscesses were the man referred to who was irrational and incontinent after his hip was nailed and a woman who was operated on for internal derangement of the knee. The internal semilunar cartilage and an avulsed tibial spine were removed. She was permitted to walk on the fourth postoperative day and three stitch abscesses were noted two days later. The skin sutures were removed the

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¹ Jensen A, K, Johnsrud L, W, and Nelson M, C. The Local Implantation of Sulfanilamide in Compound Fractures. *Surg* 6: 112 (July) 1939.

² Key J, A, and Burford T, H. The Local Implantation of Sulfanilamide in Compound Fracture. *South M J* 33: 449-455 (May) 1940.
Key J, A, Frankel C, I, and Burford T, H. The Local Use of Sulfanilamide in Various Tissue. *J Bone & Joint Surg* 22: 932-938 (Oct) 1940.
Key J, A, and Frankel C, J. The Local Use of Sulfanilamide, Sulfapyridine and Sulfamethylthiazole. *Ann Surg* 113: 284, 297 (Feb) 1941.
Harbin S, P, and Key J, A. Local Implantation of Sulfanilamide and Its Derivatives in Wounds. *Arch. Surg* 44: 22-26 (Jan) 1942.

³ Key J, A, and Burford T, H. The Prophylactic Implantation of Sulfanilamide in Clean Operative Wounds for the Reduction of Postoperative Infection. *Surg Gynec & Obst* 73: 2-4 (Sept) 1941.

knee put at rest and sulfathiazole given by mouth. The deeper layers of the wound were not involved. She left the hospital on the thirteenth postoperative day with the wound healed. She stated that on five previous occasions she had had subcutaneous abscesses around this knee.

Hematomas developed in the wounds of 5 patients and some old blood was evacuated when the sutures were removed. 1. A man who had an Ober fasciotomy



Fig 1—Two wounds immediately after removal of sutures from the larger wound. Smaller biopsy wound is 16 days old and the larger wound 10 days old. The proximal third of the humerus was excised with a sarcoma and the proximal third of the fibula was transplanted to the shoulder.

developed a large hematoma, and blood clot was pressed out on several occasions after the sutures were removed. 2. A man from whom an osteoid osteoma of the tibia was removed had a rather large dead space in the wound, and some old blood was pressed out when the sutures were removed. 3. A girl aged 14 years with an old slipped epiphysis of the hip developed a hematoma in the lower end of the wound after an osteotomy of the neck of the femur and fixation with a nail. This drained for a few days after the sutures were removed. Similar hematomas occurred in the wounds of the 2 obese women with old subtrochanteric fractures which were fixed with Neufeld nails. In all of these sulfathiazole was sprinkled or pushed into the opening and the wounds healed without infection.

In 2 instances the wounds were opened on the second postoperative day and large hematomas were evacuated, clotted blood was removed and the wound was then sprinkled with sulfathiazole and sutured. Both healed without further complications. One was a lumbosacral fusion, in the other the tip of the spinous process of the first thoracic vertebra and a considerable amount of the surrounding fascia were excised in order to relieve persistent pain complained of by a woman.

In 1 instance after a lumbosacral fusion a wound was opened because of pain and fever. No infection was found. This patient developed a decubitus ulcer which

later involved the lower portion of the wound and necessitated a second operation and suture for healing.

In 1 instance the skin edges separated and the wound healed by epithelization. The patient was a young man whose clavicle had been excised the preceding year. He returned with a rather large local recurrence of the sarcoma. This was excised with the overlying skin and a rather wide area of the surrounding tissue including part of the acromion. This left a considerable dead space covered by skin flaps under moderate tension. When the pressure dressing and sutures were removed the skin margins retracted about half an inch. Sulfathiazole powder was sprinkled on the exposed hematoma, and the wound healed without infection.

It is to be noted that with two exceptions all the operations in which the aforementioned hematomas developed were done under local anesthesia with procaine hydrochloride which contained four drops of 1:1,000 epinephrine to the ounce. This technic causes the surgeon to omit the ligation of some vessels, which may bleed later. It is also to be noted that three hematomas including the one which became infected occurred after operations in which a Neufeld nail was used. This is because the fixing of the long plate attached to this nail necessitates considerable trauma to the vastus lateralis muscle.

With the foregoing exceptions all the wounds healed satisfactorily and in no longer time than would be required by similar wounds in which the sulfonamide powder had not been implanted. In most instances the sutures were removed on the sixth, seventh or eighth postoperative day. In large wounds in obese patients they were left for ten days or more. In many instances cross straps of adhesive were used to relieve the tension on the skin after the sutures were removed.

In cases in which plaster casts were applied over the wound the sutures were usually left in until the cast was removed, often several weeks later. In none of these cases did stitch abscesses or skin infections develop, because sulfonamide powder was sprinkled on the suture line before the dressing and cast were applied.

As explained in the preceding article,³ the operative technic used was not especially elaborate and silk or cotton was used for ligatures and sutures. The technic differed from that used in the past in no way except that in this series sulfanilamide, sulfathiazole or a mixture of these two powders was implanted in the wound just before it was closed.

In view of the experience reported in this paper it is in order to mention a recent paper by Bick⁴ in which he reports clinical observations on the healing of 50 traumatic and operative wounds. He states that "there was no question but that wound healing was delayed when powders were implanted locally" and "the delay was considerable, representing on the average between 50 and 75 per cent of the time factor." He further stated that the scar of the treated group remained broader at equivalent intervals than did the scars of the controls and that the delay in healing caused longer hospitalization and postpones necessary active motion and massage.

In answer to the foregoing, I believe that Bick used too much powder in a given wound or distributed it improperly. Also the daily inspection did not help

4 Bick, E. M. Observations on Topical Use of Sulfonamide Derivatives, J. A. M. A. 118:511-513 (Feb. 14) 1942.

the healing On the day on which Bick's paper was called to my attention 2 patients had their sutures removed These were photographed (figs 1, 2 and 3) and I believe that their appearance is typical of the wounds of this series and is approximately the same as that of similar clean wounds without the local implantation of sulfonamide powder In following the 600 cases reported in this series I have noted no difference between the scars and those in other cases in which similar operations were performed in the past and sulfonamide powder was not implanted in the wounds

In regard to hospitalization, this period was not lengthened but was often shortened, as many patients were permitted to go home earlier than usual because of the added factor of safety from infection obtained by the implantation of a sulfonamide compound in the wound This is particularly true of out of town patients (fig 3) The diagnosis, type of operation, highest temperature, days in the hospital and character of the healing of the wounds in the first 150 cases in this series are given in the preceding paper on this subject³ Repetition of the data on the entire series would needlessly lengthen this paper

METHOD AND CHOICE OF DRUG

Since the drug is not bactericidal it should be sterile when it is placed in the wound Sterile packages containing 5 Gm each of sulfanilamide or of sulfathiazole or of a mixture of the two can be obtained from many drug houses Or the drug can be sterilized in glass tubes or bottles by autoclaving at 18 pounds pressure for twenty minutes This method will not kill all spores, as the bottles are stoppered with gauze and paper, but it has proved satisfactory in some hundreds of cases

In wounds contaminated with staphylococci, sulfathiazole is the drug of choice, but in clean wounds sulfanilamide is equally satisfactory On theoretical grounds I prefer a mixture of two parts of sulfanilamide and one part of sulfathiazole in clean wounds In the first 150 cases of this series sulfanilamide was used, in the next 100 cases sulfathiazole was used, and in the next 100 cases various mixtures of the two drugs were used There was practically no difference in the results



Fig 2—Leg wound of same patient ten days after operation immediately after removal of the sutures.

The two infections occurred in wounds in which sulfanilamide was used, but, as has been explained, these infections occurred long after the drug had disappeared from the tissues and could have been prevented by proper after-care I prefer the mixture but do not hesitate to use either of the drugs alone if the mixture is not available

There has been some discussion about the form of the drug I have used a fine powder, fine crystals and rather coarse crystals and find no difference in the results It is soon dissolved in the fluid in the wound unless it is permitted to form aggregates or lumps The crystals flow more easily but are heavier and do

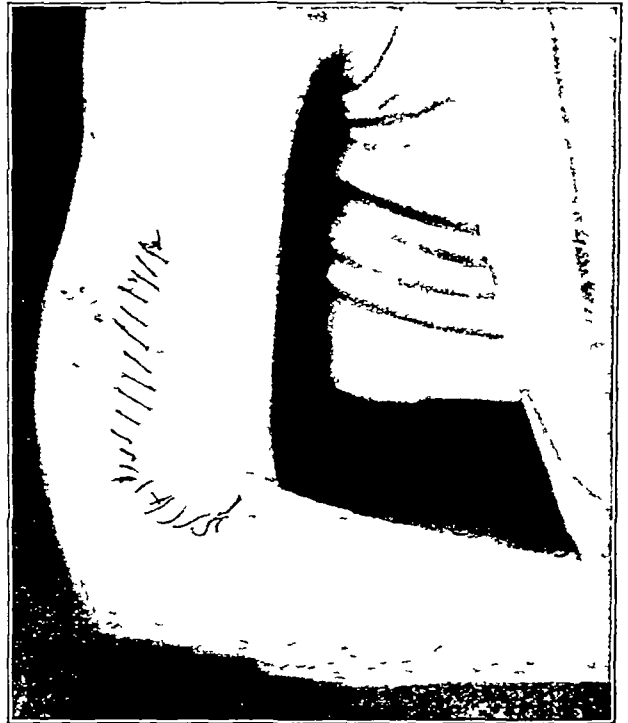


Fig 3—Sutures in place four weeks after operation The radial nerve was sutured and a step-cut operation was done for nonunion of the humerus Patient left hospital on the fourth postoperative day in a hanging cast.

not cover as much surface per gram A sterile salt shaker containing 5 Gm of the drug is on the instrument table and this is enough for most operations, and a little is saved to sprinkle along the suture line after the wound is closed Usually a good deal is left in the shaker Occasionally in extensive incisions part of a second 5 grams is used The powder is sprinkled over the surface and is then smeared with the fingers so that no aggregates are left and the drug reaches the entire area of the wound In large joints a gram or more is dropped in the joint and smeared around a bit before the synovial surface is closed After the subcutaneous sutures are tied the skin margins are wiped with the finger to remove any excess of the drug

Not over 10 Gm has been used in any clean wound As no toxic symptoms other than fever have been noted in any of the patients, no record is kept of the exact amount of drug implanted nor is the blood level or the drug determined A postoperative elevation of the temperature to 38.6 F occurred in approximately 5 per cent of the patients Whether or not this was caused by the drug I do not know At any rate it subsided quickly and did no harm Rashes have occurred in some patients who were also taking the drug by mouth and one such patient had hematuria These patients had osteomyelitis and were not included in this series

SUMMARY

The local implantation of sulfonamide powder in the clean operative wounds is a safe procedure and lowers the incidence of operative infections In over 600

consecutive cases there were no toxic symptoms, except fever, which occurred in about 5 per cent of the cases and may or may not have been caused by the drug. In these cases the total postoperative complications were 3 deaths, 7 hematomas, 1 separation of wound margins, 2 stitch abscesses and 2 infections. The 2 infections were mild and developed late. In the other cases the wounds healed in a normal manner without excessive scar formation and the average period of hospitalization was shortened by the use of the drug. Sulfanilamide or sulfathiazole powder or crystals or a mixture of the two drugs is suitable. An excessive amount of the drug may delay the healing of the wound.

Since the drug is not bactericidal it should be sterilized before it is implanted in clean operative wounds.

In view of the favorable results reported in this paper, I believe that the practice of implanting sulfonamide powder in clean operative wounds should become routine in all civilian and military hospitals. This is especially true at this time when, owing to the emergency resulting from the war, so much surgery must be done under abnormal conditions and the incidence of operative infection may be expected to be unusually high.

PHENOTHIAZINE

EXPERIMENTAL AND CLINICAL STUDY OF TOXICITY AND ANTHELMINTIC VALUE

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AND

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Our interest in phenothiazine as an anthelmintic agent was stimulated by Manson-Bahr's report¹ on its effectiveness in threadworm and roundworm infections in man. An additional stimulus was provided by the preliminary report of the Council on Pharmacy and Chemistry,² which stated that phenothiazine³ had interesting possibilities and that further investigations would be useful for a proper evaluation of its therapeutic value. Our studies have shown that phenothiazine is not an effective anthelmintic and in human beings and in rats is capable of causing toxic reactions.

Our program of study was divided into three categories: (1) an experimental study on rats, (2) blood and urine studies in human beings and (3) a study of phenothiazine as an anthelmintic.

CHRONIC TOXICITY STUDY IN RATS

A chronic toxicity study of the effects of repeated oral doses of phenothiazine was carried out as follows. Two groups of 10 male albino rats each were maintained on a diet of ground Purina Dog Chow. Sufficient drug was mixed with the diet of one group to make it 0.5 per cent with respect to phenothiazine content. The other group served as a control group. The experiment was continued for eighteen days. The total drug consumed per rat averaged 1,420 mg, or 390 mg per kilogram per rat.

The treated animals were unkempt and depressed and apparently excreted the drug or its degradation products in the urine, as was shown by the magenta colored spots which were found on the paper under the cage.

At the end of the experiment the animals were killed and examined. No gross pathologic lesions were found. Microscopic examinations of the essential organs including the bone marrow, were made. Examination of the bone marrow revealed hypoplasia of all cellular elements in 1 rat and normoblastic hyperplasia in another. The latter is generally regarded as evidence of peripheral blood destruction. Sections of the livers, spleens, kidneys, gastrointestinal tracts, adrenals and brains were without any significant changes from the normal controls.

HUMAN TOXICITY STUDY

Twenty-four patients attending an outpatient clinic were studied during a course of phenothiazine. These patients had long standing diseases such as chronic ulcerative colitis and lymphogranuloma venereum or had intestinal infections with various helminths or protozoa. None of the patients treated had acute infections, so that for the purpose of this study we can reasonably assume that any significant changes in blood or urine during phenothiazine therapy were due to phenothiazine and not to the disease. A complete blood count and urinalysis were made before therapy was begun and were repeated twice weekly while the patient was receiving phenothiazine and once or more times after the drug was stopped.

A full course of phenothiazine for an adult consisted in giving 1½ Gm. three times daily for ten days, making a total of 40 Gm.

Results of red blood cell counts were as follows. Six patients had no decrease in their counts during or at the end of therapy, 11 patients had a decrease in red blood cell count up to 500,000 per cubic millimeter, 4 had a decrease of from 500,000 to 1,000,000 per cubic millimeter and 3 had a decrease in red blood cells of more than 1,000,000. During therapy, examination of the blood smears frequently showed anisocytosis and poikilocytosis, and erythroblasts were found in one smear.

The hemoglobin of 23 patients was studied before, during and after phenothiazine therapy. Five patients had no decrease in hemoglobin, 9 patients had a decrease of less than 10 per cent and 9 patients had a decrease of more than 10 per cent in hemoglobin.

Repeated urinalyses on 23 patients undergoing phenothiazine therapy revealed that 13 showed no abnormal constituents during therapy, 6 developed a trace of albumin, 1 developed a considerable amount (3+). Two patients showed cylindroids during therapy and 1 showed hyaline and cellular casts. Crystals of an undetermined nature that polarized light were found in the urine of 1 patient. The urine was a brownish red mahogany color while the drug was being taken.

Complete white blood cell counts were not significantly altered in any of the patients during or after therapy except for the finding of an occasional myelocyte in the smears of 2 patients and metamyelocytes in the smear of 1 patient.

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¹ Manson-Bahr, Philip. Phenothiazine as an Anthelmintic in Threadworm and Roundworm Infections, *Lancet* 2: 808 (Dec. 28) 1940.

² Phenothiazine. Preliminary Report of the Council on Pharmacy and Chemistry, *J. A. M. A.* 115: 1721 (Nov. 16) 1940.

³ Phenothiazine was furnished through the courtesy of Burroughs Wellcome & Co. (U. S. A.) Inc. New York.

Side effects of nausea and vomiting were manifested by 2 patients and nausea alone by 1, the amount of phenothiazine taken in these cases was 6 Gm, 18 Gm and 40 Gm respectively

EFFECT ON INTESTINAL PARASITES

Private patients and patients attending an outpatient clinic were studied. These patients had a variety of intestinal parasitic infections and they were all given a course of phenothiazine in order to determine if this drug is therapeutically effective as an anthelmintic in infections caused by intestinal parasites. Study, therefore, was not made on any one type of infection but rather on a cross section of parasitic intestinal infections. The results are summarized in the table.

The usual dose schedule in this study of phenothiazine was as follows: for children 2 to 6 years of age $\frac{3}{4}$ Gm twice daily for ten days (13 Gm total), for children 6 to 12 years of age $\frac{3}{4}$ Gm three times daily for ten days (20 Gm total), for adults $1\frac{1}{3}$ Gm three times daily for ten days (40 Gm total). In some of the patients this

Results of Treatment

Parasite	Stool Examination		
	Before Treatment Number of Patients	After Treatment	
		Patients Positive	Patients Negative
Enterobius vermicularis	10	8	2
Hookworm	3	3	0
Ascaris lumbricoides	2	2	0
Taenia saginata	2	2*	0
Schistosoma mansoni	1	1	0
Trichuris trichiura	9	9	0
Endameba histolytica	3	2	1
Endameba coli	7	7	0
Giardia lamblia	3	3	0
Iodameba buetschlii	2	2	0
Diandameba fragilis	1	1	0
Endolimax nana	1	1	0
Totals	44	41	3

* In one case after treatment with oleoresin of aspidium the head was obtained

course of treatment was repeated after a rest period of two weeks. The results are summarized in the table and are detailed as follows:

Enterobius vermicularis (pinworm). Ten patients with pinworms were treated with phenothiazine. The total dose for children ranged from 13 to 25 Gm and for adults from 25 to 100 Gm. The criteria for cure were three negative NIH swabs. Eight cases remained positive after treatment. Two were considered cured of the infection.

Hookworm. Three adult patients with hookworm infection were treated with total doses ranging from 28 to 93 Gm; all remained positive after the course of treatment.

Ascaris lumbricoides (roundworm). Two patients with roundworms were each given a total of 40 Gm of phenothiazine; ova were present following treatment.

Taenia saginata. One patient was given a total of 30 Gm of phenothiazine; the head of the worm was not recovered. Following this oleoresin of aspidium was given and the head obtained. Another patient was given a total of 93 Gm and the worm head was not obtained.

Schistosoma mansoni. One patient with this infection was given a total of 58 Gm; the stool remained positive.

Trichuris trichiura (whipworm). Nine patients with whipworm were treated with phenothiazine with total doses ranging from 13 Gm in a 2 year old child to 93 Gm in 1 of the adults. In all cases ova were found in stool examinations following treatment.

Endameba histolytica. Three patients with this ameba in the stool were treated with phenothiazine in total doses of from 6 to 30 Gm. On subsequent examination 1 of the 3 had three negative stools following a total of 10 Gm.

Endameba coli. Seven patients harboring this organism were treated with total doses ranging from 8 to 40 Gm and all cases remained positive following treatment.

Giardia lamblia. Three patients harboring this flagellate were treated with total doses ranging from 13 Gm (2 year old child) to 28 Gm in an adult; stools of all 3 remained positive.

Iodameba buetschlii. Two patients were given a total of 36 Gm (child of 8) and 40 Gm (adult) respectively of phenothiazine; stools of both were positive following treatment.

Diandameba fragilis. One patient with this amebic infection was given a total of 68 Gm, after which the stool still remained positive.

Endolimax nana. One patient with this infection was given a total of 68 Gm; the stool remained positive.

SUMMARY AND CONCLUSIONS

1. The effects of repeated oral doses of phenothiazine were studied on rats. The only abnormal findings on microscopic examination of the essential organs were hypoplasia of all cellular elements in the bone marrow of 1 rat and normoblastic hyperplasia of the bone marrow in another.

2. Blood and urine studies during courses of phenothiazine therapy in 24 human beings showed a decrease of more than 1,000,000 red blood cells per cubic millimeter in 3 cases; a decrease of more than 10 per cent in hemoglobin in 9 patients; a trace of albumin in the urine of 6 patients and a pronounced amount in 1 patient; cylindroids in 2 patients and hyaline and cellular casts in 1 patient. Two patients developed nausea and vomiting.

3. Forty-four patients with intestinal parasitic infections of various types were treated with phenothiazine. Only 3 could be classified as being clinically cured. Of these 3, 2 had pinworm infections and the other an *Endameba histolytica* infection.

4. From our clinical and experimental study of phenothiazine in human beings and rats it appears that this drug is capable of causing toxic reactions in an appreciable number of patients.

5. It was not an effective anthelmintic or amebicide in the patients studied.

Hypnotism—Genuine hypnotism actually stands in the same category as chemistry, physics or mathematics. It is based on definite basic laws and principles which have been discovered by patient experiment and research and just as astronomy has evolved from the superstitions of astrology and chemistry from the medieval search for the magical philosopher's stone, so hypnotism has evolved from the mesmerism of the eighteenth and nineteenth centuries into a true science, a branch of the great subject of the human brain and human consciousness. The main facts and rules on which the science of hypnotism are based are known to all competent students of the subject just as the general laws of chemistry are known to chemistry students.

There can be no doubt that hypnotism may be of great aid in curing many types of human disease. At the present moment, however, it has practically no real value in America. This is due entirely to popular prejudice, that curious quirk in human thinking which sees in hypnotism something closely allied to black magic and the supernatural. We must not blame the medical profession for our own ignorance and superstition rob them of this very valuable device or combat human ailments. First we must educate our people. We will then find that the doctor is the most easily educated of all humanity.—Estabrook, G. H., professor of psychology at Colgate University, Hypnotism, New York: E. P. Dutton & Co., Inc., 1943.

ACUTE TYPHOID CHOLECYSTITIS

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BOSTON

Acute cholecystitis may be of typhoid origin. The failure to detect this association may result in grave consequences. Because of the relative infrequency of typhoid and its complications in modern medical practice, one rarely thinks of this disease when confronted with a case of acute cholecystitis. This report reviews 4 cases of acute typhoid cholecystitis to reemphasize the importance of this complication of typhoid. Two of the 4 cases came to operation before the association with typhoid had been established. In 2 instances secondary attacks occurred among the personnel of the hospitals to which the patients had been referred for operative procedures.

The localization of the typhoid bacillus in the gallbladder during the course of typhoid has become common knowledge since the report of Gilbert and Girode¹ in 1890. Chiari² in 1894 recovered this organism from the gallbladder in 19 out of a total of 22 cases of typhoid which came to postmortem examination. Nevertheless, clinical evidence as to the invasion of the gallbladder is demonstrated by a comparatively small percentage of cases of typhoid. Holscher³ observed gross changes in the gallbladder in only 5 out of 2,000 postmortem examinations performed in cases of typhoid. Keen⁴ in 1898 recorded 30 cases of typhoid cholecystitis. In 1907 Thomas⁵ collected 154 cases of typhoid complicated by acute cholecystitis. In 39 of these perforation of the gallbladder occurred. In the following year Ashurst⁶ reported 21 operative cases of acute typhoid cholecystitis. Since 1916, although foreign reports have been quite numerous, references to this condition have been infrequent in the English and American literature.⁷ With one exception⁸ the reported cases have been concerned primarily with acute typhoid cholecystitis in children.

In 1920 Reid⁹ made the observation that pain and tenderness in the right upper quadrant associated with slight muscle spasm may be encountered during the course of typhoid. In most cases the symptoms of gallbladder involvement subside without the necessity of surgical intervention. When, however, the damage to the gallbladder is more extensive, surgery may become necessary. In such cases a definitely distended gallbladder is usually found at operation.

The signs and symptoms of acute cholecystitis may become manifest during the course of typhoid or after convalescence has been established. In the majority of cases they are first noted after the second week of

the fever. Exceptionally the gallbladder complication appears at the very onset of the underlying disease. Panayotatou¹⁰ reported a case of primary typhoid cholecystitis in 1920. A similar report was made by Mussio-Fournier and his associates¹¹ in 1928.

Perforation of the gallbladder is a serious end result of acute typhoid cholecystitis. Liege and Folliasson¹² in 1931 reviewed 35 published reports of cases in children. These authors remarked on the frequency of perforation in their series. This outcome occurred in 16, or 46 per cent, of the entire group. In several of their cases it was noted that evidence of perforation was found only a few hours after the onset of clinical signs of gallbladder involvement. Emphasis is placed on the necessity for operative intervention in perforated cases. Failure to operate results in 100 per cent mortality. Salmon¹³ reported a case of acute eberthian cholecystitis associated with biliary peritonitis. At operation, although the gallbladder was large and distended, no visible break could be detected in the wall.

Statistical studies indicate that jaundice is one of the rarest complications of typhoid. Only 52 cases were recorded by DaCosta.¹⁴ McRae¹⁵ noted only 8 cases in a series of 1,500. The cause of the icterus associated with typhoid is variable. Jaundice may be one of the signs associated with acute typhoid cholecystitis. However, all jaundiced cases of typhoid do not necessarily show gallbladder damage. Petridis¹⁶ reported a case of fatal typhoid in which the jaundice appeared at the very onset of the illness. The icterus in this case was not associated with gallbladder disease but seemed rather to have been the result of a diffuse hepatitis. Berry¹⁷ reported a case of typhoid with icterus and thrombocytopenic purpura. Autopsy revealed no gallbladder involvement. Hence it is obvious that the presence of jaundice in a case of typhoid need not necessarily be indicative of a complicating acute cholecystitis.

REPORT OF CASES

CASE 1¹⁸—Dr R. S., a house officer aged 25, married, was admitted to the medical service of his own hospital on Dec 16, 1941 with complaints of malaise, generalized pains and aches and fever. He had been perfectly well until three days prior to admission, when he had noticed that he tired easily. The temperature at this time was normal. In twenty-four hours the patient became aware of generalized pains and aches associated with slight soreness of the throat. On the following day, when it was found that the temperature was elevated, he was admitted to the hospital. On admission physical examination was essentially negative except for diffuse redness of the throat.

Examination of the blood showed a red cell count of 5,700,000 with a hemoglobin content of 96 per cent, and white cell counts varying from 3,500 to 7,300, the blood smear showed 69 per cent neutrophils, 20 per cent lymphocytes, 10 per cent

From the Division of Communicable Diseases, Massachusetts Department of Public Health.

1 Gilbert A., and Girode, J. Contribution à l'étude bactériologique des voies biliaires, *Semaine med* 10 481, 1890.

2 Chiari, H. Ueber das Vorkommen von Typhusbacillen in der Gallenblase bei Typhusabdominalis, *Ztschr f Heilk* 15 199 233, 1894.

3 Holscher, A. Ueber die Complicationen bei 2000 Fällen von letalem Abdominaltyphus München med Wchnschr 38 43 62 1891.

4 Keen, W. W. The Surgical Complications and Sequels of Typhoid Fever, Philadelphia, W. B. Saunders Company, 1898.

5 Thomas, B. A. Surgical Complications and Sequels of Typhoid Fever Involving the Gallbladder and Liver, New York M J 86 688 696, 1907.

6 Ashurst, A. P. C. Perforation of the Gallbladder During Typhoid Fever, Cholecystectomy, Recovery, With an Analysis of 21 Operations of the Gallbladder During Typhoid Fever, *Am J M Sc* 135 541, 1908.

7 Zeligs, M. Acute Typhoid Cholecystitis in Child, *J Med* 7 611, 1927.

8 Deaver, H. C. Cholecystitis Following Typhoid in Childhood, *Ann Surg* 69 534 (May) 1919. Reid and Montgomery⁹ Eustis⁸.

9 Reid, M. R., and Montgomery, J. C. Acute Cholecystitis in Children as Complication of Typhoid, *Bull Johns Hopkins Hosp* 31 7 (Jan) 1920.

10 Panayotatou, Angelique. Sur un cas d'infection localisée du bacille d'Eberth. Isolement du bacille d'Eberth du pus d'une cholecystite suppurée, *Bull et mem Soc med d hop de Paris* 11 76 (Jan 16) 1920.

11 Mussio-Fournier, J. C. Bertolini, A., Alvarez, H., and Gatti, P. Cholecystite aiguë pré typhoïdique, *Bull et mem Soc med d hop de Paris* 52 960 962 (June 7) 1928.

12 Liege, R., and Folliasson, A. Etude medico-chirurgicale des perforations de la vesicule biliaire au cours de la fièvre typhoïde chez l'enfant, *Arch de med d enf* 31 581 606 (Oct) 1931.

13 Salmon, Michel. Peritonite biliaire sans perforation visible consécutive à une cholecystite eberthienne. Cholecystostomie. Guérison. *Bull et mem Soc nat de chir* 61 878 881 (July 6) 1935.

14 DaCosta, J. M. On the Significance of Jaundice in Typhoid Fever and on the Hepatic Complications Without Jaundice. *Am J M Sc* 116 130 (July) 1898.

15 McRae, Thomas. In Osler's Principles and Practice of Medicine, 12 New York, D. Appleton & Co 1935.

16 Petridis, P. Syndrome de fausse perforation intestinale au cours d'une fièvre typhoïde grave avec icterus, *Bull et mem Soc nat de chir* 58 278 280 (Feb 20) 1932.

17 Berry, M. G. Typhoid Jaundice with Case Report. *J Clin Med* 36 111 112 (March) 1935.

18 This epidemiologic investigation has been reported in detail.

mononuclears and 1 per cent eosinophils. Urinalysis was negative. The blood serum agglutination reactions against typhoid showed a gradual rise in titer from 1 plus in a dilution of 1:40 on December 17 to 2 plus in 1:320 on January 6. A blood sample submitted for a Widal test to the state laboratory was reported positive on December 30. A stool culture was positive for *Escherichia typhosa*.

The temperature remained elevated for about ten days. The course was mild and uneventful except for an attack of acute pain in the right upper quadrant on December 25. The pain was severe and radiated to the right part of the back and the right side and was relieved only after the administration of morphine. The attack was associated with spasm over the region of the gallbladder. Tenderness in the right upper quadrant persisted for five days. The temperature became normal on the eleventh hospital day. There was no recurrence of gallbladder symptoms. The diagnosis was typhoid fever, acute typhoid cholecystitis.

CASE 2¹⁸—Mrs. S. R., a housewife aged 28, was admitted to the hospital on Dec. 6, 1941, with the chief complaint of pain in the right upper quadrant of one day's duration. About three weeks before admission, a severe infection of the upper respiratory tract associated with 'heaviness of the chest' and productive cough appeared. About a week later the patient noticed that she tired more easily than usual. Her arms and legs felt heavy. She could scarcely stand on her legs. After this feeling of tiredness had persisted for about a week she found that her temperature was 104° F. She consulted a physician who advised bed rest. The fever persisted. On December 1 she became aware of a dull ache in the right upper quadrant. This subsided until twenty-four hours prior to admission when the pain returned with increasing severity. It was intense and colicky and radiated to the back. She became nauseated and vomited several times. There was no jaundice and no clay-colored stools. The past history revealed an attack of pain in the right upper quadrant one year previously which had lasted for three days.

On admission the temperature was 103.4° F. and the pulse rate 120. On physical examination the patient was alert, feverish and restless and in obvious distress. General examination was otherwise negative except for spasm and tenderness in the right upper quadrant. Examination of the blood showed a white cell count of 8050, a red cell count of 4,130,000 and a hemoglobin content of 70 per cent. Urinalysis was negative. The icterus index was 11.

On December 7 the gallbladder was removed under spinal anesthesia. It was tense, edematous and inflamed, with several small areas of necrosis. No stones were found.

Following operation, the patient had a spiking temperature. On December 9, two days after operation, the white cell count was 9000. The temperature on that day was 101.4° F. The temperature gradually subsided and was normal on December 24. Except for the temperature, the course was uneventful and the patient was discharged on December 27.

On January 21, about six weeks after operation, the Widal reaction was found to be positive. *E. typhosa* was recovered from the stools at the same time. The diagnosis was typhoid fever, acute typhoid cholecystitis.

CASE 3—Miss L. B., aged 29, white, was admitted to the hospital on July 12, 1936, with the chief complaint of pain in the right upper quadrant. She had been perfectly well until July 1 when she noted onset of a severe frontal headache. Her physician found that she had a temperature of 102° F. Several days later she began to have severe chills at irregular intervals for about forty-eight hours. Two days prior to admission there was sudden onset of sharp crampy pain in the right upper quadrant radiating at times to the right shoulder. There was persistent anorexia, nausea and intractable vomiting. One day prior to admission there appeared a profuse diarrhea which lasted for several days. The sharp pain was intermittent, leaving a dull constant ache. There was no past history of any gastrointestinal symptoms. The patient had never been jaundiced in the past.

Physical examination showed that the patient was well developed and well nourished and was in obvious distress. The temperature was 102° F., the pulse rate 104. Positive physical

findings were limited to the abdomen, which showed decided hyperesthesia, spasm and tenderness in the right upper quadrant. The gallbladder could not be felt. Laboratory examination on July 12 showed a white cell count of 25,500. Urinalysis was negative except for a few granular casts in the sediment. A flat plate of the gallbladder region showed no evidence of stones. The gallbladder could not be outlined.

Operation was performed on July 13, one day after admission. A large distended gallbladder was found, matted down to the liver bed by adhesions. The liver appeared slightly enlarged. The gallbladder was acutely inflamed and surrounded by heavy plastic exudate. Cholecystectomy was performed. Following operation the temperature remained elevated, spiking between 99 and 103° F. for ten days. During the course of the succeeding six days it subsided gradually and became normal on July 29, seventeen days subsequent to admission and twenty-eight days after the onset of her illness. The white cell count postoperatively varied from 7,100 on July 15 to 9,600 on August 1. The blood smear on August 1 showed 54 per cent neutrophils, 39 per cent lymphocytes and 7 per cent monocytes. The red cell count was 3,480,000. On July 17 the Widal reaction was reported positive for typhoid. A positive stool culture for *E. typhosa* was obtained on August 11. Following the subsidence of the temperature recovery was uneventful. The patient was discharged on August 11. The diagnosis was typhoid fever, acute typhoid cholecystitis.

Following discharge from the hospital the stool cultures continued to be positive. When this condition persisted for one year from the onset of the illness the patient's name was added to the carrier list. To cure the carrier condition cholecystectomy was performed in April 1938. Laboratory data subsequent to this operation finally indicated that the patient had been relieved of the carrier state. The patient's name was therefore removed from the carrier list.

CASE 4—Miss A. H., aged 29, white, was admitted to the hospital Sept. 16, 1938. She had been well until September 11 when there was onset of persistent cough, headache and fever. There was no past history or any similar illness. There was no history of any previous gastrointestinal symptoms. On admission the temperature was 102.2° F., pulse rate 108 and respiratory rate 16. Physical examination was entirely negative. Laboratory examination revealed a red cell count of 3,400,000 and a white cell count of 9,600. The smear showed 85 per cent polymorphonuclears and 15 per cent lymphocytes. Urinalysis was negative.

The temperature remained elevated. On September 19 the patient felt somewhat improved in spite of the high temperature. On September 22 diarrhea was noted for the first time. Her condition became aggravated and she became listless and disoriented. Five days later, September 27, she began to complain of headache and occasionally of abdominal pain. Because of her mental condition the pain was difficult to localize. On October 3 it had increased in severity, and apparently an ice bag gave some relief. A chest plate at this time was reported as within normal limits. For the next ten or eleven days the patient continued to have intermittent abdominal distress and physical examination remained essentially negative. The temperature thus far during the entire hospital stay had remained consistently elevated. The pulse in general was slow for the height or the sex.

On October 18 the abdominal pain seemed to have become particularly intense. At that time a Widal reaction was reported as positive. The following day muscle spasm was noted in the right upper quadrant. A diagnosis of acute cholecystitis was made and operation was considered necessary. The white cell count which had varied from 7,000 to 10,200 until October 8 rose to 15,400 on October 17 and to 23,600 on October 19. At operation an acutely distended gallbladder was found with thickened and edematous walls. The gallbladder was drained. *E. typhosa* was cultured from the bile recovered from the gallbladder at the time of operation and on several occasions from the stools. The temperature gradually subsided during the week following operation. There was profuse drainage of bile through the operative wound. The patient was discharged from the hospital on Jan. 14, 1939.

Bile continued to drain through a persistent sinus at the operative site. The diagnosis was typhoid fever, acute typhoid cholecystitis.

Following operation, the stool cultures and drainage from the biliary fistula were consistently positive for *E. typhosa*. When this condition persisted for several months it was obvious that the patient had become a chronic typhoid carrier. In August 1939, approximately eleven months subsequent to the onset of her illness, cholecystectomy was performed to relieve the carrier state. At operation the gallbladder was found "adherent to the abdominal wall beneath the sinus tract at the lower end of the previous incision. It was markedly dilated and thickened, and contained at least one stone." Culture of the bile at this time was again reported as positive for *E. typhosa*. Following cholecystectomy the typhoid bacilli rapidly disappeared from the stools. Release specimens submitted during an observation period of one year were consistently negative for *E. typhosa*. The carrier condition had been relieved.

COMMENT

In 3 of the 4 reported cases, the severity of the clinical picture was of such intensity as to warrant operative intervention. It is obvious that the risk of perforation justifies surgical measures in any case in which such an eventuality is at all likely.

It is noteworthy that 2 of these patients (2 and 3) underwent operation before the association with typhoid had been established. A nurse who had been attending patient 2 and who had frequently handled postoperative dressings came down with typhoid. The typhoid etiology of the source case was determined only by the epidemiologic investigation which was instituted when the nurse's infection was reported to the state health department. Patient 3 contracted typhoid during the course of a small epidemic. The presence of other cases of typhoid in the wards of the hospital to which she had been admitted for surgical treatment first called attention to a possible diagnosis of typhoid. Although A. H. (patient 4) had been diagnosed as having typhoid before operation, a student nurse who had been caring for her came down with the disease before this diagnosis had been made.

This series of cases is indicative of the risk which the undiagnosed case of typhoid may bring to bear on employees in medical and surgical wards in hospitals. Such incidents are particularly liable to occur in connection with cases of acute typhoid cholecystitis in which signs and symptoms of the acute gallbladder involvement are often so striking as to obscure the underlying disease. Furthermore, it has been observed¹⁹ that hospital personnel may contract typhoid subsequent to contact with previously undiscovered typhoid carriers admitted to hospitals for operations on the gallbladder. Although the chronic cholecystitis associated with the typhoid carrier state has been definitely established as a clinical entity, this fact may be forgotten by the physician confronted with a case of chronic gallbladder disease. Hence attention must be given in all cases of both acute and chronic cholecystitis to the possibility that *E. typhosa* may be the causative agent.

It is of interest that 2 of the patients (3 and 4) became chronic typhoid carriers. The carrier state in both instances persisted until cure was brought about by cholecystectomy. There is a possibility that S. R. (patient 2) might also have become a carrier had cholecystectomy not been performed. Stool cultures submitted by R. S. (patient 1) have been positive five

months subsequent to the onset of his illness. Garbat²⁰ reported that a large percentage of patients with typhoid complicated by acute cholecystitis tend to become permanent carriers. It is therefore doubly important that all patients with acute typhoid cholecystitis submit a sufficient number of release specimens in order to exclude the development of the carrier state. On the other hand, acute cholecystitis is not the only factor that predisposes toward acquiring the carrier state. Very few known carriers present a past history of typhoid complicated by acute cholecystitis.

Analysis of these cases reveals that in each instance the complicating acute cholecystitis was preceded by a period of unexplained fever. A similar interval of idiopathic hyperpyrexia antedating the acute cholecystitis is noted in many of the cases recorded in the literature. Hence a diagnosis of typhoid must be considered in any case of acute cholecystitis in which the history reveals that the onset of gallbladder symptoms was preceded by a period of unexplained fever without any other localizing signs.

Occasionally the acute cholecystitis may appear within a few days following the recovery from typhoid. These cases may be considered in the same category with those in which the gallbladder involvement occurs during the course of the underlying disease. However, as the interval between the typhoid and the onset of gallbladder symptoms is prolonged, it must be assumed that chronic inflammatory changes arise within the gallbladder. The pathologic condition in such cases becomes that of chronic rather than of acute cholecystitis. Chapuy²¹ reported a case of acute typhoid cholecystitis unassociated with any illness which might have been regarded as typhoid. It must be borne in mind that approximately one third²² of known typhoid carriers do not present a past history of typhoid. It would therefore be extremely difficult to prove that Chapuy's case was actually acute typhoid cholecystitis rather than the chronic cholecystitis of a typhoid carrier presenting an initial attack of gallbladder disease. The finding of gallstones at operation may in such cases assist in establishing a diagnosis of chronic cholecystitis. In the series of cases of chronic typhoid cholecystitis reported by Bigelow and Anderson²³ in 1933, gallstones were found in all. No stones were found in any one of our 3 cases of acute cholecystitis in which surgical treatment was undertaken. Similarly, those reporting in the literature rarely if ever mention the finding of gallstones at operation.

Consideration must be given to the protection of hospital personnel against chance contact with cases of unrecognized typhoid cholecystitis. Several procedures are available as safeguards for such persons. Patients with chronic cholecystitis presenting a past history of typhoid or any unexplained fever, no matter how long ago, should be placed on typhoid precautions until the carrier state has been excluded. In addition, great care must be exercised by persons handling dressings and discharges from all other patients with gallbladder disease. Cases of acute cholecystitis with a history of a preceding bout of unexplained fever should be investigated by suitable laboratory methods as probable cases of typhoid. Furthermore, routine antityphoid immuni-

20 Garbat, A. L. Typhoid Carriers and Typhoid Immunity, New York: Rockefeller Institute for Medical Research, 1922.

21 Chapuy, A. Cholecystite éberthienne primitive sans antécédents typhoïdes, Lyon med 153: 313-315 (March 18) 1934.

22 Massachusetts Department of Public Health. Unpublished data.

23 Bigelow, G. H., and Anderson, G. W. Cure of Typhoid Carriers, J. A. M. A. 101: 348-352 (July 29) 1933.

19 Rubenstein, A. D. Unrecognized Typhoid Cholecystitis as a Source of Hospital Infections, New England J. Med. 226: 722-726 (April 30) 1942.

zation of hospital personnel, including nurses, physicians and ward attendants, will mitigate considerably the risk of acquiring the disease as a result of contact with patients with undiagnosed typhoid or with unrecognized typhoid carriers. To maintain a proper level of immunity, the initial three doses of vaccine must be fortified by an annual stimulating dose of 0.5 cc subcutaneously or 0.1 cc intradermally.²⁴

SUMMARY

Acute cholecystitis as a complication of typhoid may appear during the course of the disease or early in convalescence. Any case of acute cholecystitis in which the onset of gallbladder symptoms is preceded by a bout of unexplained fever should be studied as a possible case of typhoid.

Chronic cholecystitis is a frequent result of the localization of the typhoid bacillus in the gallbladder of typhoid carriers. Every patient with gallbladder disease who has a definite or suggestive history of typhoid should be placed on typhoid precautions until laboratory study excludes the carrier state.

These measures will prevent possible infection of hospital personnel from contact with patients with undiagnosed typhoid and with unrecognized typhoid carriers.

Routine immunization of hospital personnel against typhoid will also minimize this hazard.

Clinical Notes, Suggestions and New Instruments

AMPHETAMINE SULFATE POISONING IN A CHILD OF TWENTY MONTHS

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It seems trite to caution parents to keep drugs out of the reach of children.

The mother of a girl of 20 months was being treated with a 1 per cent amphetamine sulfate solution used as a nasal spray. There was no caution on the label that this might be toxic if taken internally.

At 3:30 p.m., before the parents realized what was happening, the child had worked off the top of the container and had drunk a quantity of the contents of the bottle. Early in the evening the child began to be increasingly restless, moving her arms and legs incessantly and crying out. She refused everything by mouth and vomited twice during the evening. I saw her at 11 p.m. and gave her 1½ grains (0.1 Gm.) of secal rectally. After an hour the child slept thirty minutes and then awakened and continued her former extreme activity.

At 2 a.m. she was again given 1½ grains of secal and after about forty minutes she slept until 6 a.m. and woke up as restless as before. When again seen at 9 a.m. her activity was extreme and there were signs of exhaustion with rapid pulse, pallor, rapid shallow respiration, hollow eyes and acetone breath. She was taken to the Children's Memorial Hospital and given 300 mg. of avertin with amylene hydrate and 300 cc. of 5 per cent dextrose and saline solution intravenously. The intravenous dextrose and saline solution was repeated early in the afternoon. At about 5 p.m. she woke up and seemed quite herself and made an uneventful recovery. She was sent home the following morning.

This report is written to call attention again to the importance of locking away from children all drugs and also to urge manufacturers to label products that can do harm.

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²⁴ Longtellow D. and Lippold G. F. Typhoid Vaccine Studies: Revaccination and Duration of Immunity. *Am. J. Pub. Health* 30: 1311 (Nov.) 1940.

FATAL AORTIC ESOPHAGEAL FISTULA FROM A SWALLOWED FISHBONE

REPORT OF A CASE AND REVIEW OF THE LITERATURE

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Reports have appeared of fatal hemorrhage resulting from a foreign body in the esophagus. The case presented here emphasizes the need for early esophagoscopy in cases in which a foreign body in the esophagus is suspected. Chevalier Jackson has stated 'Esophagoscopy is demanded in every case in which a foreign body is known to be or suspected to be in the esophagus.' To this dictum might be added only the word 'early.'

REPORT OF CASE

History.—C. S., a Negro girl aged 12 years, was admitted to the medical service of the Jersey City Medical Center on Jan. 16, 1939. She had excruciating pain in the lower sternal and left interscapular areas. The past history and family history contained nothing significant. The present illness began January 6 when, during a meal which included fried fish, the patient complained of a sticking sensation in the midsternal region. The pain increased in intensity but did not radiate. It lasted three days during which the patient felt worse on ingestion of anything except cold liquids. On swallowing the patient localized the pain above the xiphoid cartilage. A physician was called and symptomatic treatment is said to have been given. At the end of the third day the pain disappeared and swallowing again became normal until January 13 when the patient again began to complain of severe midsternal pain of a sticking character, this time radiating to the left interscapular region. The dysphagia returned and fever was noticed. Late January 13 the patient became nauseated and vomited about a cupful of dark red blood containing several clots. After this her stools were constantly tarry. The physician was called again and cold liquids, bed rest and opiates were ordered. The fever became higher and the pain so agonizing that hospitalization was ordered on January 16.

Examination.—On admission the temperature was 104.2 F., respiratory rate 32 and pulse rate 150 a minute and the blood pressure 120 systolic and 60 diastolic.

The patient was well nourished and well developed; she appeared acutely ill and was writhing about in severe pain. The skin was hot and dry. The organs of the head and neck presented no abnormality. There was no cervical rigidity. Except for sinus tachycardia the heart was apparently normal. The lung fields were clear to percussion and auscultation. Hyperesthesia to light touch was present in the left interscapular region. Examination of the abdomen revealed slight deep epigastric tenderness and slight muscle spasm in the upper part of the abdomen. The organs were not palpable and there was no discernible fluid or distention. The hymen was intact. There was no vaginal discharge. The extremities were normal. Kernig's sign was not present. The deep reflexes were hyperactive and equal.

The urine showed a slight trace of albumin; otherwise it was normal. A blood count showed 4,800,000 red blood cells, 80 per cent hemoglobin (Sahli) and 17,800 white blood cells with polymorphonuclear neutrophils 84 per cent, lymphocytes 12 per cent and large mononuclears 4 per cent. A vaginal smear was negative for gonococci. Blood culture was sterile at five days. The Wassermann reaction was negative. X-ray examination of the chest revealed that the bony framework was normal. The trachea was in the median line. The heart shadow was within normal limits. Just below the clavicle at the arch of the aorta on the right there was a soft tissue shadow which may have been from the aorta itself or from a mediastinal gland. The lung fields were normal. The hilar glands were moderately enlarged and there was some basal thickening of the pleura.

Diagnosis and Course.—The clinical impressions were perforation of the esophagus by a fish bone, mediastinitis and hemorrhage, probably due to erosion of an esophageal vessel. We felt that esophagoscopy was contraindicated at the late date at which

the patient was seen by us. It was hoped that the mediastinal infection would localize and that the hemorrhage was sufficiently slow to arrest itself spontaneously. A conservative plan of therapy was therefore decided on. Pain was relieved with repeated small doses of morphine sulfate. Alcohol sponges were given and cold fluids were administered by mouth. The patient's condition remained unchanged except for a progressive rise of temperature to 105.2 F and of the respiratory rate to 40 a minute. She died suddenly in her sleep thirty-two hours after admission. Postmortem examination was performed ten hours after death.

Autopsy—Externally the body revealed no gross abnormalities except for extreme rigor mortis and moderate abdominal distention. The organs of the abdomen were in normal position but the liver edge was about 3 cm below the costal margin. The stomach was greatly enlarged and through the visceral peritoneum the contents appeared definitely bluish. When the stomach was opened it was found to be filled with a tremendous clot of blood weighing 825 Gm. The mucosa of the stomach was well preserved and showed no abnormalities. The remainder of the gastrointestinal tract was considerably distended but section showed no pathologic changes and no evidence of a foreign body. The liver weighed 350 Gm and appeared in all respects normal. The gallbladder was normal in appearance. The spleen, pancreas, adrenals and kidneys manifested both grossly and on section no evidence of disease. The pelvic organs were normal. On examination of the thorax the right pleura was found to contain no free fluid. The right lung weighed 350 Gm. There were numerous fairly free adhesions at the inferior pole of the lower lobe to the dome of the diaphragm. The tissue was air containing throughout, cut with ease and showed slight congestion at the base of the lower lobe. The left pleural cavity contained 50 cc of yellow serous fluid. The left lung weighed 200 Gm. There were no pleural adhesions and the tissue was air containing throughout. The heart showed no abnormalities. The pericardial cavity, however, contained about 15 cc of yellow cloudy fluid. Examination of the esophagus revealed in the posterior wall, at the level of the fifth thoracic vertebra, a round ulceration 1 cm in diameter with thin margins. The lumen contained clotted blood. Posterior to the ulcerated area, in the areolar tissue between the esophagus and the aorta, there was a cavity 2 cm in diameter containing blood and lined with soft, friable brownish tissue. This cavity became narrow as it approached the wall of the descending aorta and was found to be continuous with an opening communicating with the lumen of that vessel. The perforation in the aorta measured 4 by 3 mm. The edges of the rent were ragged and thin. Microscopic sections of that portion of the esophagus which was perforated revealed edema and congestion of the tissue. Around the perforation there were dense collections of polymorphonuclear cells. Evidence of a foreign body was not found and it was assumed that the foreign body was washed into the esophagus by the force of the current of blood from the aortic perforation.

REVIEW OF THE LITERATURE

Ginsburg¹ in 1931 reported that a man aged 26 swallowed a small denture which lodged in the esophagus at the level of the fifth dorsal vertebra and eroded the aorta, causing death a week later by hemorrhage into the esophagus and stomach. In this case esophagoscopy was not done until the patient collapsed, when of course it was too late. Drejack² in 1934 mentioned among the other cases of his series that a man aged 49, without a history of having swallowed a foreign body, died five days after onset of symptoms. Autopsy revealed perforation of the upper part of the esophagus with erosion of the aorta by a splinter of bone. In this case the esophagus had also eroded into a principal bronchus. A fetid exudate was found in both pleural cavities. The esophageal defect was the size of a lentil.³

Tucker³ reported in 1932 that an infant aged 7 months who had previously been well suddenly became paler than usual,

seemed to have difficulty in swallowing, developed fever and later vomited blood. X-ray examination revealed an open safety pin in the esophagus. After the patient had been removed to a hospital it was found that the pin had passed into the stomach. Later it was passed rectally, but the child died of exsanguination from a small perforation of the aorta via the esophagus. Autopsy further revealed an acute purulent pericarditis and minute embolic abscesses of the kidneys. The author emphasizes the importance of early x-ray examination of every child who experiences the slightest difficulty in swallowing.

Turner⁴ in 1910 reported that a boy aged 6 years died of perforation of the aorta by a coin which he had swallowed twenty-two months before. This patient had had initial symptoms of a foreign body in the esophagus but these had disappeared and he was symptom free until he began to vomit blood three days before his death. At autopsy the coin was found impacted transversely at the level of the left bronchus. Turner reported 4 other cases of erosion or perforation of the aorta, 2 from rabbit bones and 2 from fish bones.

Lovett⁵ in 1909 reported that a boy aged 8 years began suddenly to vomit blood and to pass tarry stools. He died of exsanguination in a few days. He had swallowed a half penny coin at the age of 4 but had not had an x-ray examination. He was treated conservatively, and when he became symptom free the matter was forgotten until the terminal illness. The coin was recovered from the upper part of the esophagus at the post mortem examination. It had slowly eroded into the aorta, death occurring from hemorrhage through a hole the size of a pinhead.

The literature contains many reports of the perforation of vessels other than the aorta by foreign bodies in the esophagus. A typical one is that of Sneller,⁶ who in 1936 reported a case of profuse arterial bleeding following perforation of the esophagus by a chicken bone. Ter-Oganesjan⁷ reported 50 such perforations of great vessels and Killian⁸ 12 more.

Swan⁹ in 1930 reported a traumatic aortic-esophageal fistula in a 10 month old baby who swallowed a small piece of nickel plated wire. Decoulx and Omez¹⁰ in 1939 reported that a man aged 41, a miner, suffered dysphagia after he swallowed a chicken bone and subsequently bled to death from an aortic esophageal fistula following a crushing chest injury in the mine. The conclusion was that the esophageal ulceration from the bone predisposed to the final rupture and that the thoracic trauma precipitated it. The chicken bone was not found.

COMMENT

Death from mediastinitis, empyema, pyopericardium and erosion of great vessels has been reported from time to time in case reports dealing with foreign bodies in the esophagus. In cases in which there is erosion of vessels the great vessels of the neck are more commonly perforated, the great thoracic vessels and the heart less commonly. Perforation of the thoracic aorta by a foreign body in the esophagus, while not rare, is sufficiently uncommon to warrant being reported.

CONCLUSION

All patients suspected of having a foreign body lodged in the esophagus should be studied early by roentgenography and esophagoscopy. If symptoms persist despite negative x-ray findings, diagnostic esophagoscopy is demanded. Esophagoscopy itself is rarely responsible for a fatality and will often be life saving if undertaken early. Only by accurate history taking and prompt action in suspected cases is it possible to prevent a fatal issue in the type of case reported here.

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- 2 Drejack, cited by LeVee, Soulas and DeBain. *Bronchoscopy, esophagoscopy et gastroscop*, pp. 221-228, July 1937.
- 3 Tucker, G. Spontaneous Perforation of Aorta from Open Safety Pin in Esophagus, with Fatal Hemorrhage, Occurring in Child 7 Months of Age, *Ann Otol, Rhin & Laryng* 41: 1228-1234 (Dec) 1932.
- 4 Turner, G. G. Perforation of the Aorta by a Coin. *Lancet* 1: 1335, 1910.
- 5 Lovett, T. Perforation of Aorta by a Coin, *Brit M J* 1: 1004, 1909.
- 6 Sneller, C. Daniel. Injuries to Esophagus, *Illinois M J* 70: 373 (Oct) 1936.
- 7 Ter-Oganesjan, M. Perforation of Great Vessels by Esophageal Foreign Bodies. *Acta oto laryng* 21: 116, 1934.
- 8 Killian, H. Perforations of the Esophagus with Fatal Hemorrhage. *Arch f klin Chir* 122: 382, 1922.
- 9 Swan, H. L. Unextracted Foreign Body in Esophagus Penetrating Thoracic Aorta of Ten Months Infant. *Tr Am Laryng* 4: 52, 79-81, 1930.
- 10 Decoulx, P. and Omez, Y. Medical Aspects of Perforation of the Esophagus. *Ann med leg* 10: 144 (Feb) 1939.

XANTHOMA OF TENDON SHEATH

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PHILADELPHIA

While xanthomas of tendon sheaths or of synovial membranes are not too rare, they are worthy of consideration because frequently they are known to perplex the unsuspecting physician. The following case illustrates the difficulties in the diagnosis and treatment of this condition. It is presented because, while it illustrates most of the essential features of this condition, it is one of the most extensive lesions yet recorded.

REPORT OF CASE

H. W., a white man aged 46, married, was first admitted to Dr. Gill's orthopedic service in the Hospital of the University of Pennsylvania on March 26, 1924, complaining of pain and swelling of the left foot. He stated that the pain started approximately three years before without any definitely known cause save the possibility of repeated minor injuries received while bowling. Pain was very slight at first and some swelling of the left foot and lower ankle was appreciated after six months. He consulted a physician, who prescribed arch supports after receiving a negative x-ray report. He got along fairly well with these but did experience ever increasing discomfort for the six months prior to admission to the hospital. The pain was never severe enough to prevent him from walking. On admission a moderate amount of swelling was present behind and below the medial malleolus and the inner side of the tarsus of the left foot extending along the course of the tendon of the tibialis posterior muscle. On March 27, 1924, under ether anesthesia, five small tissue masses were removed from his left foot and they were diagnosed as 'mixed cell sarcoma of alveolar arrangement with much degeneration and blood pigment.' He returned on April 9, 1924, when another piece of tissue was removed. This was diagnosed as being 'xanthomatous' and the patient was referred for x-ray therapy. An x-ray examination on Nov. 6, 1924, revealed no evidence of recurrence. He returned again on Feb. 19, 1925, at which time the following was recorded: 'There is a soft doughy mass present in the region of the inner surface of the left foot in the same area as was occupied by tumor. This is suggestive of an extension or a recurrence of the original tumor. Recommend further x-ray treatment. Has had no x-ray treatment since October 1924.' On June 26, 1928, examinations revealed no evidence of recurrence and the patient was discharged from the x-ray department. He returned on May 7, 1942, at which time a soft tumor measuring 2 by 3 inches over and below the left medial malleolus and definite soft tissue thickening of the entire foot on both the dorsal and the plantar aspect were observed. The skin appeared thin over the tumor but appeared normal about the foot. Pain and tenderness were absent and weight bearing was painless. Dr. Gill saw the patient and advised amputation because, while the lesion was probably not malignant there was the possibility of its becoming so. The patient stated that he first noticed the presence of this swelling or tumor, about three years previously in the region below the internal malleolus and that it had gradually grown in size and extended into the entire foot, but that during the past year the growth had been more rapid.

The history by systems was essentially negative with no history of weight loss. The family and social histories were noncontributory. Physical examination revealed that the temperature was 98 F, the pulse rate 70 and respiratory rate 20. The blood pressure was 156/72 mm of mercury in both arms while recumbent. The patient was somewhat obese and though 63 years of age appeared to be about 50. He was ambulatory and in no distress. A small tender nonfixed nodule was observed over the left eyebrow measuring 1 by 5 cm. A soft apical blowing systolic cardiac murmur was heard. The left foot appeared as described. Laboratory examination

revealed hemoglobin 88 per cent, white blood cells 5100 with a normal differential, negative blood Wassermann reaction, normal blood calcium, phosphorus and phosphatase and normal urine. X-ray examination of the left leg and foot on May 12, 1942, revealed erosive bone changes in the left ankle and foot suggesting extensive pressure. On May 14, using ether anesthesia, Dr. Gill incised the mass on the medial aspect of the left foot and found that it contained yellowish necrotic material. This extended throughout all the enlarged parts of the foot. It was fairly vascular. A specimen was sent to the laboratory. Removal of the tumor tissue was impossible, as it extended into all the soft structures of the foot. Amputation was done at the junction of the middle and upper thirds of the leg. No difficulties were encountered. The patient was returned to the ward in good condition and was given parenteral fluids. The amputated left foot (upper tibial amputation) was increased in size with tissue tense and bulging, especially around the inner aspect. Subcutaneous tissues down to the bone were filled with bundles and lobules of orange yellow soft tissue. The tissue was stained with dark blood in many

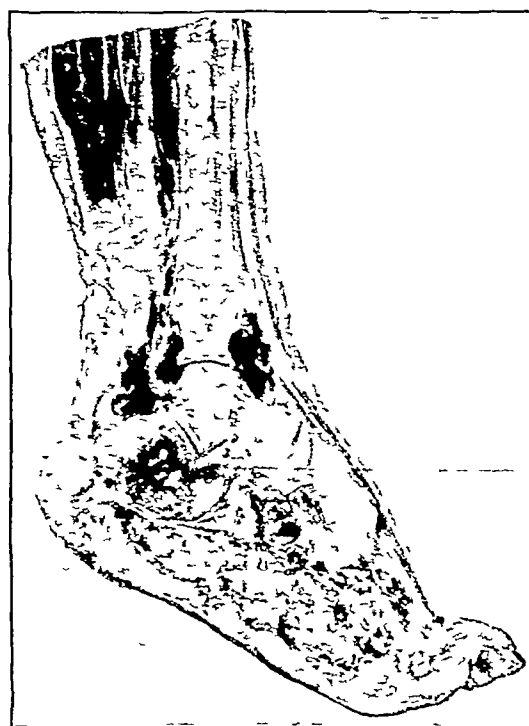


Fig. 1.—Section of foot illustrating most likely origin of tumor. Section made by band saw after two hours fixation with solidified carbon dioxide. Specimen allowed to thaw out in Klotz solution number 1.

areas. Process completely surrounded the thinned metatarsals without invasion. Microscopic examination revealed foam cells (xanthoma cells) containing intracellular fat and cholesterol crystals, cholesterol clefts, foreign body giant cells, typical endothelium-like stroma cells and interlacing strands of fibrous tissue. The diagnosis was xanthoma of the tendon sheath.

Microscopic study prompted estimation of the patient's blood cholesterol which was found to be 276 mg. per hundred cubic centimeters with esters 181 mg. per hundred cubic centimeters. The patient's postoperative course was entirely uneventful and he was discharged two weeks later.

COMMENT

A clinical and pathologic study of this problem was published by Galloway, Broders and Ghormley¹ in 1940. They reviewed the literature and added 70 cases. Their investigations showed that these are slowly growing painless tumors averaging approximately five years to develop before they are discovered. While the tumor varies in size and shape, it is a

Dr. Cristol, formerly a member of the Department of Pathology of the University of Pennsylvania Medical School and Hospital, is now urologic fellow at the Mayo Clinic. Dr. Gill is professor of orthopedics of the University of Pennsylvania Medical School and Hospital.

1. Galloway, J. D. B., Broders, A. C. and Ghormley, R. C. Xanthoma of Tendon Sheaths and Synovial Membranes. A Clinical and Pathologic Study. Arch. Surg. 10: 555-555 (Mar. 5) 1940.

ages 25 to 30 by 20 cm when first seen by the physician and in most cases is a firm, round or oval lesion. Galloway and his collaborators found that these lesions occurred most commonly on the fingers, and on the upper extremity two to three times as often as on the lower extremity. They found that the largest number of cases fell in the third to sixth decades,

and that the secondary factor is trauma or infection at the site of the lesion."

Most authors regard these lesions as benign and many also point out their potential malignant nature, especially in those occurring in the palm of the hand, forearm or foot. Many authors believe that these tumors are of inflammatory origin. Some authors believe them to be inflammatory with a secondary disturbance in lipid metabolism, while others believe that they are only associated with a cholesterol diathesis and result from the removal of the excess cholesterol from the blood. Galloway and his collaborators believe that these tumors should be classified as one of the primary essential xanthomatoses and agree with the classification of Thannhauser and Magendanz.

In the diagnosis we could describe a typical case as occurring in either sex around 40 years of age with a firm, round or oval subcutaneous mass measuring approximately 2 to 3 by 2 cm, painlessly growing in size and located on or associated with a tendon sheath, most typically the flexor of a finger. The most characteristic case will present a history of previous trauma and the blood lipoids will demonstrate an absolute increase or an alteration in the ratio of cholesterol to cholesterol esters. The x-ray examination will prove normal. In joint involvement there may or may not be heat and pain, and examination of the aspirated joint fluid will reveal a high cholesterol content. These tumors are harder than lipomas and softer than chondromas. Unlike carcinoma, they do not involve the skin. Osteomas are harder and are connected with the bone, while ganglions are usually on the extensor surface, besides being much softer. Biopsy and surgical removal will always reveal the true diagnosis. Local excision, even if repeated with recurrence, is the choice method of treatment.

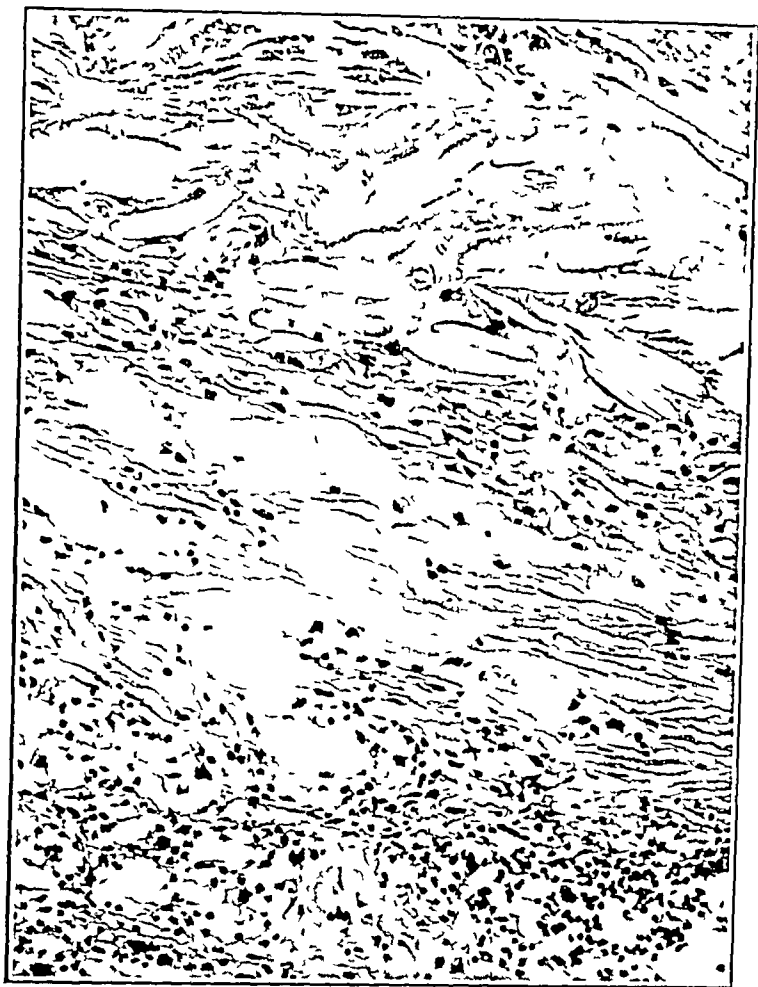


Fig 2—Microscopic section of tumor demonstrating cholesterol clefts above separated by fibrous septums from foam cells below, X 200

the average age in their cases being 44 years. The two sexes were found to be about evenly involved with a very slight female preponderance. It was felt that principally trauma of a mild, constant and unnoticeable type, and possibly infection were important secondary factors in the production of these tumors. They concluded that the alteration in lipid metabolism was the primary etiologic factor, with trauma and infection or both being a secondary factor. In a review of the pathologic picture it was believed that the foam cell originated from the reticuloendothelial system and its contained cholesterol was present via infiltration. It was also believed that the giant cells, which along with the foam cells are characteristic elements of this tumor, were morphologically identical with osteoclasts and differed from them only in their affinity for different foreign materials. The contained pigment is believed by some to result from the breaking up of the red blood corpuscles of the extravasated blood in the tissues or, as Wells believes, from the presence of either carotene or xanthophyll pigments or both, which are normally present in the blood serum and are readily taken up and combined with cholesterol fatty acid esters. These mentioned elements, together with the type cell, complete the diagnostic pathologic picture. The type or stroma cell is morphologically similar to the endothelial cell and its fat content is made up chiefly of cholesterol or of its esters, being intracellularly arranged in most cases.

Concerning the pathogenesis, the authors mentioned believe that "the primary factor in production of this tumor is a pre-existing alteration in the lipid metabolism in which there is either a marked disturbance in the absolute values of the blood lipoids, or even more important, a disturbance in the ratios of the various constituents, chiefly that of cholesterol to esters,

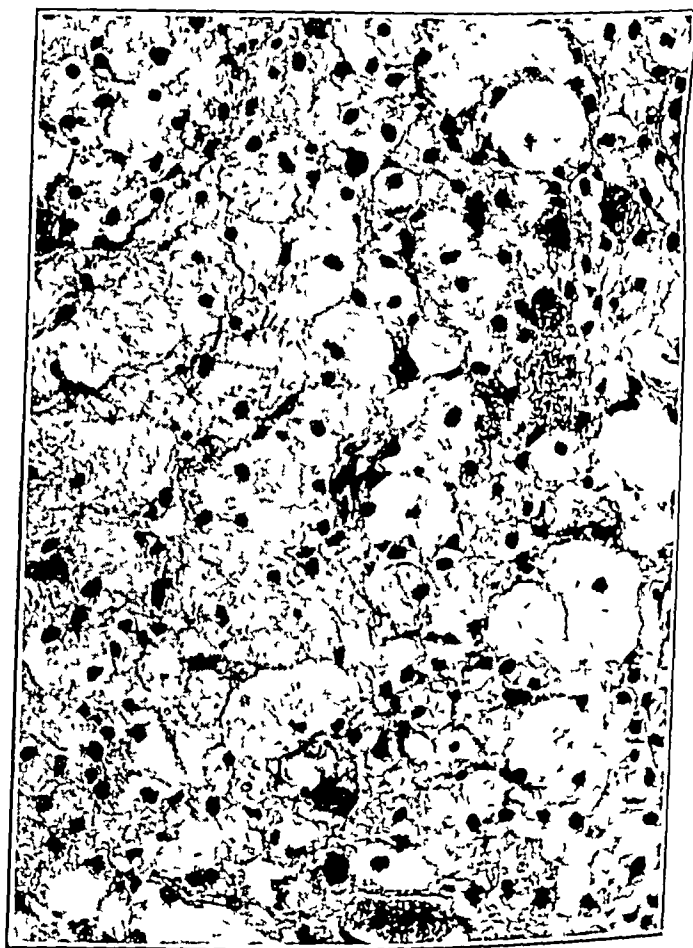


Fig 3—Microscopic section of tumor showing pigment content of foam cells, with some typical endothelium like cells of the stroma, X 400

The value of x-ray therapy is still to be more critically evaluated, but some authors have reported good results. Low cholesterol diets are prescribed for patients who show high blood values.

2 Thannhauser S J and Magendanz Heinz The Distinct Clinical Groups of Xanthomatous Diseases A Clinical Phys Study of 22 Cases, Ann Int Med 11 1662 1746 (March) 1913

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING REPORT HOWARD A. CARTER, Secretary

HANOVIA SAFE-T-AIRE FILTER JACKET TYPE QUARTZ LAMPS (Hospital Operating Room, Nursery and Ward Models) ACCEPTABLE

Manufacturer Hanovia Chemical & Mfg Co Newark, N J
Clinical evidence submitted to the Council on Physical Therapy shows that under properly controlled conditions ultraviolet radiation is effective in killing air borne micro organisms and may be used to supplement other measures for the prevention of cross infection in hospital wards and nurseries and in operating rooms for reduction of air borne infections in wounds. On the basis of this evidence the Council has undertaken the consideration of ultraviolet disinfecting lamps designed for installation in operating rooms hospital nurseries and hospital wards. Council acceptance is limited to these installations only because the available data do not substantiate the claims for disinfecting of air by ultraviolet radiation in schools, waiting rooms public gathering places and homes or for the sterilization of solids such as drinking cups. Ultraviolet radiation cannot penetrate deeply and may be absorbed by finger marks saliva cosmetics or other foreign matter on a drinking cup this would render the radiation ineffective. To kill a micro-organism a direct hit by ultraviolet rays of sufficient intensity is required.

To have effective disinfection of air by ultraviolet radiation it is necessary for a sufficient number of properly placed lamps to be installed. A lamp used for disinfecting purposes is a single unit in an installation compliance of the ultraviolet output of a single lamp unit with the Council's requirements does not insure adequate radiant disinfection. Adequate ventilation is a necessity because dust laden air provides protection for air borne micro-organisms against the ultraviolet radiation.

In an installation of ultraviolet disinfecting units the total amount of direct and scattered ultraviolet radiation incident on the occupants must be kept below the level that will produce conjunctivitis erythema and any other (at present unforeseen) injurious physiologic effects that may arise from prolonged irradiation. This requirement should be met by suitable arrangements of the lamp fixtures and baffles and not by requiring the personnel to wear glasses and special covering or exposed parts of the body (face hands) normally uncovered. Hence if the irradiation is of penetrating intensity in a corridor or the hospital for example, care should be taken that the attendants do not receive an exposure which will cause injury to the skin or eyes and particular attention should be taken to make sure that the intensity or the space at eye level through which a transient may pass or tarry momentarily will not cause injury to the eyes. Under no circumstances should the occupants of a room be able to look directly at the burner when standing within the region of potent intensity.

Ultraviolet lamps for disinfecting purposes shall have under suitable ventilating conditions of a room a concentration of ozone not to exceed one part in ten million.

The Hanovia Safe-T-Aire Quartz Lamps Filter Jacket Type generate ultraviolet radiation of wavelengths between 2500 and 2600 angstroms and are said in the firm's literature to 'turnish air sanitation and by this means to lessen the danger of infection through air borne organisms'. The lamps are available in ceiling suspension models wall type equipment operating room models and floor stand models and the Baryaire Safe-T-Aire equipment.

Evidence consisting of reports from several investigators having used in their experiments the Safe-T-Aire burners and other lamps said to have disinfecting properties was presented by the firm. That ultraviolet radiation from the Safe-T-Aire will destroy bacteria within a specified distance and under required conditions is substantiated in the evidence submitted.

The ceiling suspension lamp comprises an indirect lighting fixture suspended by three chains to a height of about 6 to 7

feet from the floor at its lowest point. The burner housing is bowl shaped and of polished aluminum and is about 20 1/2 inches in diameter. A polished reflector is mounted in the housing.

Wall type Safe-T-Aire equipment is designed to be mounted on the side wall of a room at a point where the radiations will cover the largest area.

The operating room model is arranged for ceiling or wall mounting. It is usually fixed on the wall at ceiling height or at a distance usually not greater than 14 feet from the floor.

The floor stand unit is said to be "designed to fill the need for a portable unit which can be moved at will. The general design of the lamp is similar to an indirect illuminating lamp." The upright finished in polished chromium supports the burner above eye level.

The Baryaire Safe-T-Aire equipment is usually installed in pairs at opposite points across the width of a hospital corridor to help prevent the passage of air borne micro-organisms. Approximately 24 inches square and 9 inches deep, the unit is equipped with a fan which draws air past the upper and lower burners.

The Safe-T-Aire burner which is incorporated in each of the fixtures mentioned is tubular standard sizes are 12 and 24

Technical Information for Quartz Safe-T-Aire Lamp Water Jacket Types

Specification	Catalogue No. 2831 J Filter	Catalogue No. 2852 J Filter
Effective burner length	12 inches	24 inches
Overall burner length	16 3/8 inches	29 1/4 inches
Operating control		
Supply input voltage	110/120 volts	110/120 volts
Supply frequency	60 cycles AC	60 cycles AC
Lamp circuit		
No load voltage	3 000 volts	3 000 volts
Burner operating voltage	430 volts	600 volts
Burner watts	7	10
Burner current	30 milliamperes	30 milliamperes
Supply input current	1.25 amperes	1.20 amperes
Power factor	0.19	0.21
Supply watts	26 (at 115 V)	29 (at 115 V)
Lamp radiation characteristics		
% ultraviolet at 2537 angstroms	96%	96%
Intensity of 2537 angstroms for new lamp with clean reflector or Alzak aluminum distance 1 meter (line voltage 115 volts)	22 mw/cm ²	48 mw/cm ²
Effective burner life	over 10 000 hrs	over 10 000 hrs
Percentage loss in effectiveness with usage		
After the first 1 000 hours		5% loss
After the next 2 000 hours		7% additional
After the next 3 000 hours		5% additional
After the next 5 000 hours		2% additional
Total loss in effectiveness in 1 000 hours		19%

inches long. The envelop of the burner is of pure transparent fused quartz. Cathode connections are sealed in the quartz tube without the use of intermediate glass. The tube operates from alternating current through the medium or a high voltage transformer with a primary supply voltage of 110 or 220 volts. A filter jacket is provided to limit the production of ozone.

Users of the lamps are advised to have the intensity checked at periodic intervals by company representatives or other qualified persons. After ten thousand hours or use the intensity or effectiveness of the Hanovia burner falls off more rapidly and it should be replaced after it has been used ten thousand to fifteen thousand hours.

These lamps are a very intense source of 2537 angstroms ultraviolet radiation. The eyes must be carefully protected from direct radiation from the lamp.

When a unit is installed the purchaser should make sure that a sufficient number of lamps are used to produce the correct amount of intensity in the enclosure and that they are arranged correctly so as not to cause harm to the occupants. The Council cannot undertake the supervision or assume the responsibility for satisfactory performance or any particular installation.

The Council voted to accept the Hanovia Safe-T-Aire Filter Jacket Type Quartz Lamp Operating Room Ward and Nursery Models for inclusion on its list of accepted devices. Models which are unequipped with the filter jackets to prevent the production of ozone are not acceptable for disinfecting purposes.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 7, 1943

MORE DOCTORS NEEDED FOR THE ARMED FORCES

At a conference of the Directing Board of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians, held on July 31 with the War Participation Committee of the American Medical Association and in the presence of Mr Paul V McNutt, chairman of the War Manpower Commission, and representatives of the Army and Navy medical departments and the Public Health Service, it became apparent that the medical profession must produce toward the winning of the war an additional six thousand physicians for the armed forces before Jan 1, 1944. Pursuant to a realization of this objective a directive has gone to the generals in command of the various service commands authorizing them to induct into the service physicians between the ages of 38 and 45 who have been declared available by the Directing Board of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians and who are otherwise subject to Selective Service.

The needs of the armed forces are real. The members of the War Participation Committee raised with the representatives of the various governmental agencies all the questions that have from time to time challenged the need, the challenge seems to have been met effectively. Indeed, the intimation was made clear that the needs of the armed forces will be met

by specific regulations of the Selective Service Administration or the enactment of necessary legislation if required. All physicians up to 45 years of age who have been indicated as available have therefore placed on them now the responsibility for an immediate decision as to their enlistment with the armed forces. The need is so positive that questions of essentiality of men in positions of teaching and research and in industrial medicine are likely to be rigidly reviewed in the near future with a view to extracting from civilian life every one that can be spared.

As the war continues and intensifies, new needs for the services of the medical profession become apparent. An army in motion and one engaged in the kind of aggressive combat that now concerns our armed forces needs physicians in even greater numbers than have heretofore been demanded. Many thousands of interned aliens and prisoners are now the burden of the United States and must be given medical care.

If there is any physician who still hesitates under these circumstances, he should realize the added advantage to him of accepting now the commission that is proffered. Should it become necessary in the near future, as seems quite likely, to enlist new activity by the Selective Service Administration and the Officers' Procurement Service to bring in the six thousand

physicians that are so certainly required, those recruited by that technic will inevitably begin their service with the minimum commission that is offered, namely that of first lieutenant. Until that technic is installed, the men of special competence and of years beyond those of the recent graduate have the assurance of careful consideration and a commission more nearly in accord with age and experience.

The call here made has the approval of the Directing Board of the Procurement and Assignment Service and of the War Participation Committee of the Amer-

**6,000
MORE
PHYSICIANS
NEEDED
NOW!**

ican Medical Association. The medical profession may well be proud of the fact that it has been the only group given, by directive of the President, the responsibility of maintaining service in civilian life and at the same time supplying the needs of the armed forces. Let us not fail in meeting fully the trust that has been placed upon us.

HYPERADHESIVE THROMBOCYTES

A rise in blood platelet count following childbirth or surgical operation is a well established clinical phenomenon and is believed to be a contributory factor in postoperative or postpartum venous thrombosis. This rise begins about the fourth day after operation or delivery and attains its maximum about the tenth day, the number of circulating platelets subsequently falling to the normal by the twenty-first day. The period of hyperthrombocytemia corresponds roughly with the period in which venous thrombosis generally occurs. The correspondence, however, is not complete. To account for this divergence, MacKay¹ postulated a second thrombogenic factor, an increased agglutinability or adhesiveness of blood platelets.

A technical method of measuring relative platelet "stickiness," therefore, was developed by Wright² of Guy's Hospital, London. After addition of an anticoagulant, blood samples are revolved slowly in glass tubes the rate of decrease in the platelet count being taken as a measure of the number of thrombocytes that became adherent to the glass surface. In normal blood samples about 33 per cent of the initial platelets became adherent after twenty minutes' rotation, increasing to 67 per cent by the end of eighty minutes.

This technic has now been applied to a series of obstetric and surgical cases.³ By the fourth day after operation or delivery a distinct increase of adhesiveness was noted, increasing to a maximum "stickiness" by the tenth day. At this time an average of nearly 90 per cent of the platelets became adherent to the glass surface in their routine test. After the tenth day the stickiness gradually decreased, the platelets being restored to normal by the twenty-first day. In paraffined control tubes practically no platelets become adherent.

Plotted as a curve, this increased "stickiness" shows a closer parallelism with the percentage incidence of thrombophlebitis⁴ than that shown by the increased platelet count. Wright concluded from this that the presence of "exceptionally sticky platelets" is the essential etiologic factor in postoperative and postpartum thrombosis.

Parallel studies of sedimentation rates indicated that this increased adhesiveness is not due to plasma changes but must be attributed to alterations in the platelets themselves. Wright therefore postulates that new formed blood platelets are hyperadhesive and that there is a progressive reduction in their initial stickiness as the platelets age. Whether or not excessive formation of these hyperadhesive platelets can be prevented by blood transfusion or other therapeutic measures has not yet been determined.

1 MacKay William. *Quart J Med.* 24: 285 (April) 1931.

2 Wright H. P. *J Path. & Bact.* 53: 255 (Sept.) 1941.

3 Wright H. P. *J Path. & Bact.* 54: 461 (Oct.) 1942.

4 Barker N. W., Nygaard E. K., Walters Walman and Priestley J. T. *Proc. Staff Meet. Mayo Clin.* 16: 17 (Jan. 8) 1941.

Current Comment

BOSTON MEDICAL POLICE

In 1808 the Boston Medical Association adopted a code of Medical Police¹ which its standing committee had been instructed to prepare. This code was based on the ethical teachings of Gregory, Rush and Percival, with changes and additional matter to meet better the conditions in Boston at that time. The subjects covered are consultations, interferences, differences of physicians, discouragement of quackery, conduct for the support of the medical character, fees, exemption from charges, vicarious offices and seniority. Physicians in consultation "should divest themselves of all partialities and think of nothing but what will most effectively contribute to the relief of those under their care." By "interferences" is meant meddling inquiries and hints or other selfish conduct of any kind by physicians that might tend to weaken the confidence of the patient in his physician. The practice of medicine should be founded on qualification, not on artifice and insinuation. The section on quackery follows:

"The use of quack medicines should be discouraged by the faculty, as disgraceful to the profession, injurious to health, and often destructive even of life. No physician or surgeon, therefore, should dispense a secret nostrum, whether it be his invention or exclusive property, for if it is of real efficacy, the concealment of it is inconsistent with beneficence and professional liberality, and, if mystery alone give it value and importance, such craft implies either disgraceful ignorance, or fraudulent avarice."

Under fees we read that "the poor of every description should be the objects of our special care." Clergymen and all members of the medical profession together with their families should be attended gratuitously. In June 1830 revised rules and regulations were adopted by the association and printed, together with the Medical Police and a list of members.¹ The rules provided for the conduct of the business of the association as well as of medical practice. A detailed table of "regular fees" is included. Here are samples. The common fee for a visit, \$1.50, for advice at the physician's house according to the importance of the case and the time occupied, \$1 to \$10, for a postmortem examination in a case of legal investigation, \$5, for vaccine inoculation \$5, for capital operations, such as amputations of large limbs, lithotomy, trepanning and extirpation of large tumors \$40. With certain exceptions the fees listed were the lowest the members should demand. Members were not allowed to contract to give annual service to any family for a definite sum. According to paragraph VI no member should "consult with or voluntarily meet in a professional way or aid or abet any practitioner resident in this town who is not a member of the association." One wonders how this rule worked out in practice. Full provision was made for the admission of new members on the basis of approval of these regulations. From its foundation in 1806 to July 1830 the association had 170 members. This

1 Boston Medical Police. Rules and Regulations of the Boston Medical Association. Boston: Press of J. H. Easton, 1830.

glimpse at medical organization in the beginning of the last century reveals the high ideals that governed Boston physicians of that day in their strivings to maintain and advance the ethics of the practice of medicine

SYNTHESIS OF BIOTIN

Biotin, a factor in the B complex, is of unusual interest. It is involved in animal metabolism and also is capable of exerting a noticeable biologic effect, under appropriate test conditions, in a dilution of one to four hundred billion,¹ thus ranking as one of the most active substances known. A comment on the determination of the structure of this potent compound by du Vigneaud and his collaborators was published some months ago in *THE JOURNAL*.² At that time it was pointed out that the elucidation of the chemical makeup of the vitamin was an initial step in the direction of making it more readily available through synthesis. This synthesis was not long in forthcoming, for the preparation of synthetic biotin has now been reported.³ The material possesses a complex chemical structure and includes in its makeup three different asymmetrical carbon atoms. The latter fact makes possible the existence of several stereochemical isomers related to biotin. Synthesis of a product possessing not only the structure but also the stereochemical configuration of natural biotin was an accomplishment of the first magnitude. A comparison of the physical and chemical properties of the synthetic product with those of naturally occurring material revealed no difference between the two substances. The crucial test was a comparison of the biologic activity of the two chemical compounds as determined by experiments with biotin deficient chicks and rats. The physiologic response of biotin deficient animals to the synthetic product was the same as to the naturally occurring biotin. The way has thus been cleared for the production of amounts of biotin which will greatly facilitate the carrying out of experiments designed to increase our knowledge of this member of the vitamin B complex. Kogl and Tonnies,¹ who isolated biotin for the first time, were able to obtain only 1 mg of the crystalline material from a quarter of a ton of dried egg yolk.

DOMESTIC CARBON MONOXIDE POISONING

A report¹ has been published on the results of a cooperative study of the effects of carbon monoxide on the health of persons more or less habitually exposed to smaller and larger quantities of the gas in the air they breathe. This study was carried out by a committee under the joint auspices of the University, the State Board of Health and the Geological Survey of West Virginia in conjunction with a number of gas companies. In this study special attention was

given to the effects of carbon monoxide on health under domestic conditions. The engineering survey revealed that in many homes one or more gas appliances discharged carbon monoxide into the rooms, some of them in large quantities. The clinical studies in general confirmed the description by Henderson² of the effect of repeated exposures to small amounts of carbon monoxide "such as a mechanic in an automobile repair shop breathes day after day, or a workman at a blast furnace or gas plant, or a cook working in a small badly ventilated kitchen with a defective gas stove. The results of such conditions are impairment of general health, nervousness, ill temper" and other general symptoms. The West Virginia investigators report that the symptoms will vary in intensity, depending on the quantity of monoxide in the air breathed, the length of exposure, the amount of monoxide in the blood, the activity and previous condition of the patient and other factors. In a field survey of the health and living conditions of 279 persons who lived at home or worked in shops in which natural gas was consumed for cooking or heating, 137 gave histories suggestive of carbon monoxide anoxemia, mostly of a simple and uncomplicated form. The diagnosis in these cases was based mainly on definite exposure to the monoxide gas, on subsidence of symptoms when the exposure ceased, on the presence of monoxide in the blood whenever it was possible to make the necessary tests, and on exclusion of other diseases. It is to be noted that these milder forms of monoxide poisoning do not present any distinctive clinical picture, the manifestations being essentially subjective. In suspected cases the definitive diagnosis will require proper chemical examinations of the blood of the patient as well as of the air he has been breathing.

STABILITY OF VITAMINS AND WHISKY

Present government regulations make it illegal to add vitamins to alcoholic beverages. Nevertheless, the fact that many of the diseases associated with chronic alcoholism are due primarily to deficiencies in the vitamin intake of the excessive drinker make information on the stability of vitamins in whisky of more than academic interest. Novak and Adams¹ investigated this question by fortifying a standard brand of 86.8-proof whisky with riboflavin, thiamine and nicotinic acid. Part of the whisky was exposed to daylight in clear bottles and part in amber bottles, and a control portion was stored in the dark. The result of the assays showed that riboflavin is unstable in whisky, since a reduction of 50 per cent of the amount added occurred in both paper-wrapped and amber bottles at the end of the two month period. At the end of six months assays indicated that loss of thiamine or nicotinic acid had not occurred and that these members of the vitamin B complex appear to be stable in whisky. Even if it should become legal to add vitamins to alcoholic beverages, physiologic considerations would incline to make such formulas undesirable.

¹ Kogl, F., and Tonnies, B. Ueber das Biotin Problem. *Ztschr f physiol Chem* **242** 43, 1936.

² Structure of Biotin, *Current Comment J A M A* **121** 54 (Jan 2) 1943.

³ Harris, S. A., Wolf, D. E., Mozingo, Ralph, and Folkers, Karl. *Synthetic Biotin, Science* **97** 447 (May 14) 1943.

¹ Beck, H. G., Roetman, E. J., and Suter, G. M. Combustion Products Study, West Virginia University Bulletin, Series 43 No. 2 I (Aug) 1942.

² Henderson, Yandell. The Dangers of Carbon Monoxide Poisoning and Measures to Lessen These Dangers, Report 1 of the Committee on Poisonous Gases of the American Medical Association. *J A M A* **91** 179 (Jan 18) 1930.

¹ Novak, A. F. and Adams, S. L. Determination of the Stability of Thiamine, Nicotinic Acid and Riboflavin in Whisky Over a Six Month Period, *Quart J Studies Alcohol* **3** 541 (March) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

ARMY

LIEUT COL LEON S EAGLEBERGER TO INSTRUCT PHYSICIANS IN COMBAT MEDICINE

Lieut Col Leon S Eagleberger of the Army Medical Corps with a great wealth of experience concerning medical support of United States troops battling the Japanese in the Southwest Pacific has returned to the United States to instruct newly commissioned officers in combat medicine at the Medical Field Service School Carlisle Barracks Pennsylvania. Colonel Eagleberger states that the portable hospitals in which doctors performed surgery in the jungle only a few hundred yards behind the front lines were the 100 per cent solution to the problem of giving adequate surgical service in that area. Blood plasma which was available in sufficient quantities was used unsparingly thereby saving many lives. The portable hospitals consisted of four medical officers and twenty enlisted men with one such hospital for each regiment. Every general hospital station hospital evacuation hospital and surgical hospital in Australia had been ordered to organize one such unit.

Colonel Eagleberger whose home town is Waupun Wis graduated from Rush Medical College in 1930. He was called into federal army service in January 1941 and spent eight months in New Guinea from the start of the United Nations operations there until April of this year. He commanded a battalion of a medical regiment. In May 1942 he was ordered to take part of his battalion to Port Moresby to establish a provisional hospital and to pave the way for the larger hospitals which would later move into that area.

LIEUTENANT COLONEL BUNSHAW CITED

Lieut Col Raymond H Bunshaw A U S whose home is in Erie Pa has been cited for especially meritorious conduct in the performance of his duties on Guadalcanal, where he is still serving. According to the Erie Pa Times the citation reads as follows:

for exceptionally meritorious conduct in the performance of services of a considerable degree of merit on Guadalcanal Solomon Islands from Jan 10 to Feb 9 1943. As commanding officer of a medical battalion in an infantry division of which he was also division surgeon. Lieutenant Colonel Bunshaw succeeded in arranging the evacuation of casualties of the division in spite of the handicaps of extremely difficult terrain lack of roads and the isolated positions of many units.

This he accomplished by displaying outstanding initiative energy and by developing many improvisations and innovations in procedure to overcome the local conditions. His professional knowledge was employed and proved in the successful execution of the difficult task of the hospitalization by his battalion of twice the number of patients it was equipped to care for.

SELECTION OF PREMEDICAL STUDENTS

In compliance with recent army regulations Indiana University School of Medicine has announced the selection of 154 premedical students for entrance to the school in May 1944. The selections were made by a committee of fourteen faculty members and practicing physicians with Dr C H McCaskey of Indianapolis as chairman and are subject to maintenance by the students of satisfactory grades and conduct. On account

of this provision the total of 154 selected is 16 per cent above the quota of the school. The premedical students selected are enrolled for premedical study in Indiana University and twenty-three other colleges and universities among the selectees are nine women.

GRADUATE MEDICAL ADMINISTRATIVE OFFICERS

The nineteenth class of the Camp Berkeley Medical Administrative Corps Officer Candidate School graduated on July 7 following a special course of twelve weeks which now has been lengthened to sixteen weeks. These former noncommissioned officers studied problems of supply personnel training and evacuation and as officers in the medical administrative corps will take over such duties in hospitals camps and elsewhere, thus relieving medical officers to apply their professional skill to the treatment of the sick and wounded. The graduation address was delivered by Hon Jesse E Martin state senator from Fort Worth who was introduced by the school commandant Brig Gen Roy C Heflebower.

NINTH CLASS OF AVIATION PHYSIOLOGISTS

Graduation exercises at the School of Aviation Medicine Randolph Field Texas for the ninth class of Aviation Physiologists was held on July 10. The course in aviation physiology is of five weeks duration. Among those graduating were the following officers of the medical corps:

Capt Fred Dumstra Sioux Falls S D
Capt Herbert D Krieger Beverly Hills Calif
Capt John R Orndorff River Forest Ill
1st Lieut Seaburt Goodman Cleveland
1st Lieut Harold L Graber Topeka Kan
1st Lieut George A Hallenbeck Rochester Minn
1st Lieut Vincent J Palmeri Newark N J
1st Lieut Bradford D Rodgers Deming N M
1st Lieut Sidney I Smith Sheridan Ill
1st Lieut Oliver H Straus Boston
1st Lieut Orville O Witherbee Santa Ana Calif

THE TORNEY GENERAL HOSPITAL

The Torney General Hospital has been established at the El Mirador Hotel in Palm Springs Calif following the purchase of that hotel by the government. By August of 1942 there were facilities for 500 patients and it is planned that on completion there will be 1600 patient beds available. The hospital was named after Brig Gen George Henry Torney Surgeon General of the Army from 1909 to 1913 during whose term of office inoculation against typhoid was started in the army.

The commanding officer at Torney General Hospital is Col Augustus B Jones a distinguished internist. Major Edward F Thompson of Milwaukee is executive officer. Col Maurice A Schinger is chief of the medical service from Washington D C. Lieut Col William C Sheehan chief of the surgical service from Philadelphia. Major Hans F Strutana chief of the laboratory service from New York. Major Willard L Nielsen chief of the dental service. Major William A Kunkel from Memphis Tenn chief of the x-ray service and Major Julian N Dow chief of the evacuation and treatment service formerly of Los Angeles.

NAVY

ARMY-NAVY HOSPITALIZATION

According to the Bureau of Medicine and Surgery, in an agreement reached between the Army and Navy, all charges for the care of personnel in each other's medical facilities will be discontinued. Heretofore when army personnel were treated in naval facilities the War Department was billed, which was reversed when navy personnel received treatment in Army facilities. In the future, members of the armed forces may be treated in Army and Navy facilities without reciprocal billing.

LIEUT THIRL E JARRETT AWARDED
SILVER STAR MEDAL

Lieut Thirl E Jarrett, MC, USN, has been awarded the Silver Star Medal for conspicuous gallantry and intrepidity while serving as a medical officer at the Division Field Hospital during action against enemy Japanese forces on Guadalcanal in October 1942. On repeated occasions, while the hospital was under tremendous bombardment by hostile warships, Lieutenant Jarrett, with utter disregard for his own personal safety, worked tirelessly over his wounded comrades, administering plasma, rendering first aid and performing invaluable medical service under difficult and dangerous conditions. By his calm professional skill and loyal devotion, maintained above and beyond the call of duty, he undoubtedly saved the lives of many men who otherwise might have perished. Lieutenant Jarrett graduated from the University of Oklahoma School of Medicine in 1936 and after his internship and residency was commissioned as a lieutenant (jg), MC-V(G), USNR, on

May 1, 1941, was commissioned a lieutenant (jg) (MC), USN, on Oct 20, 1941 and commissioned a lieutenant (MC), USN, on June 15, 1942. His home address is Brooklyn.

AWARDED LEGION OF MERIT

Comdr Don S Knowlton, MC-V (S), USNR, has been awarded the Legion of Merit for his brilliant leadership, which made possible evacuation and hospitalization of Guadalcanal wounded despite heavy Japanese air and surface craft fire. The citation reads as follows:

"For exceptionally meritorious conduct in the performance of the outstanding services to the government of the United States as executive officer of the First Medical Battalion during the seizure and occupation of Guadalcanal, Solomon Islands.

"Under extremely difficult and dangerous conditions, Commander Knowlton, by his untiring effort and skilful organizing ability, developed a high state of efficiency in the medical battalion, particularly at the division field hospital.

"The steadfast functioning of this unit as a principal evacuation and medical supply center of the division, in an area heavily bombarded by Japanese air and surface craft, is attributable to his brilliant leadership and excellent training of subordinate personnel."

Commander Knowlton graduated from Tufts College Medical School, Boston, in 1921. He entered military service, Nov 5, 1940, and is now camp medical officer and commanding officer of the Medical Field Service School, Infantry Battalion, Camp Lejeune, New River, N C.

CIVILIAN DEFENSE

ORGANIZATION PLAN FOR RESCUE
SERVICE

Plans for the organization of the Rescue Service, which is responsible for the recovery of persons trapped under the structural debris of demolished buildings in the event of enemy action, were issued on June 24 by James M Landis, director of the U S Office of Civilian Defense, in Operations Letter No 133.

To guide the development of a trained Rescue Service in the United States Citizens Defense Corps, an engineer officer of the U S Public Health Service, Mr Simon H Ash, has been designated chief of the rescue section of the Medical Division of the OCD. Mr Ash has recently returned from a month's visit to Britain, where he studied the British rescue organization and training methods.

Although the Rescue Service is being organized nationally under the direction of the Medical Division of OCD, state and local rescue services will be separate from the Emergency Medical Service. Local chiefs of rescue and emergency medical services will work in close coordination in the control center. When reports are received of persons trapped by the debris of buildings demolished by an air raid or other enemy action, an express party is dispatched, which consists of one rescue squad, one mobile medical team and one ambulance and one sitting-case car.

Rescue workers, who should be recruited from workers in the building and demolition trades, mine workers, mechanics, petroleum industry workers and tunnel workers in the heavy construction industry, are to be organized in squads of ten. The squads should be based in depots, each of which should have a complement of three squads rotating on periods of first call. The OCD recommends an average of one depot for each 50,000 population in target areas. The national program contemplates an establishment of about 1,000 depots and a full rescue personnel of 30,000 organized into 3,000 squads.

Training for rescue squads will include special technical instruction and drill ranging over all classes of rescue problems and, in addition, practice in advanced first aid and handling of the injured. The medical division now has in press two publications, "Technical Manual for the Rescue Service" and

"Emergency Field Care and Transportation of the Injured," which will be used as training manuals. Advanced training in these subjects will be pursued after squad members are inducted into the U S Citizens Defense Corps. Preinduction training includes a basic course in first aid.

DUTIES OF STRETCHER TEAMS IN
EMERGENCY SERVICE

The medical division of the Office of Civilian Defense in an operations letter issued June 30 defines the duties of stretcher teams of the Emergency Medical Service. Rescue squads are now to assume the duties formerly assigned to the stretcher teams at major incidents with many trapped casualties. In addition to the technical work of rescue, this includes emergency care and transport of casualties from the scene of an incident to an ambulance or to a point where medical service is available. Stretcher teams remain, however, an essential part of the Emergency Medical Service. The functions of the teams as outlined in the new statement are as follows:

1. Assisting medical personnel at casualty stations in handling and nonprofessional care of minor casualties.
2. Unloading ambulances and assisting in reception of casualties at hospitals.
3. Performing rescue work at minor incidents not requiring specialized rescue squads.
4. Assisting rescue squads at major incidents at which many casualties are trapped.

A stretcher team is composed of a leader and four other persons, preferably men and older boys from the neighborhood of the facility to which they are attached. The medical division urges that members of a hospital staff who have maintenance functions should not be selected for duty on a stretcher team.

All team members must meet the requirements of OCD regulations for membership in the U S Citizens Defense Corps by completing either an American Red Cross or a Bureau of Mines first aid course. If a Red Cross or Bureau of Mines instruction is not available, instruction in first aid may be given by any other qualified person certified by the chief of Emergency Medical Service.

HEALTH OFFICIALS IN CIVILIAN PROTECTION ORGANIZATION

In order that health and sanitation may be maintained during and after an air raid, health officers, with their deputies, division chiefs and sanitary inspectors, should be members of the U S Citizens Defense Corps, the Office of Civilian Defense advises in Operations Letter No 131. Commanders of the U S Citizens Defense Corps are urged to appoint health officers to their staffs.

Health officers should develop plans for prompt action in emergencies to assure (1) maintenance of safe water, food and milk supplies, (2) sanitary disposal of sewage and putrescible wastes, (3) sanitation at mass feeding centers, rest centers, casualty stations, billets and other temporary facilities for war emergencies, and (4) control of communicable disease, the operations letter points out.

In communities in which the health department does not have sufficient staff to provide sanitary supervision and inspection services in a war emergency, the health officer may select volunteer health deputies and recommend their appointment to the staff unit of the Citizens Defense Corps. Tasks to which they may be assigned include supervision and inspection of disinfection of fractured water mains, pasteurization of milk, and preparation and handling of food at emergency feeding centers.

A section of the operations letter is devoted to the place of state health agencies in the civilian protection program. State defense councils are urged to obtain the guidance and leadership of the state health officer in the development of an emergency health and sanitation program throughout the state.

NURSES' AIDES ELIGIBLE FOR CIVILIAN SECURITY BENEFITS

All volunteer nurses' aides should be enrolled in the U S Citizens Defense Corps, the medical division of the Office of Civilian Defense states in a special announcement, Circular Medical Series No 32. The immediate importance of this announcement lies in the fact that nurses' aides must be enrolled in the Nurses' Aide Unit of the Citizens Defense Corps if they are to be eligible for the benefits provided under the War Civilian Security Program of the Federal Security Agency for all members of or trainees for the Citizens Defense Corps who may be injured in line of duty. Nurses' aides at present working in hospitals and health agencies are considered to be in training for service in care of the wounded in the event of an enemy attack or other wartime disaster. They are therefore eligible for membership in the Defense Corps and are thus eligible for the benefits of War Civilian Security after enrollment. It is suggested that the local chief of Emergency Medical Service and the local nurse deputy arrange with the Red Cross Nurses' Aide Committee to have the required CDC oath administered at the graduation ceremony. All nurses' aides who have completed their training since the program was initiated but have failed to enroll in the Defense Corps should now become enrolled members. Women who are still undergoing preliminary training as nurses' aides but have not yet graduated are also eligible for benefits if they are properly registered with the personnel officers of the appropriate Citizens Defense Corps as trainees for the nurses' aide unit.

MISCELLANEOUS

DR. RAYMOND W. WAGGONER APPOINTED CONSULTANT IN PSYCHIATRY

The Selective Service Bureau of the War Manpower Commission announced on July 21 the appointment of Dr. Raymond W. Waggoner as consultant and adviser in psychiatry to the director of Selective Service. Because of the large percentage of registrants who are rejected on examination for neuropsychiatric reasons it was considered of the utmost importance to have all pertinent data on registrants, which might be used for the guidance of psychiatrists at induction stations, assembled and forwarded to them by local boards. Dr. Waggoner will advise on psychiatric problems which will include methods of assembling such data. Dr. Waggoner graduated from the University of Michigan Medical School in 1924; he was formerly associate professor of neurology at the University of Michigan and has been professor of psychiatry and director of its Neuropsychiatric Institute since January 1937.

in addition to a required internship and for the associate medical officer grade (\$3,828) one year of internship. The salaries quoted include overtime pay. There are no written tests and no age limits. Persons now using their highest skills in war work should not apply for these positions. Appointments in federal positions are made in accordance with war manpower policies and employment stabilization plans. Before a definite offer of appointment is made, eligibles are cleared through the Procurement and Assignment Service for Physicians, Dentists and Veterinarians of the War Manpower Commission. Persons rated eligible on the medical officer examination of 1941 need not file applications again unless they consider that they now possess qualifications for eligibility in a higher grade or different option. Application forms may be obtained at first and second class postoffices, civil service regional offices and the commission in Washington, D C.

PHYSICIANS NEEDED FOR CIVILIAN WAR SERVICE

The shortage of physicians to engage in war work in the civilian branches of the government continues. This need resulted in a liberalized civil service examination for medical officers in 1941. The Civil Service Commission has just revised and reannounced this examination. The twenty optional branches under which doctors may apply range from General Practice to Aviation Medicine. Those appointed will perform professional duties as doctors of medicine in active practice in hospitals, in dispensaries in the field or in rural areas or in bureaus of the government. Doctors will also be used in industrial establishments under direction of the War Department. Applicants for all grades must have received the degree of M D from an accredited medical school. Applicants for the senior medical officer grade (\$5,228 a year) must have had at least five years of appropriate medical experience for the medical officer grade (\$4,428 a year) three years of experience

NYLON FILTERS FOR TRANSFUSION PURPOSES

A fine weave nylon cloth having 30,000 holes per square inch is being used by several laboratories as a filter during the processing of blood plasma for the Army and Navy. Small nylon bags have also been devised for filtering either plasma or whole blood during actual transfusions. Dr. S. Brandt Rose, chief of the bacteriologic laboratories of the Philadelphia General Hospital, announces in *Science* that the new type filters have been successfully employed in more than a thousand transfusions. Dr. Rose said that while it is desirable that fresh blood be filtered immediately before it is transfused, this precaution is mandatory when stored blood or plasma is used. The nylon fabric has several desirable characteristics as a filter. Dr. Rose states that no intolerance or sensitivity to nylon has been observed in more than a thousand blood and plasma transfusions made with the filters during the past eight months and no reactions have followed the administration of 1,000 to 200 cc's.

ORGANIZATION SECTION

OFFICIAL NOTES

MEDICAL SERVICE AND PUBLIC RELATIONS

Minutes of Meeting, July 21, 1943

The Council on Medical Service and Public Relations, Dr James E Paulin, President of the American Medical Association, presiding, met in the Board of Trustees Room at the headquarters of the American Medical Association.

There were present Drs A W Adson, Louis H Bauer, John H Fitzgibbon, W S Leathers, E J McCormick, James R McVay, Ernest E Irons representing Dr Roger I Lee, James E Paulin and Olin West, members of the Council, Mr J W Holloway, Director of the Bureau of Legal Medicine and Legislation, and Dr R G Leland, Director, and Mr A M Simons, member of the Staff, of the Bureau of Medical Economics. The President announced that Dr Roger I Lee and Brig Gen Fred W Rankin had found it impossible to be in attendance.

Dr West reported that he had taken the responsibility of communicating with members of the Council, assuming that they would wish to have a meeting for organization, the preparation of a budget and a consideration of the nature of the work to be undertaken.

Nominations were called for and Dr McVay nominated Dr Louis H Bauer, who was elected Chairman by unanimous vote.

Dr Bauer stated that he would try to do his utmost, realizing that the burden would be taken from his shoulders to some extent when a permanent secretary is secured. Most important was the selection of the right man for that purpose, who will be in Chicago and conduct the Council's work according to the suggestions of its members. Some had suggested that the Secretary be a physician. After the views of members were presented, Dr Bauer stated that the consensus was that the Council should try to secure a physician, if possible, if it is not possible to secure a physician, it will be necessary to get a competent layman with the proper medical point of view. Any physician secured should have the proper public relations point of view and any layman secured should have the proper medical point of view.

Consideration was given to salaries and budget.

The Chairman suggested that the Council propose a program before considering the budget. The functions of the Council as stated in the report adopted by the House of Delegates in June were read by Dr West. Dr Adson presented to each member of the Council proposed agenda. The discussion, in which it was suggested that committees be appointed to study some of these questions, continued until the Council recessed for luncheon.

The Chairman stated in the afternoon session that it seemed that two or three outstanding subjects on which to concentrate should be selected by the Council. He suggested the hospital-physician relationship, what approach the Council should make to the Wagner-Murray-Dingell bill, discussion of representation in Washington, and the relation of the Council to other organizations.

A committee of three members of the Council was appointed to consider the matter of securing a secretary. Consideration was given also to the budget. The committee members are Drs Bauer, West and McCormick.

The Chairman appointed Drs Adson, Leathers and McVay as members of a committee to determine the present status of work and a proposed program.

The Council voted to have another meeting on September 9 and 10.

Dr Adson asked the opinion of the Council as to what it thought about committees on medical service and public relations in state associations and component county societies. The consensus was that it would be better to ask these units which of their committees they desired to have as the outlet for the Council on Medical Service and Public Relations of the American Medical Association.

The Chairman felt that press relations were part of the work of the Program Committee and suggested that Dr Fitzgibbon could consider, in collaboration with the Program Committee, the manner in which the material of the Council can be filtered through.

Dr West stated that the Council might be of important help in that its members or others they might secure could appear before Congressional committees when necessary, he stressed the necessity of making the best possible selections for this purpose.

Dr Adson informed the Council concerning the work of the committee of the American Dental Association in Washington.

Dr West, in the discussion of the question of who would act as temporary secretary until the Council secured a permanent one, informed the Council that Mr Holloway, Director of the Bureau of Legal Medicine and Legislation, had agreed to act as temporary secretary if the Council so desired. Mr Holloway, on being asked by the Council, stated that he would be glad to serve as temporary secretary. It was moved by Dr McCormick, seconded by Dr Adson and carried, that Mr J W Holloway be asked to act as temporary secretary until a permanent secretary of the Council is secured.

Dr West presented several matters that had been received at the offices of the Association that might later come to the attention of the Council. No action was taken on any of these matters but they were referred to the Program Committee for consideration as to priority of action.

The Council adjourned at 4 30 p m.

SUMMER HEALTH HINTS

The next two programs for the series of broadcasts over WLS on Thursdays at 2 45 p m under the title "Summer Health Hints" will be as follows:

August 12 "Hiking"
August 19 "Hay Fever Time"

A new series of broadcasts on appropriate, timely, health topics is contemplated on station WLS beginning in early autumn.

WOMAN'S AUXILIARY

Pennsylvania

A recent meeting of the Philadelphia auxiliary was of unusual interest, as it was the first time that a combined meeting was held of the First Councilor District of the state medical society, Dr George C Yeager, councilor, and the First Councilor District of the state auxiliary, Mrs W Burrill Odenatt, councilor. Among the 100 guests present were Dr Gilson Colby Engel, vice president of the state medical society, Dr

William Bates, president of the Philadelphia County Medical Society, and Mrs Leon C Darrach, councilor of the Second District. The president, Mrs George C Yeager, introduced the officers and speakers. Dr Yeager presented certificates to sixteen physicians who have been in practice fifty years. Dr William Egbert Robertson spoke on "Fifty Years of Medicine." Dr Hubley R Owen, director of health of the city of Philadelphia, told of his recent trip to England, where he visited hospitals.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Personal—Charles H. Danforth, Ph.D., professor of anatomy at the Stanford University School of Medicine, San Francisco, has been appointed to the honorary position of librarian of the California Academy of Sciences.—Dr. Romeo R. Root, Riverside, among others, received a gold-headed cane in May in recognition of his long service in the Riverside County Medical Association.

Drugless Practitioners May Sign Death Certificates—Drugless practitioners may legally sign death certificates according to an opinion released on June 23 by Attorney General Robert W. Kenny, newspapers reported. In Kenny's opinion given to the board of medical examiners, he pointed out that the California courts had never ruled on the legality of the question. In thus making it possible for the drugless practitioner to sign death certificates, it should of course be realized that the implication is not to be conveyed that such drugless practitioners may call themselves or advertise themselves as physicians or that they may practice medicine. A drugless practitioner receives his license from the board of medical examiners. By law the mode of treatment of human diseases, injuries and deformities employed by drugless practitioners is recognized. It is difficult for me to believe that a drugless practitioner in attendance on such a patient should not be qualified to file the certificate of death as well as the medical certificate.

COLORADO

Changes in State Medical Board—New officers of the Colorado State Board of Medical Examiners for the period July 1, 1943 to June 30, 1945 include Dr. B. Franklin Blotz, Rocky Ford, president; C. Robert Starks, D.O., Denver, vice president; and Dr. John B. Davis, Denver, secretary-treasurer. Membership of the board includes Drs. Blotz, Davis, George H. Gillen, Denver; Robert J. Groom, Grand Junction; Walter W. King, Denver; William P. McCrossin, Jr., Colorado Springs; George A. Unfug, Pueblo; C. Robert Starks, D.O., and Rodney Wren, D.O., Pueblo.

DISTRICT OF COLUMBIA

Physicians Organize Panel for Emergency Services—A panel of 338 physicians has been established for medical care during emergencies to be available through the medical bureau of the Medical Society of the District of Columbia. The physicians will respond to calls in any part of the city where their services are urgently needed and will report through the medical bureau which maintains a twenty-four hour switchboard and will cooperate with other physicians who have accepted the chairmanship of various sections of the city. The sections are divided to conform with those designated by the Selective Service System. The operation of the new setup is the result of a plan initiated several months ago (THE JOURNAL, March 6, p. 774). The announcement to the press was made by Dr. A. Magruder MacDonald, chairman of the committee on medical service for the district which includes representatives of seven medical and health agencies, namely, the district medical society, the U. S. Public Health Service, the district health department, the Emergency Medical Service for Civilian Defense, the District Procurement and Assignment Committee, the Health Security Administration and the Medico-Chirurgical Society, which is made up of colored physicians. Out of the 338 physicians who volunteered to serve on the panels in the twenty-five selective service districts of the city, 189 are general practitioners and 128 are specialists who agreed to do general practice if necessary.

KANSAS

Dr. Crumbine Honored—In the first ceremony of its kind in history, the state of Kansas recently officially honored Dr. Samuel J. Crumbine. Jackson Hights, N. Y., who for many years served as secretary of the Kansas State Board of Health and is dean of the University of Kansas School of Medicine (THE JOURNAL, Nov. 28, 1942, p. 1050). The Crumbine plaque, first for presentation to Dr. Crumbine at a testimonial dinner in New York in 1942, was officially unveiled in the Topeka

Hall of Fame. A 'Dr. Crumbine Week' was officially declared throughout Kansas and the Missouri Pacific Railroad, the first railroad to abolish the common drinking cup, a movement launched by Dr. Crumbine, sponsored a publicity campaign throughout eleven states designating July as 'Dr. Crumbine Month.' According to the *Health Officer News Digest*, final preparations are under way to name a new train car 'The Dr. Crumbine.'

MASSACHUSETTS

License Revoked—The state board of registration in medicine on June 28 revoked the license to practice medicine in Massachusetts of Dr. Philip L. Manfredi, Boston, because of gross misconduct in the practice of his profession.

Rehabilitation Program for the Tuberculous—The executive committee of the Lynn Tuberculosis League has approved a rehabilitation program for Lynn residents with tuberculosis, including plans to employ a rehabilitation specialist. Five hundred dollars was also appropriated to provide educational and vocational scholarships for persons with tuberculosis ineligible for such vocational aid from governmental sources and will be available to those at home who have never needed sanatorium care as well as to those who have taken sanatorium treatment. It is planned for the tuberculosis specialist to begin work sometime in September, allowing a period for specialized training under the direction of the National Tuberculosis Association.

MINNESOTA

License Restored—The license to practice medicine of Dr. Arthur H. Langhoff, Glencoe, which was suspended by the state board of medical examiners Feb. 13, 1942, was restored by the board on May 7.

Personal—St. Olaf College, Northfield, recently conferred the honorary degree of doctor of laws on Dr. Donald C. Balfour, director of the Mayo Foundation for Medical Education and Research, Rochester, and the honorary degree of doctor of science on Dr. Adolph M. Hanson, Faribault, in recognition of work on the isolation of the active principles of various hormones. Dr. Balfour was also recently elected an honorary fellow of the Royal Society of Medicine.—Dr. Theodor E. Bratrud, Minneapolis, recently received an alumni award of the Marquette University School of Medicine, Milwaukee, for a paper submitted at an alumni clinic entitled 'Congenital Adrenal Hyperplasia.'

NEW JERSEY

State Medical Election—Dr. Joseph F. Londrigan, Hoboken, was chosen president-elect of the Medical Society of New Jersey at its recent annual meeting in Newark. Dr. Ralph K. Hollnshed, Westville, was installed as president to succeed Dr. Elias J. Marsh, Paterson. Dr. Alfred Stahl, Newark, is the secretary.

Endowment Fund for Research—Acting on the suggestion of Dr. Elias J. Marsh, Paterson, president of the state medical society in 1943, members of the society have been submitting contributions to establish an endowment fund for the support and encouragement of original investigations conducted by members. At the present time the fund has four \$100 war bonds and almost enough cash to purchase the fifth. In his proposal to the house of delegates to create a scientific research fund, Dr. Marsh said: 'This will compensate for the lack of any generally available teaching or research institution in our state. We have in New Jersey plenty of ability, plenty of scientific spirit and plenty of clinical and other material to produce good original work, but we lack facilities for bringing them together in a practical and fruitful way.'

NEW YORK

License Restored—The state board of medical examiners at a meeting on June 18 restored the license to practice medicine in New York of Dr. Julius Hammer, Scarsdale.

Personal—Donald K. Tresler, Ph.D., since 1933 chief of research and head of the division of chemistry, New York Experiment Station, Geneva, has joined the staff of the General Electric Company. He will be concerned chiefly with research on refrigeration and the freezing preservation of food, working in the laboratories at Bridgeport, Conn.—Alfred E. Sherndal, Ph.D., plant superintendent, has been elected vice president of Winthrop Chemical Company, New Rochelle.—Dr. Walter B. Martin, warden of Clinton Prison at Dannemora, has been appointed warden of the Alca Prison effective July 1.

New York City

Education Program to Obviate War Shock in Seamen—A medical education program under the auspices of the United Seamen's Service and the War Shipping Administration to help merchant seamen avoid war shock will be started under the direction of Dr Florence B Powdermaker, the New York Times reported on July 9. The program will be supervised by the U S Public Health Service.

Promotions at Rockefeller Institute—The Rockefeller Institute for Medical Research announced the following promotions on its scientific staff: assistant to associate, Merrill W Chase, Ph D, Stanford Moore, Ph D, Isabel M Morgan, Ph D, Howard A Schneider, Ph D, and William H Stein, Ph D, fellow to associate, D Wayne Woolley, Ph D, and fellow to assistant, Dr Sidney Rothbard.

Three-Cents-A-Day Plan Expanded—On July 19, 257 member hospitals of Associated Hospital Service of New York approved a plan of expanded service for the 1,365,000 members of the Blue Cross three-cents-a-day plan. In addition to providing hospital bed and board, prescribed diets, general nursing care and anesthesia when administered by a hospital employee, Blue Cross members who occupy semiprivate accommodations may now use the operating room as often as necessary, the former \$25 limitation being removed. All x-ray examinations consistent with the treatment required will be provided, the \$25 limitation being waived. Laboratory examinations, formerly held to \$20, are now limited only by the need. All drugs and medications are now provided, as are all dressings and plaster casts. The use of the cystoscopic room, cardiographic equipment and physical therapeutic equipment are made available at no added cost, as are basal metabolism tests. After twenty-one days of hospitalization members receive a 50 per cent discount for an additional period up to ninety days on all regular hospital charges, including the services listed. The rate of payment to hospitals has now been increased to compensate them for this more comprehensive service. An extra allowance is likewise provided for those members who wish private room accommodations. Another phase of the new program is the making available individual memberships to men and women under 60 years of age who cannot enroll through a place of employment.

NORTH CAROLINA

Dr MacNider Retires as Head of Pharmacology Department—Dr William deB MacNider, Kenan research professor of pharmacology and head of the department at the University of North Carolina School of Medicine, Chapel Hill, will relinquish his responsibilities as head of the department on September 1. He will continue in the department as research professor. Dr Grant L Donnelly has resigned as associate professor of pharmacology in order to resume the practice of medicine.

New Hospital for Early Treatment of Venereal Diseases—The North Carolina State Board of Health has accepted an offer made through the Federal Works Agency for \$210,200 annually to establish in Charlotte a hospital for the intensive treatment of venereal diseases in the early stages. The board signed a lease with the Palace Realty Company of Charlotte whereby the Charlotte Sanatorium is to be used for the purpose. About 200 patients can be accommodated at one time. The U S Public Health Service will provide a chief medical officer, a chief nurse and a record analyst. The Zachary Smith Reynolds Foundation has given \$25,000 to the board to be used in establishing a closer administrative supervision throughout the state.

PENNSYLVANIA

Personal—Dr Anthony J Sparta has been named health officer of Easton, succeeding the late Dr Reuben S Raub, who died, May 28.—Dr Eugene L Sielke, formerly assistant superintendent of the Philadelphia State Hospital, is now superintendent of the Danville State Hospital, Danville.

Philadelphia

Pharmacologic Changes at Sharp and Dohme—Arnold D Welch, Ph D, who, since June 1940 has been in charge of the pharmacologic research laboratories of the medical research division of Sharp and Dohme, has been made director of research of the division. According to *Science* he will continue to direct the general activities of the pharmacologic and nutritional laboratories. Dr Karl H Beyer, who recently joined the medical research division, has been named assistant director of phar-

macologic research. Paul A Mattis, D Sc, who is supervising the histologic and toxicologic work of the department, will serve as assistant department manager.

Changes in the Faculty at Jefferson Medical College—Dr Paul C Swenson, associate professor of radiology at the Columbia University College of Physicians and Surgeons, New York, has been appointed professor of roentgenology at Jefferson Medical College of Philadelphia and Dr James Rudolph Jaeger, assistant professor of surgery (neurosurgery), University of Colorado School of Medicine, Denver, has been appointed professor of neurosurgery. Other appointments to Jefferson include those of Dr William G Sawitz, assistant professor of parasitology, Dr Joseph Stasney, assistant professor of pathology, and Dr Francis M Forster, assistant professor of neurology.

Alvarenga Prize Goes to Ernest Faust—On July 14 the College of Physicians of Philadelphia awarded its Alvarenga Prize to Ernest C Faust, Ph D, professor of parasitology and acting head of the department of tropical medicine at Tulane University of Louisiana School of Medicine, New Orleans, for his "outstanding contribution to our knowledge of parasitology and tropical medicine." This prize was established by the will of Pedro Francisco Da Costa Alvarenga of Lisbon, Portugal, an associate fellow of the College of Physicians, to be awarded annually by the College of Physicians on each anniversary of the death of the testator, July 14, 1883, to the author of the best memorial on any branch of medicine which may be deemed worthy of the prize.

RHODE ISLAND

Mr Farrell Becomes Executive Secretary of State Society—On July 1 Mr John E Farrell, executive secretary of the Providence Medical Association for the past five years, became executive secretary of the Rhode Island Medical Society and managing editor of the state medical journal. The executive office of the society and the business office of the journal will be maintained at 106 Francis Street, Providence 3. Mr Farrell will continue as executive secretary for the Providence Medical Association (THE JOURNAL, June 5, p 388).

SOUTH CAROLINA

Crippled Children's Home Transferred to State—The Florence County Crippled Children's Home was formally transferred to state ownership during special ceremonies on July 1, the result of a special act of the legislature. Under state management the unit will be known as the South Carolina Crippled Children's Convalescent Home and is said to be the first state-owned convalescent home in South Carolina. Located on a 6 acre tract on the Florence Timmonsville Highway, the home, established in 1937, consists of two large buildings, one for white children and one for Negroes, connected with a smaller building which houses the central kitchen and heating plant. It is equipped with a modern swimming pool and has a capacity of 50 beds and cribs. Beginning on August 1 the home was to be equipped and staffed for physical therapy treatments. News papers report that the home will be operated under the division of crippled children under the state department of health, which is under the direction of Dr George S T Peebles, Columbia. Dr James A Hayne, Columbia, state health officer, in his speech of acceptance stated that Dr Peebles would be advised by a subcommittee of the state board of health's executive committee composed of Drs Walter R Mead, Florence, William R Wallace, Chester, and William L Pressly, Due West.

TENNESSEE

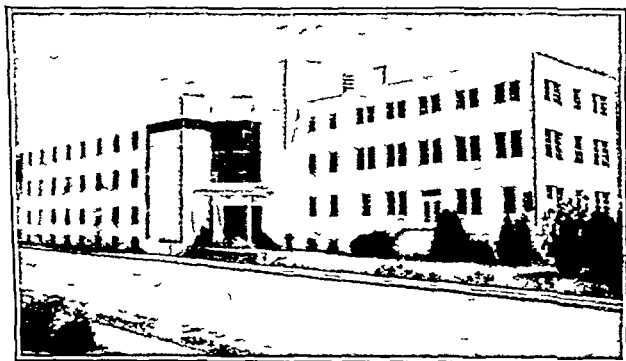
Changes in Health Officers—Dr Harcourt A Morgan Jr, Lewisburg, head of the Bedford County Health Unit, has been placed in charge of a seven county area including the six adjacent counties of Grundy, Franklin, Warren, Bedford, Marshall, Moore and Coffee with headquarters at Manchester.—Dr Chester A Hicks, Elizabethton, director of the health unit of Carter, Johnson and Unicoi counties, has resigned to become director of health of the city of New Rochelle, N Y.—Mr Lowell H Stokes, McMinnville, in charge of the Warren County Health Department, has been appointed to a similar position in Knox County.

Physician Honored—Dr Edward C Ellett was guest of honor at a dinner recently, given by the Memphis and Shelby County Medical Society to honor his completion of fifty years active practice in Memphis. In 1939 Dr Ellett was awarded the Leslie Dana Medal through the National Society for the Prevention of Blindness and in 1942 he received the award of merit from the American Academy of Ophthalmology and Otolaryngology.

gology in recognition of his services as president and member of the council. Dr Ellett was secretary of the Section on Ophthalmology of the American Medical Association 1900-1901 and chairman of the Section 1914-1915 and is a past president of the American Ophthalmological Association.

TEXAS

New Home of State Health Department—An open house on July 26 formally marked the installation of the Texas State Department of Health in its new building at 400-412 East Fifth Street, Austin. The structure was made possible by a grant of \$135,105 from the federal government and \$87,500 from the state of Texas. A joint resolution by the forty-seventh legislature authorized the state board of health to proceed with final arrangements. Ground breaking ceremonies were held on March 9 1942. Because of labor and material shortages the work was held up at various times and it was not until June 18 of this year that the keys were formally turned over to the state department of health. The building is constructed entirely of reinforced concrete. The right wing is the original laboratory, to which one floor was added to be used for making biologic preparations. The left wing of the building is entirely new. The basement will contain the division of vital statistics, where fireproof vaults have been constructed in which to keep these records. On the first floor will be the offices of the state health officer, central administration, hygienic laboratories and local health services. The second floor will contain offices of sanitary engineering, public health education, central filing room, malaria control, tuberculosis control, office of civilian



Texas State Department of Health.

defense and bedding division. On the third floor will be located the division of maternal and child health of the state board, library, venereal disease control, the food and drug division, and milk inspection, public health nursing and dental division. The new part of the building is 151 feet in length and 60 feet in depth and covers one-half block of land. Now for the first time since its inception, the state department of health will be all at one location permitting better administrative policies with work under the direct supervision of the state health officer, Dr. George W. Cox.

WASHINGTON

New Health Activities in King County—The enactment of recent legislation has made possible the expansion of the health program in King County. Under the direction of Dr. Wallace W. Schwabland, Seattle, health officer of the county, the appointment of Dr. Bryan Newsom, Seattle, for many years epidemiologist of Seattle, marks the beginning of a division of epidemiology in the department of health. Under a reorganization the King County commissioners have designated the county health officer to be tuberculosis administrator for the county, which means that admission of patients to the county tuberculosis institutions will be decided finally by the health officer rather than by the medical director of the sanatorium.

WEST VIRGINIA

Members of Public Health Council Reappointed—Drs. William R. Goff, Parkersburg, William P. Bittinger, Summerlee, and Walter E. Vest, Huntington, have been reappointed by Governor Matthew M. Neely as members of the Public Health Council for the term ending June 30 1947. Dr. Vest has been a member of the council since 1933 and president since

1937. Dr. Goff has been a member since March 1942, and Dr. Bittinger is beginning his second four year term, having first been appointed in 1939. Dr. John E. Offner, Weston, recently appointed state health commissioner, is a member and ex officio secretary of the council. The next meeting of the council will be held in Charleston, October 25-27.

GENERAL

Mead Johnson Continues Award for Vitamin B Research—Mead Johnson and Company has renewed the arrangements for a period of five years whereby the annual award of \$1,000 will be given for research dealing with the vitamin B complex. The recipient of this award will be chosen by a committee of judges of the American Institute of Nutrition.

American Medical Association Membership Waived in Orthopedic Board Requirements—The American Board of Orthopaedic Surgery has ruled that membership in the American Medical Association is not necessary for those who wish to present themselves for part I of the examination by the board. Dates for part I are as follows: New Orleans, October 8-9, New York, October 15-16, Chicago, October 22-23 and San Francisco, October 29-30. The board had earlier sent out a notice to most prospective applicants that membership in the American Medical Association would be prerequisite and essential.

Expand Program of Physical Education—Harold T. Friermood, Dayton, Ohio, has been appointed special secretary of health and physical education of the National Council of the Young Men's Christian Associations of the United States of America. He will aid in redirecting the groups' program in relation to physical fitness, health education, swimming and water safety and in devising methods of enlisting volunteer and part time leadership for service in communities where staffs have been depleted by transfer of Y M C A secretaries and physical directors to other forms of service. Mr. Friermood has been given a leave of absence as director of physical education of the Dayton Y M C A to undertake this special service for the National Council.

Special Society Elections—Dr. Albert A. Berg, New York, was chosen president-elect of the International College of Surgeons at its recent meeting in New York and Dr. Desiderio Roman, Philadelphia, was installed as president. Vice presidents are Drs. Manuel A. Manzanilla, Mexico, D. F., Herman de las Casas, Caracas, Venezuela, Custis Lee Hall, Washington, D. C., Ratael Angelo Calderon Guardia, San Jose, Costa Rica, Ali Ibrahim Pascha, Cairo, Egypt, and Alejandro Ceballos, Buenos Aires, Argentina. Dr. Max Thorek, Chicago, is secretary. At the annual meeting of the executive board of the National Gastroenterological Association the following officers were reelected for the coming year: Drs. Anthony Bassler, New York, president, Clarence J. Tidmarsh, Montreal, Harry M. Eberhard, Philadelphia, and William W. Lermann, Pittsburgh, vice presidents; Roy Upham, New York, secretary general, national council; G. Randolph Manning, New York, secretary, and Elihu Katz, New York, treasurer.

The Poliomyelitis Situation—The U. S. Public Health Service reported on July 28 that the incidence of infantile paralysis had reached epidemic proportions in several Southwestern states and that figures for the country during the first six and a half months were the highest in twelve years. The New York Times reported on July 29 that a sharp rise in the number of cases since early June was accounted for by outbreaks in Texas, California and Oklahoma. No specific cause could be assigned for the situation; it was stated and no predictions could be made as to the possibilities of a further spread. Figures for the week ended July 17 showed 297 cases in the United States as compared with 245 for the preceding week. 231 cases or 94 per cent, were reported from three states: Texas which had 102, California 90 and Oklahoma 39. During the first week in June Texas reported 6 cases, California 35 and Oklahoma none. Arizona reported 3 cases for the week ended July 17 but recorded 45 for the first half of the year. Previous to July 17 no state other than those four had reported more than 6 cases in any week this year but in the latest report New York announced 11 cases as compared with 5 the week before and both Kansas and Arkansas had 7 each. For the first twenty-eight weeks of this year 1,020 cases were listed for the entire country. The Times also reported that Hawaii is fighting infantile paralysis—47 cases have been treated in three months with 5 discharged as cured. The Times stated on July 17: "Never before had Hawaii more than a few scattered cases," the report said. At the time of this report 40 patients were still under treatment in the special hospital set up for the purpose.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 26, 1943

An Industrial Health Advisory Committee

At a conference in London Mr. Ernest Bevin, minister of labor, described the setting up of an industrial health advisory committee attached to his department. He said that in the past industrial health had been rather relegated to a separate compartment. The ordinary physician had not much knowledge of the conditions of industry and tended to regard industrial health as a matter for the specialist. But there had been great improvement during the war. The services of many part time works physicians had been enlisted and liaison made between works physicians and outside medical services. The great trouble was shortage of physicians. The employer naturally sought to get the utmost out of his machines, but he had also to study the human factor. It had been found, rather paradoxically, that a slight slowing down of the rate of production actually increased production. When machines were working at their full capacity the nerve strain was great and there was so much "standing off" and introduction of new workers on account of the exhaustion of those whom they replaced that better results were obtained by some slowing down.

Another important factor was the development of safer materials and methods and more effective safeguards. Thus the discovery of a harmless substitute for yellow phosphorus in the manufacture of matches, the introduction of leadless pottery glazes and the substitution of solvents less toxic than benzene and carbon disulfide in rubber cements were valuable advances. The duty of the new committee would be to keep step with every discovery so that the best possible use could be made of it. He believed that methods of lighting and ventilation were still in their infancy and that great improvements now used for war purposes would in time be adopted in industry in general. The committee would also concern itself with nutrition, and he was anxious that the present wartime feeding arrangements would be continued after the war, because they had been shown to be great checks against industrial ill health.

The machinery of inquiry (as distinct from research) into industrial health questions would be developed by increasing facilities for x-ray examinations, examination of blood samples and medical supervision of particular cases of illness. He believed that after the war one of the qualifications for managing factories would be a knowledge of and interest in industrial hygiene.

The chairman of the committee will be the minister of labor. Its members will comprise the chief inspector of factories, Sir Wilfred Garrett, the superintendent of the engineering department of the National Physical Laboratory, Mr. D. L. Smith, the deputy chief medical officer of the Ministry of Supply, A. J. Amor, the regius professor of medicine, Oxford University, A. W. Ellis, the chief medical officer of the Ministry of Health, Sir Wilson Jameson, the president of the Royal College of Physicians, Lord Moran (formerly Sir Charles Wilson) and John A. Ryle, Nuffield professor of social medicine, Oxford.

American Medical Officers in London

In the medical sphere this war has brought American physicians and surgeons into closer contact with British leaders and their work than ever before. The numerous American medical officers now in this country take part in the discussions before our medical societies and attend the clinics of the leaders of British medicine and surgery. Courses of one week each have been planned with the object of showing any American medical officer who is interested the working of the London hospitals and also some of the "sights of London." They come from all

parts of the country and are billeted in London. Facilities have been offered by such great hospitals as Guy's, the London, St. Mary's and the Middlesex. At Guy's visits are paid to the tomb of the founder, the bookseller Thomas Guy, to the museum and library and to the accident room. They are also shown the new pathology building and the outpatient department with its new appointment system.

On the occasion of the principal public function of the Royal College of Surgeons, the triennial Hunterian Oration, Col. Elliott C. Cutler, professor of surgery at Harvard, and Prof. W. G. Penfield, neurosurgeon at McGill University, were admitted to honorary fellowship. In the presence of most of the principal London surgeons they were presented to the president by the senior vice president, who described their achievements. These two surgeons will take part in the forthcoming Anglo-American surgical mission to Russia. During the mission the senior vice president of the college, Admiral G. Gordon-Taylor, will admit to the honorary fellowship two Russian surgeons, Dr. N. N. Burdenko, director of the Operative Surgery Institute, Moscow University and surgeon in chief to the Red Army, and Dr. S. Y. Yudin of the Sklifasovskii Hospital for Traumatic Diseases, Moscow. The British members of the mission will include Major Gen. D. C. Monro, professor of military surgery at the Army Medical College, Mr. E. Rock Carling and Mr. R. Watson-Jones. The object of the mission is to study the results of war surgery in Russia and to explore the possibility of extending medical relations between the two countries.

War Casualties for the First Three Years

In the House of Commons the government gave figures for the casualties of all the forces of the British Empire during the first three years of the war (excluding deaths from natural causes). They amounted to 514,993, of which 92,089 were killed, 226,719 were missing, 88,294 were wounded and 107,891 were prisoners of war. These figures do not include the casualties of the merchant service or other civilian casualties. Because of the failure of the Japanese to notify the names of prisoners as prescribed by international law, the number of prisoners in the Far East of Indian and colonial units is not exactly known.

The fact that the figures for those killed are higher than the figures for those wounded is susceptible of explanation. In the Royal Navy this is almost always the fact because of the nature of operations. The same is true of the Air Force, whose operations are almost entirely offensive and over enemy territory, as a result of which many wounded casualties inevitably become prisoners of war.

Civilian casualties for the same period were high as a result of bombardment of towns from the air. These were 47,291 killed and 55,643 injured, a total of 102,934.

Tracing Missing Civilians

Three years ago the Foreign Relations Department of the Red Cross was set up here to make inquiries for missing civilians of all nationalities in enemy or enemy occupied territory, so that relatives and friends could maintain contact with them by a message scheme. From a handful of people the staff has grown to over 300. Of 26,000 messages sent out by the department last month only 818 came back because the address could not be traced. Inquiries for missing civilians and for foreign soldiers, sailors, airmen and merchant seamen are made. Interned British civilians in Europe and interned as well as noninterned civilians in the Far East are covered. In exceptional cases of severe hardship medical supplies are sent. Sometimes visits of inspection are arranged and reports of them sent to relatives in this country. The Red Cross message of twenty-five words costs 24 cents to send and receive a reply. Fourteen languages are permitted.

The German and Italian governments have officially recognized this message scheme. By the end of the third year of

the war the index records held over 250 000 cards, and success in handling these inquiries was over 92 per cent. Last month 141 000 messages were received from abroad. Medical supplies have been sent to a Czechoslovak unit in Russia. Drugs and medical supplies have also been sent to Latvia to be distributed by the German Red Cross. As far as can be ascertained, this has always kept ruth. The department has done more for merchant seamen of allied countries than for any other group. It has extended the Red Cross cloak of comfort to the tortured minds of people who have suffered by the occupation of their countries.

Oxford University Honors Dr Trueta

Dr Joseph Trueta, the Spanish surgeon famous for his treatment of war wounds, has been given the honorary degree of DSc by Oxford University. During 1930-1939, when civil war was waged in Spain and Barcelona was subjected to some three hundred and fifty air raids, he developed his method and applied it in the treatment of 20 000 wounded soldiers. It consisted in enclosing the wound in plaster of paris and relying on the rest so obtained to ensure healing instead of on antiseptics. This is known as the closed plaster treatment and gave him excellent results. It contrasts with the frequent dressing of wounds in the last great war. In 1939, after the defeat of the Spanish republicans, he came as a refugee to England where he published his book "Treatment of War Wounds and Fractures". During the present war, in 1940 he was appointed by the government adviser or the minister of health to the Wingfield-Morris Orthopedic Hospital. In presenting him for the degree the public orator's deputy Mr J G Barrington-Ward described Trueta's treatment as the enclosing of the wound in plaster of paris and the cutting off of bacteria from the main blood stream. He also spoke of the gentleness of his hand and heart. The ancient Romans gave the civic crown to a man who had saved in battle the life of one citizen: the university was right in placing its crown on the head of the man who had saved the lives of so many.

Suicides

The new statistics show a sharp rise in the number of suicides. They numbered 7 647 in 1942, 6 222 in 1941, 6 104 in 1940 and 6 387 in 1939. Yet it is the experience of most belligerent countries in this and past wars that suicides decrease during hostilities. This has happened in Britain during the present war and in Germany the number fell in 1940. But the last quarter of 1942 showed a rise of 87 per cent (to 2 538) over the same quarter of 1940. It does not seem that political murders or suicides in concentration camps are included in the German official statistics or that suicides of imported workers are included.

All the death rates for the large cities are likely to underestimate the actual rise in mortality for several reasons. The evacuation of children, mothers and expectant mothers to rural areas might be expected to reduce the number of deaths in the cities. As the official figures relate only to civilians, the transference of large numbers of adolescents to the armed forces would reduce the civilian population exposed to the risk of tuberculosis.

Soya in Sausages

The war shortage of certain foods, particularly meat, has led to various alternatives. The wartime sausage is much eaten but has the disadvantage of containing less meat and more bread. The latest innovation in food is the use of the soya bean as an ingredient in the sausage. In future the sausage will be composed of 37.5 per cent meat, 75 per cent soya and 55 per cent flour and water. The Ministry of Food states that it is impossible to make more meat available for sausages but as the protein value of soya is about three times that of meat, the protein content of sausages will be equal to what it was before the war.

AUSTRALIA

(From Our Regular Correspondent)

June 22, 1943

Social Trends in Australian Medical Practice

Of the various schemes for an Australian medical service, those receiving most attention are (a) national health insurance with medical benefits, (b) the plan of the Federal Council of the British Medical Association, (c) the New Zealand scheme, (d) the National Health and Medical Research Council's outline for a salaried medical service and (e) the scheme of the Victoria branch of the British Medical Association in Australia.

The main features of the National Health Insurance and Pensions Act have been outlined in a previous letter.

THE FEDERAL COUNCILS SCHEME

The Federal Council of the British Medical Association in Australia consists of two representatives from each of the various state branches. It has no power to bind the state branches by its decisions but functions as a coordinating body through which their opinions can be ascertained and expressed and as a medium for communication with the federal government on behalf of the branches collectively. The first mention of planning by the Federal Council of a general medical service for Australia is found in a report of a meeting of the council in February 1940 when consideration was given to the proposal that the British Medical Association should have as its policy the provision of a general medical service for Australia. A subcommittee was appointed to consider the question and the report drawn up by this committee was finally adopted by the Federal Council in September 1941. The report constitutes an outline of general principles rather than a practically detailed plan for a general medical service. Constant emphasis is placed on the personal relationship between doctor and patient and the right of free choice of a doctor by the individual. The basic principle is that health insurance is a practicable method of providing a complete general medical service and should be divorced from any scheme for the provision of cash benefits, such as sickness benefits and pensions. All persons having an income of less than £417 per annum should be compulsorily insured and thereafter receive medical services from a general practitioner or the individual's own choice to whom would be available all necessary ancillary and specialist services. The necessary capitation fee is not stated nor are details given of the system under which the practice would be conducted but apparently an extension of the practice or the lodge type is envisaged. The scheme has been criticized in that (1) the doctor is placed on a twenty-four hour working basis with no allowance for sickness or holidays, (2) no provision is made for epidemics or other emergencies arising within the scheme, (3) under the capitation system of payment the doctor would tend to take the maximum number of patients to make a living and would have little time to devote to the individual and (4) methods of consultation with specialists are cumbersome and in order to obtain the extra financial return given for specialist services the practitioner would be tempted to undertake work for which he did not have the necessary skill and experience. The apparent advantage of the scheme is that disturbance of present methods of practice would be minimal.

War Medicine and Surgery

In previous war periods the study and practice of war medicine and surgery has constituted the special province of medical members of the fighting forces. But under present conditions of total warfare when the civil population is directly threatened it has become a topic of major importance for every medical practitioner in the country. Accordingly the National Health and Medical Research Council has appointed a committee for the survey of war medicine and an associated junior research

fellow for the purpose of collecting, condensing and presenting reliable information on the subject. At regular fortnightly intervals the committee publishes an article in the form of a supplement to the *Medical Journal of Australia*. These articles cover a wide range of subjects related to problems of war surgery and medicine, and special emphasis is laid on practical experiences rather than on theoretical discussions. This work should achieve much in giving the medical men in Australia a concise and reliable account of recorded experiences in war medicine and in fitting them to meet medical emergencies affecting the civilian population.

BRAZIL

(From Our Regular Correspondent)

June 25, 1943

Anophelines of the Amazon Basin

The importance of the Amazon basin for the production of rubber to be sent to the United States has led to an extensive plan of sanitation which is being carried out by the American and the Brazilian governments. As the main problem is malaria, the recent studies by Brazilian sanitarians in this field are of great value. A case in point is the study reported by Drs. Ayrosa Galvão and Marques Porto on the biology of *Anopheles darlingi* and *Anopheles tarsimaculatus*, which are the anophelines with epidemiologic importance in the vicinity of Belém, the largest city of the basin, with a population of 208,000, at the mouth of the Amazon. The facts concerning the biology of the adults of these two species were observed between October 1941 and June 1942. *A. darlingi* practically occurs only in relatively high lands, which are not flooded by the tide, and where there is fresh water with low chloride content. *A. tarsimaculatus* is chiefly found in breeding places with relatively high chloride concentration, on the low lands invaded by the tide. The average number of *A. darlingi* mosquitoes captured per hour indoors and outdoors, with human and animal baits, was 0.96 and 0.98 respectively. The ratio of these numbers is very nearly 1 to 1 and *A. tarsimaculatus* gave respectively 1.6 and 7.6 per hour, the rate being 0.21 to 1. If we compare this figure (0.21) with 1 for *A. darlingi*, the rate at which *A. tarsimaculatus* frequents houses is five times smaller than that for *A. darlingi*. However, as *A. tarsimaculatus* is 4.8 times more abundant than *A. darlingi*, they had almost even chances of attacking man inside houses during the period of observation. The hourly rate of house captures from October 1941 to June 1942 showed that the prevalence of *A. darlingi* from December to June was small in comparison to that of *A. tarsimaculatus*, which was then very abundant, with a maximum during March. The study of the variation of the number of specimens captured during the night indoors showed that *A. darlingi* is nocturnal in its habits: most specimens enter the houses after 10 p. m., and at later hours they continue at a slightly lower rate until 6 a. m., 1 per cent of the total number of *A. darlingi* having been caught between 6 and 7 p. m., and 51 per cent after midnight. Diurnal captures made in the same houses showed that *A. darlingi* is relatively abundant until 8-9 a. m. Seventy-one per cent of *A. tarsimaculatus* enter houses before midnight, mostly from 7 to 8 p. m. Diurnal captures were very few. House captures made in three different places showed that the prevalence of *A. darlingi* in dwellings varies as new breeding places are formed. In places where *A. darlingi* was very prevalent these mosquitoes made up 94.8 per cent of the anophelines captured inside houses, while in outdoor captures with human bait their proportionate number fell to 70.1 per cent and with horse bait to 16.9 per cent. Nevertheless it seems that *A. darlingi*'s preference for food varies with the seasons, as precipitin tests made during this time, which was not favorable to its development, gave a human blood index of 15.2 per cent. It is the author's opinion that many more tests must be made before a conclusion can be reached.

Brief Items

In the new Pathologic Institute of the Santa Casa de Misericórdia Hospital of Rio de Janeiro, created a few months ago, Dr. Oswaldo Penna of the Oswaldo Cruz Institute is giving a postgraduate course on "Clinical Pathology of Malignant Growths." Twenty physicians from the interior of Brazil are taking this course.

In July Dr. Almeida Prado, professor of medicine at the São Paulo University, will begin to give a special postgraduate course in "Gastroenterology" at the Santa Casa de Misericórdia Hospital of Rio de Janeiro.

Dr. João Baptista Canto, surgeon of the Rio de Janeiro Department of Hospitals, died recently at the age of 56. Graduated in 1911, he went immediately to Europe, where he worked in several hospitals, especially in France. In 1914 he took a course of war surgery under Professor Gosset in Paris. Back in Rio de Janeiro he entered the service of the city administration in the Department of Hospitals, in which for some time he was head surgeon of the Municipal Emergency Hospital.

Dr. Antonio Alvaro, professor of dermatology and leprology at the Minas Gerais University, died in Belo Horizonte at the age of 60. He contributed much to the development of the control of leprosy in the state of Minas Gerais, one of the most important foci of the disease in Brazil.

Dr. J. Oliveira Santos died a few days ago in Rio de Janeiro. He was head of the medical department of the Brazilian Sports Confederation.

Dr. Alvaro C. Carvalho, professor of medicine at the Bahia Medical School, died in Salvador, state of Bahia, at the age of 63.

The Death of Dr. Arthur Neiva

Dr. Arthur Neiva, head of the Division of Entomology at the Oswaldo Cruz Institute, died in Rio de Janeiro on June 6 at the age of 63. Dr. Neiva was one of the first assistants of Oswaldo Cruz in 1906 at the time of the foundation of the Institute at Manguinhos, a suburb of Rio de Janeiro. In his paper "A Strain of Malaria Parasite Resistant to Quinine," published in 1910 in the Archives of the Oswaldo Cruz Institute, he gave, perhaps for the first time, the explanation for the failure of quinine to protect against malaria under certain conditions. A few years later he was invited to organize the department of medical zoology and parasitology of the Bacteriologic Institute of Buenos Aires. He went also to Washington to write, in collaboration with L. O. Howard, an important monograph on insect vector of diseases. He described many new species of arthropods of South America, particularly mosquitoes, and his name is used in the parasitologic nomenclature to designate several species.

Marriages

- STANFORD S. KROOPF, Los Angeles, to Miss Barbara Williams of Waban, Mass., at Miami Beach, Fla., July 17.
JOSEPH C. MANNING JR., Savannah, Mo., to Miss Helen Elizabeth McDougale of Rochester, Ind., recently.
GEORGE TURNER HOWARD JR., Knoxville, Tenn., to Miss Joan Lucey of Forest Hills, N. Y., June 26.
FRANK BUIST WOODRUFF, Woodruff, S. C., to Miss Martha Thelma Courtney of Aiken, June 25.
JEFFERSON EUGENE MORRIS, Moultrie, Ga., to Miss Robert E. Haggerty at Augusta in June.
CHARLES S. BAER, Steger, Ill., to Miss Adelaide Ascher of Chicago Heights in June.
BRUCE AMBLER, Abington, Pa., to Miss Marian Jane Law of Altoona in June.
RAYMOND M. GALT, Chicago, to Miss Jane Folley of Easton, Ill., recently.

Deaths

Frederic Vinal Hussey * Providence, R I, Columbia University College of Physicians and Surgeons New York 1904 past president of the Rhode Island Medical Society, member of the New England Surgical Society, fellow of the American College of Surgeons, state regent of the International College of Surgeons at Geneva, specialist certified by the American Board of Surgery and a member of the founders group, served as a lieutenant in the medical corps of the U S Naval Reserve assigned to duty at Navy Base Hospital number 4 at Queenstown, Ireland, and Base Hospital number 5 at Brest, France, during World War I since 1934 lieutenant commander in the medical corps of the U S Naval Reserve organizer of unit number 5, in March 1940 was transferred to the honorary retired list recently a member of the Rhode Island Committee of the Procurement and Assignment Service senior surgeon to the Memorial Hospital, Pawtucket, from 1910 to 1940, when he became chief of the surgical staff surgeon in the outpatient department of the Rhode Island Hospital from 1907 to 1919, assistant surgeon from 1919 to 1929 and since 1930 consulting surgeon consulting surgeon to the Miriam Hospital Providence, Westerly (R I) Hospital, Providence Lying-In Hospital, Notre Dame Hospital, Central Falls and the South County Hospital Wakefield, aged 64, died, June 15, of pancreatitis

John Milton Griscom * Moorestown, N J University of Pennsylvania Department of Medicine Philadelphia, 1906 emeritus professor of ophthalmology at the Medico-Chirurgical College, Graduate School of Medicine University of Pennsylvania, Philadelphia, specialist certified by the American Board of Ophthalmology, member of the American Academy of Ophthalmology and Otolaryngology and the Association for Research in Ophthalmology, member of the council of the American Ophthalmological Society and formerly secretary-treasurer, attending ophthalmologist and executive surgeon to the Wills Hospital, Philadelphia consulting ophthalmologist to the Burlington County Hospital Mount Holly N J and the Jeanes Hospital, Philadelphia aged 62 died, June 5 in Philadelphia of coronary thrombosis

Juriah Harris Pierpont * Pensacola Fla, Medical College of Virginia Richmond 1888 an Affiliate Fellow of the American Medical Association and member of the House of Delegates 1908-1909 three times president of the Florida Medical Association and for many years counselor of the First District past president of the Pensacola Medical Society and the Escambia County Medical Society past president of the state board of medical examiners served as a member and president of the United States pension board of medical examiners formerly health officer and city physician of Pensacola consulting surgeon to the Pensacola division of the Louisville and Nashville Railroad for many years, served as vice consul for Argentina on the staff of the Pensacola Hospital where he died, May 23, of myocarditis aged 79

William James Carroll * Lieutenant Colonel U S Army, retired, Hot Springs National Park, Ark. Albany Medical College 1916 specialist certified by the American Board of Radiology Inc member of the Association of Military Surgeons of the United States Radiological Society of North America Inc and the American College of Radiology entered the medical corps of the U S Army as a first lieutenant in 1918 lieutenant colonel since 1937 retired Sept 30 1940 for disability in line of duty served during World War I aged 47 chief of the radiology section of the Army and Navy General Hospital where he died Dec 28 1942

David Edward Jones * Worthington Ohio University of Louisville (Ky) School of Medicine 1928 assistant professor of medicine and director of the department of physical medicine at the Ohio State University College of Medicine Columbus formerly clinical assistant in orthopedic surgery at his alma mater served as orthopedic surgeon in charge of the poliomyelitis clinic Louisville City Hospital at one time orthopedic surgeon in charge at the Clifton Springs (N Y) Sanitarium and Clinic graduate assistant in orthopedics at the Massachusetts General Hospital Boston from 1929 to 1931 aged 42 died July 10, of cerebral hemorrhage

John Aloysius McKenna Lansdowne, Pa Medico-Chirurgical College of Philadelphia 1897 member of the Medical Society of the State of Pennsylvania at one time instructor in surgery at his alma mater veteran of the Spanish American War and World War I lieutenant colonel medical reserve

corps U S Army, not on active duty, member of the school board and board of health of Lansdowne, formerly member of the Lansdowne borough council obstetrician to the Misericordia Hospital, Philadelphia, and the Fitzgerald-Mercy Hospital, Darby aged 67 died, May 10, of arteriosclerotic cardiovascular renal disease and uremia

Anderson Watkins, Little Rock Ark, Arkansas Industrial University Medical Department, Little Rock, 1897, emeritus professor of surgery at his alma mater, now known as the University of Arkansas School of Medicine, fellow of the American College of Surgeons, past president of the Pulaski County Medical Society served during World War I, for many years city physician, member of the surgical staff of the Little Rock General and St Vincent's Infirmary, member of the staff of the Baptist State Hospital consulting surgeon to the Missouri Pacific Hospital, aged 66, died, May 26 or arteriosclerotic heart disease

Leonard Richard Ellis * Hot Springs National Park Ark Vanderbilt University School of Medicine, Nashville Tenn, 1899, past president of the Garland County Medical Society, served in the Spanish-American War on the Mexican Border and during World War I, at one time an officer in the Arkansas National Guard past president of the city board of health and formerly city physician division surgeon for the Missouri Pacific and Rock Island railroads aged 68, on the staff of St Joseph's Hospital, where he died, May 10, of acute myocarditis

James Alfred, Brockton Mass, Tufts College Medical School, Boston 1897, member of the Massachusetts Medical Society aged 69 died June 12, of carcinoma of the throat

James Burns Amberson, Waynesboro, Pa, University of Pennsylvania Department of Medicine, Philadelphia, 1868, member and at one time vice president of the Medical Society of the State of Pennsylvania past president of the Franklin County Medical Society Cumberland Valley Medical Association and the Waynesboro Academy of Medicine, first chief of the medical staff of the Waynesboro Hospital, Civil War veteran, aged 98, died June 14 or arteriosclerotic heart disease and acute bronchopneumonia

Adelbert L Anderson, Chicago Chicago Medical School, 1923 a teacher at the Roosevelt High School aged 46 died, June 9, in the Passavant Memorial Hospital of coronary thrombosis

Samuel E Beecher, Chicago Jenner Medical College, Chicago, 1906 also a dentist, aged 72 died, June 6 in the Columbus Hospital of chronic splenomyelogenous leukemia.

Leonard Franklin Bender * Philadelphia, Jefferson Medical College of Philadelphia, 1919 member of the American Academy of Pediatrics chief pediatrician at the Hospital of the Protestant Episcopal Church, consulting pediatrician at the Shriners Hospital for Crippled Children and the Northeastern Hospital, aged 49 died June 8 of coronary occlusion with hypertensive cardiovascular disease

Frank Robertson Boyd * New York University and Bellevue Hospital Medical College New York, 1902 aged 65 died May 17 in the Presbyterian Hospital of cerebral hemorrhage

George Mason Brandt, Seneca Falls N Y, University of Michigan Department of Medicine and Surgery Ann Arbor 1909 member of the Medical Society of the State of New York served as a lieutenant in the medical corps of the U S Army during World War I aged 62 died, June 5, of cerebral hemorrhage

Garrison Lee Brown Euclid N Y Syracuse University College of Medicine 1878 member of the Medical Society of the State of New York past president and secretary of the Onondaga County Medical Society served as health officer of the town of Clay aged 88 died, May 27 in Saranac Lake of myocardial degeneration and nephritis

Frederick C Brooks * St Louis Beaumont Hospital Medical College St Louis 1900 served during World War I member of the staffs of the Evangelical Deaconess Home and Hospital and St John's Hospital aged 73 died May 14 in St Mary's Hospital of carcinoma of the lung and rectum

Charles M Bumstead * Monticello Ill University of Pennsylvania Department of Medicine Philadelphia 1898 served on the medical advisory board at Decatur during World War I and recently as chief medical examiner for the Platt County Selective Service Board member of the board of the Platt County Tuberculosis Association at one time mayor of Monticello chief of staff of the John and Mary E. Kirby Hospital on the staff of the Decatur and Macon County Hospital Decatur aged 67 died May 30 of nephritis and heart disease

Daniel Ray Campbell, Rosalia, Wash., University of Minnesota College of Medicine and Surgery, Minneapolis, 1905, served during World War I, aged 67, died, May 31, in St. Ignace Hospital, Colfax, of pneumonia.

Watson Emanuel Campbell ♂ Sharon, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1907, aged 61, on the staff of the Christian H. Buhl Hospital, where he died, June 5, of meningococcal meningitis.

Everett B. Currier, Phillips, Maine, College of Physicians and Surgeons, Baltimore, 1893, member of the Maine Medical Association, member of the associate staff of the Franklin County Memorial Hospital, Farmington, aged 77, died, May 22, in St. Petersburg, Fla., of coronary occlusion.

Joseph Robert FitzGerald, Toledo, Ohio, Toledo Medical College, 1904, aged 65, served on the staff of the Mercy Hospital, where he died, May 25, of coronary thrombosis.

Louis James Frederick, Joliet, Ill., Rush Medical College, Chicago, 1892, member of the Illinois State Medical Society, health commissioner of Joliet, formerly prison and county physician, on the staffs of the Silver Cross and St. Joseph's hospitals, aged 72, died, May 10, of cerebral hemorrhage.

Homer Elliott Frizell ♂ Vaughan, Miss., University of Nashville (Tenn.) Medical Department, 1908, local surgeon for the Illinois Central Railroad, aged 59, died, May 13, of tuberculosis.

Henry Goodfriend, Boise, Idaho, Columbia University College of Physicians and Surgeons, New York, 1898, aged 67, died, May 14, of bronchopneumonia.

Dudley M. Hall, Glens Falls, N. Y., University of Maryland School of Medicine, Baltimore, 1880, member of the Medical Society of the State of New York, served as health officer and as school physician, honorary member of the associate staff of the Glens Falls Hospital, aged 81, died, May 3, of myocardial degeneration.

Jesse Hartman, Crete, Neb., Nebraska College of Medicine, Lincoln, 1909, aged 71, died, June 21, in the Bryan Memorial Hospital, Lincoln, of carcinoma.

Alice M. Humphrey Hatch, Des Moines, State University of Iowa College of Homeopathic Medicine, Iowa City, 1895, member of the Iowa State Medical Society, aged 79, died, June 8, of diabetic gangrene.

Thomas J. Hilliard, Fairfield, Ill., Physio-Medical College of Indiana, Indianapolis, 1891, member of the Illinois State Medical Society, since 1941 a member of the "Fifty Year Club" of the state medical society, past president of the Wayne County Medical Society, past president of the Fairfield Rotary Club, a director of the chamber of commerce, aged 79, died, May 16, of cerebral hemorrhage.

William Kendall James, Chicago, Bennett Medical College, Chicago, 1911, member of the Illinois State Medical Society, aged 58, died, May 27, in the Englewood Hospital of chronic vascular heart disease and hypertension.

Preston Jennings Jones, Oneida, Ky., University of Louisville Medical Department, 1907, member of the Kentucky State Medical Association, past president of the Clay County Medical Society, aged 62, died, May 10, in the Good Samaritan Hospital, Lexington, of pneumonia.

Jane Reid Keefer, Oak Park, Ill., Woman's Medical College of Pennsylvania, Philadelphia, 1889, member of the Illinois State Medical Society, aged 80, died, May 30, of cerebral hemorrhage and arteriosclerosis.

Robert Daric Kirk, Baldwin, Miss. (licensed in Mississippi in 1882), aged 84, died, May 5, of coronary thrombosis.

David Murton Knapp, Mendon, Ill., State University of Iowa College of Medicine, Iowa City, 1896, member of the Illinois State Medical Society, aged 72, honorary staff member of St. Mary's Hospital, Quincy, where he died, May 5, of edema of the lungs, congestive heart disease, hypertension and sclerosis.

Norman Rudolph Kretschmar, Ann Arbor, Mich., University of Michigan Medical School, Ann Arbor, 1926, specialist certified by the American Board of Obstetrics and Gynecology, Inc., associate professor of obstetrics and gynecology at his alma mater, member of the Michigan State Medical Society and the Central Association of Obstetricians and Gynecologists, fellow of the American College of Surgeons, aged 39, died, May 5, in the University Hospital of coronary occlusion.

Robert Ray Lee, Sipe Springs, Texas, University of Oklahoma School of Medicine, Oklahoma City, 1933, aged 49, died, May 16, in Fort Worth of tuberculosis.

Eliot Horton Luther, Westfield, Mass., Harvard Medical School, Boston, 1921, served for several years on the Harvard Infantile Commission as diagnostician and field epidemiologist, member of the Massachusetts Medical Society, aged 47, assistant superintendent of the Westfield State Sanatorium, where he died, May 2, of pulmonary tuberculosis.

William H. Lycan, Charleston, Ill., Chicago Homeopathic Medical College, 1891, member of the Illinois State Medical Society, on the staff of the M. A. Montgomery Memorial Sanitarium, aged 77, died, May 19, of coronary thrombosis.

William Lawrence Madden, Jersey City, N. J., University of Maryland School of Medicine, Baltimore, 1916, member of the Medical Society of New Jersey, served in the medical corps of the U. S. Army during World War I, for many years medical examiner for the bureau of communicable diseases, city department of health and the U. S. Veterans Bureau, on the staff of the Fairmount Hospital, aged 52, died, May 10, of coronary thrombosis.

Thomas A. Manes, Deckerville, Mich., Trinity Medical College, Toronto, Ont., Canada, 1894, aged 72, died, May 12, of carcinoma of the stomach.

Cyrus Haymond Maxwell, Morgantown, W. Va., Gross Medical College, Denver, 1898, member and past president of the West Virginia State Medical Association, past president and secretary of the Monongalia County Medical Society, aged 80, died, July 25.

John Wilson Maxwell, Chillicothe, Ohio, University and Bellevue Hospital Medical College, New York, 1899 and 1900, member of the Ohio State Medical Association, past president of the Ross County Medical Society, formerly secretary of the Ross County Academy of Medicine, aged 70, died, May 16, of carcinoma of the liver.

James Benjamin Franklin McMillan, Edinburg, Texas (registered in Texas under the Act of 1907), aged 85, died, April 15, of carcinoma of the face and throat.

Raymond Henderson McPherron ♂ Chicago, Northwestern University Medical School, Chicago, 1921, on the staff of the Woodlawn Hospital, aged 48, died, May 23, of coronary disease.

Duncan McTaggart, Naperville, Ill., Michigan College of Medicine and Surgery, Detroit, 1894, for fourteen years member of the school board of Ray, Ind., and formerly health officer, aged 85, died, May 22, of arteriosclerosis.

Joseph Michalski, Newark, N. J., Georgetown University School of Medicine, Washington, D. C., 1913, served as a major in the Polish Army during World War I, on the staff of the Hospital of St. Barnabas and for Women and Children, aged 53, died, May 22, of heart disease.

Frederick Coston Monks ♂ Kittanning, Pa., University Medical College of Kansas City, Mo., 1891, past president and secretary of the Armstrong County Medical Society, aged 82, died, May 23, of cardiovascular disease.

Albert Everett Obermeyer ♂ Arcadia, Ill., Barnes Medical College, St. Louis, 1906, member of the Morgan county rationing board, aged 66, died, May 25, in the Passavant Memorial Hospital, Jacksonville, of carcinoma of the kidney.

Reuben Stanley Raub, Easton, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1905, member of the Medical Society of the State of Pennsylvania, health officer of Easton, on the staffs of the Betts and Easton hospitals, aged 61, died, May 28, of heart disease.

George Robson Renwick, Grand Rapids, Mich., Rush Medical College, Chicago, 1892, aged 85, died, May 21, of cardiovascular degeneration, prostatism and pyelonephritis.

William Rothman, Great Neck, N. Y., L. R. C. P., Edinburgh, L. R. C. S., Edinburgh, and L. R. F. P. & S., Glasgow, Scotland, 1938, member of the Medical Society of the State of New York, served on the staffs of the Greenpoint and Beth Moses hospitals, Brooklyn, aged 33, died, June 21, of coronary thrombosis.

Julius Albert Edward Sass ♂ Brooklyn, Long Island College Hospital, Brooklyn, 1929, instructor in the department of pediatrics at his alma mater, served on the staffs of the Israel Zion and Kingston Avenue hospitals, aged 37, died, May 31, of coronary sclerosis.

Bryant Richard Selden & Sterling Ill, University of Illinois College of Medicine, Chicago, 1927, aged 46, died, May 29, of pneumonia

Julius L. Selzer, Troy N Y, McGill University Faculty of Medicine, Montreal, Que, Canada, 1923, member of the Medical Society of the State of New York for eight years jail physician, aged 46, on the staff of the Troy Hospital where he died, May 22 of coronary thrombosis

John H. Simon & St Louis Missouri Medical College, St Louis, 1890, at one time health commissioner of St Louis aged 74, was found dead May 24 of a self-inflicted bullet wound

Frank Salmeron Smith & Nevada, Iowa Rush Medical College Chicago 1882, an Affiliate Fellow of the American Medical Association, physician for the Rock Island Railroad for many years, aged 89, died, May 18 of diabetes mellitus

Russell Aubrey Smith, Brewton, Ala, Medical College of Alabama, Mobile, 1900, member of the Medical Association of the State of Alabama, president of the Bank of Brewton, formerly served as mayor aged 68, died, May 25 of carcinoma of the rectum with metastasis to abdominal incision

George Hartley Sollenbarger, Corydon Iowa College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois, 1898, member of the Iowa State Medical Society, for many years a member of the school board and city and county physician, on the staff of the Corydon Hospital, aged 72, died May 14 of coronary thrombosis

Isaac Zalman Stalberg, Atlantic City N J St Louis College of Physicians and Surgeons 1905 at one time associated with the Indian Service served in the medical corps of the U S Army during World War I, formerly clinical assistant in cardiology at the Temple University School of Medicine, Philadelphia, aged 60 died, May 30, in Philadelphia of carcinoma of the liver

Howard Frank Steele & Claypool, Ind Indiana University School of Medicine Indianapolis, 1920 secretary of the Kosciusko County Medical Society aged 48 died May 10 in the McDonald Hospital, Warsaw, of myocarditis and uremia

Karl Johann Swenson, Portland Ore University of Pittsburgh School of Medicine, 1908, received the Croix de Guerre and the Distinguished Service Cross for service during World War I, colonel in the medical reserve corps of the U S Army not on active duty for many years on the staff of the Emanuel Hospital, aged 64, died May 14, of coronary occlusion

Theodore Fields Thompson, Lakewood N J, University of Maryland School of Medicine and College of Physicians and Surgeons Baltimore, 1918, member of the Medical Society of New Jersey, served during World War I, for several years school physician, on the staff of the Paul Kimball Hospital, aged 53 died, May 23, of thrombosis of the popliteal artery arteriosclerosis and coronary sclerosis

Rollin Lester Thorp Denver Bennett College of Eclectic Medicine and Surgery, Chicago 1889 Gross Medical College, Denver, 1895, member of the Colorado State Medical Society formerly a member of the city school board a member of the emeritus staff of St Anthony's Hospital aged 82, died, May 27, of cerebral thrombosis

Walter Thomas Van Dament, Bloomington Ind Indiana University School of Medicine, Indianapolis 1912 member of the Indiana State Medical Association served in France during World War I aged 56 died May 19 of carcinoma of the mediastinum with metastasis to the bones

Evon Walker & Ottumwa Iowa State University of Iowa College of Medicine Iowa City 1905 College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois 1908 past president secretary and treasurer of the Wapello County Medical Society member of the staffs of St Joseph and Ottumwa hospitals a director of the Farmers and Merchants Bank aged 66 died May 17 of coronary disease

Meyer Wigdor, Miami Beach Fla, Cornell University Medical College New York 1923 member of the Florida Medical Association served during World War I appointed a first lieutenant in the medical reserve corps of the U S Army in 1924 and in 1935 promoted to captain which terminated in 1940 by reason of declination or appointment appointed a captain in the medical corps Army of the United States in July 1942 and was honorably discharged in February 1943 by reason of physical disqualification aged 46 died April 24

DIED WHILE IN MILITARY SERVICE

Walter Douglas Campbell, Houston, Texas University of Texas School of Medicine Galveston 1920, member of the State Medical Association of Texas, began active duty as a captain in the medical corps Army of the United States, in June 1942 a member of the medical staff of the Waco Army Flying School, aged 46, died April 11, in an airplane accident 5 miles north of Hubbard

Vasco August Fanti, Wilkes-Barre, Pa Hahnemann Medical College and Hospital of Philadelphia, 1937 member of the Medical Society of the State of Pennsylvania formerly city physician served on the staff of the Waconung Valley Homeopathic Hospital, first lieutenant in the medical corps Army of the United States, stationed at Edgewood Arsenal Md, where he died June 1, of cerebral hemorrhage aged 34

Raynor Elmore Holmes Jr, Canon City, Colo Tulane University of Louisiana School of Medicine New Orleans 1933, member of the Colorado State Medical Society, began active duty as a captain in the medical reserve corps of the U S Army in January 1940 aged 34, died July 16 1942

Arthur La Roe, Westfield, N J, Jefferson Medical College of Philadelphia 1916, served during World War I, began active duty as a captain in the medical reserve corps of the U S Army in April 1941, a flight surgeon attached to the Station Hospital at Lowry Field, Denver, aged 51 died July 21, 1942, in an airplane accident in the Latin American area

Jerome Benedict Marciniak, Chicago, Loyola University School of Medicine Chicago 1932 member of the Illinois State Medical Society served on the staff of the South Chicago Community Hospital captain in the medical corps Army of the United States attached to the 103d Infantry 328th Medical Battalion Camp Claiborne La where he died May 18 of heart disease aged 40

Benton Burkhart Mitchell, Fountain City Tenn University of Tennessee College of Medicine Memphis, 1934 member of Tennessee State Medical Association began active duty as captain in the medical corps Army of the United States in September 1942 aged 44 died June 10, in the Station Hospital, Fort Hayes, Ohio

Michael Albert Nicolais, Trenton, N J University of Bellevue Hospital Medical College New York, 1929 served on the staffs of St Francis and Mercer hospitals major medical reserve corps U S Army aged 38, died May 16 of pneumonia and multiple myeloma

Herbert Edward Orange & Hempstead, N Y Long Island College of Medicine, Brooklyn 1932, first lieutenant in the medical corps, Army of the United States aged 35 died May 3 in the North African area

Robert Titus Phillips, Portland Maine Tufts College Medical School Boston 1932 member of the Maine Medical Association American Rheumatism Association and the International League for the Control of Rheumatism diplomate of the National Board of Medical Examiners formerly resident at the Boston City and Robert Breck Brigham hospitals Boston appointed a captain in the medical reserve corps of the U S Army in January 1941, promoted to major while a prisoner of the Japanese aged 41 died June 11 while a prisoner at a Japanese prison camp in the Philippine Islands

Ralph Hunt Sullivan Jr, Lansing Mich University of Michigan Medical School Ann Arbor 1940 for three years connected with the 119th Field Artillery of the Michigan National Guard first lieutenant in the medical corps Army of the United States ordered to active duty in July 1942 with the medical department of the Army Air Corps aged 29 died March 27 in an airplane accident at the Tonopah Bombing and Gunnery Range in Nevada

John Martin Wallace Elmhurst N Y Long Island College of Medicine Brooklyn 1939 diplomate of the National Board of Medical Examiners formerly resident physician at the Cornell University Hospital Ithaca began active duty as a first lieutenant in the medical corps Army of the United States in August 1942 assigned to the Thirty Second Evacuation Hospital Camp Berkeley Texas later commended a captain and was killed in an airplane accident at Camp

Bureau of Investigation

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Products

The following items are abstracts of stipulations in which promoters of "patent medicines," medical devices and cosmetics have cooperated with the Federal Trade Commission to the extent of agreeing to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

Ardine—Angela Sykes trading as Sykes Laboratories, Chicago, stipulated with the Federal Trade Commission in November 1942 to cease representing that this product is a sure contraceptive, can be relied on to prevent conception or becomes Dr. King's solution when diluted in four ounces of water. Angela Sykes further agreed to cease representing by use of the word 'laboratories' or any term of similar meaning that she manufactures, operates or controls a laboratory in connection with the preparation and sale of this product.

Benederm—In November 1942 Benederm Inc. which puts out this product, and Fred W. Fox the advertising agent both of Los Angeles, stipulated with the Federal Trade Commission that they would cease representing that this product is healing or is a remedy or effective treatment for skin eruptions that it renders normally present fatty detritus of the skin soluble or facilitates removal of the contained carbon particles.

Blu Tabs—The Reese Chemical Company, Cleveland which puts out this product, stipulated with the Federal Trade Commission in December 1942 that it would discontinue any advertisements which failed clearly to reveal that frequent or continued use of this product may cause nervousness, restlessness or sleeplessness that except on competent medical advice, it should not be taken by persons suffering from high blood pressure, heart disease, diabetes or thyroid trouble, that it should not be used in case of lung disease or chronic cough and that if a skin rash appears the use of the nostrum should be discontinued. It was provided, however, that such advertisement need only contain the statement "Caution Use only as directed, if the directions for use contain a caution or warning to the same effect."

Brater's Powder and Brater's Asnarettes—These are put out by John K. Brater and Company Inc., of New York. In November 1942 that concern stipulated with the Federal Trade Commission to discontinue the following misrepresentations: that its products are beneficial for the underlying causes of asthma or are a remedy or cure for that condition, that their use will result in a quiet night or free the victim from torturous breathing, and also benefit many forms of hay fever. The company further agreed to discontinue any advertisements which failed to reveal that the frequent or continued use of the preparations should be avoided, especially by elderly persons and should be discontinued if dryness of the throat, excessively rapid pulse or blurring of the vision appear. However, that such advertisements need only contain the statement "Caution Use only as directed" if the directions for use bear a warning to the same effect.

Curadalis—In November 1942 one G. A. Labrador, Honolulu T. H., entered into a stipulation with the Federal Trade Commission to the effect that he would cease representing that this product will relieve or cure all types of skin diseases and benefit those which occur among sugar cane and pineapple workers, or that it has any therapeutic value in excess of relieving minor skin irritations.

Fetherfluff Quilts and Pads—These are sold by one Louis Katz trading as the Sanitary Feather Works, Fort Worth, Texas, whose advertising had represented that the articles in question will cause the user to enjoy a more healthful and revitalizing sleep than competing products would, that use of his commodities offers an effective treatment for rheumatism, arthritis and similar disorders or that his quilts and pads retain their efficacy without impairment for ten years and further that competing products will be harmful to the user. In a stipulation that Katz signed with the Federal Trade Commission in November 1942 he agreed to discontinue these misrepresentations.

Flurene Nose and Throat Drops and Flurene Salve—One Stephen Gardner, trading as Flurene Chemicals Ltd., Washington, N. C., entered into a stipulation with the Federal Trade Commission in November 1942 in which he agreed to discontinue the following misrepresentations in his advertising: that the nose and throat product is of benefit in relieving the nasal swelling of asthma, assisting sinus drainage or preventing hay fever, headaches or colds or that Flurene Salve loosens phlegm or helps break up congestion of the upper respiratory passage. Gardner further agreed to discontinue any advertisements which failed to reveal that his nose and throat drops should not be used in excessive amounts or given to infants and younger children except on competent advice, and that persons suffering from high blood pressure, heart disease, diabetes or thyroid trouble should not use the preparation except on competent

advice. It was provided, however, that if the label carried a warning to the same effect, it would be sufficient for the advertisements to state "Caution Use only as directed."

Koto Cleansing Cream, Koto Vanishing Cream and Koto Lemon Almond Lotion—These are put out by a William Banks, trading as Koto Cosmetic Company, Pittsburgh. In November 1942 Banks signed a stipulation with the Federal Trade Commission, agreeing to cease representing that any of these products is of value for skin troubles or effective in preventing or curing blackheads, pimples, freckles or wrinkles. He agreed further to discontinue representations that "Koto Cleansing Cream" is free from wax or will penetrate the pores that "Koto Lemon Almond Lotion" will whiten the skin or has been tested or approved by a chemist, or that he employs a chemist and "beautician" when such is not the fact.

Liquid Chin Strap—This is put out by Delettrez, Inc., Long Island City, N. Y. In October 1942 the concern entered into a stipulation with the Federal Trade Commission, agreeing to cease and desist from representing that its product will help ward off the appearance of age or grayish surface lines, heighten the arch or sweep of chin lines, benefit the skin or contour thereof, or produce any physiological effect other than a temporary feeling of an astringent at the site of its application, or that the use of it will result in even temporary disappearance of crepey skin.

Man O Ree—Charles P. Monroe trading as Man O Ree Products, Greensboro, N. C., markets this product. In October 1942 he stipulated with the Federal Trade Commission that he would no longer represent that his product is an aid to digestion will rid the system of poisons or gases, can be relied on to relieve gastric disturbances, heartburn, stomach disorders, nervousness and insomnia, possesses the rebuilding qualities of a tonic and is incapable of having any deleterious effect on the digestive organs. He further stipulated that he would discontinue any advertisement which failed to reveal that "Man O Ree" should not be used when abdominal pains, nausea or other symptoms of appendicitis are present and that its frequent or continued use may result in dependence on laxatives. It was provided, however, that it would be sufficient to include in the advertising only the statement "Caution Use only as directed" if the directions for use in or on the trade package contained warnings to the same effect.

Padol Machineless Permanent Wave, Lifeoil Machine Permanent Wave and Dio Dane No 100 (shampoo)—These are distributed by Bonat and Bonat, Inc., New York, which concern in December 1942 stipulated with the Federal Trade Commission to cease representing that the first named product nourishes the hair or gives it a deeper wave, that the second named contains lanolin or that the shampoo nourishes the hair and is not a soap.

Posturite and Ortho Flex Mattresses—The advertisements of these represented that they are of such construction, scientific or otherwise as to insure correct posture during sleep that insomnia and other serious disorders are caused by faulty mattresses that the latter interfere with the functioning of the sleeper's organs and that healthful sleep is not possible on a soft mattress. In December 1942 the Burton Dixie Corporation Chicago which sells the above named mattresses stipulated with the Federal Trade Commission to discontinue such misrepresentations. The corporation further agreed to cease using the term "Ultra Violet Ray Processed," either alone or in connection with the word "vitalized" or any other term of similar implication, as descriptive of its products the effect of which might give the impression that the products have been completely sterilized or endowed with health giving qualities which they do not possess. Further, the concern agreed to cease using on its products any labels on which appear the terms "doctor" or "Dr.," either alone or in connection with a name to imply that the products so labeled are made in accordance with the design or under the supervision of a doctor of medicine or contain special or scientific features resulting from medical determination or services.

Vanola Laxative Herb Tea—This is put out by Wladyslaw Ochrymowicz and Theodosia Wandycz Ochrymowicz, trading as Vanola Herb Tea Company, New York. A stipulation was signed in November 1942 with the Federal Trade Commission by these persons, in which they agreed to discontinue the following misrepresentations: that their product is an adequate treatment or effective remedy for stomach disorders, headache, dizziness or digestive disturbances or has any value except as a temporary laxative for the relief of constipation that the condition known as sour stomach is caused by temporary constipation and is benefited by the product in question, that this preparation can be relied on to make the user healthier or has any effect in inducing sound sleep. The respondents further agreed to discontinue any advertisement which represented that this tea is safe or which failed to reveal the potential danger in its use when nausea, vomiting or other symptoms of appendicitis are present provided, however, that if the directions for its use wherever they appear in the labeling, contain an adequate warning of its potential danger to health as aforesaid the advertisement need only contain the cautionary statement "Caution Use only as directed."

Zdroj—This is promoted by the Gramercy Chemical Company Inc. and an Andrew Borak, both trading, as the Roxola Company Brooklyn. In December 1942 they entered into a stipulation with the Federal Trade Commission agreeing to cease representing that this nostrum is recommended by doctors for digestion or that it has any favorable influence on the digestive processes, that it is a competent treatment for debility of the stomach or liver that it stimulates the secretory glands of the body or is of any benefit except as a temporary laxative for the relief of constipation. Further, the promoters agreed to discontinue any advertisements which represented that this product is safe to use or which failed to reveal the potential danger in its use in the presence of nausea, vomiting or other symptoms of appendicitis provided however, that the directions for use wherever they appear contain an adequate warning of its potential danger to health although the advertisements need only contain the cautionary statement "Use only as directed."

Correspondence

BROMIDISM AFTER EXCESSIVE DOSAGE OF PROSTIGMINE BROMIDE

To the Editor—In the June 19 issue of THE JOURNAL Dr J M Nielsen reports a case of bromidism attributed to excessive use of prostigmine bromide in myasthenia gravis. The author of the report is, as he states, aware of the fact that the amount of bromide taken was small but that even with the small dose such an accumulation resulted that a blood concentration of 225 mg per hundred cubic centimeters was eventually reached. The author explains this remarkable accumulation on the ground that for any dosage of bromide the concentration in the blood shows enormous individual variations.

On the contrary it has been thoroughly demonstrated that the accumulation of bromide depends on definite physical characteristics and physiologic functions: dosage in relation to body weight, volume of extracellular fluid and rate of excretion of sodium chloride. The accumulation shows no greater individual variations than those of these characteristics and functions. Prostigmine bromide contains only about a third as much bromide by weight as does sodium bromide. The maximum dose of prostigmine bromide taken by the patient who was the subject of the report was 240 mg in twenty-four hours; this would correspond to less than 83 mg, about $1\frac{1}{4}$ grains, of sodium bromide a day. Under no circumstances could a patient so accumulate bromide on this dose as to reach a concentration in the blood of 225 mg per hundred cubic centimeters or one even approaching it.

The weight of the patient is not stated; but, if we assume 50 kg and an extracellular fluid of 20 per cent, the actual weight of sodium bromide present in the body to give a concentration of 225 mg per hundred cubic centimeters would be of the order of 22 or 23 Gm. Bromide during administration is continuously excreted in the urine. But even ignoring all excretion it does not appear in the case reported that for the full time of administration this amount of bromide as prostigmine bromide, was administered. It seems improbable that prostigmine bromide can cause an accumulation of more bromide than is given.

In at least some of the clinical reports in the literature in which high concentrations of bromide in the blood are said to follow from low intake there is grave doubt as to whether the physician made a sufficiently careful examination to exclude the possibility of bromide being taken surreptitiously but has accepted only the statements of the patient and relatives that none was taken. In the present instance the assumption was apparently made only on this basis. Furthermore, in many cases diagnosed as bromidism the underlying difficulty is not primarily bromide but the psychopathic or psychotic state for which the bromide was taken. The finding of bromide in the blood even in small amounts gives a convenient direction to the diagnosis which without this finding would be made as some other state. Consequently the belief is held as stated by the author of the case report that the individual variations in response to any concentration of bromide in the blood are enormous. In the present instance there was sufficient bromide in the blood to cause symptoms. The difficulty here is that the patient did not receive enough bromide as prostigmine bromide to account for the concentration.

It is suggested here that the author was perhaps too easily convinced by the statement of the husband that there was no medication for the patient's anxious and tearful states except an occasional dose of phenobarbital.

Clinical reports of this sort become a part of the scientific literature and are used as a basis for evaluating the action of drugs—in this instance bromide—quite as much as are the results of carefully controlled laboratory investigations. Because of their important place in the literature, such reports, especially when dealing with the dosages of drugs, should be made only with the same safeguards as those expected for reports of laboratory investigations. The author may have applied such safeguards but the evidence presented does not show it.

HOWARD W. HAGGARD, M.D.,
4 Hillhouse Avenue
New Haven, Conn.

EMERGENCY FURLOUGHS

To the Editor—In Mr Bondy's absence from the city I am writing concerning the procedure to obtain an emergency furlough for a serviceman stationed outside the continental United States.

Permission for an emergency furlough may be granted only by the man's commanding officer and the military and naval authorities are placing more restrictions on the granting of furloughs. Arrangements for furloughs are rendered increasingly difficult because of the problems of locating a serviceman and limited facilities for communication and transportation. Many men are stationed where the distance involved practically precludes a furlough being granted. Servicemen may be ready to embark for foreign stations or be en route under sealed orders in which instances they may not be reached. It is frequently impossible to reach naval personnel immediately if they are attached to ships.

Military and naval authorities frequently ask for full details. In cases of illness a doctor's diagnosis and prognosis and a doctor's statement of the need for the serviceman's presence should be quoted. The serviceman initiates a request for a furlough to his commanding officer who may grant it at once or may ask the Red Cross field director at the army post or navy station to secure further information through the serviceman's home Red Cross chapter. The chapter Home Service worker on receipt of this request verifies illnesses, other conditions, meets any emergency needs of the family and telegraphs the field director a statement of the circumstances. The chapter neither recommends nor approves a furlough but states the facts including recommendations of the doctor or other responsible persons.

The practice of relatives initiating the request for an emergency furlough and the Home Service worker or the chapter immediately verifying the circumstances to the field director has been endorsed by many commanding officers as a means of expediting the granting of the furlough.

If a member of a serviceman's family makes the initial request to the local Red Cross chapter he should be advised to notify the serviceman immediately of the situation and at the same time the chapter Home Service worker should inquire into the situation and immediately telegraph a full statement of facts to the Red Cross field director serving the station where the man is located. It is desirable that two telegrams be sent one to the serviceman from his family and one from the local Red Cross chapter to the field director. Families may send telegrams of their own to many places outside the United States through the facilities of the commercial cable companies. Where there are no commercial facilities available the chapter Home Service worker will telegraph Home Service American National Red Cross Washington, D. C., asking consideration of the furlough request and stating that no commercial cable facilities are

available. The message will then be relayed by cable or radio to the Red Cross field director at the man's post.

It seemed desirable to give a full statement so that your readers may be apprised of the factors involved. We believe that it will be helpful to publish this information in *THE JOURNAL*.

DOV C SMITH, Washington, D C
Deputy Administrator, Services to the Armed Forces

"THE PHENOMENON OF BLACK DERMOGRAPHISM"

To the Editor—In the article on "The Phenomenon of 'Black Dermographism'" by Urbach and Pillsbury (*THE JOURNAL*, February 13, p. 485) the authors state that the phenomenon was first reported by Lidsky and Kusmenko in 1925, but in the discussion Anderson and Becket cited studies made on this subject sixty years ago.

The following references may also be of interest.

In 1902 Solomon Solis-Cohen (A Further Contribution to the Subject of Vasomotor Ataxia, *Tr Assn Am Physicians* 17:644, 1902) stated: "In certain patients, especially those with more or less constant red flushing of the face, if a silver probe be drawn across the flushed cheek a bluish black mark will be left, which can afterward be wiped off. I assume that this is due to the formation of silver sulphide, but I have not as yet been able to have a chemical study made."

Ten years later he wrote (Brief Notes on Vasomotor Ataxia, *M Rev of Rev* 18:21 [Jan] 1912): "Silver, less frequently gold, copper, nickel, leaves a bluish black or brown mark when drawn over the skin of face or breast. Black mark due to talc or zinc oxide face powder must be excluded." This phenomenon was given by Leon Solis-Cohen in 1917 among the Chief Tests of Autonomic Ataxia (Sympathetic Nervous System, Reference Handbook of the Medical Sciences, ed. 3, New York, William Wood & Co. 8:61, 1917).

A black line appeared when silver was drawn across the face in 40 per cent of 119 tuberculous patients whom I tested in 1917 (A Study of the Signs and Symptoms of Autonomic Disturbance Occurring in Pulmonary Tuberculosis, *Am Rev Tuberc* 1:289 [July] 1917).

MYER SOLIS-COHEN, M.D., Philadelphia

TETANUS IMMUNIZATION

To the Editor—In *THE JOURNAL*, June 19, page 559, Dr. Geoffrey Edsall, Boston, stated that "in the American army the official procedure (Circular Letter 34, S. G. O. [4/16/41], Long, A. P. Tetanus Toxoid: Its Use in the United States Army, *Am J Pub Health* 33:53 [Jan] 1943) is to give two initial doses of fluid toxoid three weeks apart, a stimulating dose one year later or on departure for a theater of operations."

I believe there is a slight error, probably typographic, as this particular circular of the Surgeon General, United States Army, states that the initial vaccination consists of three subcutaneous injections of tetanus toxoid (plain) of 1 cc each, administered with intervals of not less than three or more than four weeks, and preferably with intervals of three weeks between doses. There are, however, some students of immunology who recommend a much longer period, up to six months, between the second and third injections, to obtain a more lasting immunity.

ROYAL DEER BARONDES, Major, M. C., A. U. S.,
Station Hospital, Camp Beale,
Marysville, Calif.

CONTINUOUS CAUDAL ANESTHESIA

To the Editor—In the July 3 issue of *THE JOURNAL* Dr. Maurice Small of Parsons, W. Va., wrote a clinical note with the title "A Serious Complication of Caudal Anesthesia." In his note he states that while one of his patients was getting caudal anesthesia she went into respiratory failure and resuscitatory measures had to be instituted in order to save her life.

As a worker in the field of caudal anesthesia, I would like to make some comment on this case. There is no doubt that the needle was in the caudal space, as was proved in two ways: 1. The rate of flow of the gravity drip was 60 drops per minute. 2. The patient had good anesthesia and analgesia and had been getting the injection for a full hour before untoward symptoms appeared. If the needle had been in the spinal canal the patient would have made her exitus long before an hour had elapsed, since procaine or metycaine diffuses very rapidly through the spinal fluid. The fault, therefore, in this near catastrophe was not the site of injection but rather allowing the level of anesthesia to ascend too high.

In the method as devised at Sinai Hospital, we allow saline solution to drip in once the needle is in the caudal space, and if the rate is compatible with the caudal flow then procaine hydrochloride 1 per cent is allowed to drip in at 60 drops per minute until anesthesia is obtained to the level of the tenth thoracic vertebra or the umbilicus. When this level is obtained, the drip is cut down to 12 to 15 drops per minute, which is a maintenance dose. Of course, this maintenance dose will vary from patient to patient according to their ability to metabolize procaine.

If we review the anatomy of the uterus and its innervation, we find that the somatic innervation of the uterus comes from the tenth, eleventh and twelfth thoracic and part of the first lumbar vertebrae, so that the level of anesthesia required for the relief of uterine pains is about the level of the tenth thoracic vertebra or the umbilicus. The level or height of anesthesia depends on two factors: the rapidity of the injection and the amount of procaine hydrochloride injected. If we want higher levels of anesthesia, we can obtain it by allowing procaine to run in at the original drip, which may vary from 40 to 150 drops per minute. The procaine dissects up the extradural space higher and higher until the intercostal nerves and finally the third, fourth and fifth cervical nerves are anesthetized and the patient goes into respiratory failure. This is what happened in Dr. Small's case. By allowing the drip to run at its original rate and not testing the patient for the proper level, the metycaine which he used dissected itself up extradurally until the patient went into respiratory paralysis.

In giving caudal anesthesia for labor and delivery, it is very important that, once anesthesia is obtained, the proper level should be maintained and not allowed to rise any higher. Dr. Small's case was in reality not a complication but rather an error in maintaining the proper level.

In closing I wish to stress two important facts:

1. The most important point in the giving of caudal anesthesia is to be sure that the caudal needle is in the proper space and not in the subarachnoid space. This can be ascertained by simply allowing isotonic solution of sodium chloride to run into the caudal space as explained in the previous article.

2. Once the proper level of anesthesia is obtained, the drip must be cut down and only a maintenance dose allowed to run in. The maintenance dose required will vary from patient to patient and on the whole will probably be 10 to 15 drops per minute.

MORRIS L. ROTSTLIN, M.D., B.A. Hon.
Resident, Sinai Hospital

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL July 31 page 967

BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery June 20-22 Sec Dr B F Austin 319 Dexter Ave Montgomery

ARKANSAS * Medical Nov 3-4 Sec Dr D L Owens Harrison Electric Little Rock Nov 4 Sec C H Young 1415 Main St Little Rock

CALIFORNIA Oral Los Angeles Aug 9 Written Los Angeles Aug 9-12 Sec Dr Frederick A Scatena 1020 N Street Sacramento

DISTRICT OF COLUMBIA * Washington Nov 8-9 Sec Commission on Licensure Dr G C Ruhland 6150 E Municipal Bldg Washington

FLORIDA * Jacksonville Nov 22-23 Sec Dr William M Rowlett Box 786 Tampa

ILLINOIS Chicago Oct 12-14 Superintendent of Registration Department of Registration and Education Mr Philip M Harman Springfield

INDIANA Indianapolis Sept 14-16 Sec Board of Medical Registration & Examination Dr W C Moore 301 State House Indianapolis

IOWA * Iowa City Dec 27-29 Dir Division of Licensure and Registration Mr H W Greife Capitol Bldg Des Moines

KANSAS Topeka Dec 14-15 Sec Dr J F Hassig 905 N Seventh St Kansas City

KENTUCKY Louisville Dec 6-8 Sec Dr A T McCormack 620 S Third St Louisville

MARYLAND Medical Baltimore Dec 14-17 Sec Dr J T O Mara 1215 Cathedral St Baltimore Homeopathic Baltimore Dec 14-15 Sec Dr J A Evans 612 W 40th St Baltimore

MICHIGAN * Ann Arbor Oct 13-15 Sec Board of Registration in Medicine Dr J Earl McIntyre 100 W Allegan St Lansing

MINNESOTA * Minneapolis Oct 19-21 Sec Dr J F DuBois 230 Lower Medical Arts Bldg St Paul

MISSISSIPPI Jackson September Asst Sec. State Board of Health Dr R N Whitfield Jackson

MONTANA Helena Oct 5-6 Sec Dr O G Klein First Natl Bank Bldg Helena

NEVADA Reciprocity Carson City Aug 2 Sec Dr G H Ross 215 North Carson St Carson City

NEW HAMPSHIRE Concord Sept 9-10 Sec Board of Registration in Medicine Dr D G Smith State House Concord

NEW JERSEY Trenton Oct 19-20 Sec Dr E S Hallinger 28 W State St Trenton

NEW MEXICO * Endorsement Santa Fe Oct 11-12 Sec Dr LeGrand Ward 141 Palace Ave Santa Fe

NEW YORK Albany Buffalo New York and Syracuse Sept 20-23 Sec Dr R R Hannon Education Bldg Albany

OHIO Endorsment Columbus Oct 7 Written Columbus Dec 4 Sec Dr H M Platter 21 W Broad St Columbus

SOUTH CAROLINA Charleston Dec 20-22 Sec Dr A B Heyward 1329 Blanding St Columbia

VERMONT Burlington Dec 13-17 Sec Dr F J Lawless Richford

VIRGINIA Richmond Dec 14-17 Sec Dr J W Preston 301 1/2 Franklin Road Roanoke

WYOMING Oct 4-5 Sec Dr M C Keith Capitol Bldg Cheyenne

Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA Tucson Sept 21 Sec Dr Robert L Nugent Science Hall University of Arizona Tucson

COLORADO Denver Sept 8-9 Sec Dr E B Starks 1459 Ogden St Denver

DISTRICT OF COLUMBIA Washington Oct 18-19 Sec Dr G C Ruhland 6150 E Municipal Bldg Washington

FLORIDA Deland Nov 6 Sec Dr John F Conn John B Stetson University Deland

IOWA Des Moines Oct 12 Dir Division of Licensure & Registration Mr H W Greife Capitol Bldg Des Moines

MINNESOTA Minneapolis Oct 26 Sec Dr J C McKinley 120 Millard Hall Univ of Minnesota Minneapolis

NEBRASKA Lincoln Oct 5-6 Dir Bureau of Examining Boards Mr Oscar F Humble 1009 State Capitol Bldg Lincoln

OREGON Portland Oct 30 Sec State Board of Higher Education Mr C D Byrne University of Oregon Eugene

RHODE ISLAND Providence Aug 18 Chief Division of Examiners Mr Thomas B Casey 366 State Office Bldg Providence

WISCONSIN Madison Sept 15 Sec Prof R N Bauer 1-2 W Wisconsin Ave Milwaukee

Council on Medical Education and Hospitals

COURSES FOR GRADUATES AT HARVARD MEDICAL SCHOOL

Harvard Medical School has informed the Council on Medical Education and Hospitals that the following continuation courses for practicing physicians published in the July 3 issue of THE JOURNAL have been canceled for the duration of the war

Anatomy—Microscopic Anatomy July August six weeks
Medicine—General Course in Internal Medicine August 1 four months A one month course in Internal Medicine will be given for the month of October 1943 Fee \$150 Otherwise all courses in Internal Medicine have been canceled for the duration of the war

Internal Medicine September 1 September 15 one year All of the one year courses in Internal Medicine have been canceled for the duration of the war

Selected Subjects in Endocrinology and Metabolism August two weeks
Military Medicine—Military Medicine and Surgery to be announced two weeks

Otolaryngology—Bronchoscopy and Esophagoscopy Arranged two weeks full time

Pathology—With the exception of the course Pathology of Obstetrics and Gynecology which is still available all the courses in pathology have been canceled for the duration of the war

Pediatrics—The one year course in Pediatrics has been canceled for the duration of the war

Psychiatry and Neurology—All postgraduate courses in these departments have been canceled for the duration of the war

Surgery—The courses in Endoscopy and Minor Surgery have been canceled for the duration of the war

A new two week course in Pediatrics is to be given at Harvard Medical School August 2 to 14 inclusive at a fee of \$75

The one month course in General Roentgenology listed in the July 3 issue of THE JOURNAL with a fee of \$50 is a part time rather than a full time course

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Abandonment of Patient Actionable Only When Injury Results—The plaintiff scratched the tip of his right thumb in February 1936 without drawing blood. Several days later the thumb hurt and he pierced it with a sterilized needle causing a bloodlike liquid to flow. He repeated the procedure a few days later. The pain in the thumb became more severe and on March 10 the plaintiff visited the defendant physician who diagnosed the infection in the thumb as a felon. He incised the tip to drain pus and found that a portion of the bone and tissue in the tip was necrotic. The physician directed the patient to keep the thumb in a hot epsom salt or borax acid solution. The following day the physician dressed the wound renewing the instructions previously given. The patient visited the physician daily until March 16 when after a roentgenogram had indicated that there had been no restoration of circulation in the necrotic portion of the thumb the physician removed a small piece of the distal phalanx. The next day the wound was again dressed. On the 18th the thumb was very painful red streaks appeared in the forearm from the wrist about halfway to the elbow the patient had a temperature of 99.2 F and a small lump appeared in the patient's arm. On the 19th the patient again visited the physician but the red streaks had subsided and the patient's temperature was normal. Starting that afternoon however the hand became ever more painful and the patient tried unsuccessfully for five days to reach the physician by telephone. When the physician was reached on the phone about 10 p. m. he reached according to the patient's wife to visit the patient on a certain day the patient was unemployed and that he would be unable to pay them any further and suggested that the patient be sent to the county hospital. According to the physician the patient

advised the wife that hospitalization was imperative and on learning that the patient was unemployed promised to arrange for admittance to the county hospital but informed her that on admittance he could no longer treat the patient. In any event, the physician's connection with the case terminated at that time. Another physician, Dr Foster, was called and reached the patient about 10:20 p. m. He administered a hypodermic and had the patient removed to a private hospital. The next morning Dr Foster called in Dr Allen, a surgeon, to take charge of the case, and on March 22 Dr Allen operated on the hand. Between that date and May 4, when the patient was removed to another hospital, Dr Allen made numerous incisions in the hand in an effort to establish drainage and prevent the infection from spreading. Shortly after May 4 an amputation—just how extensive is not made clear—was performed. Three additional amputations were performed, the last one being performed on Jan 11, 1937, when the arm was amputated at a point $5\frac{1}{4}$ inches from the armpit. Subsequently action for malpractice was instituted against the defendant physician, and the jury returned a verdict in favor of the patient. The trial court, however, believing that it had erroneously instructed the jury, ordered a new trial, and the plaintiff appealed to the Supreme Court of Washington.

The instruction that the trial court concluded was erroneous told the jury that if it found that the physician was negligent and unskilful in the treatment of the patient's infected thumb by withdrawing from the case while the infection was active and dangerous, and that such negligence on the physician's part proximately caused resulting damage to the patient, then the jury should return a verdict in favor of the patient. This instruction, said the court, permitted the jury to consider, as an element for which they might award the patient damages, the act of the physician in withdrawing from the case on the evening of March 19. This instruction was erroneous because there was no evidence in the record to indicate that any injury resulted to the patient by reason of the alleged withdrawal. Whatever injury may have subsequently resulted to the patient bore no causal relation to the allegedly improper withdrawal by the defendant physician. It must be remembered that Dr Foster visited the patient about twenty minutes after the defendant allegedly terminated his connection with the case and that he then took charge of the case and moved the patient immediately to a hospital and called in Dr Allen the next morning to take charge of the case. It is the general rule, continued the court, that when a physician undertakes to treat a patient it is his duty to continue to devote his best attention to the case until either (1) medical care is no longer needed, (2) he is discharged by the patient or (3) he has given the patient reasonable notice of his intention to cease to treat the patient so that another physician may be obtained. Abandonment of a case by a physician without sufficient notice or adequate excuse is a dereliction of duty, and if injury results therefrom the physician may be held liable in damages. Under the evidence the jury might have found that the physician had abandoned the patient without sufficient justification, and if the record contained sufficient evidence that would support a finding that by this abandonment the patient suffered injury, doubtless the instruction as given was correct. It is not, however, sufficient that the patient introduce evidence showing merely the breach of some duty by the physician, the patient must go further and show that such breach of duty resulted in some compensable injury to the patient. In this connection, the only evidence relied on by the patient is that of a physician called as a witness by the patient. He stated that the defendant physician was negligent in his treatment and that he failed to incise the infected area properly and to take necessary tests to aid him in determining the proper course of treatment, but this witness did not testify, nor is it a reasonable inference from this testimony, that the patient suffered any damage or that his condition became worse because the defendant physician terminated his care and treatment of the patient, leaving him without a physician or medical assistance for perhaps half an hour on the evening of March 19. The record contained no evidence that there was any causal connection between the situation referred to and the later suffering endured by the patient or the creation of the condition which resulted in the amputation of the patient's

arm. The basic question to be determined is one of causation. It does not appear that had the defendant physician responded to the telephone call as soon as he received it on the evening of March 19 he could have reached the patient any sooner than Dr Foster did. All the physicians who testified agreed in the opinion that from the time the red lines first appeared on the patient's arm, March 18, there was every indication that the patient was suffering from lymphangitis. We find no evidence, said the court, on which could be based a judgment for damages in the patient's favor occasioned by the physician's refusal to visit the patient on the evening of March 19.

The patient argued that the mental suffering endured by him because of his abandonment by the physician would support a verdict for judgment in his favor. It was intimated, too, that there was evidence of actual physical injury to the patient because of the defendant's failure to act on the evening in question. The patient, said the court, was not acquainted with any other physician in this particular city. He knew that his thumb and hand had become progressively worse and that while the defendant had refused to attend him he had told him that he was in need of hospitalization. Conceding that the patient might well be disappointed and mentally perturbed because of the physician's refusal to visit him, such a mental condition is not sufficient alone to support an award. In connection with this phase of the argument, the patient cited *Ricks v Budge*, 91 Utah 307, 64 P (2d) 208. In that case the plaintiff was suffering from an infected finger which had been incised by the defendant physician in that case to establish drainage. The plaintiff's condition having become worse, the physician indicated that a further operation was necessary and that the plaintiff should go to a hospital. The plaintiff then went to a hospital conducted by the defendant physician and was being prepared for the operation when the physician refused to continue to treat the plaintiff because of an old unpaid account which the physician discovered the plaintiff owed him. The plaintiff then dressed, left the hospital in the rain and walked to another hospital, where an operation was performed on his hand. The court in that case held that the plaintiff's case should be submitted to the jury, the court being of the opinion that it could not be held as a matter of law that the plaintiff had suffered no damage from the abandonment. That case, however, said the Supreme Court of Washington, is not controlling here, as it appeared that the physician admitted that at the time of his abandonment of the plaintiff in that case the patient was in a dangerous condition and in dire need of immediate attention. In this case, after Dr Foster was retained he procured Dr Allen to take charge of the case, no radical change in the treatment of the patient's hand was made and no operation was performed thereon until March 22.

The court accordingly concluded that the trial court properly ruled that error had been committed in submitting to the jury the question of negligence on the part of the physician and resulting damage to the patient based solely on the physician's withdrawal from the case on the evening of March 19. In effect, the Supreme Court accordingly ordered a retrial of the cause—*Gray v Davidson*, 130 P (2d) 341 (Wash, 1942).

Society Proceedings

COMING MEETINGS

- American Association of Obstetricians Gynecologists and Abdominal Surgeons Hot Springs, Va., Sept 9-11 Dr James R. Bloss 413
- Eleventh St. Huntington W. Va., Secretary
- American Congress of Physical Therapy Chicago, Sept 8-11 Dr. Rich-ard Kovacs, 2 East 88th St., New York, Secretary
- Michigan State Medical Society, Detroit Sept 22-24 Dr. L. Ferris Foster, 2020 Olds Tower Lansing, Secretary
- Northern Minnesota Medical Association, Duluth Aug 23 Dr. R. Jones, 8 Sixth Avenue N., St. Cloud, Secretary
- Oregon State Medical Society, Portland Sept 4-5 Dr. Thoras D. Robertson, St. Vincent's Hospital Portland Secretary
- Utah State Medical Association, Salt Lake City, Aug 27-28 Dr. D. C. Edmunds, 610 McIntyre Bldg., Salt Lake City Secretary
- Wisconsin State Medical Society of Milwaukee, Sept 13-15 Mr. C. H. Crownhart, 110 East Main St. Madison, Secretary

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American Journal of Clinical Pathology, Baltimore

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Significance of Some Toxicologic Procedures in Medicolegal Autopsies A O Gettler—p 169
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American Journal of Medical Sciences, Philadelphia

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Subcutaneous Administration of Sodium Sulfathiazole in Various Clinical Conditions J J A Lyons D R Chlmenko and L W Gorham—p 703
Therapy of Experimentally Induced Gangrene K K Grubaugh and W A Starin—p 709
*Studies on 2-Sulfamylamido-4-Methylpyrimidine (Sulfamerazine Sulfamethyldiazine) in Man I Absorption Distribution and Excretion F D Murphy J K Clark and H F Flippin with the Technical Assistance of Elizabeth Patch—p 717
Clot Retraction Time in Thrombophlebitis and Pulmonary Embolism J S Hirschboeck and W L Coffey Jr—p 727
Case of Extreme Hypotension Following Acute Arsenic Poisoning with Adequate Blood Supply to Tissues I H Page R D Taylor and K G Kohlstaedt—p 730

Primary Sciatic Neuritis—The 55 cases analyzed by Alpers and his associates were selected as authentic examples of sciatic neuritis. Thirty-seven or 67 per cent of the cases were in males all but 4 of whom were engaged in heavy work and were exposed to changes in weather. Sciatic neuritis is a disease of middle age or early old age. The diagnosis of sciatic neuritis and its differentiation from secondary sciatica is not difficult. Sciatic neuritis is always characterized by tenderness of the nerve trunks and usually also of the muscles of the thigh and calf. All other diagnostic criteria such as weakness or atrophy of leg muscles decrease or absence of the achilles reflex pain on stretching the sciatic nerve sensory disturbances and the like are as characteristic for one form or sciatica as for the other. Special signs such as Lasègue's and Neri's all of which depend on the stretching of the sciatic nerve are also characteristic of both groups. Feeling divided the sciaticas into primary or essential sciatica and secondary or symptomatic sciatica. This classification serves all practical purpose is accurate and emphasizes the fact that sciatica is

produced by many causes. The cases of sciatic neuritis must be considered quite apart from those of other origin. The fact that no cause can be established for such cases does not justify their classification as idiopathic.

Familial Mediterranean Target-Oval Cell Syndromes

—Dameshek reported in 1940 the case of a young man of Italian origin who presented a moderately severe hypochromic anemia with numerous target cells definite splenomegaly moderate hemolytic icterus and generalized osteoporotic changes commonly seen in Cooley's erythroblastic anemia. He suggested that the fundamental fault in Cooley's anemia might center about the target cell, which might be the inherited defective factor. The present study concerns 10 Italian families and 1 Italian bachelor comprising all together more than 50 individuals all affected with what is believed to be a similar condition but one of varying degrees of intensity. In addition blood smears of 60 consecutive persons of Italian origin were examined for oval target and stippled red cells. Dameshek shows that it is possible to arrange in a descending scale beginning with the rare Cooley's anemia various more frequent hereditary syndromes which present as a common denominator a reduction in the hemoglobin level hypochromia abnormalities of the red cells including the presence of target cells oval cells stippled cells increased hypotonic resistance and complete retractoriness to iron therapy. At the lower end of the scale are individuals without anemia but showing increased numbers of target or oval cells. Possible relationships among the syndromes is indicated by the following: 1 Some siblings and both parents of the patients with Cooley's anemia showed the hematologic changes of mild Mediterranean target cell syndrome. 2 The various groups merged into one another. 3 Individuals of the same families occasionally showed the same variations as were noted in the groups. Cooley's anemia is probably the most severe manifestation of a hereditary disorder which occurs in people of Mediterranean origin and in which target cells and increased hypotonic resistance are prominent features. The fundamental inherited abnormality appears to lie in a disturbance of the hemoglobin metabolism which makes the nucleated red cells deficient in and unable to take on their normal complement of hemoglobin. In consequence thin and hypotonically resistant erythrocytes (target and oval cells) are produced. Basophilic stippling and retractoriness to iron therapy are probably concomitant abnormalities. The increased hemolysis in the more severe cases may be due to the breakdown of unused hemoglobin precursors. There are resemblances between Mediterranean target cell syndromes and African sickle cell anemia. It is possible that the two conditions are closely related entities with unusual erythrocytic thinness (leptocytosis) as one of the fundamental traits. They are important not only diagnostically but because the mating of 2 individuals with relatively mild forms may result in the appearance in the offspring of full blown Cooley's anemia or sickle cell anemia.

Mixed Bacterial Oral Cold Vaccine—Siegel and his co-workers report the experience of the Visiting Nurse Service of New York City with bacterial vaccines in the prevention of the more usual respiratory complications. The study was limited to volunteers of the nursing and office staffs. They were divided into two groups depending on the number of colds experienced in the preceding year. Each group was further subdivided into those with (a) chronic sinusitis bronchitis or otitis (b) allergies and (c) no clinical manifestations making six classifications in all. A commercial product composed of mixed heat-killed bacteria (about 25 billion pneumococci 15 billion streptococci 5 billion Hemophilus influenzae and 5 billion Micrococcus catarrhalis per dose) was prepared in the form of capsules to be taken orally. The control group was given capsules identical in appearance and containing the same ingredients without bacteria. The evidence indicates that the oral administration of a commercially prepared vaccine or mixed killed bacteria failed to decrease the incidence of acute respiratory infections to reduce the severity or duration of such infections and to prevent secondary bacterial complications. Both control and inoculated groups had the same number of colds and there was no significant difference in the duration of symptoms and the number and variety of complications following the cold. These observations seem to be made by

various investigators that, contrary to fairly widespread medical and lay opinion, the so-called cold vaccines are of questionable value as a prophylactic measure against the common cold and its bacterial complications.

Sulfamerizine in Man—Murphy and his co-workers present observations on the absorption, distribution and excretion of sulfamerizine in human beings. To one group of persons a single dose of the drug was administered orally, subcutaneously, intravenously or rectally, while multiple doses were administered over a period of days to another group. Studies were made on the behavior of sulfamerizine in 28 convalescent patients serving as controls and on 20 patients with acute bacterial infection. The data presented indicate that after a single 3 Gm oral dose of sulfamerizine higher blood serum levels are attained more rapidly and sustained longer than after similar amounts of sulfadiazine. Desired serum concentrations can be obtained by giving sulfamerizine sodium subcutaneously or intravenously. Sulfamerizine is readily diffused through body fluids and enters the red cell in varying concentrations. Sulfamerizine is slowly excreted in the urine in amounts roughly comparable to sulfadiazine.

American J Obstetrics and Gynecology, St Louis

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- Cerebral Complications Occurring in Toxemias of Pregnancy. J Parks and J W Pearson Jr—p 774
- Principle of Physics as Applicable to Shoulder Delivery. C E Woods—p 796
- Effect of Local Anesthesia by Means of Pudendal Nerve Block with Novocain on Cervical Dystocia Occurring Late in First Stage of Labor. Preliminary Report. L A Bunim—p 805
- Blood Nucleotides in Pregnancy and in Toxemias of Pregnancy. R W, Bonsnes and H J Stander—p 827
- *Incidence of Rh Factor and Erythroblastosis Fetalis in Chinese. P Levine and Helena Wong—p 832
- Use of Sodium Sulfathiazole in Treatment of Septic Abortions. C G Johnson and J D Talbot—p 846
- Vinbarbital Sodium for Obstetric Amnesia and Analgesia. J B Bernstein and L N Prince—p 851
- Pregnancy After Tubal Sterilization, with Report of Case Demonstrating Epithelium Lined Connecting Tube. G L Carrington and J B Bullitt—p 892
- Circumcision of Newborn Infant by Cauterization. E D Colvin and R A Bartholomew—p 899

Iliac Lymphadenectomy in Cancer of Cervix—Taussig points out that radiation therapy usually fails to destroy cancer metastases in the tributary lymph nodes. Removal of these nodes was for years considered an essential feature of the radical Wertheim hysterectomy. The high operative mortality of this extensive procedure led many to abandon it. The procedure is applicable in a relatively small number of group I (League of Nations Classification) cancers of the cervix. Group II cases in which there is involvement of the parametrium or upper third of the vagina without extension to the pelvic wall are two to three times as numerous as the group I cases. Taussig attempted to obtain better results for this group by combining lymphadenectomy with irradiation of the primary tumor. Leveuf in France and the author here have independently conceived the possibility of this method of attack. Leveuf carried out this procedure in only a few cases, while the author employed it in 175 group II cancers of the cervix. The operative mortality in this group was 17 per cent with a mortality of 0.7 per cent in the last 140 cases. The five year survival rate of 70 patients operated on previous to October 1937 was 38.6 per cent. Comparing this with a five year survival of 22.9 per cent in 118 similar cases treated with radiation alone, there was a 68 per cent greater salvage when the lymph node removal was added to the radiation treatment. Cancer was found present in the lymph nodes in 26.8 per cent of the 175 patients operated on. A five year salvage of 21 per cent was obtained even in cases with demonstrated metastases. Lymph node dissection appears to be a valuable adjunct in the treatment of group II cancers of the cervix.

Rh Factor and Erythroblastosis Fetalis in Chinese—Recent studies have revealed, Levine and Wong point out, that immunization of the Rh— mother by the dominant Rh factor of fetal blood is the essential feature in the pathogenesis of at least 90 per cent of the cases of erythroblastosis fetalis. The intrauterine hemolysis of the fetal blood, which is respon-

sible for erythroblastosis fetalis, is due to the action of maternal immune anti Rh agglutinins on the susceptible Rh+ fetal blood. The incidence of the Rh factor is different in the white and the colored races. With a particular human anti Rh serum there are 15 per cent Rh— white individuals in contrast to values varying from 5 to 8 per cent among the colored persons. Clinical observations indicate that the incidence of erythroblastosis fetalis was 2.1 per cent for the white and 0.7 per cent for the colored races. Wong expressed the opinion that this condition is probably rare among Chinese infants. If this could be shown to be correct, one should expect to find a low incidence of Rh— individuals in a random Chinese population. This was confirmed in a study of 150 Chinese persons residing in New York City, only one of whom was Rh—. Using the anti Rh serum, which may be considered as standard, Rh— persons are twenty-one times less frequent among the Chinese than among the white persons. This observation supports the contention that erythroblastosis fetalis is rare among Chinese infants.

American Journal of Physiology, Baltimore

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- Effects of Exercise on Coronary Blood Flow, Heart Rate and Blood Pressure of Trained Dogs with Denervated and Partially Denervated Hearts. H E Essex, J F Herrick, E J Baltes and F C Mann—p 687
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- Experimental Study of Flow Patterns in Various Peripheral Arteries. R E Shipley, D E Gregg and E F Schroeder—p 718
- Effect of pH and Certain Electrolytes on Metabolism of Ejaculated Spermatozoa. H A Lardy and P H Phillips—p 741
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- Effect of Heparin on Vasoconstrictor Action of Shed Blood Tested by Perfusion of Rabbit's Ear. E M Landis, J E Wood Jr and J L Guerrant—p 26
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- Depressive Effects Produced on Appetite and Activity of Rats by Exclusive Diet of Yellow or White Corn and Their Correction by Cod Liver Oil. C P Richter and Katherine K Rice—p 147

American Journal of Psychiatry, New York

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American Journal of Surgery, New York

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- Demerol Hydrochloride New Drug in Practice of Surgery M. L. Weinstein—p 267
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Management of Tumors of Breast—Robillard and his associates report 351 cases of carcinoma of the breast treated since 1935 at the Brooklyn Cancer Institute. The Steintal classification has been adopted by the authors. Radical mastectomy is the procedure of choice. Five year survivals vary from 30 to 40 per cent without evidence that such differences are due to specific modes of therapy. The fact most profoundly influencing the number of five year arrests is apparently the percentage of early or Steintal I cases. Improvement over the 30 per cent five year survival rate reported forty years ago after radical mastectomy alone has not been biometrically established. The essential determinants then as now appear to be the rate of preoperative growth and the tendency to localization or metastasis. The five year survival rate for untreated cases is about 20 per cent. All these survivors have active lesions. After radical amputation roughly one third of the patients survive. Thirty to 40 per cent are aided by present methods of treatment. Sixty to 70 per cent are doomed to failure. The baffling intrinsic factors predicate failure in some two thirds of all cases. In the 30 per cent which are benefited the percentage of Steintal I and the radical mastectomy are the major factors for success.

Am J Syphilis, Gonorrhea and Ven Dis, St Louis

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- *Sulfathiazole as a Venereal Disease Prophylaxis R. D. Arthur and H. Dermom—p 261
- Results of Twenty Week Treatment Schedule for Early Syphilis B. J. Hood—p 267
- Essential Steps for Successful Epidemiology in Syphilis and Other Communicable Venereal Diseases H. Goodman—p 275
- Postarsphenamine Lichen Planus Report of Case M. H. Goodman and R. W. Reckling—p 280
- Problem of Latent Syphilis in General Hospital A. Gelperin—p 290
- New Method for Staining Donovan Bodies or Granuloma Inguinale F. Mortara and R. B. Dienst—p 296
- Further Observations on Correlation Between Clinical and In Vitro Reactions of Gonococcus Strains to Sulfathiazole Notes on Bactericidal Effect of Human Blood on Different Types of Strain A. Cohn and Irma Seijo—p 301
- Note on Cultivation of Treponema Pallidum with Preservation of Virulence Clara C. Kast and J. A. Kolmer—p 309
- *Agranulocytosis Complication Following Quinine in Case of Malaria Therapy A. G. Franks and M. I. J. Davis—p 314
- Cardiovascular Involvement in Congenital Syphilis J. Hinrichsen—p 319

Sulfathiazole in Venereal Disease Prophylaxis—Arthur and Dermom studied in a unit of Negro troops a series of 583 known exposures to contacts almost certain to be infected with venereal disease. Sulfathiazole prophylaxis was instituted

the morning after exposure. It consisted of 3 Gm after breakfast 2 Gm after dinner and 1 Gm after supper. The drug was administered to 152 men, of whom 40 repeated this prophylaxis one or more times after subsequent exposures. Of 384 exposures in 259 men not followed with sulfathiazole, 42 resulted in infection of which 9 were primary syphilis. After 199 exposures in 152 men followed by sulfathiazole prophylaxis 1 developed a chancre and 5 syphilis. One of these was a secondary syphilid and the rest exhibited a positive serologic test but no signs. The rate of infection per thousand exposures to venereal disease for those not taking sulfathiazole after contact was 109 for those who received sulfathiazole the rate of infection was 30 per thousand exposures. The authors conclude that sulfathiazole is a valuable adjunct to the routine army prophylaxis against venereal disease. It also seems to be of value when used alone. It is suggested that it be given when routine prophylaxis has been omitted. Sulfathiazole prophylaxis may interfere with the development of the macroscopic chancre or syphilis.

Agranulocytosis Following Quinine—Franks and Davis report the treatment of a soldier aged 26 with quantan malarial blood for cerebrospinal syphilis. Induced malaria was terminated following the second paroxysm of fever. Five grains (0.3 Gm) of quinine sulfate was given three times daily. Twenty-four hours after the first dose of quinine a leukopenia was noted. Five days later the patient complained of a sore throat. The tonsils and pharynx became distinctly injected and mildly ulcerated. The gums were sore and red. Palpable tender lymph nodes were noted in the cervical and submaxillary regions. Daily intramuscular liver therapy was initiated. All other medication except quinine was discontinued. The leukocyte count was now 2000 the segmented cells were disappearing and the lymphocytes rose to 97 per cent. Thirty cc of pentnucleotide given every other day caused a rise in the total leukocyte count but no increase in the number of granulocytes. Leukopenia and agranulocytosis continued unchanged. At this stage quinine was discontinued and the leukocyte count immediately increased with an accompanying rise in the segmented cells. The authors were able to find only 4 cases in the literature in which quinine was thought to be responsible for agranulocytosis. Many observers mention the deleterious effect of the benzene ring in producing granulopenia. Quinine (oxymethylcinchonine) has a molecular nucleus much like that of the benzene ring. It also contains the toxic NH radical in which the H is replaced by Ch which radical likewise has been thought to be responsible for the injurious effect.

American Review of Tuberculosis, New York

47 449-548 (May) 1943

- Physiologic Changes in Breath Sounds and Tuberculosis Relation between Altered Physical Findings in Upper Lobes and Primary Tuberculous Complex in Lung R. T. Ellison and J. Gershon Cohen—p 449
- Tuberculosis in Mentally Ill Patients Problems and Difficulties of Its Treatment A. A. Leonidoff—p 460
- Injection of Procaine for Pleural Pain J. E. Farber—p 469
- Is and Pulmonary Tuberculous Focus I. D. Bobrowitz—p 472
- Roentgenology of Digestive Tract in Tuberculosis J. L. Kantor—p 484
- *Pectin Agar Feeding in Tuberculous Enterocolitis P. D. Crimm, J. J. Westra and Ruth E. Thompson—p 493
- Tuberculous Tracheobronchitis Pathological Study Chiasa Huang—p 500
- Quantitative Aspects of Specific Tuberculo-immunity H. J. Corper and M. L. Cohn—p 509
- Effect of Diet Low in Thiamine and Riboflavin on Avian Tuberculosis in Rat G. M. Higgins and W. H. Feldman—p 511
- Examination of Pooled Sputum Specimens C. J. Stringer and H. E. Cope—p 524
- Cholesterol Content of Sputum M. Bruger and M. B. Rosenblatt with technical assistance of Sylvia B. Ehrlich—p 533

Pectin Agar Feeding in Tuberculous Enterocolitis—According to Crimm and his associates the incidence of intestinal tuberculosis as a complication of pulmonary tuberculosis has been reported as low as 20 per cent and as high as 92 per cent. In the authors' experience excess of calcium and of vitamins D and C in the diet did not augment the cure. Twelve of their patients of whom 20 had far advanced and 4 had moderately advanced disease were placed on a month or two diet consisting of chicken fish ground meat cassards and vegetables.

dings, plum cake, toast, milk, fruit juices, finely milled cereals, macaroni, spaghetti and noodles. Pectin agar was given flavored and sweetened to suit the taste of the individual. It is best given with vanilla malted milk. Of the 24 patients 8, or 33 1/3 per cent, died in the hospital, 10, or 41 3/4 per cent, have apparently recovered from their intestinal disease, 2, or 8 3/4 per cent, are improving and still under treatment, and 4, or 16 2/3 per cent left the hospital before studies could be completed. The authors conclude that pectin agar is of decided value in controlling symptoms of intestinal tuberculosis.

Anesthesiology, New York

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- Effects of Nembutal (Sodium Pentobarbital) and Scopolamine on Human Subjects M H Hawk and C P Wingeman —p 238
- Study of Traumatic Shock Under Certain Anesthetics J W Pender and H L Lacey —p 247
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- Clinical Investigation of Anoxia in Intrathoracic Operations (Preliminary Report) I I Thornton Jr, W I Adams, H Livingstone and V Wellman —p 266
- Anesthesia in Esophageal Surgery A R Wilkins —p 274
- Crawford Williamson Long 1815-1878 F J Collier —p 279
- Tetrachlorethylene as Anesthetic Agent Ellen B Foot, K Bishop and Virginia Appert —p 283
- Clinical Aspects of Pulmonary Metastasis (with Case Report of Death Under Anesthesia) S Schotz —p 293

Annals of Internal Medicine, Lancaster, Pa

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- Clinical Approach to Alleged Traumatic Disease L Brady and S Kahn —p 491
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- Criminal Interrogation with Lie Detector Eight Years' Experience by Michigan State Police L M Snyder —p 551
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Archives of Neurology and Psychiatry, Chicago

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- Studies in Diseases of Muscle VII Heredity of Progressive Muscular Dystrophy Relationship Between Age at Onset of Symptoms and Clinical Course A T Milhorat and H G Wolff —p 641
- Id XIII Progressive Muscular Dystrophy of Atrophic Distal Type, Report on Family Report of Autopsy A T Milhorat and H G Wolff —p 655
- Experiences with Intramedullary Tractotomy II Immediate and Late Neurologic Complications L M Weinberger and F C Grant —p 665
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Archives of Ophthalmology, Chicago

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- *Anticoagulant Therapy of Occlusion of Central Vein of Retina in Relation to Pathogenesis and Differential Diagnosis Bertha A Klien —p 699
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- Practical Application of Crossed Prisms L Bacon —p 772
- Correction of Low Astigmatism Subtraction Test S J Beach —p 775
- Principles of Tonometer Standardization E Sachs and Frances L MacCracken —p 782
- Degeneration and Repair of Rat Retina in Avitaminosis A Myra L Johnson —p 793
- Studies with Microcrystalline Sulfathiazole I H Leopold and H G Schick —p 811
- Optochiasmatic Arachnoiditis Report of 3 Cases E R Ryan —p 818
- Pigmentation of Optic Disk D Kravitz —p 826
- Ophthalmic Requirements of Military Services C A Bahn —p 831

Anticoagulant Therapy of Occlusion of Central Vein of Retina—Klien differentiates the following four types of occlusion of the central retinal vein 1 Occlusion by compression from without the vessel and secondary thrombus formation, as in some types of arteriosclerosis and phlebosclerosis or in tumor metastasis into the optic nerve In these conditions anticoagulant therapy is of little or no value, as thrombus formation is only the terminal event bringing about complete occlusion of an already narrow venous aperture 2 Occlusion by primary thrombus formation in blood dyscrasias, such as polycythemia and thrombocythemia Heparin or dicumarol therapy is of definite value The rapid action of these preparations may be prolonged and supported later, if necessary, by roentgen irradiation of the bone marrow 3 Occlusion by stagnation thrombosis following widespread arterial spasms To this type belongs venous occlusion caused by (a) early spastic hypertension, (b) a surgical procedure or cranial fracture and (c) congenital heart disease Anticoagulants, perhaps supported by vasodilators, should be of definite value in the treatment of this type 4 Occlusion by inflammatory disease of the venous wall and secondary thrombus formation The employment of anticoagulants is contraindicated Heparin and dicumarol are valuable additions to the therapeutic armamentarium for the care of eyes with venous occlusion whose vision otherwise might be lost, but the most accurate clinical classification of the type of occlusion should precede the employment of this therapy

Archives of Pathology, Chicago

35 649-786 (May) 1943

- *Cortical Necrosis of Adrenal Glands Associated with Addison's Disease Report of 8 Cases J D Duffin —p 649
- Studies of Normal and of Abnormal Mitotic Activity II Rate and Periodicity of Mitotic Activity of Experimental Epidermoid Carcinoma in Mice C M Blumensfeld —p 667
- Tuberculous Reaction in Ovarian Dysgerminoma E L Heller —p 674
- Postmortem Study of Renal Pelvis in Relation to Hypertension B E Stofer and L L Kline —p 681
- Tyrosine Poisoning in Rats W C Hueper and G J Martin —p 685
- Effects of Repeated Intravenous Injections of Jecithin in Rabbits Relationships to Lipoid Storage Diseases and to Hemolytic Anemias Edna H Tompkins —p 695
- Influence of Vitamin B₁₂ and Pantothenic Acid on Growth of Sarcoma 180 T Bischoff, Louise P Ingraham and J J Rupp —p 713
- Anomalies of Aortic Arch P A Herbut —p 717

Cortical Necrosis of Adrenal Glands Associated with Addison's Disease—Duffin states that Addison's disease is caused by a tuberculous destruction of the adrenal glands in the majority of cases There are, however, cases in which the process is not tuberculous They are referred to as cases of adrenal atrophy Relatively few such cases have been recorded in detail The author reports 8 cases and points out the remarkable similarity in their symptoms and course Six of the patients were women, the youngest was 20 and the oldest 44 at the time of death All presented a gradually developing and slowly progressing asthenia interspersed with attacks of prostration and vomiting All had some degree of hypotension and pigmentation All died in an Addisonian crisis between

two and four years after the onset of symptoms. The lesions observed in the adrenal glands presented the same striking similarity as did the clinical course. In 6 cases the lesion was one of cortical destruction with severe and widespread necrosis of the cortex in 4 and complete disappearance of cortical tissue in 2. In each case the adrenal medulla was comparatively well preserved but constantly showed lymphocytic infiltration. In 2 additional cases no adrenal parenchymal tissue remained, although the process was presumed to be of the same nature as that in the other 6. The thyroid was atrophic, fibrosed and infiltrated with lymphocytes. The pituitary gland in 3 of the 4 cases examined showed a diffuse increase in the connective tissue of the anterior lobe, a scarcity of basophils and a reduction in eosinophilic and chromophobe cells. A hitherto unrecorded pigmentation of fat tissue was noted. The process in the adrenal glands is not one of true atrophy but rather of a disappearance of tissue secondary to cortical necrosis. No clue as to the cause of the cortical necrosis was obtained. The incidence of this pathologic process in the present series of cases of Addison's disease was 41 per cent.

Archives of Surgery, Chicago

46 459-588 (April) 1943

- Effects of Jejunal Transplants on Experimental Production of Peptic Ulcers. J. W. Lord Jr., W. DeW. Andrus and P. Stefkó.—p. 459
- Hemangioma of Joints. M. C. Cohen.—p. 465
- *Post-Traumatic Dystrophy of Extremities. Chronic Vasodilator Mechanism. G. de Takats and D. S. Miller.—p. 469
- Solitary Benign Enchondroma of Bone. H. L. Jaffe and L. Lichtenstein.—p. 480
- Primary Carcinoma of Intra-Ampullary Portion of Duodenum with Example of Probable Origin from Aberrant Pancreatic Tissue. G. L. Duff, H. L. Foster and W. W. Bryan.—p. 494
- Therapeutic Trends and Operative Mortality in Cases of Obstructive Jaundice. A. W. Clin.—p. 504
- Infiltration of Bone with Spontaneous Fracture in Case of Chronic Myelogenous Leukemia. L. M. Meyer, A. B. Friedmann and V. Ginsberg.—p. 514
- *Arteriosclerotic Gangrene. Report on Refrigeration Prior to Amputation. E. R. Halev.—p. 518
- Nerve Regeneration in Rat Following Tubular Splicing of Severed Nerves. P. Weiss.—p. 525
- Role of Toxin and Use of Antitoxin in Systemic Staphylococcal Infections. B. Kleiger and J. E. Blair.—p. 548
- Trigeminal Neuralgia Due to Radicular Lesions. W. B. Hamby.—p. 555
- Biliary Dyskinesia. Role Played by Remnant or Cystic Duct. H. K. Gray and W. S. Sharpe.—p. 564
- Reticulosis Following Ablation of Frontal Cerebral Cortex. F. A. Mettler.—p. 572
- Repair of Large Cranial Defects. Report of Case in Which Large Cranial Defect Was Repaired by Graft from Ilium. V. S. Lambros.—p. 575
- Evaluation of Blood Test for Galactose Tolerance in Diagnosis of Hyperthyroidism. A. G. Schneeberg, W. B. Likoff and D. R. Meranze.—p. 581

Post-Traumatic Dystrophy of Extremities—De Takats and Miller describe observations on the syndrome of Sudeck's atrophy. Many terms have been employed to characterize it such as traumatic angiospasm, chronic traumatic edema, acute atrophy of bone, post-traumatic osteoporosis, peripheral trophoneurosis and reflex nervous dystrophy. The authors studied and treated 33 cases in 12 plethysmographic studies the blood flow, vasomotor reactivity and calcium metabolism were investigated. They gained the impression that Sudeck's atrophy is the result of a chronic stimulation of somatic and possibly of efferent vasodilator fibers. Pain localized and spreading vasodilatation and osteoporosis characterize the fully developed syndrome but osteoporosis is a late manifestation. Reflex dystrophy is most amenable to treatment in the early stages; later it becomes more intractable and requires more radical interventions. The eliciting trauma is usually a blunt injury near a joint or a nerve trunk such as the interosseus, the sphenoos or the posterior tibial nerve. The treatment must fit the duration and severity. It consists in repeated injections of procaine hydrochloride into the injured area, paravertebral sympathetic block, periaxillary sympathectomy and sympathetic ganglionectomy. Orthopedic correction may be needed in cases of advanced atrophy after the pain has subsided.

Refrigeration Prior to Amputation in Arteriosclerotic Gangrene—According to Halev, twenty amputations for arteriosclerotic gangrene have been performed in a six month period at his hospital. Seven of these were performed under spinal anesthesia, 3 under intravenous pentothal sodium anes-

thesia and 10 with the employment of the ice-tourniquet anesthesia. The ice-tourniquet treatment has a place as a preoperative measure in the management of debilitated patients with gangrene. Operative or postoperative reactions following the use of this method are mild as compared with those following the use of spinal anesthesia. The need for preoperative and postoperative sedation is practically eliminated. The stump is apparently not harmed by the ice-tourniquet, and healing is satisfactory. The use of two tourniquets with amputation between them constitutes an improvement over the use of one tourniquet.

Bulletin of Johns Hopkins Hospital, Baltimore

72 203-254 (April) 1943

- Studies in Experimental Hypertension. I. Phenol Red Excretion and Renal Blood Flow in Hypertension of Renal Origin. T. A. Warthin and Caroline B. Thomas.—p. 203
- *Role of Alpha Hemolytic Streptococcus in Pneumonia. H. M. Thomas Jr.—p. 218
- Renal Osteomalacia and Osteitis Fibrosa in Adults. R. H. Folliott Jr. and Deborah A. Jackson.—p. 232
- Salt Carbohydrate and Water Appetite of Adrenalectomized Rats Before and After Treatment with Desoxycorticosterone Pellets. J. Mark.—p. 243
- Note on Fate of Injected Insulin. J. Mark and R. C. Lewis Jr.—p. 246

Alpha Hemolytic Streptococcus in Pneumonia—Thomas discusses 2 fatal cases of primary atypical bronchopneumonia. In 1 Streptococcus viridans was recovered from the sputum and from the blood stream during life. In the other the organism was recovered from the sputum during life and from the heart's blood and bronchial exudate at autopsy shortly after death. The presence of Streptococcus viridans in cases of influenzal pneumonia and primary atypical bronchopneumonia has been noted previously, but its importance has been discounted. The observations reported here suggest that this organism is capable of playing a pathogenic role as a secondary invader. In view of its well recognized pathogenic activity in the production of endocarditis, its presence in the bronchi in association with purulent inflammation may be of more significance than is at present recognized. Intense purulent bronchitis by causing obstruction of the air passages is an added factor in the symptomatology and outcome of atypical bronchopneumonia and Streptococcus viridans appears to be one of a variety of organisms which may produce this complication.

Bulletin New York Academy of Medicine, New York

19 301-370 (May) 1943

- Multiple Sclerosis and Encephalomyelitis. T. J. Putnam.—p. 301
- Management of Hypertension. W. Goldring.—p. 317
- Pulmonary Irritants. R. A. Kehoe.—p. 340
- Effect of War Gases and Other Chemicals on Eyes of Civilian Population. C. Berens and E. Hartmann.—p. 356

Diseases of Chest, Chicago

9 197-296 (May-June) 1943

- Common Masquerading Lung Disease. R. H. Overholt.—p. 197
- *Coexistence of Pathogenic Fungi in Certain Chronic Pulmonary Diseases with Especial Reference to Pulmonary Tuberculosis (Preliminary Report). A. E. Greer and H. N. Gemoets.—p. 212
- Study of Weltmann Coagulation Reaction in Pulmonary Tuberculosis. W. I. Werner.—p. 241
- Chemotherapy of Tuberculosis. F. Seligson.—p. 245
- World Planning for Tuberculosis Control. C. M. Hendrickson.—p. 25
- Tuberculosis Problem in Army. C. C. Hillman.—p. 465
- Photofluorographic Chest Survey of Naval Personnel. R. E. Duncan.—p. 269
- Tuberculosis Problem in Veterans Administration. R. A. Wolcott.—p. 274
- Tuberculosis Control Program of U. S. Public Health Service. H. E. Hilleboe.—p. 281
- Relationship Between National Research Council and Medical Service. E. R. Long.—p. 284

Coexistence of Pathogenic Fungi in Pulmonary Tuberculosis—Greer and Gemoets investigated the incidence of fungi in the oral sputum of 301 patients of the Houston Tuberculosis Hospital. Fungi were isolated from the oral sputum by direct smear and by culture on Sabouraud's dextrose medium in 11.5 (15 per cent) of 301 patients in 18 patients (6 per cent) individually identical with the ones found in sputum were isolated by carefully controlled washing of the trachea. In the study of the 18 patients revealed that the fungi were

be found in the tracheal sputum of at least 4 per cent of tuberculous patients and that the finding of fungi in the oral sputum alone does not assure their presence also in the trachea and, therefore, by inference, in the bronchi and lungs. In 60 per cent of the patients who have fungi only in the oral sputum, the fungi are harmless saprophytic contaminants. Fungi obtained from the trachea and cultured on Sabouraud's dextrose medium will produce, when injected into the lungs of rabbits, localized and generalized pulmonary lesions from which the same fungi may be obtained. Pulmonary tuberculosis seems to have a more devastating course when it is associated with parasitic fungi. The coexistence of fungous and tuberculous infections should be more frequently considered in the diagnosis of chronic pulmonary diseases.

Endocrinology, Springfield, Ill

32 307-372 (April) 1943

- Studies on New Series of Synthetic Estrogenic Substances E W Blanchard, A H Stuart and R C Fallman—p 307
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Urinaty Steroids from Breast Cancer Patients B R Hill and B B Longwell—p 319
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Effects in Dog of Infusion of Adrenal Cortical Extract on Exercise Tolerance Blood Constituents and Adrenal Cortex G H Litinger and Doreen Jeffs—p 351
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Experimental Medicine and Surgery, Brooklyn

1 105-228 (May) 1943

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Effect of Administering Individual Amino Acids and Casein Hydrolysate on Appearance, Growth and Disappearance of Emge Sarcoma in Rats H H Beard—p 136
Elective Painless Rapid Childbirth Anticipating Labor H Koster and L Perrotta—p 143
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Methodical Advice for Dissection of Cava Funnel Region in Cases of Pericardial Diseases H Elias—p 163
New Method to Produce a Nystagmus B Kisch—p 169
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Georgia Medical Association Journal, Atlanta

32 95-150 (April) 1943

- Functional Disorders of Circulation H C Sauls, C Smith and C F Stone—p 95
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Facts About Rabies for the Physician E J Sunkes and T F Sellers—p 110
Relief of Pain by Neurosurgical Measures H S Swanson—p 146

Hawaii Medical Journal, Honolulu

2 131-184 (Jan-Feb) 1943

- Leptospirosis (Weil's Disease) R J Hoagland, F H Harris and S S Chinen—p 131
Survey of Leptospirosis in Honolulu J E Alicata and Virginia Breaks—p 137
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Corpus Luteum Cyst in Ovarian Transplant L G Phillips—p 154

Illinois Medical Journal, Chicago

83 289-364 (May) 1943

- Treatment of Shock from War Wounds H N Harkins—p 325
Recognition and Treatment of Surgical Shock A M Vaughn and M J McCarthy—p 331
Treatment of Mental Disorders by Electrically Induced Convulsions Preliminary Report E Otten—p 336
Orchiectomy in Prostatic Cancer Case Report P H Pernworth—p 338
Prognostic Factors in Cases of Psychoses Following Pregnancy Ethel A Chapman—p 339

Journal of Bone and Joint Surgery, Boston

25 243-502 (April) 1943 Partial Index

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Migration of Kirschner Wire from Shoulder Region into Lung Report of 2 Cases R Mazet Jr—p 477

Journal of Clinical Investigation, Boston

22 329-470 (May) 1943 Partial Index

- Blood Amylase Activity in Disease of Carbohydrate Metabolism and in Nondiabetic Pancreatic Disease S Z Sorkin—p 329
*Nitrogen Retention, Creatinuria, and Other Effects of Treatment of Simmonds' Disease with Methyl Testosterone S C Werner and R West—p 335
Motility of Small Intestine in Sprue F J Ingelfinger and R E Moss—p 345
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Renal Biopsy Studies Correlated with Renal Clearance Observations in Hypertensive Patients Treated by Radical Sympathectomy J H Talbott, B Castleman, R H Smithwick R S Melville and I J Pecora—p 387
Group A Hemolytic Streptococcus Antibodies I Griffith Type Agglutinin and Antistreptolysin Titers in Normal Men and in Acute Infections L A Rantz, W M M Kirby and A H Jacobs—p 411
*Absorption, Excretion and Distribution of Penicillin C H Rimmler, Kimp and C S Keefer—p 425
Changes Which Alter Renal Osmotic Work J D Newburgh—p 439
Diodrast and Insulin Clearances in Nephrotic Children with Supernormal Urea Clearances K Emerson Jr and V P Dole—p 447
Observations on Physiology and Biochemistry of Quantitative Burns W W L Glenn, J Muus and C A Drinker—p 451
Improvements in Calculation of Renal Resistance to Blood Flow Charts for Osmotic Pressure and Viscosity of Blood H Limport—p 461

Methyl Testosterone for Simmonds' Disease—Werner and West point out that the loss of nitrogen after hypophysectomy in experimental animals is clinically reflected in Simmonds' disease, but, whereas in animals replacement therapy is readily accomplished with anterior hypophyseal substance, this is not always the case in Simmonds' disease. Administration of methyl testosterone in dwarfism results in nitrogen retention and creatinuria. The authors obtained striking subjective, objective and laboratory changes with methyl testosterone therapy in 4 patients with Simmonds' disease. The patients demonstrated renewed vigor, sense of strength and libido, and redeveloped secondary sex characteristics. Seborrhea failed to appear, suggesting that androgens act to produce seborrhea only after the skin has been prepared by some basic mechanism or mechanism in which are wanting following hypophyseal failure. In the absence of hypophyseal function, administration of methyl testosterone resulted in nitrogen retention associated with persistent weight gain. Definite creatinuria developed after a latent

period of several weeks and subsided in about the same length of time after discontinuance of treatment. The therapeutic value of methyl testosterone in Simmonds' disease or anterior pituitary insufficiency is suggested by these cases.

Absorption, Excretion and Distribution of Penicillin
—Rammelkamp and Keefer studied the absorption, excretion and distribution of penicillin when administered by various routes. The subjects included normal volunteers and ward patients. Penicillin in the form of the sodium salt was dissolved in either distilled water or 0.85 per cent sodium chloride solution and passed through a Seitz filter to effect sterilization. The final concentration of all solutions was 1000 Florey units per cubic centimeter except that administered subcutaneously which contained 200 Florey units per cubic centimeter of 0.85 per cent sodium chloride. The number of Florey units administered varied between 5000 and 40000. Intravenous injection of penicillin resulted in high initial concentration in the blood plasma followed by an abrupt fall. The sharp fall in the serum concentration was associated with increased excretion in the urine. Penicillin was rapidly absorbed when given intramuscularly and slowly absorbed after subcutaneous injections. Excretion in the urine was rapid following intramuscular injections and delayed after subcutaneous injections. Absorption from the body cavities was delayed and this was reflected in the slow excretion of penicillin by the kidneys. The total amount found in the urine was somewhat lower than that obtained after intravenous injection. Fluid aspirated from pleural and joint cavities twenty-two and thirteen hours after injection showed appreciable amounts of penicillin remaining. Absorption of penicillin from the duodenum was rapid, whereas oral and rectal doses were poorly absorbed. This may be explained by the inactivating effect on penicillin of the acid and of *Escherichia coli*. The average amount excreted in the urine after oral intraduodenal and rectal administration was extremely small. Penicillin was not excreted rapidly in renal failure and as a result high concentrations were maintained in the blood stream after intravenous injections. Penicillin failed to penetrate the red cells in significant amounts. The average concentration in erythrocytes was less than 10 per cent of the plasma concentration. No penicillin was found in the spinal fluid, saliva or tears of subjects receiving it intravenously.

Journal of Experimental Medicine, New York

77 397-486 (May) 1943

- Biochemical Studies on Shock. I. Metabolism of Amino Acids and Carbohydrate During Hemorrhagic Shock in Rat. F. L. Engel, Mary G. Winton and C. N. H. Long—p. 397
Further Studies on Survival and Development in Vitro of Malaria Parasite. W. Trager—p. 411
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Changes in Lipid Content of Serum and of Liver Following Bilateral Renal Ablation or Ureteral Ligation. A. W. Winkler, S. H. Duracher, H. E. Hoff and E. B. Man—p. 473

Journal Industrial Hygiene & Toxicology, Baltimore

25 139-174 (April) 1943

- New Method for Determination of Free Silica in Industrial Dust. A. Salazar and L. Silverman—p. 139
Study of Industrial Workers Exposed to Sulfur Dust. S. S. Pinto, R. A. Brown and B. H. Carlton—p. 149
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Journal of Lab and Clinical Medicine, St. Louis

28 797-926 (April) 1943

- Heart in Experimental Thyrotoxicosis. E. D. Nora and N. Flaxman—p. 797
Fatal Anuria Following Administration of Sulfonamides with Reference to Tubular Necrosis and Regeneration. Jane A. Ergaman and J. H. Doval—p. 808
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Chronic Hemolytic Anemia with Paroxysmal Nocturnal Hemoglobinuria. Case Report with Experimental Studies. B. J. Hoffman and R. R. Kracke—p. 817
Variations in Susceptibility to Cinchophen as Observed in Animals with Bile Fistulas. J. H. Annegers, F. E. Snapp, A. J. Atkinson and A. C. Ivy—p. 828
Relation Between Amounts of Pertussis Antigen Injected and Production of Agglutinins. J. A. Toomey, W. S. Takacs, R. Averill and N. Lewis—p. 835
Experimental Study of Phlebitis Following Venoclysis with Glucose and Amino Acid Solutions. A. Horvitz, L. A. Sachar and R. Elman—p. 842
Erythrocyte Longevity in Dogs and Rabbits. J. E. Davis—p. 848
Effect of Change of Altitude on Basal Metabolism of Human Subjects. R. C. Lewis, Alberta Iliff, Anna Marie Duval and Gladys M. Kinsman—p. 851
Effect of Change of Altitude on Blood of Human Subjects. R. C. Lewis, Alberta Iliff, Anna Marie Duval and Gladys M. Kinsman—p. 860

Journal Neuropath and Exper Neurology, Baltimore

2 103-206 (April) 1943

- Diffuse Carcinomatous Metastases in Nervous System. E. Lspensky—p. 103
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Journal of Nutrition, Philadelphia

25 411-510 (May) 1943 Partial Index

- Ascorbic Acid Nutrition of Some College Students. Memda P. Brown, Margaret L. Fincke, Jessie E. Richardson, E. N. Todhunter and Ella Woods—p. 411
Biological Determination of Vitamin E. H. Gottlieb, F. W. Quackenbush and H. Steenbock—p. 433
Choline Content of Animal and Plant Products. R. W. Engel—p. 441
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Effect of Dietary Fat on Bone Calcification in Growing Rat. R. Bunkfeldt and H. Steenbock—p. 479
Ascorbic Acid Deficiency Among Papago Indians. M. Pijoan, C. A. Elkin and C. O. Eshinger—p. 491
Growth in Mice Fed Diets Rendered Deficient in Cystine but Not in Methionine. C. D. Bauer and C. P. Berg—p. 497
Influence of Variety, Size and Degree of Ripeness on Ascorbic Acid Content of Peaches. G. M. Schroder, G. H. Satterfield and A. D. Holmes—p. 503

Ascorbic Acid Content of Peaches—Schroder and others made a study of the ascorbic acid content of eight common varieties of peaches grown under comparable climatic and soil conditions in commercial orchards near Raleigh, N. C. The larger portion of the 156 peaches studied were obtained directly from orchards and were assayed within two days of their arrival. There was no correlation between the size of the peach and its ascorbic acid content. The average difference in ascorbic acid content of peaches within varieties was 4.29 mg. per hundred grams of fruit whereas the extreme difference between varieties was 90.2 mg. per hundred grams of fruit. The concentration of ascorbic acid in peaches was found to be highest in the skin, lower in the flesh directly under the skin and lowest in the flesh surrounding the pit. Hard, early season

tained the minimum of ascorbic acid, and as the peaches ripened the amount increased to a maximum for the fully ripe edible peach. The average ascorbic acid content of ripe peaches varied from 384 mg per hundred grams for the Augbert to 1286 mg per hundred grams for the Hiley Belle variety. The ascorbic acid content of peaches is not as high as that of lemons, oranges or tomatoes, but fully ripe peaches contain sufficient ascorbic acid to contribute materially to the human requirements for this vitamin.

Journal of Pediatrics, St. Louis

22 513-636 (May) 1943

- *Evaluation of Dangers of Repeated Administration of Sulfadiazine and Sulfathiazole in Children. H. W. Fink and J. L. Wilson—p 513
- Menarcheal Age and Height, Weight and Skeletal Age of Girls Age 7 to 17 Years. Katherine Simmons and W. W. Greenlich—p 518
- Study of Humoral Antibodies for *Staphylococcus Aureus* in Infants and Their Mothers. J. A. Lichty Jr., C. P. Katsmpes and W. S. Baum—p 549
- Disturbed Kidney Function in Newborn Infant Associated with Decreased Calcium-Phosphorus Ratio. C. L. Snelling—p 559
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- *Sporadic Congenital Obstructive Goiter with Recovery Following Operation in Thirteen Day Old Infant. J. R. Davies—p 570
- Familial Epidemiology of Rheumatic Fever. Genetic and Epidemiologic Studies. II. Epidemiologic Studies. Mary G. Wilson, M. D. Schweitzer and Rose Lubshetz—p 581

Repeated Administration of Sulfonamides in Children

—Fink and Wilson investigated the incidence of acquired sensitivity to sulfadiazine and sulfathiazole in 177 children who were given a sulfonamide drug in two or more courses and had no reaction during the first course. Of the 86 who were given sulfathiazole 3 developed febrile reactions, and of the 91 who were given sulfadiazine 4 developed febrile reactions. It is suggested that these febrile responses were toxic reactions to the drug that might have occurred at any time and had no clear relation to previous drug therapy. Two of the 7 children with initial reactions were given a second and a third course of the drug without reaction. An "immediate" type of febrile reaction occurred during a second course of sulfonamide in 3 of 5 children who had had reactions during a first course. These studies showed that "sensitization" to sulfathiazole or sulfadiazine is not common or frequent in children but that the occurrence of one reaction greatly increases the probability of future reactions. The authors suggest that children who develop toxic symptoms during the first administration of the drug should be given the drug only with caution and under close observation.

Congenital Goiter in Infant with Recovery Following Operation.—Davies presents the history of a woman who gave birth to 7 children, 5 of whom are alive. The first three were normal full term males and are now 11, 10 and 7 years of age respectively. The mother has had severe attacks of asthma since 1934. She administers to herself injections of epinephrine during these attacks. She has a centrally placed thyroid swelling of small to medium size which appears to be adenomatous in character. At the birth of the fourth child the mother was acutely distressed with an attack of asthma, and epinephrine had to be given. The infant was dyspneic and cyanotic. A large bilateral mass connected by a smaller central mass occupied the greater part of the anterior neck. This child died on the thirteenth day. The postmortem diagnosis was congenital hyperplasia and hypertrophy of the thyroid. The fifth child died when 27 days old. The case of this child resembled that of the preceding one, although the swelling in the neck was unilateral. The sixth child, a girl, presented no enlargement in the neck at birth and is normal at the age of 2. The seventh child, a boy, was born on Nov 22, 1941 with a large bilateral mass in the neck. One-third grain (0.02 Gm) of sodium iodide in aqueous solution was given by mouth once a day, beginning on the third day of life. Four days later the swelling in the neck appeared to be enlarging. On December 4 thyroidectomy was performed because of cyanosis and stridor. Two minims (0.12 cc) of strong solution of iodine was given daily for the next twelve days. There is no evidence of thyroid disturbance several months after the operation.

Kentucky Medical Journal, Bowling Green

41 145-184 (May) 1943

- Medical Research in the Navy. H. W. Smith—p 148
- Relationship Between Local Board Examining Physician and Registrant with Reference to Initial Examination. J. L. Toll—p 154
- Preliminary Physical Examination in Selective Service. R. A. Bier—p 156
- Army Examination and Induction Routine. J. E. Dittmer—p 161
- Processing at Reception Center. R. C. Alley—p 164
- Hypertension. R. G. Webb—p 166
- Deafness and Its Detection. A. J. DiCello—p 168
- Influenzal Meningitis. Report of Case. E. P. Scott—p 172
- Spiral Anesthesia with Pontocaine. S. S. Clark—p 174
- Skin Grafting. A. B. Ortner—p 176
- Ambulatory Treatment of Sacroiliac Disease. C. Bailey—p 179

Maine Medical Association Journal, Portland

34 63-80 (April) 1943

- Significance of Rh Factor of Blood. J. E. Porter—p 63
- The Doctor of Medicine and His Responsibility. A. W. Adson—p 66

34 81-102 (May) 1943

- Five Hundred Neuropsychiatric Casualties at Naval Hospital. A. W. Stearns and R. S. Schwab—p 81
- Use of Sulfa Drugs in Traumatic Surgery. F. Winchenbach—p 90

Medical Annals of District of Columbia, Washington

12 171-212 (May) 1943

- *"Primary Atypical Pneumonia." Report Based on Study of 250 Cases. J. L. Thompson Jr.—p 171
- *Treatment of Infections of Cervix, Vagina and Vulva with an Allantoin-Sulfanilamide Lactose Ointment. Preliminary Report. J. Parks—p 175
- Anuria Caused by Transfusion Reactions Due to Anti Rh Agglutinins in Pregnant Women. Report of 2 Cases. W. M. Yater and B. E. Nunez—p 178
- Psychiatric Program at National Training School for Boys. L. M. Dub—p 185

Primary Atypical Pneumonia.—Thompson's report deals with 250 cases of a syndrome which has been variously termed "acute diffuse bronchitis," "acute interstitial pneumonitis," "acute pneumonitis," "virus pneumonia," "primary atypical pneumonia" and the like. The pneumonitis is mainly interstitial. The criteria for diagnosis are a history of "grippy" sensations, minimal physical signs, x-ray findings, normal or leukopenic white blood cell response, irregular fever resolving by lysis, relative bradycardia, sputum negative for pneumococci and no response to sulfonamide therapy. The etiologic agent may be one of several viruses, and the clinical signs and symptoms form a bizarre pattern. A definite diagnosis can be made through totaling several factors and not by a single observation or procedure. Exclusion of closely simulated diseases, particularly of pneumococcal pneumonia, is paramount. There is no alternative but to give a sulfonamide routinely until a definite diagnosis of primary atypical pneumonia can be made. This routine therapy at the onset of the disease might have some beneficial effect on possible secondary bacterial invasion. Symptomatic treatment is all that can be offered in primary atypical pneumonia. The symptoms that demand greatest attention are the headache and the dry, hacking cough. These are alleviated by codeine and by steam inhalations. Oxygen therapy is rarely necessary. The author kept each patient at bed rest until there had been six days of normal temperature or until the x-ray film showed clearing. Seven to fourteen days of fever, six days of normal temperature, seven days sitting up and seven days of moderate activity resulted in an average hospitalization of between twenty-seven and thirty-four days. This lengthy convalescence is believed to be a major factor in the lack of serious complications in this series.

Allantoin-Sulfanilamide-Lactose Ointment in Infections of Cervix, Vagina and Vulva.—The ointment used by Parks contains 2 per cent allantoin, 15 per cent sulfanilamide and 5 per cent lactose in a special greaseless base buffered to a pH of 4.5 with lactic acid. A total of 68 patients have been treated with this preparation. Surface infections of the cervix, vagina and vulva, with the exception of vulvo vaginal mycoses, respond to local applications of the ointment. Its expression through a tube into the vaginal vault is a quicker

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Use of New Ephedrine as Drug in Hay Fever and Asthma A J
Freeman and A E Cuthbert—p 138

Southern Medical Journal, Birmingham, Ala.

36 321-392 (May) 1943

- Cancer of Liver M Equen, F Neuffer and W B Matthews—p 321
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 W R Mason Jr and O Swineford Jr—p 321
 Live per Cent Saline Enemas in Urologic Practice H E Carlson—
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 Smith Petersen Nail Fixation in Hip Disease J W White—p 333
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 Rubinstein and S Androp—p 340
 Neurologic Diagnosis J D Campbell—p 348
 Alcohol and Cirrhosis of Liver R S Bolea—p 353
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 Modern Methods of Procedure in Obstetric and Gynecologic Practice
 R M Lewis—p 363
 *Importance of Antral Mucosa in Surgical Treatment of Duodenal Ulcer
 A W Allen—p 368
 Medical and Nutritional Survey of 500 Youths Experience at National
 Youth Administration Work Center in Physical Rehabilitation of
 Youths of Draft Age I H Manning Jr and D I Milum—p 373
 Contact Dermatitis W J Vaughan—p 380
 Teaching of Military Medicine in Medical Schools L P Lehman—
 p 382
 Accelerated Internship I L Jarrett—p 385

Antral Mucosa in Surgical Treatment of Duodenal Ulcer—Allen states that approximately 80 per cent of the patients coming to the Massachusetts General Hospital with duodenal ulcer are satisfactorily treated by conservative measures. Surgical ulcers, except acute perforation must be treated radically. Conservative operations give a high incidence of poor results and should be abandoned. Complete elimination of the antral mucosal cells is necessary for the highest degree of success. This can be accomplished by the resection of the distal half to two thirds of the stomach. When technical difficulties make this unsafe, the antral mucosa should be removed in any segment left for adequate closure. It is by these methods that the most serious complications of inadequate operation, namely anastomotic or jejunal ulcer, may be prevented.

Southwestern Medicine, Phoenix, Ariz

27 61-90 (March) 1943

- Acute Abdominal Conditions W W Haggart—p 63
 Emergency Treatment of Abdominal Traumas E P Palmer—p 64

Surgery, St Louis

13 495-652 (April) 1943

- Physiologic Basis for Surgical Treatment of Asthma L Miscall
 and E A Rovenstine—p 495
 Fascia Lata Transplant for Difficult Hernias A H Iason—p 511
 Free Autoplastic Transplants of Fascia Lata in Repair of Large
 Incisional Hernia L J Morse and J S Barb—p 524
 Consideration of Factors Influencing Surgical Repair of Inguinal
 Hernia H Lavender—p 535
 Intestinal Capillary Circulation During Distention M J Oppenheimer
 and F C Mann—p 548
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 dix S Saues and J Ambrusko—p 561
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 Carcinoma Metastases in Appendices Epiploicae R K Gilchrist and
 V C David—p 574
 Hemangiopericytoma of Omentum A P Stout and C Cassel—p 578
 Early and Late Topical Use of Sulfathiazole in Infected Wounds
 L W Riba and W G Aten—p 582
 *Chemotherapy in Penetrating Abdominal Gunshot Wounds F L
 Loria—p 588
 Consideration of Empyema, Especially Its Chronic Phase J E
 Strode—p 598
 New Procedure for High Frequency Coagulation R R Flores
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Chemotherapy in Penetrating Abdominal Gunshot Wounds—Loria reports a group of 100 cases of penetrating gunshot wounds of the abdomen admitted to the New Orleans Charity Hospital. Forty-nine received some form of chemotherapy, while 51 did not. In the chemotherapeutically treated group the mortality was 18.4 per cent. In the group not so treated the mortality was 50.9 per cent. In a group of 11 patients in whom intraperitoneal implantation of sulfathiazole

was practiced there were no fatalities. Sulfathiazole was the drug used. None of the patients so treated showed any evidence of toxicity attributable to these drugs. Peritoneal fluid concentrations were not determined, since none of the patients were drained. A small number of blood level determinations of the drug failed to show high figures, although large doses were implanted intraperitoneally. The sulfonamides are especially helpful to patients showing "massive" hemorrhage. Such patients showed a 91.6 per cent mortality in the group receiving no chemotherapy, as compared with 40 per cent fatality in the group receiving sulfonamide treatment.

Tennessee State Medical Assn Journal, Nashville

36 127-162 (April) 1943

- Description of an Industrial Medical Program in an Aircraft Factory
 C Harrison—p 127
 Epidemic Keratoconjunctivitis M L Berliner—p 138
 Treatment of Carcinoma of Lip with Special Reference to Manage-
 ment of Regional Lymph Nodes H Wilson—p 140

36 163-204 (May) 1943

- Essential Qualifications of a Great Surgeon E Sachs—p 173

Texas State Journal of Medicine, Fort Worth

39 1-52 (May) 1943

- Nephritis and Nephrosis E T Bell—p 6
 Splenectomy, Its Medical Management W L Marr, with technical
 assistance of Elsie Washburn—p 8
 Some Cardiac Evidence of Vitamin Deficiency L P Hightower
 —p 11
 Hypoglycemic States L M Helfer—p 15
 Photofluorography in Chest Survey Projects F J Hodges—p 19
 Diagnostic Facilities for Indigent Tuberculous in Texas E G
 Faber—p 24
 Psychoses of Pregnancy A T Stewart—p 27
 Use of Fascia in Repair of Hernias L R Sadler—p 32
 Familial Corneal Dystrophy Report of Family with Granular Dys-
 trophy R K Daily—p 34

War Medicine, Chicago

3 447-564 (May) 1943

- Arthropod Borne Diseases with Special Reference to Prevention
 and Control S Jarcho—p 447
 Packet Type of Kit for Venereal Disease Prophylaxis Preliminary
 Report Concerning Its Use I A Pelzman and J W Still—p 474
 Experimental Burns I Methods Mortality and Hemocoagulation
 Curves R Elman and F L Brown Jr with technical assistance
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 Amblyopia in Hysteria Report of 13 Cases V P Mahoney and
 W O Linhart—p 503
 Active Immunization of Human Beings with Combined Clostridium
 Perfringens and Tetanus Toxoids Sarah E Stewart—p 508

Wisconsin Medical Journal, Madison

42 373-456 (April) 1943

- Low Back Pain Anatomic and Constitutional Aspects in Differential
 Diagnosis H E Mock—p 389
 Abdominal Apoplexy Report of 2 Cases P F Doege and J H Gray
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 Surgical Scarlet Fever M J Fox and M Hardgrove—p 402
 Disorders of Newborn S E Kohn—p 404
 Leptospira Icterohemorrhagiae (Weil's Disease) Study of First
 Reported Case in Wisconsin Jacob M Fine and Warren J Conen
 —p 408
 Mumps Followed by Orchitis and Meningitis Case Report V W Koch
 —p 414
 Epidemic keratoconjunctivitis E C Bach—p 415

42 473-564 (May) 1943

- Pathologic Physiology of Hemorrhage F W Madison—p 495
 Treatment of Shock C F Conroy—p 498
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 Making Ration Limited Diets Adequate E L Sevrinhaus—p 517
 Technique of Home Canning Dorothy L Hussmann—p 522

FOREIGN

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British Journal of Radiology, London 16 129-156 (May) 1943 Partial Index

- Osteogenesis Imperfecta J F Brailstord—p 129
Response of Cells in Vitro to Variations in X-Ray Dose Age Ilse Lasnit
—p 137
Osteochondritis Dissecans Records of Some Unusual Cases R G
Hutchison—p 147
Radiologic Changes in Carotid Cavernous Aneurysm R A A Harper
—p 150
Endothelioma of Peritoneum Case Report A E Connolly—p 153

British Medical Journal, London 1 591 622 (May 15) 1943

- Head Injuries in Motor Cyclists with Special Reference to Crash
Helmets H Cairns and H Holbourn—p 591
Diet in Diabetes R H Micks—p 598
Treatment of Asthma by Nicotinic Acid G Milton—p 600
Meningitis Due to Diplococcus Mucosus P T Bray and J C Cruick
shank—p 601
Multiple Muscle Hernias I D Kitchen and D A Richmond—p 602

Edinburgh Medical Journal 50 193-256 (April) 1943

- *Value of Postoperative Radiotherapy in Carcinoma of Breast R
McWhirter—p 193
Modern Trends in Preventive and Social Aspects of Tuberculosis
C Clavson—p 208
Studies in Retractor Anemia I. Technique and Interpretation of Sternal
Puncture Biopsies Classification L S P Davidson L J Davis
and J Innes—p 220
Endemic Fluorosis in Great Britain L Spira—p 237

Postoperative Radiotherapy of Carcinoma of Breast—McWhirter states that when surgery is the only method of treatment available survival for five years probably does not occur in more than 1 in 5 of all cases of cancer of the breast. The three year symptom free rate is a reliable guide to the five year survival rate. A total of 1879 cases has been analyzed. In the operable group (stages 1, 2 and 3) effective postoperative radiotherapy by destroying cells left behind in the treatable area results in much higher three year symptom free rates in all three stages. Postoperative radiotherapy is still effective when the disease has spread to the axillary glands but is of no value so far as survival rate is concerned if the disease has spread to distant sites. Simple mastectomy combined with postoperative radiotherapy as a method of improving results and as a means of diminishing disability is on trial. Survival to five years in the advanced (stage 4) group is so low as to be accidental irrespective of the method of treatment. The delay which occurs between the time the patient first notices something wrong and treatment is on an average nine months. Treatment before the stage of clinical certainty is reached is strongly advocated if further progress is to be made. At the early highly curable stage a clinical differential diagnosis should not be attempted. Excision and microscopic examination is the only reliable means of diagnosis. If medical delay is eliminated the cure of at least 1 out of every 2 or all cases of cancer of the breast is easily possible with methods of treatment at present available.

Journal of Royal Army Medical Corps, London 80 167-226 (April) 1943

- Rehabilitation S D Large—p 165
*Acute Fulminating Hemolytic Syndrome Fat Necrosis of Liver and
Acute Necrotizing Nephrosis Following Sulfanilamide Therapy R S
Murley—p 182
Emergency Medical Service R J Blackham—p 199

Acute Syndrome Following Sulfanilamide—Murley describes a case in which an acute fulminating hemolytic syndrome developed following the administration of 12 Gm of sulfanilamide to an Indian sepoy with multiple venereal sores. Fat necrosis of the liver and acute necrotizing nephrosis accompanied the hemolytic syndrome. The much dreaded agranulocytosis is a complication of prolonged or injudicious dosage in

the great majority of cases. Agranulocytosis is a late complication of chemotherapy and is rarely seen when the drug is carefully used. Acute hemolytic anemia, however, is an early complication which is unrelated to incautious use of the drug and may occur in the hands of the most careful clinician. The importance of exercising adequate caution in chemotherapy is stressed.

Lancet, London

1 573 604 (May 8) 1943

- Lytic Agent and Inhibitory Factors in Human Tissue and Sera. Changes
in Serum Inhibitor Factor in Blackwater Fever B G Maegraith
G M Findlay and N H Martin—p 573
Immediate Death After Use of Intravenous Mercurial Diuretics H
Evans and K M A Perry—p 576
Vitamin C Intakes in Small Ship C C Ingle—p 578
Acridine Antiseptics. Further Experiments on Their Local Action
Dorothy S Russell and M A Falconer—p 580
Pneumococcal Meningitis. Recovery After Sulfapyridine and Serum
Therapy H A Thomas R J Twort and C P Warren—p 581
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Spontaneous Rupture of Spleen in Malignant Tertian Malaria G S W
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1 605 636 (May 15) 1943

- *Penicillin and Propamidine in Burns. Elimination of Hemolytic Strepto-
cocci and Staphylococci A M Clark L Colebrook T Gibson M L
Thomson and A Foster—p 605
Treatment of Burns at Tobruk N J Logie—p 609
*Thrombosis. Treatment and Prevention with Methylene-Bis (Hydroxy-
coumarin) J Lehmann—p 611
Observations on Autohemagglutination F Stratton—p 613
Slide Culture Method for Tubercle Bacilli K S Rosenberg—p 615
Fatal Air Embolism After Insufflation of Vagina R L Brown—p 616

Penicillin and Propamidine in Burns—Clark and his associates point out that the predominant part played by the hemolytic streptococcus and the staphylococcus in interfering with the repair of burns makes it desirable to perfect means for preventing and controlling infection by these organisms. Sulfanilamide is not quite the ideal agent for this purpose. The authors applied penicillin in the form of a cream to 54 burns and scalds in various stages of healing. In 41 of the wounds (76 per cent) the streptococci disappeared within five days and did not reappear. In 7 the strains which promptly disappeared were insensitive to the sulfonamides. There were no cases in which penicillin appeared to have no effect. Staphylococci also disappeared quickly from many of the wounds. Healing was rapid and no toxic effects were observed. Propamidine was applied in the form of a cream (0.1 per cent) to 34 similar burns. Hemolytic streptococci disappeared within five days from 21 of the wounds (62 per cent). They persisted in 8 cases during treatment with propamidine. Of these 3 lost their streptococci promptly when they were later treated with penicillin. Healing was not quite so rapid as with penicillin. No toxic effects were observed. Coliform bacilli *Proteus vulgaris* and *Pseudomonas pyocyanea* when present in the wounds were apparently not affected by either agent.

Treatment and Prevention of Thrombosis—Lehmann of Gothenburg, Sweden gave dicumarol the anticoagulant first obtained from spoiled sweet clover hay by mouth to 100 persons with established venous thrombosis in the lower limb and 32 with thrombophlebitis. In thrombosis the mean recovery time was reduced to from one to three weeks, a third of what it was before anticoagulants were used and in thrombophlebitis to six and one half days. The anticoagulant was also given prophylactically to 170 patients after various gynecologic operations during 1942, only 1 case of venous thrombosis and 1 mild case of embolism were seen and there were no deaths from these causes. In 1941 there had been 9 cases of thrombosis and 5 of embolism with 3 deaths in a comparable series. In about 1 case in 10 hemorrhage occurred as a complication but in only 1 in 100 was it at all profuse and in these it was readily controlled with vitamin K and blood transfusions.

Medical Journal of Australia, Sydney

1 225 227 (March 15) 1943

- Scheme for Medical Service of Commonwealth A J L Davis—p 225
Considerations on the Use of Salivary Medical Service of the
Health and Medical Research Council C T Fier—p 227

Schweizerische medizinische Wochenschrift, Basel**72 1237-1260 (Nov 7) 1942 Partial Index**

- When Is Roentgen Therapy of Cancer Indicated and What Can Be Expected from It? M. Ludin—p 1237
- Treatment of Torpid Cutaneous Ulcers by Vitamin C A. Fey, L. Crisculo and P. Marhuenda—p 1242
- Sensitive and Specific Clinical Procedure for Demonstration of Blood in Urine Feeces and Gastric Juice with Use of Spectroscopic Method R. Eder and C. von Lippert—p 1245
- *Parodontitis as Important Symptom in Early Diagnosis of Diabetes Mellitus J. W. Grott—p 1249
- New Experiences on Mode of Action of Vitamin K in the Newborn N. Fischer—p 1252
- Electroencephalography in Man M. Monnier—p 1253

Parodontitis in Early Diagnosis of Diabetes—Grott surveyed 350 patients with diabetes for the presence of parodontitis. Particular attention was paid to looseness of teeth and to the length of time these symptoms existed before the discovery of the diabetes. It was found that 148 of the patients had loose teeth, 34 others had symptoms of parodontitis without looseness of teeth. Of a total of 350 patients, 182 (52 per cent) had had changes in the parodontium before diabetes was recognized. In 80 of the 148 patients the symptoms of parodontitis antedated the discovery of diabetes by from one to five years and in 68 by five years. These figures indicate that symptoms of parodontitis can be of value in the early diagnosis of diabetes. If no sugar is detected in the urine in the presence of a parodontitis a tolerance test should be made and the blood sugar curve investigated.

72 1261-1288 (Nov 14) 1942 Partial Index

- *Coronary Sclerosis in Young Persons B. Walthard—p 1261
- Hormones in Chemical Heat Regulation and Two Hitherto Unknown Hormones of Thyroid G. Mansfeld—p 1267
- Surgery in the Aged F. Becker—p 1273
- Investigations on Mode of Action of Vitamin B₁ E. Goth—p 1275
- Treatment of Acute Appendicitis with Sulfathiazole J. L. Burchhardt—p 1277
- Nicotinic Acid Amide in Permo H. Birkhauser—p 1280
- Scotoma in Plumbism R. de Montmollin—p 1284

Coronary Sclerosis in Young Persons—Walthard reviews the causation of coronary sclerosis, he studied 18 cases. Two cases of endocarditis lenta are intentionally included in order to demonstrate the insignificance of a mycotic inflammatory process for the genesis of coronary sclerosis. The remaining 16 are typical cases of coronary sclerosis in persons between the ages of 20 and 40. Postmortem examinations were negative as to the existence of a focal inflammation. The structure of the intimal plaques in the endocarditis lenta cases with the mycotic infectious foci was the same as in other cases of arteriosclerosis. It was not possible to establish a relation of focal inflammation to the development of a narrowing coronary sclerosis, an inflammatory sclerosis. The concept arteritis stenosans coronariae should be rejected. The process in question is not a primary inflammation in the form of an infection but rather a reparative secondary inflammation in the course of a progressive coronary sclerosis that leads to contraction of the artery.

Archivos de Medicina Infantil, Havana**12 69-132 (April-May-June) 1943 Partial Index**

- Chorea in Children A. M. Abril—p 69
- *Cruveilhier-Baumgarten Syndrome (Jaundice Due to Sclerotic Hepatitis) in Infant Case A. Castellanos—p 86

Cruveilhier-Baumgarten Syndrome—According to Castellanos, congenital jaundice due to sclerotic hepatitis (the so-called Cruveilhier-Baumgarten syndrome) is extremely rare in infants. The main symptoms are portal hypertension with consequent enlargement of the superficial veins of the portal system, hepatomegaly, splenomegaly, functional liver insufficiency and jaundice. The abdomen is balloon-like, the umbilicus is herniated, the face is puffy, the epicranial and cervical veins are enlarged and the fingers are clubbed. The physical and mental development of the patient is delayed. The diagnosis is confirmed by a puncture biopsy of the liver. The liver presents adult connective tissue and local sclerosis. The therapy consists of antisyphilitic drugs, regardless of whether the serologic tests of the infant or of the parents are negative. The case reported by the author in an infant of 22 months is the third on record in world literature. The patient was improved by antisyphilitic therapy.

Revista de Neurol e Psiquiat de São Paulo, São Paulo**8 167-228 (Sept-Oct) 1942 Partial Index**

- Encephalitis After Vaccination D. Fleuri Silveira—p 167
- *Auricular Herpes Zoster Cases L. de Assis and P. da Cunha Cintra—p 179

Auricular Herpes Zoster—Localization of the virus of herpes zoster in the geniculate ganglion is rare. It produces the so-called Ramsay-Hunt syndrome, which manifests itself by facial paralysis and cutaneous vesicles or pustules along the external auditory canal and the pinna. The neurologic symptoms may appear either early or late in the course of the disease, or during regression of the cutaneous and mucosal lesions. The pure form of the disease is benign. The symptoms slowly regress and disappear completely in from two to four months. The therapy consists in intense administration of vitamin B. Faradization is applied to the muscles two or three weeks after the appearance of paralysis. The appearance of muscular contractions in the course of the electrical therapy calls for discontinuation of faradization. Salicylates and strychnine by mouth or injection are helpful. Sulfamidamide is useless and dangerous because of its toxic effect on the peripheral nerves. Two cases are reported.

Klinische Wochenschrift, Berlin**21 121-144 (Feb 7) 1942 Partial Index**

- Standardization of Animal Experiments by Use of Inbred Strains kept Under Constant Environmental Conditions H. W. Denzer—p 126
- *Studies on Bacterial Growth and Its Prevention in Preserved Blood K. Reissmann—p 127
- *Serologic Behavior of Keratitis Parenchymatosa at Various Ages W. Schmidt—p 132
- Experimental Investigations on Regulation of Blood Protein Bodies by Endocrine System Thyroid and Serum Proteins L. Podbradzky—p 134
- Use of Preserved Complement in Serodiagnosis H. Gross and G. Henning—p 136

Bacterial Growth and Its Prevention in Preserved Blood—Reissmann detected bacterial contamination in preserved blood which showed no hemolysis and in which the Duran-Jorda test had failed. The fact that the transfusion of preserved blood caused chills and rise in temperature in a larger percentage of cases than transfusion of fresh blood induced him to make a bacteriologic test of every unit of preserved blood. The tests revealed that about 6 per cent of the units of preserved blood were contaminated, chiefly with staphylococci. This high percentage and a severe reaction in 1 patient who was given a transfusion of preserved blood which was found to contain colon bacilli induced a search for a disinfecting substance. Tests were made with several sulfonamide preparations, with propyl-hydroxybenzoate and related substances and with acridine dyes, such as rivanol and acriflavine hydrochloride. Rivanol gave the best results. When 2 mg of rivanol was added to 100 cc of blood, the majority of contaminating bacteria were either killed or inhibited and no harmful effect was exerted on the blood. Preserved blood which contained this addition was well tolerated and its effect did not differ from other preserved blood. The author's studies were made in the course of the preparation of 4,000 specimens of preserved blood.

Serologic Behavior of Keratitis Parenchymatosa—Schmidt's observations on 34 cases of parenchymatous or interstitial keratitis did not corroborate the widely held opinion that the strongly positive serologic reactions are about equally frequent in keratitis patients of all age groups and that they show the same refractoriness to specific treatment in adults as in children. He found that intensely positive reactions are most frequent in patients between 10 and 15 years of age. The frequency of the intense reactions decreases with age. Only about half of the patients in whom interstitial keratitis develops after the twenty-fifth year show strongly positive serologic reactions. The prospects of conversion of the positive serologic reactions into negative by the antisyphilitic treatment are much better in patients over 20 than in children. One series of antisyphilitic treatments failed to produce negativity in all of 4 children less than 10 years old and in 19 of 20 children between 10 and 20, but in only 6 of 10 patients in the third and fourth decades of life.

Book Notices

Compendium of Aviation Medicine By Siegfried Ruff and Hubertus Struhschold [English translation] With Introduction by Surgeon General Prof. Dr. Erich Hippke Chief of the Medical Staff of the German Air Corps. Reproduced Under a License Granted by the Alien Property Custodian 1942. Paper. Pp. 130 with 103 illustrations. Washington D. C. National Research Council 1942.

This book was offered in 1939 as a practical textbook for aviators, medical students and physicians concerned with medical problems in aviation. The authors point out that German aviation medicine has not been content with practical research alone but has also boldly attacked the scientific fundamentals of the problem. Their object has been not to prepare an exhaustive source book for specialists but rather to present to the medical profession at large a body of information concerning the results of these investigations and to make accessible a cross section of the status of contemporary medical aviation. Both authors are particularly well qualified for this task having made important contributions to research in several aspects of aviation medicine. In spite of its modest aspirations, this book constitutes a significant contribution to the subject. Although three years old and despite the welter of open and confidential literature which has since become available this work is of special value in the English language because of the early and extensive preoccupation of the Germans with aviation medicine.

The present translation has been reproduced under a license granted by the alien property custodian. The translator has prepared the text in an attractive and readable style and has at the same time faithfully preserved the sense and form of the original. The illustrations and text have been adequately prepared by the National Research Council within the limits of the planograph technique.

Dr. Erich Hippke, Chef des Sanitätswesens der deutschen Luftfahrt, who has written the preface, refers to the book as comprehensive. However there are notable omissions. Specifically the reader finds no discussion of vision, hearing, alimentary or renal function or the endocrine glands in relation to aviation. Nor are bacteriology and immunology in aviation, decompression sickness (bends), pathology of aviation selection testing and sanitary aviation included. In view of current interest the absence of consideration of the bends is especially surprising but possibly significant.

Chapter I reviews the historical background of aviation medicine. The treatment is sketchy, surprisingly so considering the rich historical bibliographic material available to the authors in Schmidt's *Bibliographie der Luftfahrtmedizin*. Chapter II contains a well written discussion of the effects of altitude on the body. There is an excellent section on the physics and chemistry of the atmosphere. Research methods and terminology in aviation medicine are briefly reviewed. Then follow sections on the blood, respiration, the circulation and the central nervous system. The effects of altitude on consciousness and reflex behavior are touched on. Altitude tolerance is treated in some detail. Physical, biologic, dietetic and pharmacologic factors in determining the body's resistance to flight conditions are discussed. The chapter closes with a consideration of acclimatization and the possible biologic effects of cosmic rays. Chapter III is a review of the effects of linear, radial and angular acceleration on the organism. Problems raised include the effects of opening the parachute, launching the plane from the catapult, directional changes in the plane and rotation in the centrifuge. In chapter IV is given a very incomplete account of sensory physiology in flight. Chapter V contains an analysis of the causes of flying accidents and in chapter VI, under the title of comparative physiology of flight, the wing structure and action of birds are described. The physiologic adaptations of the lower animals to high altitudes—of considerable intrinsic interest as well as practical importance in sanitary aviation—are not discussed.

Throughout the text the effects of flight on the body are considered in the light of normal physiologic mechanisms and wherever necessary the reader is given lucid explanations of physical and mathematical principles involved. The lack of an index is to be deplored.

Seoville's The Art of Compounding By Justin L. Powers, Ph.D. Chairman of the Committee on National Formulary and George E. Crossen, Ph.D. Dean and Professor of Pharmacy, Drake University, Des Moines. Seventh edition. Fabrikoid. Price \$4.75. Pp. 457 with 57 illustrations. Philadelphia: Blakiston Company 1943.

This edition presents an improved and modernized textbook for students in dispensing pharmacy. The authors have adjusted the length and content of many of the chapters to conform with changing methods and improved practices. The sequence has been somewhat revised to provide a more logical and desirable order for the presentation of the material. The first chapter deals with the origin and structure of the written prescription and describes its reception, checking, compounding, labeling, pricing and filing by the pharmacist. The second chapter discusses nomenclature, vocabulary and Latin terms and their abbreviations. The consideration of incompatibilities has been expanded into three chapters and the material has been rearranged. Improved arrangement is especially evident in the chapter on chemical incompatibilities in which the cations are grouped according to their positions in the periodic table so that the student can use his knowledge of chemistry to better advantage. The consideration of incompatibilities has been moved forward. From the standpoint of usefulness this change in order is a very desirable one. While it may tend temporarily to cloud the student's perspective or prescription dispensing, it should result in a clearer understanding of the material covered in succeeding chapters. Chapters 6 to 9 deal with various solutions. The material on isotonic solution especially is presented in a clear and understandable manner. A general discussion of hydrogen ion concentration and its application to the preparation of buffered solutions is included. However the application of buffering to specific groups of solutions would have been valuable to the student. For instance medical schools teach that collyria should be buffered but pharmacy students and pharmacists would have difficulty in preparing buffered collyria from the information in the text. Succeeding chapters cover the various types of pharmaceutical preparations and prescriptions. The chapter on pills is probably too lengthy for present needs of pharmacy and medicine. Emulsions are discussed comprehensively but the reader has difficulty in finding the meaning of an o/w or w/o emulsion without searching for the scattered threads of the explanation through a number of paragraphs. Chapters on vitamins and biologic products are brief but adequate. Chapter 23 on sterilization is very complete but the sterilization of certain sulfonamides for intraperitoneal and external use as bacteriostatics is not mentioned. With the added material the change in chapter sequence and improved style this edition should be of greater usefulness than the sixth to students in pharmacy and to practicing pharmacists.

Synopsis of Traumatic Injuries of the Face and Jaws By Douglas B. Parker, M.D., D.D.S., Associate Professor, Department of Oral Surgery, School of Dental and Oral Surgery, Columbia University, New York. Fabrikoid. Price \$4.50. Pp. 334 with 229 illustrations. St. Louis: C. V. Mosby Company 1942.

The presentation of this book achieves the author's desire to provide a concise well illustrated manual for the medical and dental professions on the subject of face and jaw injuries of traumatic origin. The author states that it was not his intention to produce a textbook on oral surgery or plastic surgery but rather in a synopsis form to present the treatment of maxillofacial cases from first aid at the scene or injury to the more definitive treatment at a more permanent base.

Physicians and dentists join their efforts in the treatment of maxillofacial cases. This cooperation and team work can be expected to assume an important role in this war and the years to follow. A number of special courses of instruction in maxillofacial surgery have been given in the military service, civilian institutions and organizations. The attendance at these courses clearly indicates the earnest desire of surgeons and oral surgeons to improve themselves professionally and to obtain a more adequate training in basic and emergency surgical procedures.

Adequate first aid and early treatment of face and jaw casualties is encouraged as a means of effecting their return to duty as soon as possible. Inadequate or delayed treatment may contribute to prolonged hospitalization and unusual difficulties.

Queries and Minor Notes

THE ANSWERS HEREFOR PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TYPHOID VACCINATION AND TUBERCULOSIS

To the Editor—Is typhoid vaccine contraindicated in clinically active tuberculosis? Is it contraindicated in arrested tuberculosis?

J. D. Riley, M.D., State Sanatorium, Ark

ANSWER—Any insult to the constitution of a patient suffering from active tuberculosis without a compensatory beneficial effect will be detrimental. As typhoid vaccination sometimes produces severe reactions and as beneficial effect on tuberculosis has never been claimed, it follows that it will probably result in injury which may lead to serious results. Although Baldwin and L'Esperance failed to show any particular damage in guinea pig experiments following typhoid vaccination, Clovis and Mills reported the production of acute pleurisy resulting from its use in tuberculous patients. There is every reason to believe also that it will produce irritation and exudation elsewhere in the body of tuberculous patients. In a report by Hektoen and Irons, who canvassed 267 American specialists in tuberculosis, there were over 3 to 1 who claimed unfavorable over favorable results on the use of different "vaccines" (not counting products of the tubercle bacillus) in tuberculous patients. Although the vaccines were intended for the "secondary infections" and were not "typhoid," the principles are similar if not identical. Of the favorable claims made to these authors only vague "good results" were reported, while from those reporting unfavorable results five deaths were directly attributable to "mixed stock vaccines."

For quiescent, latent-active or "arrested" tuberculosis it would seem that the same general rules should apply. There is a period of years when the bacilli are being encapsulated, when a sudden exudative reaction may cause a softening and exacerbation of the lesion.

In the population there is a large number of infected people who are either drifting toward disease or toward recovery when a rupture of an encapsulated tuberculous node or tubercle into the tissues or into one of the canals may lead to active and even fatal disease. There are many "accidents and shocks of life" which have been found to precipitate disease in such patients, not the least of which is typhoid vaccination. In the writer's experience activity has been precipitated in two definite instances by typhoid vaccination. Hench also reports a few random cases of exacerbation of tuberculosis following typhoid vaccination.

It seems prudent, therefore, to refrain from vaccination against typhoid in all cases of active tuberculosis and in all latent-active cases (such as those the Army and Navy reject for tuberculosis) except where the danger of typhoid itself greatly outweighs the probability of active tuberculosis. An example of the latter condition is afforded by invaded countries or bombed cities where enteric diseases may be rampant.

References

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Hektoen, Ludwig, and Irons, E. E. Vaccine Therapy, *ibid.*, March 16, 1929, p. 864.
Hench, Philip S. Usual and Unusual Reactions to Protein (Fever) Therapy, *Arch. Int. Med.* 49: 1 (Jan.) 1932.

FLUORIDES AND DENTAL CARIES

To the Editor—What type of fluorine and what dose is necessary to use as a preventive of tooth decay? Lieutenant Colonel, M. C., A. U. S.

ANSWER—There is a large amount of epidemiologic evidence suggesting that an optimal intake of fluoride tends to inhibit the intensity of dental caries attack. In this country differences in dental caries prevalence rates have been found associated with differences in the fluoride concentration of several municipal water supplies studied. In what particular form the fluorine is present naturally in these waters has not been satisfactorily demonstrated but experimentally several of the salts of fluorine (sodium fluoride, calcium fluoride and others) have been shown definitely to inhibit induced caries in rat molars.

The specific dosage most useful in inhibiting dental caries attack in man has not been definitely determined. A paper by F. J. McClure, recently accepted for publication by the *American Journal of Diseases of Children*, entitled "Fluoride Ingestion and Dental Caries—Quantitative Relations Based on Food and Water Requirements of Children 1 to 12 Years Old," may answer theoretically some of the questions raised in connection with the problem of dosage or fluoride intake.

On the basis of epidemiologic studies made in eight suburban Chicago communities (*Pub. Health Rep.* 56: 761 [April 11] 1941) it would seem that the most desirable fluoride concentration in a domestic water from the standpoint of dental health, is one containing about one part per million of fluoride (F). It is of course, likely that in some regions of the United States, for instance the Southwest, where climatologic conditions such as high mean annual temperature, humidity and wind velocity may introduce factors conducive to a higher water consumption and consequently higher fluoride intake, low dental caries prevalence rates may be found associated with the continued use of domestic waters well below one part per million. A specific answer to possible climatologic influences, however, must await the results of a number of detailed epidemiologic studies in different parts of the country in cities having the requisites for quantitative evaluation. The probable influence of this variable, therefore, must be kept in mind, a relatively precise estimation of its influence must await the results of further study.

The control of dental caries attack through the medium of internally administered fluoride has not as yet been subjected to a controlled test. No information, therefore, is available with regard to whether fluoride administered in this manner will or will not reduce the incidence of dental caries.

MANUFACTURE INVOLVING FORMALDEHYDE COMPOUND

To the Editor—A local manufacturer of wallboard is contemplating the manufacture of a new product which involves the application of a formula consisting of urea, formaldehyde and ethylene glycol. This formula will be painted on the rough board and then subjected to heat in a closed oven and later to certain presses. The question arises as to the danger to employees from inhalation of fumes from this mixture and the possible danger to residents surrounding the factory from the escape of fumes into the atmosphere from the oven. I have no literature available locally on which to base an opinion as to the harmful effects which might result from the inhalation or contact with these fumes. Can you give me any information available on this subject and, if they are harmful, any suggestion as to means of protecting the workmen handling this mixture and also the escaping fumes from the factory?

Archie Orenstein, M.D., Hilo, Hawaii

ANSWER—This query lacks some items of information necessary for a satisfactory answer. It is not clear that the urea-formaldehyde combination represents one of the well known urea-formaldehyde condensation resins or instead a loose mixture along with ethylene glycol, which possibly are chemically combined in the product itself as a result of heat and pressure. Further, the extent of operation is not clear, which fact is important to the scale of community atmospheric pollution. In any event the formaldehyde is the item for chief practical consideration. There is every reason to believe that enough formaldehyde may be present to constitute objectionable or damaging work conditions within the factory unless the operations mentioned are carried out mechanically in enclosed systems, which is highly desirable. The threshold of beginning injury from formaldehyde is about 10 parts of the gas per million of air. Above that level, and more particularly above the level of 20 parts per million, respiratory irritation may be expected, which in severe form is characterized by bronchitis and at times respiratory tract abscesses. Skin contact with almost any material containing formaldehyde may lead to dermatitis. The situation will be less troublesome if in fact a preformed urea-formaldehyde synthetic resin is employed. No casual protection such as that from respirators would be sufficient in case considerable volumes of formaldehyde gas are present. Full consideration should be extended to the merits of well ventilated automatic operations. Apart from the fabrication of the products, some possibility exists that sawdust from later shaping of the wallboard may lead to skin irritation.

As to the community situation, some benefit may arise from the passing of the entrained gases through a water screen or sprinkler system, since some of the gases evolved are readily dissolved in water and may be discharged into waste system. Assuming the provision of fairly high stacks, the dilution of the formaldehyde would be so great as to eliminate community hazard, but odors probably would arise. Formaldehyde odors are disturbing to most persons. A somewhat analogous situation exists in connection with the fabrication of bakelite products, bakelite being a phenol-formaldehyde resin. While no real damage is done, disturbing odors are sometimes encountered for several blocks down wind. Both in the factory and in the

general atmosphere it will be necessary to maintain conditions as to formaldehyde below the 10 parts per million level. Measurement procedures may be found in an article by Barnes and Speicher in the *Journal of Industrial Hygiene and Toxicology* 24:10 (Jan) 1942.

EFFECT OF ESTROGEN ADMINISTRATION IN EARLY PREGNANCY

To the Editor—A white woman aged 30 was brought to me by police eighteen hours after having been raped. She expected to menstruate in fifteen days. The legal questions and the question of prevention of disease are not difficult to handle but the question of the prevention of pregnancy entirely apart from the moral aspect has confused me and led to violent disagreement among my friends. I was advised to give large doses of estrogenic substance 50,000 units in oil daily for the three days prior to her expected period and on the day of the expected period to give quinine and castor oil. As menstruation may be due to withdrawal of estrogen it can be argued that this is not logical. I have decided partly on moral grounds to do nothing but wait and see nevertheless the paucity of information on this question irritates me. Textbooks and the literature seem to avoid the point deliberately. What can be expected if large doses of estrogen are given to a nonpregnant woman immediately prior to her expected menses? If they are given to a pregnant woman prior to the date on which should she not be pregnant she would have menstruated? If they are given to a woman during the early months of pregnancy? I should also like to know in the consideration of similar situations how the possibility or probability of pregnancy can be estimated.

M.D. Maryland

ANSWER—Large doses of estrogenic substance given to a nonpregnant woman immediately prior to her expected menses will usually have no effect on the ensuing period, since once the menstrual cycle is in full swing the rhythm is hard to upset. On the other hand when large doses of estrogenic preparations are administered in the first half of the cycle and continued throughout the next menses are often delayed. Thus Zondek (*THE JOURNAL* May 11, 1940, p 1850) has been able to postpone menstruation from seven to seventy days in this way the dose necessary for bringing about such an effect is at least 70,000 international units. This inhibition of menstruation it is believed results from the fact that the estrogen blocks the gonadotropic action of the anterior pituitary, whereby the development of the corpus luteum and production of progesterone are prevented. Consequently the uterine mucosa cannot develop and progestational transformation does not occur.

Whether the administration of estrogens to a pregnant woman between the time of conception and her first missed period would prevent implantation by disrupting the preparation of progestational endometrium (as described in the query) is not known. When given in pregnancy after the first missed period even large doses of estrogen are completely ineffectual in interrupting pregnancy.

Since rape occurred in this case about the time at which ovulation would normally have taken place that is fifteen days before the next menstruation the probability of pregnancy is good. The moral issues concerned in a problem of this kind depend so much on the circumstances of the individual case that generalizations are impossible.

UVULECTOMY

To the Editor—Is the operation of routine uvulectomy with tonsillectomy and adenoidectomy considered good practice? Is it an accepted procedure? Would it be free from a malpractice suit? Would the anesthetist giving the anesthetic be involved in such a suit? The uvulas being removed are perfectly normal.

M.D. Washington D.C.

ANSWER—The operation of routine uvulectomy (staphylectomy) with tonsillectomy and adenoidectomy is not considered good practice. It is not an accepted procedure. Abstracts of a number of court cases have been published in *THE JOURNAL* in which physicians have been sued for malpractice based on the removal of the uvula or a part of it during tonsillectomies.

Schmid & Stone 194 W 917 abstracted in *THE JOURNAL* March 15 1924 page 915

Goran & McCord 11 P (2d) 141 abstracted in *THE JOURNAL* Jan 14 1933 page 140

Shuffield & Taylor 83 S W (2d) 955 abstracted in *THE JOURNAL* Jan 4 1936 page 72

Thomas & Burgess 79 P (2d) 136 abstracted in *THE JOURNAL* April 1 1929 page 1291

The foregoing cases are evidence of the possibility that suit may be instituted against a physician who removes the uvula during a tonsillectomy without the knowledge and consent of the patient. An anesthetist normally is not legally responsible for the dereliction of the operating physician. Where a uvula is so large as to give symptoms of pharyngeal discomfort, cause cough or otherwise irritate the larynx and pharynx or interfere mechanically with the functions of breathing, swallowing and

nutrition, the exact condition of the uvula should be positively determined. Inflammatory, specific, neoplastic, indurative, infiltrative and degenerative states of the uvula must be proved so that the physician in attendance and in charge of the patient will be able to discuss the condition with the patient's parents or with the patient himself, if he is an adult past his majority, and to state specifically just what he proposes to do to the uvula during the operation. There are certain instances when a partial uvulectomy is warranted but the consensus of rhinolaryngologic opinion throughout the world is to leave a normal uvula alone. This brings up another point that happens every now and again in practice. A portion of a normal uvula may be inadvertently nipped during the time the tonsils are removed and not infrequently the entire uvula has been snared off. The latter surgery is unfortunate and should be considered an accident and though no deleterious effects have been particularly noted it is a practice to be studiously avoided. If during the course of a tonsillectomy a portion or an entire uvula has been severed inadvertently, the parents or guardian should be told about it and a complete explanation given. Uvulectomy has been performed inadvertently by skillful laryngologists as the result of dense adhesions that may have not been completely divided or dissected. The normal uvula should be left alone; the abnormal uvula should be treated according to indications.

SCRUB DERMATITIS—POSSIBLE SENSITIVITY TO FORMALDEHYDE AND RUBBER

To the Editor—I have been suffering from a so-called scrub dermatitis since 1935. Clinically I am sensitive to formaldehyde although patch tests are inconclusive. In 1935 I spent many days in the cystoscopic room wearing gowns sterilized in formaldehyde vapor cabinets. The gowns fitted snugly about my wrists under rubber gloves. The onset of the dermatitis was about my wrists but later extended to the backs of the hands and forearms. After the acute episode of three or four months the dermatitis took a mild and intermittent course but during the past year it has been present almost continuously. I found crude tar effective at first but later it became irritating. It responds most favorably to x-rays. Elimination of the common foods known to be allergenic has not been helpful. The past several years I have used nothing but Duke's basic soap for scrubbing which has been of some value and recently I have been using sulfonated oil to replace all soap without real benefit. I have not eliminated formaldehyde and still use a formaldehyde vapor sterilizing cabinet for cystoscopic instruments. In the past month or two I have developed a contact dermatitis over the right eye where the bakelite ocular of the cystoscope rests during cystoscopic procedures. Instruments are always washed with sterile water after being removed from the formaldehyde cabinet. Recently I have tried neutralization by immersing the instruments in a diluted hypochlorite (1/2 per cent Dakin's) solution before putting them through the sterile water bath.

I wish to continue vapor sterilization of cystoscopic instruments if at all possible because of the convenience of this method. Is there any other antiseptic vapor which could replace formaldehyde? If not is there any better way to detoxify the formaldehyde? Does the bakelite ocular of the cystoscope absorb the formaldehyde vapor and if so would a metal ocular solve this particular problem? If it becomes necessary to eliminate the formaldehyde cabinet and go to liquid sterilization what solution would give adequate sterilization yet be the least irritating to the skin? I understand that Bard-Parker's solution contains formaldehyde. Assuming that scrubbing and soap play a part do you have any suggestions in this respect? What part might rubber gloves play and if important how could the gloves be treated to remove the irritant properties? Would attention to vitamins or diet be of any value? What sequels might be anticipated in continuing x-ray therapy which is now effective?

M.D. Nebraska

ANSWER—Formaldehyde is not only a primary skin irritant but is one of the most powerful sensitizers and many physicians as well as laboratory technicians are highly sensitive to it.

No cold vapor other than formaldehyde is used to disinfect instruments.

Formaldehyde can be oxidized with an oxidizing agent like hydrogen peroxide, sodium perborate or potassium permanganate in solution.

Bakelite is porous and may absorb considerable formaldehyde vapor.

A metal ocular would not absorb any at all.

The best sterilization method that would be least irritating to the skin is to use a steam sterilizer. If one does not wish to install a steam sterilizer it is suggested that the instruments be soaked in a 1 per cent solution of saponated solution or creol for fifteen minutes, dipped into alcohol and then in sterile water. Another method is to dip the instruments into 1:1,000 Zephiran for fifteen minutes and then in sterile water. (Zephiran is an alkyl dimethyl benzyl ammonium chloride.)

If soap and scrubbing play a part it is suggested that the following formula be used in lead or soap.

Sulfonated castor oil
Detergent W.A. pure
Castor oil (unsulfonated)

2
2
1

This makes a superfatted soapy detergent.

Dermatitis from rubber gloves is frequent among surgeons. It is caused most of the time by sensitivity to the accelerators and antioxidants, which are taken out of the glove by perspiration. Soaking the gloves for fifteen minutes in a 5 per cent solution of sodium carbonate followed by washing in water to remove the carbonate and then sterilizing by dry heat and wearing dry gloves, using plenty of powder, has in many instances made it possible for surgeons to wear rubber gloves when previously they have not been able to do so. The treatment of the gloves removes the excessive accelerators and antioxidants which otherwise would be removed by the perspiration.

Attention to vitamins or diet has not been proved to be of any value in cases such as that described.

Too much x-ray treatment may cause x-ray dermatitis and cancer.

VESICULAR ERUPTION AND CHIGGERS

To the Editor—We have in northeastern Texas a considerable number of insect bites which present a perplexing problem. The lesion at first is a small area of inflammation comparable to a mosquito bite and is most often seen on the lower extremities, but no portion of the body is exempt. It appears immediately after exposure and within eighteen to twenty-four hours becomes a vesicle ranging in size from 0.3 to 1 cm in diameter at the base and raised 0.1 to 0.5 cm. The entire lesion causes moderate itching, and a break in the wall with an escape of the contents causes extension of a reddened area to the surrounding portion. The lesion after an evacuation of the contents follows normal healing trends and becomes completely healed within ten days. My impression is that this lesion is a result of a dermatitis venenata combined with the bite of a chigger. If you can aid me to arrive at a diagnosis from my description and give me the best treatment for the condition I should appreciate it. Is there any insect which is called a blister bug? Lieutenant, M C, A U S

ANSWER—The chigger is a larval arachnid and not an insect. It most commonly invades the host by progressing upward from the feet until it meets an obstruction such as a garter, and there it usually attaches itself to the skin in the same manner as a tick. Its salivary secretion is an irritant and produces an intensely itching erythematous papule as large as a pea or a small coin, which does not appear, as a rule, until several hours after the bite has been inflicted. By that time most of the chiggers have become engorged and dropped off, so that they are difficult to find. The lesion is usually a papule, but it may be capped by a small pinhead size central vesicle, which may be hemorrhagic. The papule may persist for ten days or longer. No blister bug is known possibly that name might be applied to the chigger in some districts. Lesions of dermatitis venenata are not likely to resemble bites. They occur as irregular erythematovesicular patches and the vesicles may be large. Itching chigger bites may be relieved by a bath followed by the application of 70 per cent alcohol, after which the official boric acid ointment plus 1 to 2 per cent phenol and 0.2 per cent menthol may be applied, the excess wiped off and talc dusted over the surface. The bath should be repeated daily and the applications at least three times a day. Scratching must be avoided. Infestation with chiggers may be prevented by dusting powdered sulfur on the legs and ankles before going into the field.

CIRCUMSCRIBED PIGMENTED MACULES ON LIPS

To the Editor—A woman aged 35 has developed within the last three months in Florida a pigmented spot in the vermilion border of the lower lip quite close to the median line. The spot consists of fine, dark dots, probably corresponding to tips of papillae. Since the patient is a heavy cigaret smoker she attributed this spot to that. I should have thought so myself had I not had an exactly parallel case in a woman about the same age who developed such a dark spot in the same place without smoking at all. This woman was pregnant when the spot developed. Some years ago I saw a man with such a black spot in the lower lip. He used to smoke gold tipped cigarettes and at that time I blamed that for it thinking of a local metal mark similar to argyrosis. Do you know anything about the significance and treatment of these spots, especially whether they have to be considered as precancerous conditions or not? There was neither inflammation nor keratosis in any of the cases.

Kurt Wiener, M D, Milwaukee

ANSWER—Circumscribed pigmented macules on the lips may be freckles, senile freckles, chloasma or superficial pigmented nevi. The differential diagnosis is difficult even after careful examination. The presence of other lesions on the face or elsewhere might be of help, but it is inferred from the query that none were found. Tobacco or gold tipped cigarettes cannot be held responsible. Exposure to strong sunlight in the one case or the pregnancy in the second is a more likely cause. The only one of these four possibilities that might eventuate in carcinoma is the second. These, seen most often on the backs of the hands, sometimes become senile keratoses but may persist for many years without undergoing any such change. They should be protected from strong light, from exposure to the weather and from other irritation. The daily application of an emollient such as equal parts of wool fat and cold cream is of value.

POSSIBLE LYMPHOID TISSUE HYPERTROPHY IN NASOPHARYNX

To the Editor—A youth aged 17 had a tonsillectomy and an adenoidectomy at 4 years of age. In the early postoperative visits the surgeon introduced his finger into the nasopharynx "to break down the adenoid tissue." Shortly thereafter the child developed a "hawking." This has persisted up to this moment despite intermittent treatment with mild protein silver packs, nasal instillations and the use of vitamin A preparations. The "hawking" comes on fairly regularly one to two hours after the patient has fallen asleep, persists for three to four minutes and is loud enough to shake the rafters. He is not troubled during the rest of the night or at any time during the day. He is otherwise healthy and well developed. A laryngologist has called it "granular pharyngitis." What can you suggest by way of treatment? Captain, M C, A U S

ANSWER—A careful search for lymphoid elements in the nasopharynx should be undertaken in addition to a thorough check-up of the nose, accessory sinuses, oropharynx, larynx and pharynx.

The treatment will be based on the diagnosis. If hypertrophic lymphoid elements are found in the pharyngeal vault they can be removed by surgical measures or, if solitary follicles are noted on the postpharyngeal wall, electrocoagulation will prove the quickest method of dealing with them. Smaller lymphoid structures on the vault or in and around Rosenmüller's fossae might require the aid of a radiologist thoroughly grounded in the principles of applying radium or x-rays in accurate dosage and at proper intervals. Recent advances along these lines have been brought forth by S J Crowe of Baltimore and others.

Lymphoid hypertrophy in the laryngopharynx might be present and should be dealt with by surgery or electrocoagulation.

Septal irregularities, spurs, ridges, hypertrophies and hyperplasias, when found, require surgical correction in order to establish good intranasal mechanics.

Catarrhal and/or suppurative states in the nasal accessory sinuses should be treated by conservative means to promote aeration and drainage, for many cases of pharyngitis have their cause in a focus higher up and by gravitation of infected material from any group of sinuses down the nasopharynx infect and reirritate lymphoid structures in the naso-oropharynx and laryngopharynx, evoking some of the symptoms described in the query. Nasal shrinkage, instillations, applications, packs, irrigations and displacement therapy after the method of A W Proetz of St Louis will aid in the functional improvement of the nose and nasal accessory sinuses, and application of astrinents to the pharynx will help "burn down" the lymphoid hypertrophies.

All measures calculated to establish the highest degree of health should be diligently carried out. Metabolic faults and alterations in the blood, glandular and other systems should be corrected as quickly as possible so that a balanced state of bodily economy may be maintained and retained.

PHYSIOLOGIC DISTURBANCES ACCOMPANYING SHOCK

To the Editor—In connection with the syndrome of traumatic shock, is there a difference in hemoconcentration between peripheral capillary blood and venous blood? In other words, would hematocrit and red blood count and hemoglobin determinations vary between these two sources of blood in a case of this syndrome? Would you kindly refer me to recent sources where I might obtain descriptions of the physiology and treatment of this condition? M D, New York

ANSWER—In the early stages of traumatic or secondary shock, before the systolic blood pressure has declined below 80 mm, there is little difference between the concentration of the blood in the capillaries and that in the veins and arteries. In later stages, stasis of blood develops in varying degrees in the capillary bed in different systemic areas. In such areas the concentration of the blood is greater than in the circulating blood, either venous or arterial.

The literature bearing on the physiologic disturbances which accompany shock has been reviewed and summarized in *Shock: Its Dynamics, Occurrence and Management* by V H Moon (Philadelphia, Lea & Febiger, 1942). The same work deals with clinical problems and management. The National Research Council has sponsored a military surgical manual on Burns, Shock, Wound Healing and Vascular Injuries, published by W B Saunders, Philadelphia, 1943.

PILONIDAL CYST AND CANCER

To the Editor—In the Jan 18, 1941 issue of The Journal there is a query with regard to pilonidal cysts and cancer submitted by Dr E V Andrew of Maquoketa, Iowa. The answer submitted stated that no report in the literature of cancer developing in a pilonidal cyst had been found. This makes me feel a little guilty, because several years ago at St Luke's Hospital I removed an innocent looking pilonidal cyst from a young man, and the pathologic report came back as squamous carcinoma. I have meant to report this case but just never got around to it. Incidentally, although the operation was done on Nov 9, 1937, the man is still well in every respect.

Will F Lyon M D, Chicago

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THORACIC AND LUMBOSACRAL CORD INJURIES

A STUDY OF FORTY CASES

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Injuries to the thoracic and lumbosacral cord have not been granted the study that their importance justifies. If, for example, it had been generally recognized that the mortality of this group of injuries as compared with that of cervical cord injuries is roughly as 6 is to 4½ and that it is this class that includes all the surviving patients with transected cords with their attendant invalidism and problems of rehabilitation, greater attention would have been paid these injuries not only by neurosurgeons but by general and orthopedic surgeons as well. Grinker¹ in his textbook of neurology devotes only ten pages to the entire discussion of injuries to the spinal column and cord and states that (p 182) "treatment of cord injuries is extremely hopeless." Frazier and Allen² note that severe injuries to the thoracic spine predicate the application of tremendous violence (p 368) but do not otherwise differentiate thoracic and lumbosacral cord injuries from those above and below. Homans³ does not devote more than seven pages to all injuries of the spinal cord. He does make a detailed distinction, however, between injuries in the cervical and in the thoracolumbar regions (p 715 et seq). In 1940 Elsberg writing in Brock,⁴ devotes only forty-eight pages to all cord injuries, of which one is devoted to thoracolumbar injuries, and in 1941 in his own book he⁵ makes no such distinction and covers the whole subject in forty pages.

Any discussion about any level of spinal cord injuries should always be based on two fundamental concepts. These are (1) that spinal cord injuries are entirely different from spinal column injuries without cord involvement and (2) that any significant spinal cord injury is always accompanied by spinal shock and its effects. The first of these two concepts is self explanatory but almost always ignored. One has only to refer to the literature to discover that many authors draw conclusions as to the diagnosis, treatment and prognosis of a neurologic injury from a mixed series of both cord

and vertebral column injuries. This failure to distinguish between strictly orthopedic and strictly neurosurgical matters has, among other things, held back the understanding and treatment of pressure and bed sores. When a spinal cord injury is present, any associated bone injury is secondary and of relatively little importance. Under such circumstances diagnosis, therapy and prognosis are all primarily problems of the cord injury, and the bone damage is subordinate from every point of view. Only when there is a back injury in which the spinal cord has been undamaged do the bony structures and any changes in them properly assume first place in the consideration of the case. Until this is generally recognized and acted on but little improvement can be expected in the functional end results of spinal cord injuries.

This report deals only with injuries to that part of the spinal cord which is enclosed within the confines of the twelve thoracic vertebrae. It thus includes the thoracolumbar and sacral portions of the cord and the *conus medullaris* as well as the twelve thoracic vertebrae. Neither the cervical cord nor the cauda equina is included except in an occasional case in which this involvement was secondary and traceable to either a spread upward of hematomyelia or to the injury of multiple vertebrae in the dorsolumbar spine. There are 40 patients in the series. Seventeen have survived and been followed to an end result in 13 instances for varying periods from seven months to nine and one-half years. Twenty-three patients died—a case mortality of 57.5 per cent. Autopsies were obtained and the spinal cords studied in 11 instances, or about one half of the deaths.

SPINAL SHOCK

Spinal shock is a constant accompaniment of all significant spinal cord injuries. It is recognized by its effects and is known to occur at once after the infliction of the injury and to last for periods varying from a few hours to months. It has nothing to do with surgical shock. As the result of its presence all reflex activity below the level of the injury becomes chaotic, unpredictably variable and devoid of any diagnostic or prognostic significance. It probably also has a like effect on other motor activity in the same area although this is less certain. The reflexes involved include not only the somatic variety such as the knee jerk but also the less easily elicited and often forgotten splanchnic reflexes. The latter control the activity of the bladder and bowel and the response to local pressure on the part of the blood vessels in the skin. The deleterious effect of spinal shock is greatest on those reflexes mediated by the spinal segments immediately below the level of injury and decreases proportionately as lower segments are reached. Thus in cervical and upper thoracic injuries a minimal effect is produced. As the location of the injury descends however bladder difficulties and

From the Department of Neurosurgery, Boston City Hospital.
Read before the annual meeting of the Boston Surgical Society at
Boston Dec 7 1942.

¹ Grinker R R. Neurology. Baltimore: Charles C Thomas Publisher 1934.

² Frazier C H and Allen A R. Surgery of the Spine and Spinal Cord. New York: D Appleton & Co 1915.

³ Homans John A. Textbook of Surgery. Springfield Ill: Charles C Thomas Publisher 1931.

⁴ Brock Samuel. Injuries of the Skull Brain and Spinal Cord. Baltimore: Williams & Wilkins Company 1940.

⁵ Elsberg C A. Surgical Diseases of the Spinal Cord. New York: Paul B Hoeber Inc 1941.

bed sores, for example, become increasingly common because of the closer approximation of the segments controlling these reflexes to the level of injury

NATURE OF THE ACCIDENT

The commonest accident leading to injury in this series was a fall from a height. This occurred 21 times or in about one half of the cases. The height varied from five stories to 10 feet. One fall was suicidal and in 2 the patient was thrown off a roof and an electric light pole respectively by the shock following contact with live wires. Sixteen of these patients died. Automobile accidents were the next most common. There were also 4 gunshot wounds, 2 of them fatal, 2 patients were crushed, 2 were dragged, 1 beneath an automobile and 1 beneath a train, 1 was stabbed with an ice pick, and there was no certain proof of the presence or absence of an accident in the 2 other cases. The last 2 and the 2 patients who were crushed survived whereas the patient with a stab wound and the 2 who were dragged died.

THE BONY INJURY

Although of less importance than the cord injury it is more convenient to deal with the bony injury first. In 3 cases there was no demonstrable bony injury. The cord damages in these instances were a single intramedullary hemorrhage, compression from local calcification and degeneration of the ligamentum flavum and transection from a stab wound. There were 4 bullet wounds. X-ray examination was not carried out in these and 1 other case. Of the 32 other patients with demonstrated bone injury 10 had a dislocation associated with the fracture or fractures.



Fig 1—Anterior (A), lateral (B) and posterior (C) dislocations of the vertebrae. The distribution of the upper level of spinal cord injury in 40 cases of thoracolumbar cord injuries.

It may be worth while at this point to call attention to the fact that a true posterior dislocation has actually occurred only once in my series of 216 spinal cord injuries. It has been diagnosed more often but, except for this one occasion always wrongly. Figure 1 emphasizes the difference between the anterior and the true posterior dislocation and depicts the only arrangement of the bones that justifies the diagnosis of a posterior dislocation. This is not without its importance. In at least 2 of my cases an incorrect diagnosis of posterior dislocation made by the X-ray department has led inexperienced surgeons to attempt reduction by flexion despite the fact that, at most, it is indicated only as a preliminary to extension in cervical injuries. Augmentation of the cord injury occurred in 1 case, and the production of cord damage when it had not been present before the attempted "reduction" followed in the other. Sixteen patients in this series had fractures of more than one vertebra—usually two but occasionally three adjacent ones. If the thoracic column is divided into three

parts (table 1) it is apparent that the first four vertebrae were fractured in 5 instances and that there was only 1 case in which an associated dislocation occurred. The fifth, sixth, seventh and eighth vertebrae were fractured 10 times with 3 dislocations, and the last four vertebrae were fractured 15 times with 6 dislocations.

TABLE 1—Distribution of the Bone Injury in Forty Cases of Thoracolumbar Cord Injuries

Thoracic Vertebral Injury									
	Thoracic Vertebrae	Correspond ing Cord Segments	Bone Injury		Total	Dislocation			
			Lived	Died		Lived	Died	Total	
Upper third	1st	1st thoracic through 5th thoracic							
	2d								
	3d			1			1		
	4th		3	1	5			1	
Middle third	5th	6th thoracic through 10th thoracic	1	4		1	1		
	6th			2					
	7th			1					
	8th		2		10	1			
Lower third	9th	11th thoracic through the conus	1	3					
	10th		1	2		1	1		
	11th			3			2		
	12th		4	1	15	1	1	6	
Cervical			1		1				0
No X rays				1	1		1		1
No demonstrable bone injury									4
Bullet wound									2
Stab wound									1

In 1 other case there is certain evidence of an upper thoracic transection, but the bone injury as far as X-ray evidence is concerned is restricted to the sixth and seventh cervical vertebrae. The lumbar spine could not be shown to be damaged in any of these cases. From this series it would appear that the lower thoracic vertebrae were more liable to fracture than the upper and that the lower the fracture the more probable is the presence of an associated dislocation.

TABLE 2—Distribution of the Upper Level of Spinal Cord Injury in Forty Cases of Thoracolumbar Cord Injuries

Thoracic and Lumbosacral Cord and Conus Injuries					
	Thoracic Cord Segments	Corresponding Thoracic Vertebrae	Living	Dead	Total
Upper third	1st	1st through 4th		1	1
	2d		1		1
	3d			1	1
	4th		6	1	7
	5th		1		1
Middle third	6th	5th through 8th		2	2
	7th			1	1
	8th			1	1
	9th		6		6
	9th			2	2
	10th		1		1
Lower third	11th	9th through 12th		2	2
	12th			1	1
	1st lumbar		3	1	4
	2d sacral		1		1
	Conus		1	1	2
Totals			14	25	39
Questionable			3	0	3
Grand total			17	25	42

PATHOLOGY OF CORD INJURY

Nineteen of the 40 patients had transections of their spinal cords. Seven of these recovered. This is in striking contrast to the cervical injuries in which there were only 13 transections with 1 recovery out of 100 cases seen during the same period of time. The findings were verified at operation or autopsy or both in every case except 5, and in these 5 the clinical manifestations

were typical. One of the patients whose injury was verified by all three methods had two transections. He had been transported 15 miles in the back seat of a touring car after falling from a roof. There were 5 contusions of the cord, 3 of which were verified, and 5 compressions all verified by either operation or

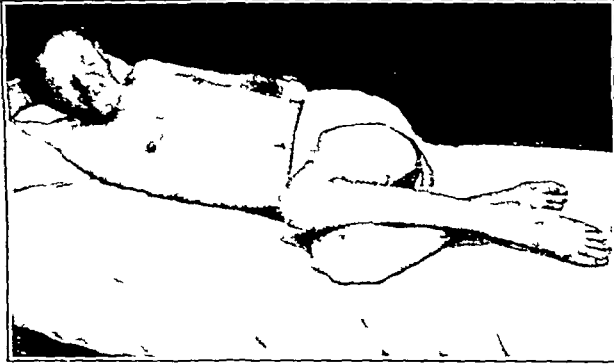


Fig. 2—Patient recumbent with upper thoracic transection and paraplegia in flexion and adduction with a mass reflex.

autopsy or both. In 1 of these the compressing agent was an extradural clot. Six patients had hematomyelia and 2 edema. These diagnoses were impossible of verification except by their clinical course. In 2 cases the injury could not be certainly determined and 1 had subarachnoidal hemorrhage. The compression in 1 case was caused by the calcified ligamentum flavum previously mentioned.

The uppermost level of the cord injury is of some interest (table 2). All 12 thoracic, 1 lumbar and 1 sacral segment as well as the conus were represented in the series. If these 15 levels are divided into thirds and the living and dead patients plotted separately, it appears that of 14 patients with lesions involving the first five segments 8 survived and 6 died. So also with the last five levels (that is the eleventh and twelfth thoracic, the first lumbar, the second sacral and the conus), 5 of 10 patients survived. In contradistinction to this when the injury involves the middle thoracic segments (that is the sixth through the tenth thoracic) 12 of 13 patients died. This suggests that injuries to the middle segments of the thoracic and lumbosacral cord are more often fatal than to the regions above and below this area. It is probable on this evidence that although the bony injury is most severe at the level of the four lower thoracic vertebrae the cord injury is not only most severe but is most often fatal in the region of the middle thoracic vertebrae.

DIAGNOSIS

I am convinced that the best one can do in making a diagnosis at or close to the time of the receipt of a cord injury is to determine the upper level of the damage by a sensory examination. Otherwise the physician is limited to a decision as to whether the injury is of the type that does or does not cause a block of the cerebrospinal fluid. The bone damage also can only be approximated. The lesions that cause a block of the flow of cerebrospinal fluid are edema with or without hematomyelia, contusion, compression and concussion of the cord. The compression may be caused by a meningeal clot, a fragment of fractured bone, crushing of the body or dislocation of a vertebra. Concussion is associated only with bullet wounds of the bony wall of the canal. Lesions that do not cause a block of the

flow of cerebrospinal fluid are hematomyelia without edema, anatomic transection and rarely an overlapping tear in the dura and arachnoid with an undetermined amount of cord injury. This last permits cerebrospinal fluid to be diverted to the extradural or subdural space during lumbar puncture and thus prevents filling of the subarachnoid space below the point of injury. Such findings may lead to the diagnosis of cerebrospinal fluid block when none is actually present. Conditions that do not produce block may be present as a complication of any of those which do cause a block and, of course, be unrecognizable, but the reverse is never true. Final differentiation between individual pathologic entities within these two classifications has to await the final outcome of the case and may not be possible for months or even years. Even then it may be impossible unless major sepsis is not present the patient is not suffering from hypoproteinemia the bladder has reached a satisfactory functional end point and proper physical therapy and splinting have been practiced.

Diagnostic and prognostic conclusions based on the onset, type and extent of motor or reflex disability are never justified. Even observations made of the exposed cord at operation are not necessarily accurate or dependable. This is particularly true when the cord looks as though it had sustained little or no damage as far as its surface goes. Because the vascular supply to the cord is minimal and so constructed as to produce a bottleneck⁶ in both the arterial and the venous channels its tissue is particularly vulnerable should damage to the arteries or venous thrombosis occur. Cells that would not have sustained lethal damage in any other tissues will not recover, and a spreading myelomalacia may develop in the presence of damage to a single artery or of thrombosis of a single vein at certain critical levels.

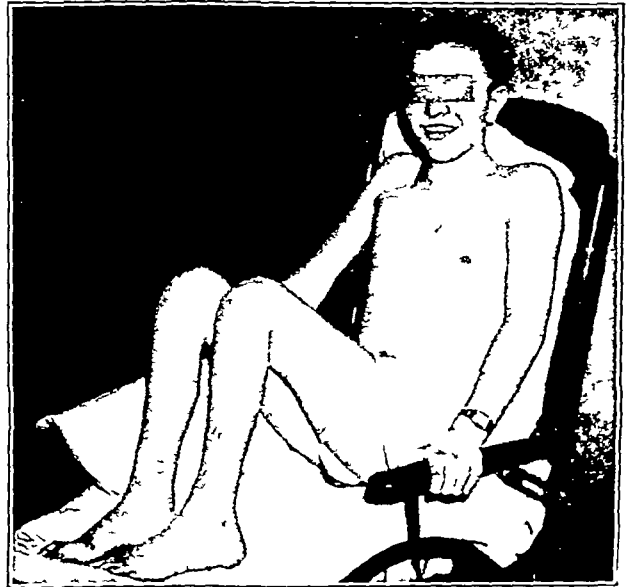


Fig. 3—Same patient as in figure 2, showing him seated.

on account of the lack of collateral circulation. A detailed study of the cases in this series has demonstrated that in 20 the immediate and final diagnoses agreed and in 15 they did not agree. Agreement and disagreement could not be determined in 5. The agree-

6. Sub T. H. and Alexander, Leo. The Vascular System of the Human Spinal Cord. *Arch. Neurol. & Psychiat.* 41: 107-117 (1937).
Herren, R. A. and Alexander, Leo. Spinal and Intracranial Vascular System of the Human Spinal Cord. *Ann. N.Y. Acad. Sci.* 41: 1-11 (1937).

ments occurred in 8 cases of transection, 4 of compression, 1 of contusion, 1 of edema, 5 of hematomyelia and 1 of subarachnoid hemorrhage. The disagreements were as follows: 6 contusions, 5 compressions and 2 concussions proved to be transections, 1 compression turned out to be a contusion and 1 case of hematomyelia

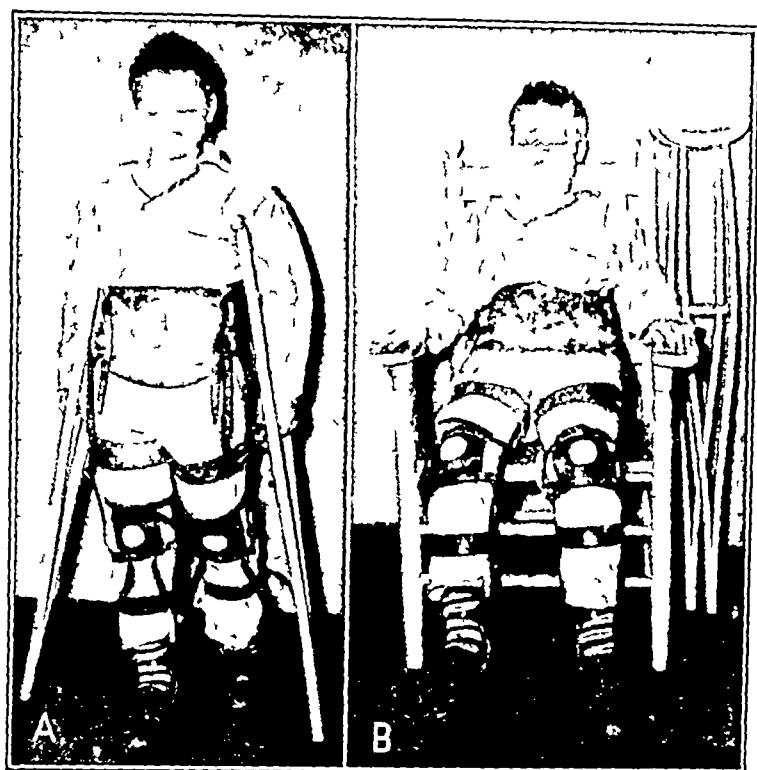


Fig 4—Patient with upper thoracic transection, ambulatory with the aid of braces and crutches. A, upright, B, seated.

to be thrombotic myelomalacia. The immediate diagnoses in 22 of these instances were made after visualization of the cord at operation and the final diagnoses either by study of the cord at autopsy or after adequate follow-up. The metamorphoses occurred because of the progressive degeneration that took place in the cord after the diagnosis was first made.

I have already noted that diagnostic and prognostic conclusions based on the onset, type and extent of motor and reflex disability are never justified. I believe that recognition of this fact is extremely important. It comes about because of the changes wrought by spinal shock. Twenty of these cases could be studied in detail from this point of view. The development of motor paralysis below the level of the injury and immediately following the accident in relation to the first diagnosis was as follows: There were 8 cases of immediate transection in which the onset of paralysis followed the injury at once and 1 in which it was delayed. All patients had a mass reflex and no return of voluntary motion at their discharge. One had a completely transected cord and a torn dura at operation. There were 6 cases first diagnosed as contusion of the cord in which the injury was followed at once by complete paralysis and 1 in which paralysis was delayed. The diagnosis was made at operation in every case. In 3, free macerated cord tissue was found floating in the cerebrospinal fluid. In 2 other cases the cord was described as being swollen and not pulsating. Improvement in the paralysis did not occur in any of these cases. There were 12 cases in which a first diagnosis was compression of the cord, the diagnosis being made at operation in every case except 2. All patients had immediate complete paralysis; nevertheless 1 patient is well and free from symptoms nine and one-half years later.

There was 1 patient with edema and 3 with hematomyelia who were paralyzed at once after the injury and 3 in whom the onset of paralysis was delayed, all of whom either completely or largely recovered before discharge. Finally there were 2 patients with concussion, 1 of whom has had no improvement in eight and one-half years. The other is still in the ward. The patient with subarachnoid hemorrhage had little paralysis at any time. There were 2 others in whom the time of onset of paralysis was uncertain. Thus 4 patients with an immediate onset of paralysis completely recovered, and in 11 others the end result was more serious than the original diagnosis suggested. Certainly the occurrence of motor paralysis, which develops at once after receipt of injury and is supposed to be a pathognomonic symptom of transection of the spinal cord, cannot reasonably be considered to be such a symptom when it is known to be wrong in one direction 11 per cent and in the other 29 per cent of the time.

The demonstration of the presence or absence of a block of the flow of cerebrospinal fluid is made by a study of the total protein content of the fluid below the block and the performance of a fractional Queckenstedt test. Evidence of block by increase in total protein will frequently appear before and will always outlast the evidence of dynamic block. The fractional Queckenstedt test is best done by compressing the jugular veins, not by hand but by inflation and deflation of a blood pressure apparatus cuff wrapped around the patient's neck. Observations on the intracranial pressure are made and recorded with every increase of 10 mm of pressure in the cuff from 0 to 40 and similarly with every 10 mm decrease from 40 to 0. Partial dynamic blocks are recognizable by this method when every other method fails. As has been pointed out, if a block is present the patient is suffering from either edema with or without hematomyelia, contusion, compression or concussion of the cord. If a block is absent the patient is suffering from either hematomyelia without edema or an anatomic transection. The only source of diagnostic error lies in the rare possibility of the patient having coincident tears in his dura and arachnoid and presenting signs that superficially appear to indicate a

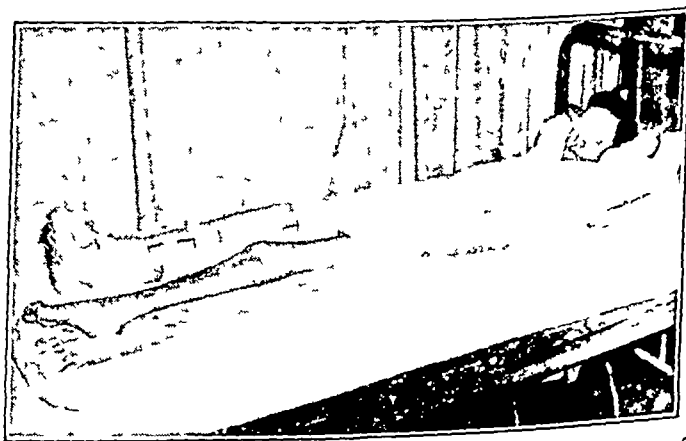


Fig 5—Same patient as shown in figure 2 after operative abolition of the motor component of the mass reflex, showing him recumbent.

block when there is actually none present. Further diagnostic differentiation is unjustified and impossible until the pathologic condition has reached an end point.

TREATMENT

Certain general principles of treatment must be adhered to if the end results that the patient has a right to expect are to be obtained. Every patient with a spinal cord injury should have his bladder emptied and

an inlying catheter fastened in place at the earliest possible moment. It is impossible to do this too soon. As soon afterward as it can be done this catheter should be attached to a tidal drainage apparatus properly adjusted by cystometry to the needs of the individual bladder. Simultaneously with this the patient should



Fig 6—Same patient as shown in figure 5 only in a wheel chair

be treated for surgical shock if and when it is present. Both should precede all but the most superficial diagnostic measures. The demonstration of the presence or absence of a block should always follow this procedure and come before all other measures. Splints, no matter what their material, that are fixed in relation to the patient must never be used in spinal cord injuries and especially in the thoracic and lumbosacral injuries. In particular the application of plaster of paris is contraindicated regardless of the amount of padding used. So too are rubber and other rings or doughnuts, Bradford or other frames and water or air mattresses. Metal frames for hyperextension or any methods which aim to accomplish rapid hyperextension are also contraindicated. Sufficient protein must be given to these patients in their diet or by transfusions or other means to maintain their serum protein at 6.0 or better. Their salt intake must usually be increased also and they should be started at once on large amounts of all the vitamins. While the patient remains on tidal drainage his fluid intake should never be allowed to fall below 4,000 cc in twenty-four hours for an adult. Care must be taken to keep the bowels open and prevent the development of fecal impactions. All patients must be moved off their back and onto one or the other side every two hours day and night, during their stay in bed. They should never be allowed to lie in a wet bed for even as little time as fifteen minutes. These are all general measures that apply to all patients with spinal cord injuries until such time as they have reached anatomic and functional end results regardless of the diagnosis. Other procedures will depend on the presence or absence of a positive Queckenstedt test. This must be determined in every case without exception and should be carried out after the patient is out of surgical shock and on tidal drainage.

If there is no block there is no need for operation, and x-ray examinations can and should be postponed for four to six weeks. The patient should be placed on a sponge rubber mattress on top of a hair mattress and bed boards, with the bed made up in the usual manner, his feet supported at right angles and with the bed clothes held off of them by a cradle, and his knees held on pillows in slight flexion. If necessary, the spine should be hyperextended by the method to be described later. Physical therapy can be started if the patient's muscles are not hypertonic. If they are, it is harmful and contraindicated. At the end of eight weeks, if there is adequate bone repair as evidenced by x-ray examination, he may be got out of bed if he wears a steel Taylor back brace. By this time those patients who have had a hematomyelia should be about to regain or have actually regained normal control of the bladder and bowel. They should be fitted for and provided with the necessary splints to make them ambulatory and to provide them with a maximum of functional activity. A constant x-ray check should be made of their bone injury until such time as the physician is certain that it is completely healed and capable of bearing the body weight without the aid of a splint. If the bone condition regresses the patient may have to be put back to bed or rarely fitted with a plaster or castex jacket.

Patients in this group who have a transection will prove the most difficult to handle. The same principles apply but the details of application are more time consuming and difficult of control. A defeatist attitude on the part of everybody concerned must be avoided at all costs. Nothing less than an active self-supporting wheel chair life is to be considered for a moment as an end result, and ambulatory activity with the aid of splints should be the eventual goal if at all possible. Time must not be allowed to be a factor, and the physician, the patient and his relatives should all constantly be striving toward that end. It is these patients who make up the bulk of those with thoracic and lumbosacral cord injuries. It is they who are most apt to develop pressure sores and if their two hourly turning is neglected or if they are permitted to lie in a wet bed for as short a time as fifteen minutes, those pressure sores which are already present will turn into bed sores and other new pressure sores be added. As these patients



Fig 7—Hyperextension of the thoracic spine by means of a blanket roll beneath the mattress and on top of bed boards

get better a mass reflex develops and paraplegia in flexion and adduction starts. To complicate the situation further the tidal drainage apparatus becomes inefficient because of the irregular bladder responses to the abnormally spreading motor impulses of the mass reflex. Patients cannot be turned or got out of bed because of the position of their legs (Fig 2). The cry

fact that they are improving neurologically leads to complications inherent in that improvement. Traction, splinting and physical therapy not only do no good but are actually harmful in such cases. Such procedures either act as sensory stimuli to the mass reflexes and set up more flexor contractions or cause pressure and

possible to mobilize these and other similar patients even to the point of fitting them with ambulatory splints. While still only in the experimental stage, it promises more than any previous approach.

THE QUESTION OF OPERATION

Patients on whom the Queckenstedt test is positive pose the question of whether or not this block should be relieved by a decompressive laminectomy. This is not to be undertaken lightly. My cervical cases showed a drop of 30 per cent in mortality after laminectomies were abandoned in cases in which there was a block. On the other hand the comparison of cervical with thoracic or lumbosacral cord injuries is not quite fair because of the complicating respiratory difficulties that are inherent in the cervical cases and not present in the others. Furthermore, a block implies pressure on the surface of the cord at some point. Unless this is relieved at the earliest possible moment spinal cord damage that would not otherwise have been present will occur. Before a decision as to operability can be made, information must be obtained as to whether the block is caused by bony pressure from the outside or swelling of the cord itself. An x-ray examination is essential at this time. This should include a lateral stereoscopic view for the middle and lower and an oblique stereoscopic view for the upper thoracic vertebrae. If the canal is distorted by a dislocation or angled by a crush fracture of a vertebral body, the patient should be hyperextended (fig 7) by having a roll of blankets placed beneath the sponge rubber and regular mattresses and on top of the bed boards opposite the kyphosis. The roll should be increased in size daily and its efficacy checked by a daily Queckenstedt test. If the block is still present



Fig 8—Pressure sore

later bed sores in the extremities that are splinted. Plaster of paris is particularly pernicious in these cases.

Not all patients with transections are like this, but those who are not probably have not a complete but a partial transection. My experience would indicate that even a minimal retention of neural connections between the cord segments above and below the injury so modifies the mass reflex that paraplegia in flexion will not occur, although it does appear that such patients still have an abnormally active bladder and one that is very difficult to control. Despite that, however, patients with partial transection can be made ambulatory in many instances (fig 4) and if not can lead active wheel chair lives, as evidenced by a patient in this series who has done so for eight and one-half years.

I am not yet sure how best to handle the late phases of the problem of patients with complete transections, particularly the bladder difficulty, which is the most important part. Certainly tidal drainage does not work, and it seems better to approach the problem by abolishing the mass reflex rather than by trying to treat the bladder. I have done this now in 4 instances. All the anterior spinal roots from the twelfth dorsal to the first sacral inclusive are cut intraspinally on both sides. Since the leg muscles become flaccid, the flexion deformities are relieved and the spread of the motor responses to minimal sensory stimuli are abolished (figs 5 and 6). In this way the bladder is no longer stimulated by contraction of the abdominal muscles, and tidal drainage can again control the urinary outflow. Moreover, because the patients are kept dry, the skin of their backs and hips is healthier and pressure and bed sores heal. I believe that eventually it will be



Fig 9—Bed sore

at the end of four to seven days a decompressive laminectomy should be done. I have found that this method is highly efficient in cases of block caused by bony compression and practically eliminates the need for operation in all but the lateral dislocations. These have had to be operated on. If there is no dislocation or kyphosis visible by x-ray examination to account for the

block, dehydration and moderate hyperextension should be tried for three to five days. If this therapy has been unsuccessful in relieving the block in that time and provided there are no complications such as a hemo-pneumothorax, laminectomy should be performed. No attempt should be made at operation to reduce any



Fig 10—Healing bed sore

dislocation that may be present and as little as possible should be done beyond opening the dura, removing loose fragments of bone and being certain that the flow of cerebrospinal fluid past the point of block is unimpeded. The cord should never be incised except in the rare instances of a single intramedullary clot. If other hemorrhages or one of the cysts that follow concussion are found and have to be dealt with or emptied, this may be done by puncturing the area with a hypodermic needle and evacuating it with the aid of a syringe. The dura should be left open and the rest of the wound closed in layers without drainage. Bullet wounds, whether causing a compound fracture with cord laceration or concussion of the cord by passage of the bullet through some part of the bony wall of the canal without contact with it or the meninges, should all be debrided as soon as the patient's general condition and complications permit. With the block relieved, the care of the cord injury and the patient is the same as that outlined in the absence of a block.

COMPLICATIONS

One of the first and most important complications of injuries to the thoracic spine is the presence of a hemo-pneumothorax. I am not aware that it has been mentioned previously as such in the literature and I know that I have overlooked it myself in the past. Its presence causes much respiratory embarrassment especially when the patient is shifted from back to side and may produce a mediastinal shift. On physical examination it causes signs that are usually interpreted as pneumonia and a correct diagnosis is often impossible except with the aid of a thoracentesis. I have now made such a procedure routine whenever pneumonia is diagnosed and whenever there is respiratory embarrassment, fractures of the ribs or a major dislocation of the vertebrae present in thoracic and lumbosacral cord injuries. When found the removal of the pleural fluid will often prove life saving. Six to ten daily thoracenteses will usually be necessary to return the pleural cavity to normal. If the bullet wounds are excluded this condition was proved to be present in 6 of the 38 patients in this series or 16.5 per cent. I have reason to believe that others were missed in the earlier patients.

PRESSURE AND BED SORES

Pressure and bed sores occur in a high percentage of patients with thoracic and lumbosacral cord injuries. It is almost impossible to avoid pressure sores (fig 8) while the patient is bedridden. The unforgivable sin is either to allow the pressure sores to go on to the point of becoming bed sores (fig 9) or to fail to heal either or both by the time the patient is out of bed. I have described the points of differentiation, treatment and usual sites of occurrence of these complications in an earlier paper. I will only repeat the conclusions drawn then and confirmed by further experience. Pressure sores always antedate bed sores. The former develop because of prolonged weight bearing on bony prominences and of maceration of the horny layers of the skin. The latter follow because of interference with the skin-vascular reflexes. The best treatment of bed sores is prevention. This is accomplished (fig 10) by keep-

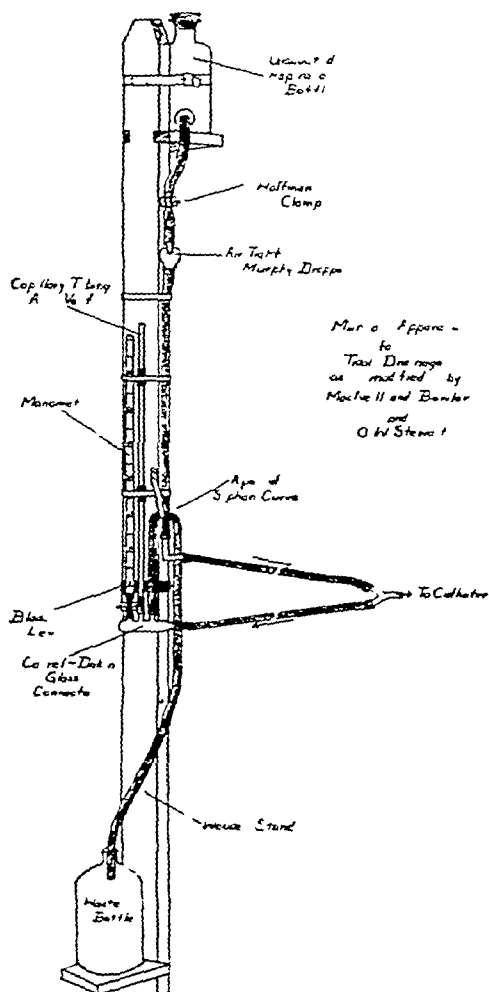


Fig 11—The tidal drainage apparatus with a built-in collector

ing the patient constantly dry, turning him every two hours as long as he is bedridden, maintaining his serum protein at 6.0 or above and his blood chlorides at a normal level and refraining from doing any surgery to the sore and dressing it only once a day and only with a dry sterile dressing.

Munro Donald, Case of the B. A. R. U. R. S. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

THE BLADDER

Successful care of the bladder can be carried out only by the proper use of tidal drainage. The apparatus (fig 11) has been greatly simplified and is now constructed in such a way as to include a built-in cystometer. There is, therefore, no excuse for a failure

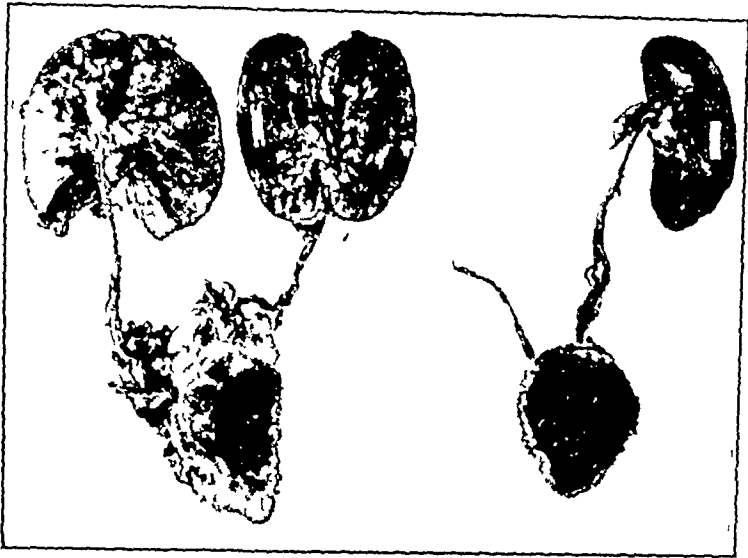


Fig 12—Genitourinary system removed post mortem from 2 patients who had each been treated with tidal drainage constantly for one and one half years

to make enough cystometric examinations to assure proper working of the tidal drainage. I have covered this problem in detail elsewhere.⁸ I should like to emphasize, however, that today patients who have sustained spinal cord injuries may expect certain genitourinary end results. Failure to provide these end results is traceable in every case not to the injury but rather to the physician who has been caring for the injury. These end results are as follows: 1. With a destructive lesion of the sacral segments the outcome will be a useless, hypertrophied bladder that leaks constantly and that cannot be controlled by any mechanical means available at present. 2. With a transection of the cord at any level the result will be a reflex bladder with a capacity of 150 to 250 cc which empties only when its capacity is reached and not otherwise. If tidal drainage is used only at night and an inlying catheter is consequently necessary, the patient will have a bacteriuria but should not have a clinical pyelitis, ureteritis or cystitis. 3. Every other patient who has sustained a spinal cord injury should have a normal genitourinary apparatus with sterile urine and normal function at the time of his discharge from the hospital.

END RESULTS

Twenty-three of the 40 patients in this series died in the hospital. This is a case mortality of 57.5 per cent. The causes of death are interesting and significant (table 3). Only 2 patients died of surgical shock—one after seven hours and the other at the end of three days. One died from multiple injuries at the end of four days and 2 of circulatory failure after eight and nineteen days respectively. These 5 patients (22 per cent) were the only ones who died because of the immediate direct result of the trauma. This figure should be compared with the 40 out of 46 (82.5 per cent) similar cervical deaths. There were 2 patients who certainly and 1 who

probably died from hypoproteinemias, two and one-half, eleven and fifteen months after injury. These deaths would not have occurred today and were preventable.

Five patients died of intercurrent diseases: 1 at the end of two years and three months from peritonitis caused by a ruptured enterostomy wound, 2 from pulmonary emboli at the end of seven days and eleven months respectively, and 1 each from a decompensated heart and a coronary occlusion after thirteen and twenty-four days respectively.

Ten patients (43.5 per cent) died of sepsis. A comparable figure in the cervical group is 4 out of 46, or 8.7 per cent. Only 2 of these 10 patients had meningitis—one because a laminectomy wound became infected and the other because a gunshot wound was not debrided in another clinic and the patient was then turned over to us to die. Four patients died from sepsis of the genitourinary tract. In 2 of these the sepsis followed instrumental perforation of the urethra and operative perforation of the bladder. The first was done with a styleted catheter and the second with a lithotrite. Both occurred because the genitourinary surgeon was without his usual guide post of pain and did not realize the limitations that this set on his freedom of movement. Another died because the tidal drainage apparatus was not operated correctly, and the last died before any

TABLE 3—Cause of Death in Spinal Cord Injuries

	Thoracic and Lumbosacral Cord and Conus Injuries (40 Patients)			Cervical Cord Injuries (46 Patients)		
	Num ber	Inci dence	Mor tality	Num ber	Inci dence	Mor tality
Death in 24 hours	1	4%		10	30%	
1 to 7 days	2	9%	37%	18	39%	74%
7 to 14 days	6	24%		6	13%	
14 to 31 days	4	17%	60%	2	4%	25%
Over 30 days	10	43%		4	8%	
Totals	23		57.5%	46		46%
Death caused by						
Surgical shock	2			2		
Respiratory failure	0	22%		34	82.5%	
Multiple injuries	1			1		
Circulatory failure	2			3		
Hypoproteinemias	3			0		
Intercurrent diseases						
Peritonitis	1			0		
Pulmonary embolism	2			1		
Coronary occlusion	1	2.1%		0	4.3%	
Heart failure	1			0		
Phlebitis etc	0			1		
Sepsis						
Meningitis	2			0		
Genitourinary tract	4	43.5%		3	8.2%	
Bed sores	3			1		
Thrombotic myelomalacia	1			0		

of this work had been started. Today death from genitourinary sepsis would not be countenanced in my service. Regardless of other causes of death, kidneys, ureters and bladders removed at autopsy should show no more than a very superficial cystitis (fig 12). Three patients died from sepsis traceable to a bed sore and 1 from a thrombotic myelomalacia that originated in a

8. Munro, Donald. Tidal Drainage and Cystometry in the Treatment of Sepsis Associated with Spinal Cord Injuries. New England J Med 229: 614 (July 1) 1943

femoral phlebitis which developed during treatment of a contusion of the back. Control of bed sores and the sepsis arising from them is still far from ideal and tremendously difficult to deal with. House officers and nurses cannot be made to believe that failure to move the patient on schedule, failure to change a wet bed within fifteen minutes of its having become wet and failure to maintain an adequate level of serum protein cause pressure and bed sores and prevent bed sores from healing until the patient has proved it to their satisfaction by dying. Then, having learned their lesson by bitter experience, these trained attendants are transferred to another ward or leave the hospital, and the educational process has to be repeated with another untrained group. Constant attention to these apparently trivial details is consequently imperative on the part of the visiting staff if it has any desire to lower the mortality and shorten the hospital stay of these patients.

Seventeen patients survived (table 4). All but 4 have been followed to an end point. End results have been listed as failure, satisfactory, and well. The

TABLE 4—End Results in Living Patients with Thoracic and Lumbosacral Cord and Conus Injuries

Follow Up Period	Failure	Satisfactory	Well	In Hospital	Lost
Less than 6 months				1	1
7 months			1		
8 months		1			
14 months		1		1	
16 months				1	
18 months	1				
2 years	1*	2†			
3 years		1			
4 years			1		
7 years			1		
7½ years			1		
8½ years			1		
9½ years			1		
Totals	2	5	6	3	1

* Died 2 years later of genitourinary sepsis.

† Died of lobar pneumonia at the end of that time.

patients whose end results are classed as satisfactory are active and leading either a normal full or a normal wheel chair life. Those classed as well are doing this and earning their living in addition. Of the 4 patients who have not been followed, 3 are in the hospital under treatment. The other has been lost sight of but his condition was considered satisfactory at the time of his discharge at the end of five months. There were 2 failures. 1 patient died at home of genitourinary sepsis 2 years, and 1 is still bedridden at another public institution one and one-half years after their respective injuries. The condition of 5 was satisfactory. One of these died of intercurrent pneumonia at the end of two years. The others were alive three years, two years, one year and six months and eight months after discharge from the hospital. Six are well. 1 of whom is caring for a family of five eight and one-half years after discharge. She leads a wheel chair life but cooks, sews and is active socially. She is and has been during that time constantly on tidal drainage, which she cares for herself. The others are all working seven months and four, seven, seven and one-half and nine and one-half years after injury.

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TUBERCULOSIS CASE FINDING BY GENERAL HOSPITALS

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Examination of admissions to general hospitals by routine x-ray or fluoroscopic examination of the chest has not been widely utilized as a source of tuberculosis case finding.

Our purpose in this paper is to report the results of a tuberculosis case finding demonstration at Grasslands Hospital extending over a period of eighteen months dating from July 1, 1941 to Jan. 1, 1943. The program was sponsored and financed jointly by Grasslands Hospital, the Westchester County Tuberculosis and Public Health Association, Inc., and the Westchester County Department of Health.

The study was to demonstrate the yield of tuberculosis that may be expected by routine x-ray or fluoroscopic chest examination of patients admitted to the hospital or its outpatient department who were not suspected of having pulmonary disease and would not customarily be examined in this way. All admissions to the chest services and those with known or suspected pulmonary or heart disease who would have received an x-ray or fluoroscopic examination of the chest as a usual procedure have been omitted from the study.

Of a total of 9,693 individuals admitted to the hospital or its outpatient department 7,187, or approximately 74 per cent, were included in the study. Those not included represent admissions to the chest services or those with expected heart or lung disease and a small number of whom examination was not practical. Those were recalcitrants or moribund patients and a few admissions to the psychiatric and contagious departments.

Clinic admissions were first examined by the fluoroscope and, when evidence of disease was present, roentgenograms were also taken. House admissions received routine roentgenograms of the chest on the standard 14 by 17 inch film. There were 2,471 examined by fluoroscopy and 4,716 by x-rays. The number of roentgenograms includes 263 patients referred after fluoroscopic examination.

Fluoroscopies were done by physicians of the tuberculosis and x-ray departments. X-ray films were interpreted by the roentgenologist and, when evidence of pulmonary disease exclusive or healed primary tuberculosis existed, the physician in charge of the tuberculosis division collaborated in the interpretation and classification.

Special efforts were not made to compare the accuracy of the two techniques of examination, but in computing the results it was found that the number of active or questionably active in the two groups was practically identical. Results from the two techniques have therefore been combined in the table, which represents the total number of examinations, age groups, sex and dynamic status of tuberculosis found.

Of those examined 80 per cent were native born and 20 per cent foreign born. Seventy-nine per cent were white and approximately 21 per cent colored.

There were 8 individuals of the yellow race. Of those examined, 3,985 were males and 3,202 were females.

With few exceptions, physical examination by members of the tuberculosis staff was done on all patients with reinfection disease while in the hospital or subsequently in the chest clinic. When this was not possible, reports were sent to the referring physicians and the health departments in the county. All reinfection tuberculosis was reported even if not considered to be active.

The apparently healed primary lesions were obvious calcifications, and no attempt was made to determine primary infection without positive evidence. Where massive calcification was present in the mediastinal and bronchopulmonary nodes, with sparse deposits of calcium or light patchy or linear fibrosis in the lung without evidence of activity, these were classified into minimal apparently healed in order that they might be reported for follow-up and contact examination. It is likely that some of these are of the primary infection type.

surveys in various sections of the country. Screening of these groups should be preceded by tuberculin testing. In addition to the tuberculosis discovered there were 23 individuals with significant nontuberculous lung or heart lesions.

In 1932 Mills and Stewart¹ examined 353 patients admitted to the Swedish Hospital in Minneapolis and found that 14 per cent of the total had reinfection tuberculosis. Their studies were made by first tuberculin testing and then by chest x-ray examination of the positive reactors. In 1935 F. J. Hodges² of the University of Michigan conducted a chest x-ray survey of 1,101 patients admitted consecutively either to the University Hospital or to its outpatient clinic during a period of fourteen days and found "significant chest disease unrecognizable by other methods and often totally unexpected on the basis of chief complaint and history" in 13 per cent.

In 1935 Pohle, Paul and Oatway³ of the Wisconsin General Hospital took chest x-ray films of 1,417 patients admitted during a three month period. Patients with

Initial Patient Survey by Age, Sex and Dynamic Status of Tuberculosis Found

Age	Sex	Total Examinations	Apparently Healed				Questionable Activity				Proved Active			
			Primary	Minimal	Moderately Advanced	Far Advanced	Primary	Minimal	Moderately Advanced	Far Advanced	Primary	Minimal	Moderately Advanced	Far Advanced
0-10	♂	559	2	3			2							
	♀	449	5								1			
11-20	♂	471	1											
	♀	538	1	3	1									
21-30	♂	450	3	4	1			1					1	1
	♀	497	4	1					1		1	2	2	
31-40	♂	518	9	10	2			3	1					
	♀	473	13	10	1			1						
41-50	♂	519	11	16	8			1				2	1	1
	♀	358	6	8	2			1						
51-60	♂	469	10	9	2			2				1	2	1
	♀	347	9	11	2									
61-70	♂	477	7	10	5	2		1	1				1	3
	♀	287	1	7	4			1						1
71-80	♂	295	4	10	4								1	
	♀	200		8	1	1								
81-90	♂	88	3		1	1			1					
	♀	75		3	1									
91-100	♂	9			1									
	♀	2												
Subtotals		7,187	89	119	36	4	2	11	4		2	8	8	7
			248				17				25			

Evidence of manifest tuberculosis was present in 290, or 4 per cent, and of these 201, or 28 per cent, showed evidence of reinfection disease, 42, or approximately 0.6 per cent of the total 7,187, were classified as active or questionably active, 3 of these were active primaries. Activity was established in 25 of the 42, or approximately 0.35 per cent of the total number examined. This group was classified after correlating the hospital or clinic record with the x-ray findings.

A breakdown of active and questionably active disease shows the larger number to be in men above 30 years of age. The ratio of males to females examined in these age groups was approximately 3.2, ratio of yield about 7:1.

We have used active and questionably active classifications to avoid the term "significant" and to mean that clinical activity was proved or could not be excluded.

As a result of the survey, 27 patients were admitted to the tuberculosis division of the hospital and admission was advised for 7 others who refused. The low yield in the younger age groups is what would be expected and has been amply demonstrated in school

history, symptoms or physical signs of a pathologic condition of the chest were excluded. About 3 per cent of the total number receiving x-ray examinations of the chest had "significant" disease which was not detected clinically and 0.3 per cent of the total were found to have the active reinfection type of tuberculosis.

Plunkett and Mikol⁴ in 1940 conducted chest x-ray examination of 4,853 patients admitted to general hospitals in upstate New York and found 26 per cent with evidence of the reinfection type of tuberculosis. Of these 11 per cent had "roentgenological characteristics diagnostic of clinically significant lesions."

Our interest in this demonstration is not confined solely to the yield of new cases of unrecognized tuberculosis but includes the furtherance of our tuberculosis

- 1 Mills, William and Stewart, C. A. Tuberculosis Survey in Private Hospital. Minnesota Med. 16: 122-125 (Feb.) 1933.
2 Hodges, F. J. Medical and Economic Advantages of Roentgenographic Chest Survey of All Hospital Administrations. Ann. Int. Med. 9: 1639-1657 (June) 1936.
3 Pohle, E. A., Paul, L. W., and Oatway, W. H., Jr. Roentgen Examinations of Chest of Patients Admitted to State of Wisconsin General Hospital During Three Months Period. Radiology 48: 484 (April) 1936.
4 Plunkett, R. E., and Mikol, E. N. Unrecognized Tuberculosis in General Hospitals. Am. Rev. Tuberc. 41: 381-387 (March) 1940.

control program at Grasslands, which has been under way for several years. Our program started in the tuberculosis division in 1932 with routine periodic x-ray examination of employees in that division. Since that time the program has been extended, until now all general hospital employees and students in the nursing school are screened by x-ray chest examinations on entering employment and periodically thereafter. In the nursing school and among young employees in the tuberculosis division, examination is supplemented by tuberculin testing. By discovering unsuspected tuberculosis in our patient groups we can isolate infectious patients and better protect our staff.

Tuberculosis case finding has been intensified during the past few years in various groups of the population. Reports of community surveys, home relief groups, inmates of institutions, schools of various types, industrial workers and apparently healthy groups have appeared in the literature. Perhaps the most noteworthy is the present program of routine chest x-ray examination of inductees into the various branches of the armed forces where, according to Long⁵ "the army examinations constitute the greatest case finding survey the world has ever seen."

Edwards⁶ and his co-workers from 1933 to 1940 examined 388,666 individuals by x-ray in New York City, and the tuberculosis division of the New York State Department of Health has been instrumental in examining large numbers in schools, hospitals and industry and is now in the process of examining thousands of individuals in mental institutions.⁷ According to press reports the Swedish National Association Against Tuberculosis⁸ is planning to take chest x-ray films of all citizens of the country. The work will be done by mobile x-ray units.

Although tuberculosis case finding programs among various sections of the population have increased, the opportunity of the general hospital with its x-ray equipment has not been fully utilized. Parran⁹ in a recent report outlines a tuberculosis control program for the United States Public Health Service and among other steps in the program emphasizes encouragement and assistance in the establishment of chest x-ray examination procedures in the admitting rooms of general hospitals.

Even though greater yields are reported in many other selected groups of the population, by the examination of general hospital admissions tuberculosis can be discovered in unbridled and unisolated individuals and is therefore of greater importance from the standpoint of tuberculosis control. In addition the general hospital often houses the most substantial x-ray equipment in the community and could be used for screening with a minimum of dislocation of material and personnel.

In days of wartime emergencies of all types, limited funds and personnel shortages, one may ponder the advisability of launching such a program. However, the importance of this demonstration looms before us when we consider that based on the figures of approximately 53,000 annual admissions to general hospitals in Westchester County, in terms of our yield approximately 300 active or questionably active cases of tuberculosis would be discovered annually and in about 150 of these open disease would be expected.

We consider it sufficiently important to preserve most of the program at Grasslands and to recommend it as a profitable source of tuberculosis case finding for general hospitals.

CONCLUSIONS

1 The opportunity offered by routine x-ray or fluoroscopic chest examination of adult admissions to general hospitals as a source of tuberculosis case finding has not been fully utilized.

2 A tuberculosis case finding demonstration for unsuspected pulmonary tuberculosis by the aforementioned methods has been carried on at this hospital for a period of eighteen months, dating from July 1, 1941 to Jan. 1, 1943.

3 Approximately 4 per cent of patients who would not otherwise have been detected were shown to have evidence of tuberculous infection. Of these 28 per cent had reinfection disease and 0.6 per cent had active or questionably active disease requiring hospitalization or close observation.

4 This group is particularly important from a public health point of view because of the ease of transmitting the disease to others.

5 By discovering previously unrecognized tuberculosis in the patients, better protection for the hospital worker is made possible through isolation and treatment of infectious cases.

THE PREPARATION AND USE OF RED BLOOD CELL SUSPENSIONS IN TREATMENT OF ANEMIA

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During the past few years there has been a definite increase in the use of blood transfusion as a therapeutic measure. The improved methods and facilities for collection, preservation and administration of blood, the development of blood banks, a better understanding of the therapeutic value of and indications for blood transfusion, and the increased requirements due to military medicine are probably the factors which are responsible for this increased interest. The present war has also intensified interest in the use of human blood plasma in the treatment of shock, burns and hemorrhage. Experimental and clinical observations have established the fact that plasma is actually more valuable in the treatment of shock and burns than is whole blood. The transfusion of plasma is now and will continue to be, of increasing importance in military medicine.

The large scale preparation of plasma from whole blood has made available great quantities of red blood cells which are usually discarded. We have attempted to utilize these red blood cells which are a by-product of our plasma bank (and which amount to about 46

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This article has been released to public attention by the Department of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writer and are not to be considered as reflecting the views of the Navy Department.

5 Long, E. and R. Bull Nat. Tuber. 1 December 1942 p. 197.
6 Edwards, H. R. Tuberculosis Case Finding, Studies in Mass. Surveys Am. Rev. Tuberc. (supp.) 41: 139 (June) 1940.
7 Hospital Management March 1941 p. 6.
8 Bull Nat. Tuber. 1 December 1942 p. 185.
9 Parran, Thomas. Tuberculosis Control Program of the U. S. Public Health Service J. A. M. A. 121: 520 (Feb. 15) 1943.

per cent of the original volume of whole blood) in the treatment of anemia

The most important factor in any type of anemia, no matter what the cause, is a deficiency in functioning erythrocytes, and the rationale of treatment is essentially replacement therapy. Whole blood transfusions are used to supply red blood cells in severe and resistant cases of chronic anemia and to hasten the recovery period in anemia from blood loss. Although the transfusion of suspensions of red blood cells is not an entirely new therapeutic procedure, its use has not been widespread. In 1937 Castellanos¹ in Spain called attention

Scudder at the Presbyterian Hospital in New York has employed infusions of red blood cells and that red blood cells salvaged from the Detroit Red Cross Center have been used to supplement whole blood transfusion.⁶

PREPARATION OF THE SUSPENSION

The red blood cells which remain after the plasma has been aspirated by means of a closed aseptic technic are used for the preparation of the red blood cell suspension. After the plasma is removed, the aspirating needle is plunged to the bottom of the red blood cell layer and 200 cc of cells is drawn over by means of

Red Blood Cell Infusions in the Treatment of Anemia

Case	Diagnosis	No of 100 Cc Infusions Given	Before Infusion		Two Days After Infusion		Reaction	Clinical Improvement
			Hb Gm	Red Blood Cells	Hb Gm	Red Blood Cells		
J H	Pernicious anemia	5	20	650,000	110	3,130,000	None	Very good
W I	Chronic myeloid leukemia	1	9.75	3,780,000	110	4,480,000	None	Good
F Mc	Chronic myeloid leukemia	2	5.75	2,100,000	70	2,650,000	None	Fair
B B	Carcinoma of stomach with esophageal obstruction (preoperative preparation)	4	5.5	2,450,000	83	3,860,000	None	Good
W J M	Postoperative gastrectomy for duodenal ulcer with pyloric obstruction	2	80	3,070,000	95	3,360,000	None	Good
E B	Chronic infectious arthritis	1	10.5	3,500,000	11.5	3,800,000	None	Fair
B C	Bronchogenic carcinoma	2	60	2,210,000	85	2,560,000	None	Fair
R M	Thrombocytopenic purpura	1	5.5	1,910,000	80	2,710,000	Yes	None
C A	Chronic infectious arthritis	2	9.0	4,050,000	90	3,480,000	None	None
J K	Empyema postoperative thoracotomy	1	8.7	3,660,000	93	3,610,000	None	Good
T H	Chronic infectious arthritis	1	10.5	4,800,000	11.8	4,600,000	None	Good
R G	Empyema	2	10.0	4,100,000	95	4,000,000	None	None
J M	Lung abscess	1	10.5	4,550,000	11.4	4,050,000	None	Good
I Y	Chronic infectious arthritis	1	10.3	3,550,000	11.5	3,520,000	None	Good
R H	Nephrosis	2	8.0	2,900,000	8.7	2,970,000	None	Good
R C	Cellulitis of hand	1	11.0	3,750,000	12.5	3,950,000	None	Good
C S	Peptic ulcer (preoperative preparation for gastrectomy)	3	9.0	3,300,000	11.5	4,200,000	None	Very good
T K	Pernicious anemia	2	4.5	1,040,000	8.7	2,820,000	None	Very good
D S	Carcinoma of kidney	4	3.5	1,500,000	4.0	1,380,000	None	Fair
H W	Duodenal ulcer (inability to regenerate blood cells above 4,000,000 with iron therapy)	2	13.0	4,060,000	15.0	4,990,000	None	Very good
W D	Gastric ulcer (preoperative preparation for subtotal gastrectomy)	1	13.0	3,950,000	14.0	4,630,000	None	Good
R M	Hemorrhage from tumor of bladder	1	Severe reaction, temp 102 F, chill lasting 30 minutes				Yes	None
H W	Chronic lymphatic leukemia	2	7.0	2,100,000	7.5	2,140,000	No	Fair
E G	Chronic gastritis	1	9.5	2,200,000	9.5	2,500,000	None	Fair
T M	Arteriosclerotic heart disease	3	9.0	3,690,000	13.0	4,600,000	None	Very good
J G	Subtotal gastrectomy, duodenal ulcer	2	9.5	2,970,000	12.0	3,970,000	None	Very good
T R	Portal cirrhosis of liver	1	9.0	3,140,000	9.5	3,200,000	None	Fair
J S	Arteriosclerotic heart disease	1	7.0	2,480,000	9.0	2,910,000	None	Very good
B L	Chronic myeloid leukemia	1	4.5	2,240,000	7.5	2,410,000	None	Very good
I C	Duodenal ulcer with pyloric stenosis (preoperative preparation)	1	8.5	2,050,000	10.5	3,790,000	None	Very good
M J	Gastrointestinal malignancy (preoperative preparation)	1	8.0	4,180,000	10.0	3,550,000	None	Very good
F H	Bronchogenic carcinoma	1	9.5		11.0	3,630,000	None	Good
C A	Chronic heart disease	1	7.5	2,370,000	8.5	3,200,000	None	Very good
J H	Convalescent lobar pneumonia	1	8.0	2,310,000	8.5	2,690,000	None	Very good
I C	Lead poisoning	1	9.5	3,250,000	10.0	3,280,000	None	Fair
I H	Peptic ulcer (posthemorrhagic)	1	10.5	3,330,000	13.0	4,350,000	None	Very good
R W	Hodgkin's disease	1	6.0	2,400,000	8.5	3,420,000	None	Good
W R	Hypertensive heart disease	1	6.5	2,200,000	9.0	3,250,000	None	Good
C S	Perinephric abscess	1	9.0	3,100,000	11.0	3,430,000	None	Very good
J D	Acute nephritis	1	7.0	2,710,000	9.5	3,150,000	None	Good
J B	Peptic ulcer (posthemorrhagic)	1	8.0	3,070,000	9.5	3,710,000	None	Very good
G R	Bronchogenic carcinoma	1	9.5	3,000,000	11.5	3,690,000	None	Fair
J S	Postoperative hemorrhaphy	1	11.0	3,630,000	12.0	4,320,000	None	Very good
H E	Chronic rheumatoid arthritis	1	10.5	3,240,000	11.5	3,940,000	None	Good
P A	Nutritional anemia	1	10.5	3,330,000	12.5	3,540,000	None	Very good
T C	Bleeding peptic ulcer	1	11.5	3,920,000	11.5	3,800,000	None	Fair
M D	Bleeding peptic ulcer	1	6.0	1,810,000	8.0	2,560,000	None	Good
B J	Acute arthritis	1	10.5	3,100,000	12.5	3,840,000	None	Very good

to the advantages of an infusion of concentrated red blood cells. In 1940 MacQuaide and Mollison² in England described the use of erythrocytes in concentrated suspensions for the treatment of anemia, and in the next year Williams and Davie³ presented a series of cases. In 1942 Bagdasarov⁴ in Russia described the use of conserved red blood cells in the treatment of anemia. In this country it has been reported⁵ that

1 Castellanos, A. La transfusion de globulos Arch de med inf 6 319 (July Sept.) 1937

2 MacQuaide, D. H. G. and Mollison P. L. Treatment of Anemia by Transfusion of Concentrated Suspensions of Red Cells Brit M J 2 555 (Oct 26) 1940

3 Williams G. E. O., and Davie T. B. Preparation and Use of Concentrated Red Cell Suspension in Treatment of Anemia, Brit M J 2 641 (Nov 8) 1941

4 Bagdasarov, A. Blood Transfusion in U S S R, Brit M J 2 445 446 (Oct 17) 1942

5 Taylor L. S. Use of Substitutes for Blood Transfusion, New York State J Med 42 1480 (Aug 1) 1942

a vacuum into a sterile 300 cc dispensing bottle which contains 100 cc of 5 per cent dextrose in isotonic solution of sodium chloride. The buffy coat or gel which lies between the packed red blood cells and the supernatant plasma and which consists of white blood cells, platelets and fibrin is left behind in the bottle which was used for collecting the blood. The final suspension contains approximately 88 per cent of the red blood cells obtained from one donation of 500 cc of whole blood. The cells are from 24 to 48 hours old when they are aspirated into the dispensing bottle. They are then stored in a refrigerator at 2 to 5 C for a maximum period of seventy-two hours, after which time those not used are discarded. The suspension of

6 Red Blood Cells Salvage, Science News Letter 43 113 (Feb -) 1943

red blood cells is typed and cross matched with the serum and cells of the recipient and is also examined for hemolysis, which, if present, is sufficient reason for discarding the suspension. An analysis of the suspension reveals averaged values as follows: a hemoglobin of 17 Gm per hundred cubic centimeters, a red cell count of 6,180,000 and a white cell count of 2,000 per cubic millimeter.

RESULTS OF TREATMENT

In the past ten weeks more than 116 infusions of red blood cell suspensions were administered to patients with anemia at the Naval Hospital, Philadelphia. No difficulty was experienced in the administration of these red cell suspensions. A filter of the type used in the administration of whole blood was employed and the rate of flow did not exceed 10 cc per minute. The data obtained from a careful study of 72 of these infusions in 48 patients was tabulated. A red blood cell count together with a hemoglobin determination (Haden-Hausser method) was done before the first infusion was administered and two days after the last infusion was completed. Although it is impossible to achieve mathematical precision in the hemoglobin rise per volume of red cell suspension because of the many variables involved, the average increase in hemoglobin was approximately 1 Gm for each 300 cc suspension of red blood cells. A questionnaire was sent to the ward with each bottle of red cell suspension to be filled out by the medical officer in charge, in order to attempt to evaluate the clinical improvement. Beneficial results were reported in all but 4 of the 48 cases. There were two pyrogenic reactions, one slight and one severe in nature. There were no reactions of the hemolytic type.

Two cases of pernicious anemia were treated, one of sufficient severity to deserve special comment.

J. H., a man known to have pernicious anemia, was admitted to the hospital on March 19, 1943, in a moribund condition. The red blood count was 650,000 per cubic millimeter and the hemoglobin 2 Gm. The diagnosis on admission was hyperchromic macrocytic anemia with combined degeneration of the lateral and posterior columns of the spinal cord. He was given five infusions of 300 cc of red blood cell suspension over a period of ten days during which time parenteral liver therapy was withheld. The blood count was elevated to 3,130,000 per cubic millimeter and the hemoglobin to 11 Gm per hundred cubic centimeters. The patient was then placed on liver therapy and was discharged from the hospital on April 29, 1943, with a well defined clinical improvement. In 1935 the patient had been hospitalized at this institution for eleven months with the same condition.

The accompanying table shows the results of the use of 72 infusions of red cells in the treatment of anemia in 48 patients. There is 1 case of anemia secondary to thrombocytopenic purpura and 2 cases caused by acute infections. Whole blood would have been more suitable, but since the available donors were not compatible these patients were given red cell infusions.

SUMMARY AND CONCLUSIONS

1. It has been estimated that 50 per cent of the patients requiring blood transfusions in a large hospital probably need only red blood cells, and, since large quantities of these red blood cells are now being discarded in the preparation of plasma, it is logical that they be utilized as suspensions in the treatment of anemia. In time of war, when hospital beds are not plentiful and convalescence can be hastened by the administration of these red cell infusions, their use is of great value.

2. At the Philadelphia Naval Hospital 116 infusions of red blood cells have been administered in this series with only two reactions, an incidence of 1.72 per cent.

3. The data obtained from a careful study of 72 of these infusions in 48 patients were tabulated. The average rise in hemoglobin for each 300 cc suspension was approximately 1 Gm and all but 4 of the cases showed clinical improvement.

4. The results show that a waste product may be converted into an effective therapeutic agent in the treatment of anemia.

SHOULD AMERICAN MEDICINE BE SOCIALIZED?

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Perhaps the simplest as well as the most comprehensive definition of socialized medicine is that it is any organized method by which adequate diagnostic and therapeutic medical service can be made available to all of the people, regardless of their ability to pay. This article, which is based on the foregoing definition, is merely an attempt to present as fairly as possible the opposing statements gleaned from the controversial literature.

The main question facing the public and the medical profession is not *Will medicine be socialized?* but *Will socialized medicine be extended?* for in the broadest sense medicine has been partially socialized, though unorganized, since the earliest Christian era.¹

At present in this country medical care is given under a variety of systems: (1) public services, (2) services financed through insurance under the workmen's compensation acts and voluntary schemes, (3) industrial group medical services, (4) charitable and philanthropic services and (5) private competitive medicine. The problem at present is not one of "socialization" but whether the proportion between the various types of existing services shall remain the same or shall be changed.² Four important trends in the distribution of medical care have been under way for some time: (1) the development of group medical practice, (2) the growth of tax supported medical care for needy and other persons, (3) the planned distribution of medical facilities and personnel and (4) the growth of health insurance.³ The two questions that should be answered are: (1) Is the present system adequate for our needs?

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¹ Hospitals and dispensaries established by the early church and later by private endowments gave unorganized socialized medical care to millions of the poor. Experimentation in new forms of distributing medical services has been taking place for many years throughout the United States. In 1773 Virginia provided institutional care for the insane. In 1800 the federal government built the first Marine Hospital at Norfolk, Va., to give medical service to sailors. From 1800 to 1884 as authorized Nov. 13, 1797 by the Fifth Congress the Marine Hospitals were financed through a tax of 20 cents a month later increased to 40 cents deducted from the wages of each seaman and collected by the Collector of Customs. This plan probably was the first of the voluntary hospital care associations which have become so numerous during the last decade. In 1802 another Marine Hospital was established at Boston and others followed along the Atlantic Seaboard and the Mississippi and Ohio rivers. In 1890 state hospitals for tuberculosis appeared. In 1907 crippled children became patients of the state. In 1910 North Carolina and Virginia commenced the free treatment of hookworm patients. In 1921 the veteran hospitals began to multiply. In 1921 the National Leprosarium was purchased. In 1922 federal narcotic farms were established and in 1933 the federal and state governments provided free diagnosis and treatment of syphilis, pneumonia, cancer and malaria. During the past generation but one of the states have paid workmen's compensation laws. For the last ten years the Children's Bureau of the U. S. Department of Labor has financed late infant and maternal programs and provided services in obstetrics and pediatrics of general practitioners.

² Sigerist H. E. Personal communication to be published.

³ Davis M. M. *Medical Care and Its Distribution*. Current J. M. J. G. 49: 602 (July) 1942.

and (2) If not, will "further socialization" improve the situation?

The national health or Wagner and similar bills authorize grants in aid to states to "extend and improve medical care as far as practical under the conditions in such state, especially in rural areas and among individuals suffering from severe economic distress" with "standards of medical and institutional care and of remuneration therefor prescribed by the state agency after consultation with professional advisory committees".⁴ Although these bills do not require the states to adopt compulsory health insurance, it is conceivable that some of them would.

The "model bill" of the American Association for Social Security, which has been used as the basis for some proposed legislation, provides complete medical and hospital service, cash disability and maternity benefits for employes receiving less than \$60 a week and for their dependents.⁵ The cost is to be borne by a 6 per cent tax on pay rolls, three fourths of the money going for medical and hospital care and one fourth for the cash disability and maternity benefits, with the details of operation and payments left to local councils under state supervision.

ARGUMENTS FOR CHANGING METHODS OF DISTRIBUTING MEDICAL CARE

Affirmative—Advances in medicine have increased both cost and benefits and intensified the need of medical care. Inability to pay for medical care leads to vast expenditures for "patent medicines" and the services of cultists. Hospital care given to those who might be served by a prepayment plan is exhausting hospital endorsements. Physicians on the average are still underpaid in comparison with the cost of medical education.

Although health conditions are better here than abroad, one third of the registrants in the first and second world wars were rejected for physical defects, many of which were remediable.

Negative—To this the negative side replies. When fully analyzed, the survey of the Committee on the Costs of Medical Care showed that only 5 per cent of those presumed to be in need of medical care failed to obtain it.⁶

No one in need of medical care has been denied it.⁷ Many surveys show that failure to secure such needed care is due primarily to failure to obtain knowledge of where service was available and refusal or neglect to obtain service and in only about 3 per cent to ability to pay.⁸

Every one who has studied the subject without prejudice admits that American medicine, American medical education and American health are better than those in countries with compulsory socialized medicine. However, it has been suggested that the American standard of living and health departments may be responsible and not the American medical service and that our health record might be even better with an extension

of socialized medicine. The essential difficulty of the present situation is the uneven distribution of the costs of medical care.

VOLUNTARY HEALTH INSURANCE

Voluntary health insurance is urged by many who say "The public should be encouraged to take out hospital and health insurance policies which will provide cash benefits sufficient to pay hospital and medical bills."⁹ These policies are now available through voluntary nonprofit associations and commercial companies. Citizens should also be encouraged to form their own medical cooperatives on the prepayment plan, and industries should be compelled either to establish medical services of their own or to contract for medical service with local groups of physicians.¹⁰

The fear that voluntary health associations will lead to compulsory health insurance is valid only if these associations are badly managed.

The opponents of voluntary plans reply "Health insurance policies may cause some persons to 'enjoy ill health' because of the financial return, they do not provide many preventive measures, minor illnesses may be neglected, and competing groups may render inadequate service in order to cut the rates and force payments to physicians to an unbearable level."

Health insurance groups are restricted to the medical personnel employed, choice of physicians and the individualism of physicians usually are lost. Many of the physicians employed by these groups probably are excellent and possibly better than those whom the members would have selected. Unless they have freedom of choice, many people do not have the confidence in their physicians which, foolish or illogical though it may seem, is a sine qua non of successful medical care.

Except indirectly by larger support to medical institutions, health insurance, either voluntary or compulsory, does not provide medical care directly for the indigent, does not provide for prolonged illness and is distributed over the low income class, which is least able to bear it.⁶ Most of the group plans are not applicable to the rural population.

Voluntary plans may lead to compulsory health insurance.

COMPULSORY SICKNESS INSURANCE

If voluntary insurance is not satisfactory, it is next urged by the advocates of compulsory sickness insurance that medical service should be made a public service, financed through taxation and available to all without charge, like the public schools. Medical services must be organized in order to reach the whole population and to be efficient.¹¹ People with low incomes—those who most need insurance protection—do not know enough to protect themselves and should be compelled to do so.⁷ Without some form of compulsion, voluntary insurance fails of its objective of distributing the cost of sickness among large classes of the population with even approximate fairness. The young and healthy will not join, the acceptance of the aged and sickly will raise the cost to a prohibitive point, but their rejection will remove protection from those most in need. Sickness insurance cannot distribute the burden of sickness among the low income classes unless it is compulsory.¹²

4 Cavers, D. F. Public Medical Services Under Title XIII of the National Health Bill. *Law and Contemporary Problems* 6: 619-627 (Autumn) 1939. Medical Legislation, Disability Insurance and Hospital Benefits, Organization Section, *J. A. M. A.* 120: 296-297 (Sept. 26) 1942.

5 Reed, L. S. Legislative Proposals for Compulsory Health Insurance, *Law and Contemporary Problems* 6: 628-644 (Autumn) 1939.

6 Leland, R. G. Is Medicine to Be Socialized? Bureau of Medical Economics, Chicago, American Medical Association.

7 Critchlow, G. R. The Trend Toward Socialized Medicine. *Compulsory Health Insurance Versus Voluntary Medical Expense Indemnity*, Bull. Richmond Acad. Med. 9: 15-20 (March) 1941.

8 Leland, R. G. The Health of Forty Million People, *Hygiene* 17: 119 (Feb.) 1939.

9 The Committee on the Costs of Medical Care. *Final Report of Medical Care for the American People*. University of Chicago Press, 1932.

10 Problem for Doctors. Editorial. *New York Times*, Aug. 16, 1942.

11 Sigerist, H. E. *Medicine and Society*. *J. A. M. Students* 5: 237, 262 (Jan.) 1941.

12 Bureau of Medical Economics. *A Critical Analysis of Sickness Insurance*, Chicago: American Medical Association, 1932.

No country that ever enjoyed the benefits of social insurance has made the slightest move to relinquish them. Health insurance has always brought more money to the doctors. The amount of bureaucracy in compulsory health insurance depends on the physicians; if they are willing to serve on salaries there will be a minimum of red tape, but if they insist on a fee-for-service basis it will be tremendous.¹³

To these arguments it is replied that though there is a decrease in the cost to the average consumer, and medical care becomes more adequate and more accessible to larger numbers, the total cost of medical care is increased owing to the employment of numerous lay organizers and bureaucrats who control medicine and become undemocratic politicians.¹⁴

Morbidity and mortality are not reduced, diagnosis and treatment are mechanical and superficial, neuroses are created, overmedication is increased, the hospital load is increased, hospitals are encouraged to practice medicine, the loss of time from employment through illness is greater, malingering is increased and the quality of medical care is worse. The confidential relation between patient and physician is destroyed, the former's private affairs become a matter of public record.¹⁵

The employment of part or full time physicians has resulted in low salaries, heavy case loads, regimentation, reduced medical standards, little opportunity for advancement and loss of initiative and personal contact.¹⁶ The patients also are dissatisfied under state managed medicine.⁶

Even the best systems furnish an incomplete service without hospitalization, surgery or specialties, have a tendency toward routine and slipshod medical service and omit medical care for dependents, the self employed, shopkeepers, farmers and others.⁷

ATTITUDE OF MEDICAL PROFESSION

The medical profession today is conducting more social experiments in the methods of distributing medical services than all the proponents for change have ever conducted. Out of the two hundred and fifty or more projects that are being studied or operated by county or state medical societies, it is hoped that methods may be found to supplement existing medical facilities wherever necessity demands. These experiments in the distribution of medical care have been encouraged and studied by the American Medical Association and analyses of their advantages and disadvantages have been compiled by the Bureau of Medical Economics.¹⁷ The medical profession has opposed some of the methods of distributing medical service for the reason that experience has shown the impossibility of providing good and sufficient medical care under such arrangements. In other instances the proposals have met with medical approval as presenting the most satisfactory method thus far found to provide good medical care for the conditions or communities concerned.⁸

The platform of the American Medical Association advocates the federal supplement of state funds for the care of the sick, the amplification of medical care for the indigent, the utilization of established medical and hospital facilities in the extension of medical service to all the people with local determination of needs, local responsibility and local control of administration and the coordination of all medical and health functions of the federal government in a National Department of Health with a physician as a member of the cabinet.¹⁸

The American Medical Association is not opposing the low income groups in this country in their effort to secure good medical service at a cost which they can reasonably meet. It has endeavored to discover more suitable methods to assist these people to solve their medical problems. It does oppose the exploitation of the poor, and it is unalterably opposed to any scheme that would give the poor an inferior quality of medical care.⁹

Both sides believe in medical care for all the people, but the "pros" believe that the present situation is intolerable and want an immediate change by legislation, while the "antis" believe that the present method of distribution of medical care can be gradually improved by local experiments and that it is impossible to apply a single universal plan to all parts of the country for the entire population or even for the forty million underprivileged people.⁸

To proceed rashly without going through progressive stages will produce worse medical service than exists under the present system. Ill considered and hasty legislation is as likely to be harmful as beneficial. Whether a generation will be necessary for the transition or a century, as in public education, only sound experiment and experience can tell.

Any organized method by which adequate diagnostic and therapeutic medical service can be made available to all of the people regardless of their ability to pay, should meet the following requirements:

1. The public should be educated to seek early medical care.¹⁹ The socialization of American medicine is being and will continue to be extended. However, if the expansion proceeds too rapidly without educating the public to the need for adequate medical care and without obtaining the cooperation of the medical profession, the resulting medical service will be worse than it is now.

2. Physicians, and good physicians, are essential to any plan of medical care, and if it is to be adequate it needs the wholehearted support of the medical profession. Medical service of sorts can be obtained by regimenting physicians against their better judgment, but the cooperation of the medical profession will not be obtained unless experiments demonstrate that the contemplated change in the distribution of medical care is an improvement on the present arrangement.

3. Medical care must be provided for the indigent and his dependents. At present it is available in most areas but is sometimes difficult to find, its quality is often poor and the payment for it usually is absent. Every one agrees that the poorest third of the population needs the most medical care and gets the least. The county medical societies, health departments and public welfare agencies are increasing their efforts to solve this problem. The following methods for pro-

13. Sigerist H. E. A Health Program for the American People. *Atlantic Monthly* 163: 794-804 (June) 1939.

14. Pick G. Sozialversicherung und Aerzte 1932 p. 40. *Than A. Ein systematisches Ueberblick über die gesamte deutsche Sozialversicherung* 1931 p. 8. Does Federal Subsidy Mean Federal Control? editorial J. A. M. A. 110: 152 (Jan. 8) 1938. Leland (footnotes 6 and 8).

15. Bureau of Medical Economics. Organized Payments for Medical Services. Chicago: American Medical Association 1939. National Physicians Committee for the Extension of Medical Service. Dangerously Menaced: The Medical Standards and The Health of a Nation pamphlet September 1942. Leland. Critchlow.

16. Critchlow. Cavers. Medical Legislation. Disability Insurance and Hospital Benefit.

17. Leland (footnotes 6 and 8). A Critical Analysis of Sicknes Insurance. Organized Payments for Medical Services.

viding medical care to the indigent from local, state or federal funds should be considered (a) The employment of county and city physicians is the cheapest method for the taxpayer, but the medical service often is mediocre. However, it may be the only practical solution in sparsely settled areas. The payment of larger salaries and the possibility of advancement would attract better physicians. (b) Medical service to the indigent on a fee-per-call basis under the control of the county medical societies, similar to the former FERA plan²⁰ or the present Farm Security Administration program,²¹ has proved satisfactory to the patient and the physician, though it is more costly than the employment of a county physician. (c) Payment to group clinics and hospitals and traveling expenses for the 15 per cent of indigent patients who need specialist, diagnostic, surgical and hospital care are essential. Many counties and states are recognizing this responsibility. (d) Group clinics and hospitals should be provided and supported in areas which need them. (e) Medical care should be separated from unemployment insurance and cash sick benefits.

4 The cost must be distributed for that large section of the population who want to pay their way if they can and who are not applicants for charity but whose budget rarely includes an item for hospital or doctor and to whom severe illness is a serious emergency, often a financial tragedy.⁷ Voluntary associations that provide medical, surgical and hospital care under the control of state and county medical societies are enabling a rapidly increasing number of low income persons and their dependents to obtain adequate medical care without charity or bankruptcy. As the education of the public to the need for good medical care grows, the membership in these groups will increase.

5 Medical care should be improved for every one. If free from political interference and regimentation, the medical profession will be able to continue to improve medical service. Without any compulsion from political or governmental sources, the medical profession has sought constantly to advance the standards of medical education, medical licensure, hospital and specialty practice. To a remarkable degree these objectives are being accomplished. Today curative and preventive medicine has advanced to new and higher planes of efficiency. The medical profession is constantly perfecting methods of diagnosis and treatment, there has been a striking reduction in the prevalence of certain communicable and infectious diseases, infant mortality has been greatly reduced, and in the past century life expectancy at birth has been increased from about 35 years to almost 62 years.⁶

6 Free choice of a physician should be provided, not to protect him as has been charged but because the best results in medical care are obtained when the patient has confidence in his physician.

7 General practitioner care is the greatest need, as 85 per cent of illness can be handled successfully by family physicians. Only 15 per cent of the patients need specialist diagnostic, surgical and hospital care. Economic factors and the specialty boards may decrease the present plethora of specialists.

8 The control and administration should be local in order that specific needs can be met. A plan applicable to a city with several physicians per square mile is not practical in areas with one physician per 200 square miles.²²

9 State or federal loan funds should be available to enable rural students to study medicine. Eighty per cent of them will return to the country, where they are badly needed.²³

10 A coordinated National Department of Health should be established with a physician as a member of the cabinet.¹⁸

11 An equitable system of taxes is necessary to support any extension of the socialization of American medicine.

Clinical Notes, Suggestions and New Instruments

A RENAL CONCENTRATION TEST EMPLOYING POSTERIOR PITUITARY INJECTION

MODIFIED PROCEDURE

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NEW ORLEANS

We have previously reported a renal concentration test employing posterior pituitary injection.¹ This procedure consists in the subcutaneous injection into an unprepared patient of 10 units of posterior pituitary injection (1 cc obstetric or 0.5 cc surgical). Specimens of urine are collected at half hourly intervals for two hours and their specific gravities determined.

The small volumes of urine resulting from this procedure require a Savé urinopycnometer, or weighing bottle, for the estimation of the specific gravity. Such a procedure does not lend itself well to clinical practice. We have therefore modified the technic by lengthening the intervals between collections to one hour. This modification is just as satisfactory and requires only the usual small size urinometer. Cheap accurate urinometers requiring only 4 to 6 cc of urine are available. The procedure is as follows:

1 The unprepared subject empties the bladder, and the specimen is saved.

2 Immediately 10 units (1 cc of obstetric or 0.5 cc of surgical) of posterior pituitary injection is given subcutaneously.

3 The subject receives nothing by mouth until the test has been completed.

4 Specimens are obtained at the end of the first and second hours.

5 The specific gravities of the three specimens are then taken, and the usual corrections for albumin and temperature are made, if necessary.

Table 1 shows the results of this procedure on 45 normal medical students. The test was carried out in the afternoon following the usual lunch. No restrictions on fluids or food were imposed on the subjects. The lowest maximum concentration during the test period is seen to be 1.023. This compares favorably with the results of the half hourly test and reaches

22 Davison W. C. Opportunities in the Practice of Medicine. *J. A. M. A.* 118:160-110 (Dec 21) 1940.

23 Hyman, W. O. Southern Medical Colleges Must Maintain Effort at Least at Its Present Level. *J. A. M. A.* 118:1475-1476 (Oct 15) 1938. (Sept.) 1937. The Number and Distribution of Physicians in the States as Bearing on the Policies of Southern Medical Colleges. *S. M. J.* 30:85-89 (Jan.) 1937.

1 Sodeman, W. A. and Engelhardt, H. T. Renal Concentration Test Employing Pituitary Extract. Response of Normal Subjects. *Exp. Biol. & Med.* 16:688 (April) 1941.

2 Sodeman, W. A. and Engelhardt, H. T. Renal Concentration Test Employing Posterior Pituitary Extract. *Am. J. M. Sc.* 60:1-11 (June) 1942.

20 American Medical Association Study of Medical Care. *J. A. M. A.* 111:1383-1385 (Oct 8) 1938. *Sickness Under National Health Insurance, Medical Economic Abstracts* ibid 111:1475-1476 (Oct 15) 1938. Sman, Nathan Hall, Marguerite F. Hogue, V. M. and Steep, Miriam. Medical Relief in Michigan, Ann Arbor, Mich., Edwards Bros. 1938.

21 Williams, R. C. The Medical Care Program for Farm Security Administration Borrowers, Law and Contemporary Problems 6:583-594 (Autumn) 1939.

the lower limit of normal described for the Fishberg procedure.³

Results of the test in patients with various degrees of renal impairment and with conditions, such as essential hypertension, which lead to renal damage are shown in table 2. Here figures for patients with both compensated and decompensated kidneys are included.

COMMENT

The usual tests for urinary concentration employ periods of water restriction varying from twelve hours to three days. In this way water diuresis is inhibited and the urinary specific gravity is elevated. Posterior pituitary injection eliminates the need for these long periods of water deprivation. The antidiuretic action of these solutions apparently increases the reabsorption of water by the tubules and in this way diminishes the urinary volume. This action takes place even when large amounts of water are ingested. Since the urinary solids continue to be excreted, the specific gravity is elevated to a degree dependent on the dose or effectiveness of posterior pituitary injection, the degree of water diuresis present tubular function and the electrolyte-nonelectrolyte pattern in the urine. We have found that 10 units of posterior pituitary injection

TABLE 1—Results of Test in Normal Subjects

Subject	Specimen Before Posterior Pituitary Injection	Specimen 1 Hour After Posterior Pituitary Injection	Specimen 2 Hours After Posterior Pituitary Injection
1	1.020	1.026	1.016
2	1.016	1.036	1.025
3	1.026	1.035	1.033
4	1.017	1.033	1.016
5	1.020	1.025	1.027
6	1.033	1.041	1.035
7	1.010	1.018	1.030
8	1.021	1.030	1.030
9	1.012	1.027	1.031
10	1.019	1.031	1.024
11	1.019	1.019	1.013
12	1.024	1.025	1.014
13	1.019	1.031	1.035
14	1.019	1.027	1.012
15	1.023	1.025	1.016
16	1.012	No specimen	1.013
17	1.030	1.031	1.032
18	1.023	1.019	1.029
19	1.027	1.032	1.035
20	1.030	1.035	1.033
21	No specimen	1.027	1.027
22	1.022	1.040	1.036
23	No specimen	1.031	1.032
24	1.011	1.025	1.024
25	No specimen	1.030	1.035
26	1.016	1.027	1.032
27	1.018	1.044	1.035
28	1.015	1.018	1.027
29	1.023	1.031	1.033
30	1.013	1.015	1.024
31	1.019	1.027	1.025
32	1.023	1.031	1.031
33	1.020	1.030	1.031
34	1.014	1.016	1.025
35	1.022	1.014	1.015
36	1.025	1.025	1.030
37	1.012	1.015	1.027
38	1.012	1.014	1.025
39	1.006	1.011	1.023
40	1.010	1.026	1.030
41	1.017	1.015	1.013
42	1.010	1.025	1.019
43	1.012	1.014	1.017
44	1.015	1.023	1.023
45	1.015	1.015	1.024

has been satisfactory, even when amounts of water up to 1,600 cc have been ingested immediately before its administration.² Increasing the dose has not increased the efficiency of the test in our hands. The effect of the electrolyte and nonelectrolyte pattern in the urine and the results of salt diuresis may vary the concentration of substances making up the specific gravity of the urine. We have not evaluated these effects.

Since the highest specific gravities found following the administration of posterior pituitary injection occur in a period varying from one to two hours, the collection of two hourly specimens has been found to be adequate. This procedure not only simplifies the test but gives specimens of adequate volume for the small type of urinometer.

TABLE 2—Results of Test in Subjects with Diseases Producing Renal Damage

Subject	Diagnosis	Specimen Before Posterior Pituitary Injection	Specimen 1 Hour After Posterior Pituitary Injection	Specimen 2 Hours After Posterior Pituitary Injection
1	Acute glomerular nephritis	1.012	1.014	1.013
2	Acute glomerular nephritis	1.025	1.015	1.022
3	Chronic glomerular nephritis	1.005	1.009	1.009
4	Chronic glomerular nephritis	1.013	1.013	1.012
5	Chronic glomerular nephritis	1.017	1.010	1.021
6	Generalized arteriosclerosis	1.010	1.012	1.024
7	Generalized arterio sclerosis	1.019	1.023	1.020
8	Generalized arterio sclerosis	1.015	1.020	1.021
9	Generalized arterio sclerosis	1.020	1.020	1.021
10	Generalized arterio sclerosis	1.005	1.009	1.009
11	Arterio sclerotic heart disease	1.006	1.014	1.022
12	Arterio sclerotic heart disease	1.022	1.026	1.024
13	Essential hypertension	1.027	1.023	1.024
14	Essential hypertension	1.016	1.011	1.024
15	Essential hypertension	1.016	1.017	1.017
16	Essential hypertension	1.017	1.023	1.020
17	Essential hypertension	1.017	1.019	1.022
18	Essential hypertension	1.021	1.021	1.020
19	Uremia malignant hypertension	1.005	1.011	1.009
20	Malignant hypertension	1.010	1.020	1.024

The concentration tests now in use give various values for the specific gravity of urine in normal subjects. Prolonged periods of water restriction may give higher values than are obtained with posterior pituitary injection. However, we have in the same subjects obtained better results with posterior pituitary injection than with water restriction up to sixteen to eighteen hours. Obviously the procedure like other tests for renal concentration does not give a ceiling specific gravity, but the standards set up for normal subjects are workable ones. Pasqualini and Etala⁴ in a series of 18 subjects in whom the specific gravity started in a low range found in the face of the ingestion of 1,000 cc of water elevation of the specific gravity to 1.025 or more. These results are similar to ours. Others⁵ also have found the procedure a satisfactory one.

Since impairment of renal tubular function may be estimated by determination of an impaired concentrating ability of the kidney, the test is useful in patients with disturbances in renal tubular function. In such patients posterior pituitary injection as well as deprivation of water will indicate the degree of tubular damage. Under these circumstances there is a striking parallelism in the results of the tests employing water restriction and the results of that employing posterior pituitary injection.²

In both normal and abnormal groups the doses of posterior pituitary injection used have not produced significant changes in the blood pressure even in the presence of severe hypertension and uremia. We have not used the procedure in cases of severe oliguria, pregnancy, angina pectoris or myocardial infarction. Posterior pituitary injection administered to patients with angina pectoris has been known to precipitate attacks. However, in arterio sclerotic heart disease with congestive heart failure we have used posterior pituitary injection without the observation of any untoward symptoms. Graybiel and Glerdy⁶ have not found any significant cardiovascular symptoms in

⁴ Pasqualini, R. O. and Etala, E. Determinacion de la capacidad de reabsorcion del tubulo renal por medio de exarcto de la urea. *Rev. Soc. Argent. de Biol.* 16: 101 (June), 1940.
⁵ Talbot, J. H. Renal Function Test. *New England J. Med.* 192: (Jan. 29), 1940.
⁶ Graybiel, A. H. and Glerdy, E. C. *Circulation* 4: 200 (Feb.), 1941.
⁷ Treatment of Angina pectoris. *New England J. Med.* 192: (Jan. 29), 1940.

patients with arteriosclerotic heart disease with angina, after slow intravenous infusion of a dilute solution of pitressin in doses adequate to produce pallor and uncomfortable abdominal cramps. Additional contraindications to the use of posterior pituitary injection include epilepsy, in which attacks may be precipitated, and hypersensitivity, which has been reported on several occasions.⁷

There are instances in which the method may be valuable when the usual concentration tests are unsatisfactory. These include congestive heart failure when water diuresis from edema fluid precludes the use of any water restriction technique. Under these circumstances we have used posterior pituitary injection, which sufficiently restricts water diuresis to give an adequate estimate of tubular function. Since the pharmacodynamic effects of posterior pituitary injection last only three to six hours, diuresis is then resumed.

In clinical practice the test has definite advantages. It may be carried out on unprepared patients at any time of day. This is particularly advantageous in office practice in which a patient coming some distance for treatment may be seen only once. Furthermore it is of value in surgical patients in whom restriction of fluids over the period of time necessary for a test by water deprivation may be inadvisable. It is particularly advantageous in edematous patients and under circumstances in which the cooperation of the patient in fluid restriction cannot be relied on.

SUMMARY

The renal concentration test employing posterior pituitary injection has been modified to adapt the procedure to clinical practice. Its satisfactory use in many normal and abnormal persons affirms its efficacy.

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ACUTE GOITER DURING THIOCYANATE THERAPY FOR HYPERTENSION

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The sodium and potassium salts of thiocyanic acid have been used intermittently in the treatment of hypertension since Pauli in 1903 discovered their property of lowering blood pressure. Their use, however, was rather restricted until Westphal in 1925 revived interest in the subject. Since that time many reports have appeared relating to their efficacy in the treatment of hypertension¹ and describing various side effects. One of the most remarkable of these collateral effects is the occasional acute enlargement of the thyroid which occurs in patients receiving thiocyanates. Although this phenomenon is mentioned in the course of several papers dealing with thiocyanate therapy,² there have been but few actual reports of such enlargement of the thyroid. We describe briefly such a case to emphasize further the possibility of this type of complication occurring during the administration of thiocyanates for hypertension.

REPORT OF CASE

An Italian woman aged 35, admitted to the hospital on March 8, 1938, complained chiefly of headache and dizziness. Hypertension had first been discovered during her fifth pregnancy, in 1932, but had not received any specific treatment. On examination the blood pressure averaged about 210/110 mm of mercury. There was moderate sclerosis of the retinal arteries with some angiospasm. The second aortic sound was accentuated. The thyroid isthmus was barely palpable. Intravenous urography showed a normally functioning urinary tract with moderate ptosis of both kidneys. Repeated urinalyses were normal. The blood urea nitrogen was 8 mg per hundred cubic centimeters. The urinary excretion of intravenously injected inophthalein was normal. The diagnostic impression was of "benign" essential hypertension.

The oral administration of potassium thiocyanate was begun in doses of 0.3 Gm daily on March 21, and the patient was discharged from the hospital on March 28, 1938. Thiocyanate therapy was continued in doses sufficient to maintain a blood concentration of 6 to 10.5 mg per hundred cubic centimeters until July 1939. During this period, however, there was little subjective or objective improvement. In June 1938 the patient was referred to the Endocrine Section of the Medical Clinic because of suspected hyperthyroidism. Although the basal metabolic rate at that time was +36 per cent and fell to +20 per cent after nine days of iodine therapy, the patient felt no better as a result of taking the iodine. It was concluded that there was no valid evidence of hyperthyroidism, the increased basal metabolic rate was thought to be associated with her hypertension, as is often the case. However, because the thyroid isthmus was palpable a semiannual period of prophylactic iodine administration was advised. On Oct 24, 1938 the basal metabolic rate was +9 per cent and on Oct 21, 1939 it was +5 per cent. In July 1939 her blood pressure was 175/110 and the blood cyanate concentration was 10.5 mg per hundred cubic centimeters. There was no apparent change in her condition until August 1940. At that time she noted a sense of chilliness, sluggishness, impairment of hearing, pain in the neck and swelling of the face and throat. In September 1940 she returned to the Endocrine Section for examination. At this time she exhibited general sluggishness, with puffiness of the face and a definite soft diffuse uniform enlargement of the thyroid. The thyroid gland was not tender, but lateral motion of the head caused pain in the neck. The heart rate was 76, the blood pressure 195/120, the basal metabolic rate -11 per cent and the blood cholesterol 223 mg per hundred cubic centimeters. The blood cyanate concentration at this time ranged from 8 to 10 mg per hundred cubic centimeters. The patient was given 0.015 Gm of desiccated thyroid and 0.3 cc of saturated solution of potassium iodide daily from Sept 1 to Nov 25, 1940. Because the relationship between the thiocyanate therapy and the goiter was not appreciated at the time, the administration of thiocyanate was not stopped. On November 25 the basal metabolic rate was -4 per cent and the thyroid enlargement had almost entirely disappeared, as had also the superimposed symptoms which had appeared in August. The desiccated thyroid and potassium iodide were stopped at this time, but the thiocyanate was continued under the direction of the Cardiovascular Section.

The patient returned to the Endocrine Section every six months for inspection and a ten day period of prophylactic iodide medication. There was no change in her symptoms or thyroid status until August 1942. At this time there was a recurrence of the symptoms noted two years before, i.e. puffiness of the face and neck, sluggishness, chilliness, impairment of hearing and pain in the region of the thyroid on motion of the neck. These symptoms, however, were less severe than at the time of their first appearance in 1940. Examination again showed puffiness of the face and a diffuse soft uniform swelling of the thyroid gland, which on this occasion was quite tender and slightly firmer than during the first episode. The temperature was 99.4 F and the blood pressure was 200/110. The basal metabolic rate was -18 per cent and the blood cholesterol was 172 mg per hundred cubic centimeters. The blood cyanate concentration was less than 4 mg per hundred cubic centimeters, despite the long duration of uninterrupted thiocyanate therapy and the fact that the patient was taking 0.65 Gm of potassium thiocyanate daily at the time. A blood count and routine urinalysis showed no abnormality. The thiocyanate was stopped and the patient was again given 0.015 Gm of desiccated thyroid and 0.3 cc of a saturated solution of potassium iodide daily. This medication was continued from Aug 6 to Oct 16, 1942. On Sept 17, 1942 the basal metabolic rate had risen to +13 per cent, the thyroid enlargement was subsiding and the patient's symptoms were improving steadily. On Dec 9, 1942 the basal metabolic rate was +9 per cent, the blood cholesterol was 172 mg per hundred cubic centimeters and the puffiness of the face and the enlargement of the thyroid had entirely disappeared. On that date the patient said that she felt better than she had for a number of

¹ W. A. The Posterior Pituitary Gland, Am J M Sc
1942

² Section, Medical Clinic, Hospital of the Uni

The Blood Cyanate in the Treatment of Hyperten
762 (March 7) 1936

berg, H. A., and Barker, M. H. Toxic Mani
J A M A 112 1120 (March 25) 1939

of years, despite the failure of prolonged thiocyanate therapy to produce a sustained significant fall in her blood pressure. The administration of thiocyanate was not resumed after the last episode of acute enlargement of the thyroid.

COMMENT

While there has been some speculation concerning the manner in which acute goiter is related to thiocyanate therapy, there have been but few specific cases reported in the literature. Barker¹ in 1936 referred to 3 cases that showed a peculiar myxedematous swelling of the tissue of the face, the orbital areas and the cervical region while thiocyanate was being taken. One occurred in a woman after one year and the other occurred in a woman after fifteen months of administration of thiocyanate. In the latter case a large thyroid, swollen face and heavy jaw developed. The basal metabolic rates were only slightly reduced (—18 per cent and —19 per cent). In 1 man a diffusely enlarged thyroid developed after ten months' administration of thiocyanate. His basal metabolic rate had fallen from +19 to —9 per cent. The enlarged thyroid returned to normal size on administration of desiccated thyroid. Wald, Lindberg and Barker² in 1939 referred to a patient who showed rapid enlargement of a previously present "adenomatous" thyroid nodule which occurred during thiocyanate administration. In reporting the results of thiocyanate therapy in a series of 246 cases in 1941 they³ mention the occurrence of enlargement of the thyroid in 11 cases and of myxedematous facies in 9 cases. They stated that the thyroid phenomenon disappeared within two weeks in all cases after the administration of small daily doses of desiccated thyroid was begun. Fahlund⁴ in 1942 described an acute tender, painful goiter (probably thyroiditis) in a woman aged 71 suffering from a ten year postoperative recurrence of hyperthyroidism, with associated essential hypertension. The goiter appeared nine days after daily administration of a 6 grain (0.4 Gm) dose of thiocyanate was begun and was accompanied by dermatitis medicamentosa and gastrointestinal disturbance. The signs and symptoms subsided after the withdrawal of thiocyanate and the administration of phenobarbital and potassium iodide. Kobacker⁵ in 1942 described a case in which full-blown myxedema appeared during thiocyanate administration, disappeared after withdrawal of the drug and reappeared when therapy was resumed a year later. Means⁶ has recently referred to a curious case to be reported by Rawson, Hertz and himself. Their patient was a man under prolonged thiocyanate therapy for hypertension who suddenly developed a rapidly growing goiter with bruit, exophthalmos, hypothyroidism and low level of iodine in the blood. Biopsy showed "wildly growing and impotent thyroid cells." The thyroid reverted to normal and the hypothyroidism disappeared after withdrawal of the thiocyanate.

A satisfactory explanation has not yet been found for the occurrence of changes in the thyroid during the administration of thiocyanates. Enlargement of the thyroid in rabbits and guinea pigs following the ingestion of winter cabbage and Brussels sprouts was described in 1928 by Chesney, Clawson and Webster⁷ and later by Marine and others⁸. It was eventually shown that the goitrogenous agent in these foods was methyl cyanide. This was believed to cause sufficient anoxia of tissue cells to result in a work hypertrophy and hyperplasia of the thyroid in an effort to produce increased amounts of thyroid hormone as required by the need to maintain oxidative processes at normal levels. These observations naturally suggest that thiocyanates may produce goiter in a similar manner. Against this theory however, seems to stand first the fact that the cyanate ion (SCN) remains intact in the body without

loss of the sulfur component and, second, failure of the cyanate ion to leave the intercellular tissue spaces and enter the cells themselves.⁹ It is of interest that some of the toxic effects of thiocyanates as reflected in the skin and mucous membranes closely resemble those of iodides.⁹ We have observed that in some hypertensive patients showing a favorable response to thiocyanates there seems to be a somewhat sedative effect with slowing of the heart rate, relief of nervous tension and sometimes coincidental loss of hair. Whenever change in thyroid function occurs during thiocyanate administration it seems to be in the direction of hypothyroidism. Most of the reported cases of goiter have developed after rather protracted periods of therapy, but the actual dosage of the drug and its concentration in the serum do not seem to bear a constant relationship to the thyroid disturbance. The prognosis for disappearance of the goiter and the hypothyroid phenomena seems to be good following the withdrawal of thiocyanates. The administration of desiccated thyroid and iodides probably facilitates recovery. It is of some interest that our patient's first attack of enlargement of the thyroid and the associated phenomena subsided after the administration of desiccated thyroid substance and iodides, despite the continued administration of thiocyanate.

TOXIC ERUPTION DUE TO AMPHETAMINE SULFATE
AND ITS ANALOGUE DEXTROAMPHETAMINE
SULFATE

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In the last decade more than half a hundred articles on the therapeutic value of amphetamine sulfate (benzedrine) have appeared in the medical literature. Within the last few months its analogue dextroamphetamine sulfate (dexedrine), which qualitatively is similar, has been introduced to the medical profession. It presumably has all the advantages of amphetamine sulfate but causes fewer undesirable vascular reactions.¹

In spite of its increasing widespread use in medical practice, and although numerous toxic reactions have been reported,² a thorough review of the literature of the last ten years reveals but 1 questionable instance of dermatitis.³

The well known untoward cutaneous reactions of amphetamine sulfate have been reviewed by Reifenstein and Davidoff,² who list flushing of the face, urticaria, cutis asperna, characteristic bromidrosis, dermatographia, pustular eruption, cyanosis, xeroderma, coldness and clamminess of the hands, paresthesia and similar effects.

Goldsmith³ presented a questionable eruption on the face of a female patient. There were a number of irregularly disposed flesh colored papules on the forehead and cheeks, some of which were excoriated. The main sensation was prickling, the rest of the skin was normal. The eruption appeared following the administration of amphetamine sulfate for narcolepsy. The rash was exacerbated by increasing doses of amphetamine sulfate and improved when it was withdrawn. Goldsmith had never seen an amphetamine rash. The original diagnosis was acne excoriee, but the paucity of scratched papules and discoloration made him consider a toxic process.

REPORT OF CASE

A S., a white woman aged 34, consulted one of us for obesity and was put on a regimen of 1200 calories and 1 grain (0.065 Gm) of thyroid daily. After several weeks amphetamine sulfate 5 mg before breakfast and lunch was added to the program. The patient then lost approximately 2 pounds (900 Gm) a week for six weeks. In a few days subsequent to the ingestion of amphetamine sulfate a pruritic lichenified eruption developed on the sides of the neck, axillae, cubital fossae and

1 Barker, M. H., Lindberg, H. A. and Wald, M. H. Experiences with Thiocyanates. *J. A. M. A.* 117: 1591 (Nov. 8) 1941.

2 Fahlund, G. T. R. Painful Enlargement of the Thyroid Gland: a Manifestation of Sensitivity to Thiocyanates. *Proc. Staff Meet. Mayo Clin.* 17: 289 (May 13) 1942.

3 Kobacker, J. L. Production of Goiter and Myxedema by Sulfitocyanates. *Ohio State M. J.* 38: 341 (June) 1942.

4 Means, J. H. Disease of the Thyroid Gland. *New England J. Med.* 227: 394 (Oct. 15) 1942.

5 Chesney, A. M., Clawson, T. A. and Webster, B. Endemic Goiter in Rabbits. *Bull. Johns Hopkins Hosp.* 43: 261 (Nov.) 1925.

6 Marine, David, Baumann, E. J. and Cipra, A. Studies in Simple Goiter Produced by Cabbage and Other Vegetables. *Proc. Soc. Exper. Biol. & Med.* 26: 22 (1929).

7 Goodman, Louis and Gilman, Alfred. *The Pharmacological Basis of Therapeutics*. New York: Macmillan Company, 1941, p. 373.

8 Prinzmetal, Myron, and Allen, G. A. Central Nervous System Stimulant Effects of Dextro-Amphetamine Sulfate. *Proc. Soc. Exper. Biol. & Med.* 42: 206 (Oct.) 1939.

9 Reifenstein, E. C. Jr. and Davidoff, Eugene. Benzedrine Side Effects. *New York State J. Med.* 39: 37 (Jan. 1) 1939.

3 Goldsmith, W. N. Benzedrine Eruption. *Br. J. Derm.* 52: 269-270 (Feb.) 1950.

popliteal fossae. The lesions were the exact counterpart of a typical atopic dermatitis.

She was taken off amphetamine sulfate medication and in a few weeks her dermatitis cleared up entirely. Although she continued on her restricted diet and thyroid medication, she observed that she was no longer losing weight and on her own initiative resumed the amphetamine sulfate. Her rash promptly recurred and she again lost weight. When the amphetamine was again eliminated, the rash subsided except for a mild nonpruritic lichenification of the cubital fossae. She then went on a trip and discontinued her reducing regimen. When she returned several weeks later she had regained half the weight lost and she resumed her previous diet and medication. Once more her atopic dermatitis-like lesions reappeared and the amphetamine sulfate was stopped. Some six weeks later, when the cutaneous manifestations had almost vanished, the patient was put on 5 mg of dextroamphetamine sulfate (dextedrine) before breakfast and lunch, and the dermatitis manifested itself, as seen in the illustration, but disappeared shortly

after the withdrawal of the dextroamphetamine sulfate.

COMMENT

Dermatitis medicamentosa has been reported as resulting from almost every type of medication. Hence it is inevitable that a case of amphetamine sulfate dermatitis should be encountered. It is not uncommon for dermatitis medicamentosa to mimic classic dermatologic entities, thus a lichen planus-like rash may follow the administration of arsphenamine.⁴ An erythema nodosum-like eruption may be produced by sulfathiazole.⁵ Our patient had no personal or family history of allergy. Although emotional factors may precipitate latent atopic dermatitis in a subject with an allergic diathesis,⁶ we do not think the sympathicomimetic stimulation of amphetamine sulfate has



Dermatitis of cubital fossa following administration of dextroamphetamine sulfate.

evoked a dormant atopic dermatitis in this case. Patch tests and scratch tests with amphetamine sulfate elicited no reaction. Goldsmith's questionable case of amphetamine eruption³ may have been acne vulgaris, as he thought was possible. The patient may have excoriated her acne papules in response to the stimulant action of the amphetamine sulfate on her nervous system.

SUMMARY

An atopic dermatitis eruption resulted from the ingestion of amphetamine sulfate and its analogue dextroamphetamine sulfate.

Republic Building

⁴ Fraser, J. F. Lichenoid Arsphenamine Dermatitis with a Histologic Picture of Lichen Planus, *Arch Dermat & Syph* 44: 510-511 (Sept.) 1941.

⁵ Costello, M. J., Rubinowitz, A. M., and Landy, S. E. Sulfonamide Therapy in Dermatology, *New York State J Med* 42: 2309-2316 (Dec 15) 1942.

⁶ Greenhill, M. H., and Finesinger, J. E. Neurotic Symptoms and Emotional Factors in Atopic Dermatitis, *Arch Dermat & Syph* 46: 187-200 (Aug) 1942.

Special Articles

THE ARMY MEDICAL LIBRARY

ITS HISTORY AND ITS FUTURE OBLIGATIONS

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Librarian, Army Medical Library

THE FIRST HUNDRED YEARS

Seven years ago the Army Medical Library celebrated its one hundredth anniversary in the building into which it moved in 1887 and which it still occupies. It had been in existence ever since the Florida war, it was a feeble infant in the Mexican struggle, a mere child in the Civil War and lived at all only because John Shaw Billings put the breath of life into it about 1868, when it boasted no doubt of its five thousand volumes. It became great in the succeeding decades, but it has had its ups and downs ever since. It produced, besides Billings, Garrison and Fletcher, neither of the latter two ever to be the librarian, and it has had some fourteen military librarians who held office from a week to nine years, the longest tenure since Billings' time. Most of the librarians, I suppose, have left some impress on the institution. All have been military officers and some were brilliant men, if untrained in library technique.

In my first few years as librarian I was asked occasionally what its policy was, what the organization was, what was the great objective and so on. Apparently, as an institution the library had no definite policy beyond habit and custom, except as is contained in Public Resolution No. 8 of the Senate and House of Representatives (approved April 12, 1892). This permitted the library to place its facilities for research at the disposal of scientific investigators and qualified students of higher institutions of learning. Nevertheless, its organization was somewhat of a mystery, even its employees were mysterious. Certain people had duties and, no less, rights. If an old employee had been holding down an office like, let us say, the steward of the British Chiltern Hundreds at a nominal salary, he was not likely to tell you much about his job. Certainly the library did not always know where its next thousand dollars was coming from and it had no precisely formulated policies. Its obligations, as laid down in Army Regulations, were somewhat nebulous. Even today they are still only what the librarian and the Surgeon General safely think they should be. Do not be surprised at this. The military service can operate only from a day to day basis. At any moment military policies may demand changes affecting the entire army, and retrenchments may produce of necessity far reaching consequences. In this respect the institution has gone through any number of economy storms. It has survived an abortive attempt to take it away from the Army and place it under the Library of Congress. It has suffered disappointments and frustrations without number. For all this it has gone on its way. The Army or, rather, the Surgeon General, has carried on the operations of the Library for many decades and you may be sure that the Army itself can continue to do this to the advantage of medicine and that the Library can retain and augment its rank as a leader in the medical library field in the broadest implication. But it can do this only if it can prove its adaptability.

Read before the Medical Department of the University of Illinois College of Medicine Chicago, May 5 1943.

to the needs of a changing world and only if it shall arrive at a clear perception of future obligations. Therefore I hope to interest you, not particularly or solely in its wartime work, but in a brief review of the history of the institution, with a consideration of its wartime activities and with its future as we may be able to see it.

Now the Army Medical Library, or the Surgeon General's Library as it was once called, was founded during the administration of Andrew Jackson in 1836. It was then a small collection of medical books and pamphlets, a mere handful in the Office of the Surgeon General, Dr Lovell, and so it remained for more than thirty years, unhonored and unsung. In 1865 John Shaw Billings came to Washington. Dr Billings came not as librarian but as the assistant to the Surgeon General, and at first he appeared more interested in pathologic specimens and in microscopes and fungi than in the library. I have examined hundreds of letters addressed to him in Washington in the years 1868 and 1869, and in none of them could I find any reference to a library and only occasionally was a book mentioned. One of his associates used to call Billings "my dear old fungous fellow," and at that period he apparently did not look on Billings as exclusively a bibliophile. The books numbered but five thousand just before 1870, there was no *Index-Catalogue*, and the present Library and Museum, once the dream of the medical library world, was not occupied until seventeen years later.

In the Surgeon General's report the museum began to be mentioned in 1867, but the library received no mention whatever until 1870, when a brief notice of its expenditures was made. It was not until 1876 that the report contained a headed paragraph on the library, and here is described briefly the printing of the *Specimen Fasciculus*, a momentous event for medicine. From that time on the library's statistics began to appear, and the Surgeon General reported in 1879 that there were fifty thousand books on the shelves. In 1880 the Surgeon General recommended that a new building be constructed to cost \$250,000. The building was completed in 1887.

If we exercise our imagination, it is not difficult to sketch the library of those days in the solemn eighties and the gay nineties except that we must exclude merriment from its somber walls. The Library and Museum shared the building, and the lower floor housed a section of the Adjutant General's Office. There were thousands of books, the *Index-Catalogue*, that monument to Billings' genius and industry was appearing regularly, and other thousands of books and pamphlets were added each year. Appropriations for material were limited and difficulties in obtaining personnel were great. Most of its employees were ex-soldier clerks, a very few of whom were of scholarly pretensions. Garrison, Fletcher, Allemann and Neuman were all of this era, and Toepper came in soon after Billings departed in 1895. The library was useful to a host of scholars, men like Osler, Klebs, Kober, Kelly, Welch and Cushing visited it constantly. Gradually there grew up somewhat of an isolationist attitude which obstinately and forever took refuge in what the library possessed and in its superb *Index-Catalogue* but exhibited no overwhelming desire to know how those outside its walls did or felt. It could not be otherwise when clerks and workers in subprofessional grades gloried in their ability to do today as was done yesterday and when the building of the *Catalogue* must subordinate every other activity. Yet this is not to deny that it held a vast pride in its well earned reputation.

Dr Billings did two notable things among his many accomplishments. He made a vision of a great index catalogue of medicine come true more than sixty years ago and he accumulated a store of medical literary treasures of the fifteenth, sixteenth, seventeenth and eighteenth centuries such as can hardly be equaled again. His ability to secure this material, now unobtainable, was beyond compare.

Billings left the library after thirty years as librarian in the closing years of the last century. The value of his services has been elaborated by abler pens than mine and I forbear to say more, for there is little that can be added. The staff was getting on in years, some were aging and most were set in their ways, to differ with them was heresy.

When Colonel Billings departed with his laurels to take his new position as the head of the public libraries of New York City, he was succeeded by Colonel Huntington, who served but a year, to be followed by Major J. C. Merrill, a distinguished naturalist and bird lover, who carried on for four years. In 1902 there came Major Walter Reed, who seems to have served actually but a week, having died in office. I can find no records which indicate that Major Reed exercised any influence on the Library itself. After Reed's melancholy and untimely death came Brig. Gen. Calvin DeWitt, who served only a year. Thus after Billings' departure in a period of eight years we find that there were five librarians, one of these serving four years and the others averaging only one year. Fortunately the staff was comfortably, not to say firmly, settled and there were always Garrison and Fletcher, brilliant men both. Garrison, so famed in the history of medicine, carried on the *Index-Catalogue* and Fletcher edited the *Index Medicus* and was justly regarded as the father of the latter publication.

The *Index Medicus*, now published by the American Medical Association here in Chicago, was begun in 1879 and except for a brief interval was carried on until 1927. In 1912 Fletcher, who had been regarded as immortal, died of old age, and Garrison became the editor. In 1903 General McCaw became librarian, remaining in this position more than nine years, until a newly adopted War Department policy which limited a tour of duty to four years forced him to leave the city of Washington. He was succeeded by Col. C. C. McCulloch who served for five years, until the end of the World War in 1919, when the Library had two librarians in less than one year. Up to 1919 the librarians had been limited to four years or occasionally a little more, and this applied to the succeeding tours of General Noble, Colonel Phalen, Colonel Ashburn and Major Hume. As each librarian went his way there was a period of uncertainty, and the incoming librarian had to decide what new policies he would adopt or whether he would carry on like his predecessors.

In 1933, to the surprise and consternation of the Surgeon General, a proposal was actually laid before the President by petition or certain members of Congress to transfer the Army Medical Library to the Library of Congress. Fortunately the Surgeon General, aided by the opinions of many of the leaders of the medical profession, was able to prevent this, and not much weight was given to the suggestion as the Librarian or Congress. Dr Putnam opposed it. Nevertheless Dr Putnam seemed to think that the Army Medical Library had not received adequate financial support and that it was not properly staffed, and in this we can agree with him.

During the depression years following 1932 Congress in great measure withdrew its support to the library. The *Index-Catalogue* had to be suspended for three years. To add to this there was not enough money to buy all the necessary journals and many of them lapsed. During this period the librarian, Major Hume, was able to keep some of the journals going by getting the subscriptions as gifts, but this turned out to be unsatisfactory in the following years because later many of the numbers were not sent, which caused gaps to occur in the files. Some of these are still unfilled. Sometimes subscriptions were cut off without notice, which made for confusion.

In 1936 the *Index-Catalogue* was restored to life and began to be printed, but much damage had been done by the lapse of three years and many mistakes were made. Dr. Claudius F. Mayr had been chosen editor some time before and has continued in the position ever since. A change in editorship of the *Index-Catalogue* is usually a serious matter and a new editor requires a number of years before he can carry on successfully. Actually, while there have been many librarians there have been only four editors since Billings' time: Fletcher, Garrison, Allemann and Mayr.

It will be seen that the low point of the library occurred in the period of national depression between the years 1930 and 1936, and those years were disastrous. Material was lacking and personnel so insufficient that much of the indexing, analysis and cataloguing had to be left undone, and this state of affairs continued for many years, which left eventually a vast amount of work which had to be caught up with

Some years before my time in the library it was realized that the institution was bound to be in difficulties within a few years for lack of space and lack of personnel. In 1938 a bill was introduced after many hearings to provide a new library and museum. After lively agitation and much favorable testimony the bill failed finally in the last few days of the Seventy-Fifth Congress. Long before this a place for the Army Medical Library and Museum had been established at the Army Medical Center. Plans had been made for a building which fitted the ground, but they did not seem to have met the needs of the library as a national institution. I entered on my duties as librarian in 1936 and immediately asked if I could revise these plans. This I was able to do to accomplish a very good effect, since I believe they were faulty. I was convinced that the location was unsatisfactory. In this belief I was supported by the leaders of the library and by Dr. Putnam, Chairman of Congress. I thought that it would be better to look to the future support of the library from the Government than to have the institution to be placed in the hands of the military reservation from the center.

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held a number of hearings at which the plans were submitted, and a defense of the ground selected was made by the Surgeon General and myself. The entire plan was finally approved and a square of ground on Capitol Hill was selected for condemnation. Early in the fall of 1940 hearings were begun by the military committee of the House of Representatives concerning the necessary appropriation, since thus far only the enabling act had passed Congress and had been approved by the President. There seemed to be little doubt that Congress would appropriate a substantial sum for the purchase of the land and for the construction of the library, the entire amount of money recommended being about \$4,500,000, of which approximately \$3,750,000 was for the building. Estimates by various construction firms called for an outlay of between \$3,900,000 and \$4,200,000 for the building alone, leaving approximately about a half million dollars for the land, the assessed value of which was about \$450,000.

On Dec 7, 1941 came the war with Japan, and with it were dashed all hopes of the immediate erection of a building which was so badly needed. This was a crushing blow, for the library was already so crowded that there was no hope of holding out any longer. The situation then was such as to discourage any one really acquainted with the circumstances. The library had been full to bursting for two or three years and all attempts to get any more space, even temporarily, had failed. The personnel was about one half what it should have been for satisfactory prosecution of the work. The war was coming on, the demands of which could not be foreseen. There was little or no room left for accessions and none whatever for expansion of personnel. Moreover, there was such a scramble for space in the city of Washington that the library had no chance of securing anything adequate. It is not too much to say that the Army Medical Library was facing disaster then, for it could not long operate under the conditions presented. In addition, the books had for some time been deteriorating, even the modern ones, and the condition of the old books to the number of more than twelve thousand was deplorable. An attempt had been made a year or two before this to do repair work on the books, but by law this could be done only by the Government Printing Office, and there were so many books that the effort was ineffectual. Reorganization of the library was extremely needed, but it could not be done under the conditions that were

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or the power seems far fetched, and for that reason it was done only on paper, to be put in operation when the new building was ready for occupancy.

The war the necessity for increasing the staff to take care of wartime needs and the utter inability to function fully in the cramped quarters enabled, indeed forced, the Surgeon General and the librarian to take long needed action. This consisted in an immediate reorganization of the staff and the method of operation, and to effect this it was necessary to move a part of the library to another city, not only for safety, but for the ultimate preservation of the books which had suffered so severely by attrition and lack of proper housing.

It was decided that a simple and logical method of operation should be devised as a guide based on experience and on future objectives. First, the old manner of operation was studied in graphic form. This appeared so unsound, showing as it did overlapping activities and utter lack of responsibility devolving on those who should have exercised authority in key positions, that the need for a new setup seemed the more urgent.

We asked ourselves What did the library do, in plain and homely terms? The answer was that it searched for medical literature, it acquired and paid for it it then indexed, catalogued and printed it it bound the serials and it shelved or boxed the material, making it available for use through loan or otherwise. There were other things, however, that made the machine less simple than it appeared at first sight. There were the problems of administration, of conforming to War Department directives, of abiding by Civil Service rules and departmental rules, of securing funds each year from Congress, and so on. Finally, it seemed to us that the library ought to have four divisions and that all its activities must be made to fit into these divisions. The divisions were to be the Administrative, the Accession and Supply, the Index-Catalogue and the Circulation and Reference.

The Administrative Division is to be headed by a commissioned officer, the assistant to the librarian. This division handles all matters of personnel, discipline, police, fire control, mail and correspondence, liaison, orders and memorandums, staff meetings repairs finance, pay rolls, building and messenger service, utilities and so on. Its force is entirely clerical and fiscal and has no professionals in it. The largest subdivision is the Photoduplication Section, in reality almost an independent unit.

The next division is the Accession and Supply, and it is concerned with searching the markets of the world for medical literature. It corresponds in most of the modern languages if this is necessary. It buys current books and journals, checks files for completion binds journal files at the end of a year accessions books and pamphlets, sending them to the Index-Catalogue Division as they are received. The division is also charged with binding and rebinding, which is done at the Government Printing Office in Washington or, in the case of the Cleveland branch, at Cleveland binderies under negotiated contracts.

The third is the Index-Catalogue Division. It indexes and catalogues according to author and subject, all medical literature, portraits, broadsides, curios and the like coming to the library by purchase or gift. It is charged also with the production of the *Index-Catalogue*, which is published by the Government Printing Office. It does bibliographic research which is not ordinary reference work. The chief of this division is the editor of the *Index-Catalogue*.

The Division of Circulation and Reference, the last of the four, is concerned with direct service to the public. This means the jurisdiction and service of reading rooms, reference library, special collections, loans stack and reference service and related correspondence. Its main subsections are the main reading room, the journal room, the reference library and the document section.

The entire personnel in the library is now about sixty-four, although there is a considerable turnover owing to separations from the service, or one cause and another, and it is seldom that there are that many on duty for the reason that replacement causes long delays. As a rule, persons assigned to divisions of the library are not shifted to other divisions except when there is an urgent reason.

A few years ago the total personnel in the library was only thirty, and of these only four or five had a professional rating, all the others being clerical or sub-professional, no matter what their duties happened to be. Outside of the editor of the *Index-Catalogue* and one other person engaged in indexing and checking medical literature there was no one with a rating higher than a professional-1, which is the lowest professional grade. At the present time the employees who have a Civil Service rating have more than doubled, but the most noticeable thing is not the increase in number but the increase in the professional grade. Whereas once the professionals were but about 10 per cent of the total there are now fourteen employees with a professional rating, which is more than 20 per cent of the whole.

CLEVELAND BRANCH OF THE ARMY MEDICAL LIBRARY

The Cleveland branch of the library was established in July 1942. A considerable portion of the Allen Memorial Medical Library in Cleveland was leased for eight years, and this included unused air conditioned stack space to house fifty thousand volumes. It also included a former museum space which was cleared and turned over to the Army for conversion into library space. This will accommodate forty thousand volumes, the grand total being ninety thousand. Almost the entire Rare Book Collection of the Army Medical Library was sent by express in boxes to Cleveland to the number of about twenty thousand. This included all the incunabula, the works of the sixteenth, seventeenth and eighteenth centuries and a few other items but did not include nineteenth century works no matter how rare these happened to be. The incunabula had been kept together in the Army Medical Library as a unit only within the last four years. The sixteenth century works were scattered through the library shelves, apparently according to subjects. The editor of the *Index-Catalogue* and the librarian gathered the incunabula and the sixteenth century authors into a very nearly complete collection which was maintained on certain shelves. When the library was moved it was necessary to search the entire building for the other works of the seventeenth and eighteenth centuries which number more than fifteen thousand. This was a tremendous task, and it was useless to attempt to collect them in any sort of order. Accordingly the titlepage of every rare book was photographed before the book was packed. Finally the entire twenty thousand odd volumes were shipped to Cleveland to be unpacked and placed in order on the shelves.

The librarian has made arrangements with a Cleveland binding firm to start the great work of repair and rehabilitation a work which will take from three to five

years. It will require a large appropriation. No matter what the cost is, it will be worth it, for there is no such medical collection in the world and it will be possible, even now, to restore the collection and place it not only in as good condition as when the library first acquired the books but in a far better one. The work requires the attention of the best of experts, it includes matching old leather, the repair of parchment, careful cleansing, the restoration of damaged pages and the restoration of silver and leather clasps and thongs. The acquisition of the branch library in Cleveland for a period of eight years was the result of my complete and undeviating opposition to burying this collection in the ground for the duration, which was at one time suggested.

In addition to the Rare Book Collection, the Document Section of the library and a part of the Vital Statistics Section also have been removed. It is intended to keep up the service in the Cleveland library more or less in the same manner as in the Army Medical Library. The personnel in the branch library consists of an officer in charge, a curator of the rare books, two professional librarians, a chief clerk and an assistant and a messenger. Its staff is 50 per cent professional. In time, in the next few years, perhaps it will become the Mecca of those who wish to consult these rare treasures. Working space is available and every consideration will be given to those who are qualified to take advantage of their opportunity.

Naturally it will be inquired: What is the principal library work which is connected definitely with the war? There is greatly increased reference work for military and naval hospitals and medical activities. Our bibliographic and reference work is increased many times. We are helping war plants and factories in this field. Greatly increased information service is being requested by military personnel in Washington.

There is a constant search being made for new medical material in journal, in book and in pamphlet form published in Latin America. The library is securing all European medical material available in film form and is cataloging it and making it available for distribution. There is a great increase in photoduplication work for overseas units, for Free China and for the United Nations. Up to the present the Army Medical Library has turned out millions of pages of this medical material and is shipping overseas more than half a million pages a month. This is in the form of journal literature, of which about seventy complete titles are copied as they appear monthly as continuing orders and in book form. More than one hundred complete textbooks have been reproduced in film and sent to fifteen medical centers in China. This requires the master film to be copied fifteen times.

The library has been active in developing simple hand viewers for microfilm and in helping to place them on the market at a low price. Thus far three types have been modeled to sell at a nominal price.

The library does not limit its services solely to the Army and Navy requests but serves the medical public in every way possible. Its loans go to every state in the Union and its photoduplication service goes all over the world, to remote places in Canada, to the naval station in the Caribbean, to Australia and to Africa. Oftentimes we do not know where it goes, for the address is only a numbered American Post Office.

The work done for the Military Information Division of the Surgeon General's Office is constantly on the increase. The library is also assisting in the preparation of the Medical History of the War.

These are but the main types of work, but the demands made on us can hardly be limited, and each week brings new questions and new problems. During all this, the production of the *Index-Catalogue* goes on regularly, and the library also places its facilities at the disposal of the "Current List of Medical Literature" issued each week by the "Friends of the Army Medical Library" and the Medical Library Association.

THE FUTURE OBLIGATIONS OF THE LIBRARY

Among the many projects outlined by the Fine Arts Commission of the District of Columbia in connection with postwar plans for the development of the city of Washington, a new Army Medical Library and Museum occupies a prominent place in the \$400,000,000 program. The Fine Arts Commission has listed as its first item the development of East Capitol Street from the National Capitol eastward to Anacostia. This will result in a great central composition at least 5 miles in length. It will be excelled in this respect by no other capital city in the world. All the buildings along East Capitol Street are to be in either marble or granite similar to the Folger Shakespearean Library and, as the commission is careful to add, "the proposed Army Medical Museum and Library Building." Thus it would seem that eventually the Army Medical Library will come into its own and hope need no longer be deferred.

In order to do full justice to the new building in so prominent a location and to secure the funds for its erection, a careful estimation will be required concerning the usefulness of the library from a national standpoint, not only now but in the future. It is my belief that the library, with a closer relationship to the Library of Congress, with the retention of its freedom as a separate unit, will give us an institution deserving of the confidence it has enjoyed in the past. Lest it should be forgotten, we should remember that the Army Medical Library has a pleasant and profitable relationship with its sister institution, the Army Medical Museum, and that the fortunes of the two are closely linked and that they will march together in future years bound by common ties of mutual respect and helpfulness.

Among the many things that the library will face will be the task of distributing its enormous duplicate collection, acquired by gifts over a period of many years and now stored in hundreds of boxes, to institutions in various parts of the world which are most in need of it. The future relation of the library with the medical schools of the city of Washington must be carefully considered. Complete and satisfactory service will involve remaining open at night, as is now the practice of the Library of Congress. No doubt such a service should be given by the Army Medical Library. Again, the great collection of medieval medical literature, within a few years to be completely restored, will be returned to the parent institution under a competent curator. The standard of our personnel is rising, but it is not yet what it should be, and greater attention should be paid to the employment of scholars and to those skilled in library technique.

How shall we determine a wise course for the future, with definite commitments in the years to come and how shall we convince the lawmakers that a definite policy as to future operation and support can be agreed on? It will be apparent that this can be determined best by putting a number of heads together, and this brings up the last thing of importance for us to consider—the survey of the Army Medical Library by one of our national foundations. This has already been

arranged for, and it should begin within a few months, since the director and his staff have been appointed. The scope of this survey is broad. It will be a fact finding body which will submit constructive criticism with a plan for the future. It will consider the previous history of the Army Medical Library through its one hundred years of existence, the support that has been given it, its personnel, its method of operation and so on.

With the completion of this survey, it will be unnecessary in future to weigh various policies and recommendations that have been made at one time or another, many of them entirely out of date and not in keeping with modern library practice. Finally, it may be said that the vicissitudes and discouragements through which the library has passed will aid us to secure greater efficiency and a better future for this century old institution.

DIPHTHERIA MORTALITY IN LARGE CITIES OF THE UNITED STATES IN 1942

TWENTIETH ANNUAL REPORT

The procedure followed in obtaining data for this report is described in the review of typhoid mortality for these same cities.¹ Briefly, a communication was addressed to the health officer of each of the cities requesting the number of deaths from diphtheria both among residents and among nonresidents which were recorded in 1942. Inquiry was also made of the percentage of children under 5 years of age who had received a complete series of diphtheria protective treatments as of Dec 31, 1942. Such figure if available should give an approximate indication of the percentage of children who had received such treatment before entering school for the first time. In calculating death rates the 1940 census figures were used. The practice of charging all deaths, both among residents and among nonresidents against the individual city has been continued with the inclusion of appropriate symbols similar to those employed in previous years. Such symbols indicate those cities in which either (1) all diphtheria deaths were stated to be in nonresidents or (2) one third or more such deaths were stated to be in nonresidents. Attention is directed to tables 11 and 13, which together list forty-three cities (there were forty-five in 1941) which record no diphtheria death among residents in 1942. In addition to the thirty cities (there were twenty in 1941) with no diphtheria and typhoid deaths in 1942 (table 12), five cities (Birmingham, Dayton, Knoxville, Memphis, Utica) report no death among residents from either cause.

While most of the groups of cities report an increase in the number of deaths from diphtheria the New England cities (population 2,579,152) record the same total (eleven) for each of the two years 1941 and 1942 (table 16). This number is however, nearly double the total for 1940 (six). The rate remains the same (0.43). Of the eleven deaths it is stated that six were among nonresidents (four of these in Provi-

dence). Nine of the New England cities (Bridgeport, Hartford, Lynn, New Bedford, New Haven, Somerville, Springfield, Waterbury, Worcester) report no death from diphtheria in 1942. All nine were on the honor roll in 1941 except Springfield. Cambridge, with one death among residents, has lost its place on the honor roll which it held for the two previous years. Lynn has extended its good record to six years. New Bedford and New Haven to five years, Somerville and Waterbury to four years. Bridgeport and Worcester to three years. Lynn also reports no death from typhoid during the past six years. New Bedford has been free of deaths from the two diseases for five years, Hartford and Somerville for two years. Boston records two diphtheria deaths for 1942, one among residents (in 1941 there were three deaths, two among residents). Fall River reports two deaths among residents, Lowell two deaths, one among residents. Six of the eight New England cities (table 10) with no diphtheria death for two or more years report that from 50 (Waterbury) to 88 (Hartford) per cent of preschool children have received their protective treatments. Lynn, with no death for six years records 71 per cent. New Bedford and Somerville could not provide adequate data. Boston and Fall River, with two resident deaths each report only 15 and 18 per cent treated.

The eighteen cities (population 13,129,185) in the Middle Atlantic states (table 2) continue to hold first place and seemed to have very little competition in 1942. The number of deaths has increased from twenty-two in 1941 to twenty-three in 1942 but the rate remains the same (0.17). This maintains the new all time low rate established by these cities in 1941, approximated

TABLE 1—Death Rates of Fourteen Cities in New England States from Diphtheria (Including Group) per Hundred Thousand of Population

	1930-		1930-	1925-	1920-	1915-	1910	1905-	1900-	1895-	1890-	
	1942	1941	1939	1934	1929	1924	1919	1914	1909	1904	1899	
New Haven	00	00	04*	07†	16	71	142	149	227	156	545	745
Lynn	00	00	04	47	135	170	178	172	217	380	440	490
New Bedford	00	00	04	50	109	165	170	209	226	31	536	200
Somerville	00	00	04	93	97	19	202	214	215	405	575	374
Waterbury	00	00	14	24	26	179	230	296				
Worcester	00	00	07†	33†	86	155	141	213	322	165	503	475
Bridgeport	00	00	08	12	118	196	234	233	268	342	639	793
Hartford	00	00	19†	11†	33	119	138	253	257	385	475	1509
Springfield	00	13	03*	21	103	154	249	191	313	396	513	62
Boston	03†	04†	07†	32†	83	202	263	280	262	527	839	1122
Cambridge	09	00	03	12	32	89	129	235	253	367	712	890
Providence	16*	04	06†	5	19	158	293	268	307	412	335	553
Fall River	17	26	24	36	120	255	235	240	344	501	435	469
Lowell	19†	19	28	94	106	167	235	216	310	593	413	364

Syracuse for three years. Yonkers reports no death from either typhoid or diphtheria during the past four years, Newark none in three years, none in Trenton for two years, none in Albany, Elizabeth, Erie, Paterson

TABLE 2—Death Rates of Eighteen Cities in Middle Atlantic States from Diphtheria (Including Group) per Hundred Thousand of Population

	1912	1911	1935	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Rochester	0.0	0.0	0.0	0.7	7.5	16.9	12.7	22.1	32.4	12.1	15.9	96.6
Elizabeth	0.0	0.0	0.0	1.5	13.2	19.2	19.3	11.5	11.7	12.1	60.5	79.1
Yonkers	0.0	0.0	0.0	0.6	10.1	17.0	17.7	25.3				
Trenton	0.0	0.0	0.8	2.7	1.1	7.1	5.8	12.8	15.8	21.6	92.7	89.7
Newark	0.0	0.0	0.2	1.0	11.5	9.7	11.6	23.1	0.1	16.7	79.1	110.1
Syracuse	0.0	0.0	0.2	0.4	2.0	22.9	12.9	16.6	17.1	17.7	11.1	5.1
Paterson	0.0	0.7	0.9	6.1	9.1	18.5	13.5	16.1	25.1	32.9	111.5	115.1
Erie	0.0	0.9	0.0	1.0	5.5	16.5	15.1	17.7	27.1	12.1	5.1	
Utica	0.0	1.0	0.0	1.2	11.4							
Albany	0.0	1.1	0.2	3.0	7.5	12.5	10.1	20.0	1.6	26.9		
New York	0.1	0.1	0.6	2.2	10.7	11.0	21.5	28.0	10.0	8.0	8.5	1.1
Philadelphia	0.2	0.2	0.5	1.1	11.5	16.7	27.7	21.6	11.1	0.0	106.6	119.1
Buffalo	0.1	0.0	0.4	1.9	9.1	21.0	27.1	22.0	15.1	21.5	3.5	60.1
Jersey City	0.7	1.0	2.1	6.0	11.5	15.1	21.0	21.2	2.6	37.3	82.1	165.6
Scranton	0.7	0.0	0.7	1.7	11.7	12.1	22.1	23.1			77.5	186.1
Pittsburgh	0.7	0.1	1.1	5.1	11.5	20.1	22.1	29.1	20.1	6.1	32.9	80.1
Hendings	0.9	0.0	2.1	1.6	7.1	21.1	16.9	15.7	23.2	70.1	72.0	91.1
Camden	1.7	0.0	2.7	5.1	21.9	20.1	21.2	5.5	15.1	15.6	13.5	191.0

* All diphtheria deaths were stated to be in nonresidents
† One third or more of the reported diphtheria deaths were stated to be in nonresidents
‡ Diphtheria deaths from Chapin's Municipal Sanitation
§ Incomplete data
¶ Diphtheria data furnished by Pennsylvania Department of Health Harrisburg

TABLE 3—Death Rates of Ten Cities in South Atlantic States from Diphtheria (Including Group) per Hundred Thousand of Population

	1912	1911	1935	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Wilmington	0.0	0.9	1.6	6.2	10.9	11.6	15.2	18.0	27.8	50.9	84.9	8.5
Baltimore	0.2	0.6	1.0	1.7	7.6	11.4	13.5	14.2	16.1	35.0	8.1	70.0
Washington	0.4	0.3	2.8	3.7	7.1	10.5	11.9	6.9	11.2	21.1	0.1	77.9
Richmond	0.5	1.0	1.7	3.5	6.9	9.8	5.8	7.0	9.8	21.1	1.1	59.7
Miami	0.6	0.0	2.2	3.5	5.4							
Jacksonville	0.6	1.7	2.4	5.5	6.0							
Norfolk	0.7	2.1	2.4	4.6	4.1	4.3	4.1	6.7	17.0			
Tampa	1.8	1.8	3.1	4.0	4.6	5.2	9.1					
Atlanta	1.9	3.0	4.6	5.9	7.0	13.3	10.1	12.5	14.2	11.1	10.5	8.8
Charlotte	4.0	0.0	6.0	4.1								

* All diphtheria deaths were stated to be in nonresidents
† One third or more of the reported diphtheria deaths were stated to be in nonresidents
‡ Incomplete data

and Rochester in 1942. Utica, after seven years without a death from diphtheria, being dropped in 1941 because of a death in a resident adult, now returns to the select list. New York reports seven deaths all among residents (ten in 1941, ten in 1940). Philadelphia records three deaths, all among residents (three in 1941, two among residents). Pittsburgh has not maintained its 1941 low (five deaths in 1942, four among residents, one death among residents in 1941). Buffalo, Camden and Jersey City each report two deaths. Five of the six Middle Atlantic cities (table 10) with no diphtheria death for two or more years report that from forty-two (Yonkers) to ninety (Elizabeth, Newark) per cent of preschool children have received their protective treatments. Data are not available for Trenton. Utica with its excellent long time record reports 76 per cent treated. Four cities (Buffalo, Erie, Pittsburgh, Camden) report less than 40 per cent treated. Data are not available for New York, Paterson and Scranton.

In 1940 Charlotte was added to the nine cities previously included in the South Atlantic states (table 3) (population 2,727,985). The figures for this city have been omitted in the tables for group comparison. The

number of deaths in the original cities shows a definite decline (twenty-one in 1942, twenty-seven in 1941), especially among residents (thirteen in 1942, seventeen in 1941). The rate has decreased from 0.99 to 0.77. Wilmington is the only city on the honor roll. There were two such cities in 1941 (Charlotte, Miami). Two cities (Richmond, Tampa) report that all deaths were among nonresidents. It is stated that in three cities (Atlanta, Charlotte, Washington) one third or more of deaths were among nonresidents (two of six in Atlanta, two of four in Charlotte, one of three in Washington). Baltimore records two deaths, both among residents, Jacksonville, Miami and Norfolk each one such death. Baltimore and Norfolk report that more than 75 per cent of preschool children have received their protective treatments, Washington 39 per cent and Atlanta 24 per cent.

In obtaining data for the cities of the East North Central group (table 4), Gary (no death in 1942) has been included for the third time. The figures for this city have been omitted in the tables for group comparison. The cities of this group (population 9,386,378) report an increase of eight deaths (sixty-nine in 1942, sixty-one in 1941). The rate has increased from 0.65 to 0.73. The number of deaths in Chicago increased by nine (forty-three in 1942, thirty-four in

TABLE 4—Death Rates of Nineteen Cities in East North Central States from Diphtheria (Including Group) per Hundred Thousand of Population

	1912	1911	1935	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Grand Rapids	0.0	0.0	0.2	0.7	2.0	19.6	13.5	20.0	26.6	17.1	37.4	60.1
Canton	0.0	0.0	0.7	1.7	2.9	17.5	15.1					
Youngstown	0.0	0.0	0.7	3.3	10.5	13.5	11.9	40.5	33.0	28.0	17.0	8.1
South Bend	0.0	0.0	1.0	1.3								
Toledo	0.0	0.0	1.1	2.7	7.2	22.4	14.1	25.4	20.4	56.8	34.0	59.3
Fort Wayne	0.0	0.0	1.9	4.0	5.1	13.1	6.3					
Milwaukee	0.0	0.2	0.4	2.1	8.5	11.4	19.3	27.8	26.4	27.7	51.7	116.1
Peoria	0.0	0.9	3.8	5.3	4.9	7.4	10.8	10.6	10.6	14.0	14.6	60.0
Gary	0.0	0.9	2.8	1.4								
Evansville	0.0	1.0	1.8	3.5	3.7	13.9	14.9	16.1	21.2	13.8	18.1	60.1
Cleveland	0.2	0.2	1.0	2.5	15.3	14.7	20.0	24.6	20.8	47.6	45.3	90.7
Columbus	0.3	0.0	1.9	3.2	4.6	8.5	7.6	12.1	10.5	11.6	78.5	66.9
Akron	0.4	0.0	1.8	2.7	4.9	10.4	18.9	27.8	21.5			
Detroit	0.5	0.0	4.3	3.6	4.6	9.4	9.3	22.1	13.3	17.2	27.4	22.3
Detroit	0.7	0.4	1.1	5.2	19.7	24.3	32.2	33.3	22.6	38.0	67.9	117.9
Cincinnati	0.7	0.9	2.4	3.1	5.2	10.6	13.2	13.9	17.0	17.3	57.3	101.1
Chicago	1.3	1.0	2.2	4.5	11.7	17.5	31.2	37.9	27.0	33.9	69.7	117.3
Flint	1.3	2.0	2.8	2.7	4.5	29.9	25.5	12.7	11.0	16.8	60.9	60.1
Indianapolis	1.3	2.1	3.6	2.9	6.6	11.7	21.4	13.5	13.3	15.9	36.4	11.1

* All diphtheria deaths were stated to be in nonresidents
† One third or more of the reported diphtheria deaths were stated to be in nonresidents
‡ Diphtheria deaths from Chapin's Municipal Sanitation
§ Incomplete data

TABLE 5—Death Rates of Six Cities in East South Central States from Diphtheria (Including Group) per Hundred Thousand of Population

	1912	1911	1935	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Chattanooga	0.0	3.9	4.0	6.8	5.9	8.7	8.9					
Birmingham	0.1	1.3	3.1	4.4	5.4	5.3	7.2	8.3	6.2	13.1	16.5	6.3
Nashville	0.6	0.0	1.4	5.0	11.8	8.0	8.9	7.5	10.3	13.3	11.1	1.1
Louisville	0.9	0.3	1.1	6.1	4.6	10.4	9.5	9.0				
Memphis	1.4	1.4	3.1	6.0	5.8	9.5	11.2	11.9	13.4	6.9	19.9	5.1
Knoxville	2.7	0.0	1.1	10.6	6.3	11.2						

* All diphtheria deaths were stated to be in nonresidents
† One third or more of the reported diphtheria deaths were stated to be in nonresidents
‡ Diphtheria deaths from Chapin's Municipal Sanitation
§ Incomplete data

1941), in Detroit by four (eleven in 1942, seven in 1941). For the cities as a whole there were sixty-nine deaths among residents in 1942, fifty-three in 1941. The group remains in fourth place (including Gary) of the East North Central group.

ville, Fort Wayne, Gary, Grand Rapids, Milwaukee, Peoria, South Bend, Toledo Youngstown) report no death from diphtheria in 1942. Canton, Fort Wayne, Grand Rapids, South Bend, Toledo and Youngstown

TABLE 6—*Death Rates of Nine Cities in West North Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1942	1941	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925	1924	1923	1922	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870	1869	1868	1867	1866	1865	1864	1863	1862	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	1848	1847	1846	1845	1844	1843	1842	1841	1840	1839	1838	1837	1836	1835	1834	1833	1832	1831	1830	1829	1828	1827	1826	1825	1824	1823	1822	1821	1820	1819	1818	1817	1816	1815	1814	1813	1812	1811	1810	1809	1808	1807	1806	1805	1804	1803	1802	1801	1800	1799	1798	1797	1796	1795	1794	1793	1792	1791	1790	1789	1788	1787	1786	1785	1784	1783	1782	1781	1780	1779	1778	1777	1776	1775	1774	1773	1772	1771	1770	1769	1768	1767	1766	1765	1764	1763	1762	1761	1760	1759	1758	1757	1756	1755	1754	1753	1752	1751	1750	1749	1748	1747	1746	1745	1744	1743	1742	1741	1740	1739	1738	1737	1736	1735	1734	1733	1732	1731	1730	1729	1728	1727	1726	1725	1724	1723	1722	1721	1720	1719	1718	1717	1716	1715	1714	1713	1712	1711	1710	1709	1708	1707	1706	1705	1704	1703	1702	1701	1700	1699	1698	1697	1696	1695	1694	1693	1692	1691	1690	1689	1688	1687	1686	1685	1684	1683	1682	1681	1680	1679	1678	1677	1676	1675	1674	1673	1672	1671	1670	1669	1668	1667	1666	1665	1664	1663	1662	1661	1660	1659	1658	1657	1656	1655	1654	1653	1652	1651	1650	1649	1648	1647	1646	1645	1644	1643	1642	1641	1640	1639	1638	1637	1636	1635	1634	1633	1632	1631	1630	1629	1628	1627	1626	1625	1624	1623	1622	1621	1620	1619	1618	1617	1616	1615	1614	1613	1612	1611	1610	1609	1608	1607	1606	1605	1604	1603	1602	1601	1600	1599	1598	1597	1596	1595	1594	1593	1592	1591	1590	1589	1588	1587	1586	1585	1584	1583	1582	1581	1580	1579	1578	1577	1576	1575	1574	1573	1572	1571	1570	1569	1568	1567	1566	1565	1564	1563	1562	1561	1560	1559	1558	1557	1556	1555	1554	1553	1552	1551	1550	1549	1548	1547	1546	1545	1544	1543	1542	1541	1540	1539	1538	1537	1536	1535	1534	1533	1532	1531	1530	1529	1528	1527	1526	1525	1524	1523	1522	1521	1520	1519	1518	1517	1516	1515	1514	1513	1512	1511	1510	1509	1508	1507	1506	1505	1504	1503	1502	1501	1500	1499	1498	1497	1496	1495	1494	1493	1492	1491	1490	1489	1488	1487	1486	1485	1484	1483	1482	1481	1480	1479	1478	1477	1476	1475	1474	1473	1472	1471	1470	1469	1468	1467	1466	1465	1464	1463	1462	1461	1460	1459	1458	1457	1456	1455	1454	1453	1452	1451	1450	1449	1448	1447	1446	1445	1444	1443	1442	1441	1440	1439	1438	1437	1436	1435	1434	1433	1432	1431	1430	1429	1428	1427	1426	1425	1424	1423	1422	1421	1420	1419	1418	1417	1416	1415	1414	1413	1412	1411	1410	1409	1408	1407	1406	1405	1404	1403	1402	1401	1400	1399	1398	1397	1396	1395	1394	1393	1392	1391	1390	1389	1388	1387	1386	1385	1384	1383	1382	1381	1380	1379	1378	1377	1376	1375	1374	1373	1372	1371	1370	1369	1368	1367	1366	1365	1364	1363	1362	1361	1360	1359	1358	1357	1356	1355	1354	1353	1352	1351	1350	1349	1348	1347	1346	1345	1344	1343	1342	1341	1340	1339	1338	1337	1336	1335	1334	1333	1332	1331	1330	1329	1328	1327	1326	1325	1324	1323	1322	1321	1320	1319	1318	1317	1316	1315	1314	1313	1312	1311	1310	1309	1308	1307	1306	1305	1304	1303	1302	1301	1300	1299	1298	1297	1296	1295	1294	1293	1292	1291	1290	1289	1288	1287	1286	1285	1284	1283	1282	1281	1280	1279	1278	1277	1276	1275	1274	1273	1272	1271	1270	1269	1268	1267	1266	1265	1264	1263	1262	1261	1260	1259	1258	1257	1256	1255	1254	1253	1252	1251	1250	1249	1248	1247	1246	1245	1244	1243	1242	1241	1240	1239	1238	1237	1236	1235	1234	1233	1232	1231	1230	1229	1228	1227	1226	1225	1224	1223	1222	1221	1220	1219	1218	1217	1216	1215	1214	1213	1212	1211	1210	1209	1208	1207	1206	1205	1204	1203	1202	1201	1200	1199	1198	1197	1196	1195	1194	1193	1192	1191	1190	1189	1188	1187	1186	1185	1184	1183	1182	1181	1180	1179	1178	1177	1176	1175	1174	1173	1172	1171	1170	1169	1168	1167	1166	1165	1164	1163	1162	1161	1160	1159	1158	1157	1156	1155	1154	1153	1152	1151	1150	1149	1148	1147	1146	1145	1144	1143	1142	1141	1140	1139	1138	1137	1136	1135	1134	1133	1132	1131	1130	1129	1128	1127	1126	1125	1124	1123	1122	1121	1120	1119	1118	1117	1116	1115	1114	1113	1112	1111	1110	1109	1108	1107	1106	1105	1104	1103	1102	1101	1100	1099	1098	1097	1096	1095	1094	1093	1092	1091	1090	1089	1088	1087	1086	1085	1084	1083	1082	1081	1080	1079	1078	1077	1076	1075	1074	1073	1072	1071	1070	1069	1068	1067	1066	1065	1064	1063	1062	1061	1060	1059	1058	1057	1056	1055	1054	1053	1052	1051	1050	1049	1048	1047	1046	1045	1044	1043	1042	1041	1040	1039	1038	1037	1036	1035	1034	1033	1032	1031	1030	1029	1028	1027	1026	1025	1024	1023	1022	1021	1020	1019	1018	1017	1016	1015	1014	1013	1012	1011	1010	1009	1008	1007	1006	1005	1004	1003	1002	1001	1000	999	998	997	996	995	994	993	992	991	990	989	988	987	986	985	984	983	982	981	980	979	978	977	976	975	974	973	972	971	970	969	968	967	966	965	964	963	962	961	960	959	958	957	956	955	954	953	952	951	950	949	948	947	946	945	944	943	942	941	940	939	938	937	936	935	934	933	932	931	930	929	928	927	926	925	924	923	922	921	920	919	918	917	916	915	914	913	912	911	910	909	908	907	906	905	904	903	902	901	900	899	898	897	896	895	894	893	892	891	890	889	888	887	886	885	884	883	882	881	880	879	878	877	876	875	874	873	872	871	870	869	868	867	866	865	864	863	862	861	860	859	858	857	856	855	854	853	852	851	850	849	848	847	846	845	844	843	842	841	840	839	838	837	836	835	834	833	832	831	830	829	828	827	826	825	824	823	822	821	820	819	818	817	816	815	814	813	812	811	810	809	808	807	806	805	804	803	802	801	800	799	798	797	796	795	794	793	792	791	790	789	788	787	786	785	784	783	782	781	780	779	778	777	776	775	774	773	772	771	770	769	768	767	766	765	764	763	762	761	760	759	758	757	756	755	754	753	752	751	750	749	748	747	746	745	744	743	742	741	740	739	738	737	736	735	734	733	732	731	730	729	728	727	726	725	724	723	722	721	720	719	718	717	716	715	714	713	712	711	710	709	708	707	706	705	704	703	702	701	700	699	698	697	696	695	694	693	692	691	690	689	688	687	686	685	684	683	682	681	680	679	678	677	676	675	674	673	672	671	670	669	668	667	666	665	664	663	662	661	660	659	658	657	656	655	654	653	652	651	650	649	648	647	646	645	644	643	642	641	640	639	638	637	636	635	634	633	632	631	630	629	628	627	626	625	624	623	622	621	620	619	618	617	616	615	614	613	612	611	610	609	608	607	606	605	604	603	602	601	600	599	598	597	596	595	594	593	592	591	590	589	588	587	586	585	584	583	582	581	580	579	578	577	576	575	574	573	572	571	570	569	568	567	566	565	564	563	562	561	560	559	558	557	556	555	554	553	552	551	550	549	5
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ago (0.66 in 1940, 0.18 in 1941) Only two cities (Duluth, Minneapolis) are on the honor roll There were five such cities in 1941 Duluth continues to head the list with no diphtheria death during the past seven years, also no typhoid death for four years Minne-

one third or more of deaths occurred among nonresidents Three cities report rates in excess of 20 (Dallas, El Paso, Tulsa) Dallas records seven deaths, four among nonresidents, El Paso nine, two among nonresidents, Tulsa six, all among residents Houston reports six deaths among residents It is stated that 77 per cent of the preschool children have been given protective treatments in Dallas, 50 per cent in New Orleans, 36 per cent in Houston, 9 per cent in Tulsa Data are not available for the other cities in this group In 1940 Sacramento was added to the eleven cities included in the Mountain and Pacific group (table 8) The figures for this city have been omitted in the tables

TABLE 11—Thirty-Four Cities with No Diphtheria Deaths in 1942

Albany	Long Beach	South Bend
Bridgeport	Lynn	Springfield
Canton	Milwaukee	Syracuse
Chattanooga	Minneapolis	Toledo
Duluth	Newark	Trenton
Elizabeth	New Bedford	Utica
Eric	New Haven	Waterbury
Jacksonville	Paterson	Wilmington
Fort Wayne	Peoria	Worcester
Gary	Rochester	Yonkers
Grand Rapids	Somerville	Youngstown
Hartford		

Thirty-three with Gary

TABLE 12—Thirty Cities with No Diphtheria and Typhoid Deaths in 1942

Albany	Grand Rapids ‡	Peoria
Bridgeport	Hartford *	Rochester
Canton †	Long Beach	Somerville *
Chattanooga	Lynn ‡	South Bend ††
Duluth †	Milwaukee	Springfield
Elizabeth	Minneapolis	Trenton *
Eric	Newark †	Wilmington
Jacksonville	New Bedford ††	Worcester
Fort Wayne ††	New Haven	Yonkers †
Gary	Paterson	Youngstown

- * No diphtheria or typhoid deaths in two years
- † No diphtheria or typhoid deaths in three years
- ‡ No diphtheria or typhoid deaths in four years
- †† No diphtheria or typhoid deaths in five years
- ‡‡ No diphtheria or typhoid deaths in six years
- # Twenty-nine without Gary

TABLE 14—Number of Cities with Various Diphtheria Death Rates

	No. of Cities	40 and Over	20 and Over	10 and Over	5 and Over	Under 5	00
1890-1894	64	52	60	61	62	2	0
1895-1899	66	34	53	63	65	1	0
1900-1904	68	22	46	64	66	2	0
1905-1909	72	3	43	66	71	1	0
1910-1914	79	1	36	62	78	1	0
1915-1919	84	0	25	62	81	3	0
1920-1924	88	0	14	65	86	2	0
1925-1929	92	0	1	22	67	25	0
1930-1934	93	0	0	0	24	69	0
1935	93	0	0	2	17	76	19
1936	93	0	0	0	5	69	19
1937	93	0	0	0	3	70	20
1938	93	0	0	0	3	66	24
1939	93	0	0	0	2	59	31
1940 *	93	0	0	0	0	53	40
1941 *	93	0	0	0	1	53	39
1942 *	93	0	0	0	1	59	33

* Charlotte, Gary and Sacramento omitted

TABLE 15—Total Diphtheria Death Rates for Eighty Eight Cities, 1923-1942 *

	Population	Diphtheria Deaths	Diphtheria Death Rate per 100,000 of Population
1923	31,060,848	4,078 †	13.13
1924	31,722,841	3,459	10.84
1925	32,384,834	3,133	9.67
1926	33,046,827	3,166	9.40
1927	33,708,820	3,493	10.4
1928	34,370,813	3,176	9.4
1929	35,032,806	2,738	7.82
1930	35,719,180	1,827	5.22
1931	35,821,890	1,366	3.81
1932	35,916,317	1,191	3.32
1933	36,032,205	861	2.38
1934	36,166,434	821	2.27
1935	36,348,921	771	2.12
1936	36,549,325	551	1.51
1937	36,751,422	571	1.55
1938	36,956,409	467	1.26
1939	37,160,779	326	0.88
1940	37,369,215	225	0.60
1941	37,369,215 ††	209	0.56
1942	37,369,215 ††	260	0.70

* The five following cities are omitted from this summary because data for the full period are not available Jacksonville Miami Oklahoma City, South Bend and Utica

- † Data for Fort Worth lacking
- ‡ The rate for the ninety-three cities in 1923 is 2.13 (population 37,025,179 diphtheria deaths 789) The corresponding rate for 1924 is 1.52 (population 37,241,414, diphtheria deaths 361)
- # Rate for ninety-three cities in 1927 was 1.50 (population 37,160,820 diphtheria deaths 583)
- ¶ Rate for ninety-three cities in 1938 was 1.26 (population 37,011,477 diphtheria deaths 477)
- * Rate for ninety-three cities in 1939 was 0.87 (population 37,160,779 diphtheria deaths 330)
- ¶ Rate for ninety-three cities in 1940 was 0.60 (population 37,369,215 diphtheria deaths 225)
- ** Rate for ninety-three cities in 1941 was 0.56 (population 37,369,215 diphtheria deaths 209)
- *** Rate for ninety-three cities in 1942 was 0.69 (population 37,369,215 diphtheria deaths 263)
- †† 1940 census figures used

for group comparison The original cities (population 4,186,039) report a sharp increase in deaths (seventy-three in 1942, thirty-nine in 1941) The rate has increased from 0.93 in 1941 (the same in 1940) to 1.74 in 1942, which is higher than that reported by

TABLE 13—Nine Cities in Which All Diphtheria Deaths in 1942 Were Stated to Be in Nonresidents

Dayton	Knoxville	Richmond
Birmingham	Memphis	Tampa
Fort Worth	Providence	Wichita

apolis for the first time reports no death from diphtheria It is stated that the one death in Wichita was among nonresidents St Louis reports six deaths, five among residents (there were but two in 1941) After a period of five years with no death, Des Moines reports one among residents Kansas City, Kan., and Kansas City, Mo., each record two deaths, the former two among residents and the latter one among residents Following a period of three years with no death among residents, St Paul records two such deaths in 1942 It is stated that in Des Moines, Omaha and St Louis 61 per cent of the preschool children have been treated Data are not available from the other cities

The eight cities of the West South Central states (table 7) (population 2,048,692) report an increase from thirty-four deaths in 1941 (forty-one in 1940) to thirty-nine in 1942 The death rate has increased from 1.66 in 1941 (2.00 in 1940) to 1.90 in 1942 While in 1941 50 per cent of the deaths (seventeen of thirty-four) were among nonresidents, in 1942 only one third (thirteen of thirty-nine) were so classified The deaths among residents have increased by nine, or 53 per cent No city appears on the honor roll It is stated that the three deaths in Fort Worth were among nonresidents Oklahoma City, on the honor roll in 1941, now records one death among residents In three cities (Dallas, New Orleans, San Antonio) it is stated that

any group of cities in 1941. The number of deaths among residents has doubled (fifty-four in 1942, twenty-seven in 1941). Long Beach is the only city on the honor roll. Tacoma, after being on the roll for two years, reports two deaths, one among residents. In four cities (Oakland, Sacramento, Seattle, Tacoma) it is stated that one third or more of deaths occurred among nonresidents. Three cities report rates of 20 or more (Denver, Los Angeles, Sacramento). Denver records twelve deaths, ten among residents (in 1941 eight, six among residents), Los Angeles thirty-one, twenty-one among residents (in 1941, twelve, four among residents), Sacramento eight, three among residents (in 1941 four, two among residents). In Los Angeles there has been an increase of seventeen deaths among residents. San Francisco reports five deaths among residents. San Diego three such deaths, Salt Lake City and Spokane two each. Of five deaths in Oakland, three were among residents, or four in Portland, three among residents, or seven in Seattle, four among residents. The health director of San Francisco states that four of the five deaths in his

TABLE 16—Total Diphtheria Death Rates per Hundred
Thousand of Population for Ninety-Three Cities
According to Geographic Divisions

	Popula- tion *	Diphtheria Deaths		Diphtheria Death Rates					
		1942	1941	1942	1941	1939	1940	1941	1942
New England	2 991 52	11	11	0.43	0.43	0.53	3.38	8.34	
Middle Atlantic	13 129 183	23	22	0.17	0.17	0.63	2.50	9.97	
South Atlantic	2 727 883	21	27	0.77	0.99	2.18	3.54	7.37	
East North Central	9 336 378	69	61	0.73	0.65	1.82	3.66	11.21	
East South Central	1 936 747	12	14	0.93	1.09	3.37	6.36	6.34	
West North Central	2 716 484	15	5	0.55	0.18	1.33	3.22	7.82	
West South Central	2 048 682	39	34	1.90	1.69	3.85	6.55	9.24	
Mountain & Pacific	4 180 039	73	39	1.74	0.93	1.71	2.09	6.28	

§ Lacks data for 1923 for Jacksonville and Miami

† Lacks data for South Bend

* Lacks data for Oklahoma City for 1923 and 1939

* 1940 census figures used

city occurred in adults over 35 years of age. The fifth occurred in a child aged 2 years and 4 months who had been a resident of San Francisco for six months, nine months in the state. It is stated that 80 per cent of the preschool children have been given protective treatments in Oakland, 64 per cent in San Francisco, 50 per cent in Long Beach, 26 per cent in Seattle. Data are not available for the other cities.

Of the entire ninety-three cities there was one (the same city in 1941) with a rate in excess of 50 (table 14). The number of cities with no deaths from diphtheria has decreased by six (thirty-nine to thirty-three). The number of cities with rates below 50 has increased by six (fifty-three to fifty-nine). For the eighty-eight cities (table 15) for which data are available since 1923 there occurred two hundred and sixty deaths from diphtheria in 1942, significantly higher than for the past two years (two hundred and nine in 1941, two hundred and twenty-five in 1940). Is there to be a continued change in the trend? The rate, however, for this group of cities is for the fourth consecutive year less than 1.0. The rate for the ninety-three cities (0.69) is approximately the same as that for the eighty-eight cities (0.70). The actual number has increased by fifty (from two hundred and thirteen to two hundred and sixty-three). War travel may have been an influence in increasing the incidence of diphtheria, especially on the Pacific coast and in certain overcrowded industrial areas. Again lack of professional personnel may have slowed up the programs for protective treatments.

No explosive epidemics are reported by the health officers. The tendency for diphtheria to become relatively more prevalent among the higher age groups may be one explanation for the higher rates. It will be interesting to review the picture for 1943.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THYMITARY NOT ACCEPTABLE FOR N N R

UNDER THE PROPRIETARY NAME THYMITARY A PREPARATION CONTAINING THE EXTRACTS OF THE THYMUS AND POSTERIOR PITUITARY GLANDS WAS OFFERED BY THE BLUE LINE CHEMICAL COMPANY FOR THE COUNCIL'S CONSIDERATION. THE COUNCIL AUTHORIZED A STUDY BY DR. JACOB SACKS WHICH ON THE BASIS OF ASSAYS OF THYMITARY SHOWED ONLY THAT IT HAD THE ACTION OF EQUIVALENT DOSES OF POSTERIOR PITUITARY EXTRACT. WITHOUT CONSIDERATION OF THE PROPRIETARY NAME THE COUNCIL DECLARED THYMITARY UNACCEPTABLE FOR INCLUSION IN NEW AND NONOFFICIAL REMEDIES BECAUSE OF IMPLIED OR EXPLICIT CLAIMS THAT ITS ACTION WAS DIFFERENT FROM THAT OF THE PHARMACOPETAL POSTERIOR PITUITARY INJECTION. THE FIRM REQUESTED POSTPONEMENT OF PUBLICATION OF A STATEMENT OF THE COUNCIL'S CONSIDERATION UNTIL INVESTIGATIONS WITH A DEVICE CALLED THE LORAND TOCOGRAPH WERE COMPLETED. THE RESULTS OF THIS INVESTIGATION WERE FILED WITH THE COUNCIL TOGETHER WITH A CAREFUL STUDY BY DR. WILLIAM T. HYATT. THIS STUDY FAILS AS THE FIRM ADMITS TO ESTABLISH THE POINT WHICH IT HOPED TO DEMONSTRATE THAT IS A DEFINITE DIFFERENCE BETWEEN THE ACTIVITY OF ITS PRODUCT AND THAT OF THE U. S. P. POSTERIOR PITUITARY INJECTION.

THE FIRM HAS PREPARED A CAREFUL TABULATION OF THE PUBLISHED LITERATURE ON THE USE OF COMBINED EXTRACTS OF POSTERIOR PITUITARY AND THYMUS. PERUSAL OF THIS MATERIAL SHOWS THAT VERY FEW ATTEMPTS HAVE BEEN MADE BY EITHER LABORATORY OR CLINICAL INVESTIGATORS TO CONDUCT DEFINITELY PARALLEL TRIALS OF POSTERIOR PITUITARY INJECTION AND THE MIXED PREPARATIONS. THE COMPARISONS REPORTED FAIL TO DEMONSTRATE ANY ADVANTAGE FOR THE MIXTURE.

AS A RESULT OF THE FOREGOING STUDY THE FIRM SUBMITTED AN ADVERTISING CIRCULAR DESIGNED TO LIMIT THE CLAIMS TO ASSERTIONS WHICH COULD BE MADE WITHOUT QUESTION AS TO POSTERIOR PITUITARY ALONE. THE FIRM HOWEVER EXPRESSED ITS INTENTION OF CONTINUING TO MARKET THYMITARY. IN VIEW OF THIS THE COUNCIL VOTED TO PUBLISH FOR THE INFORMATION OF PHYSICIANS A STATEMENT CONCERNING ITS REJECTION OF THYMITARY AND THE FOLLOWING STUDY MADE FOR THE COUNCIL BY DR. JACOB SACKS.

AUSTIN E. SMITH, M.D., Secretary

THYMITARY

JACOB SACKS, PH.D., M.D.

ANN ARBOR, MICH.

THE USE OF THYMUS EXTRACT IN THE ATTEMPT TO MODIFY THE OXYTOIC OR POSTERIOR PITUITARY INJECTION IS BY NO MEANS NEW. A PREPARATION 'Thymophysin' was introduced in Europe about fifteen years ago with the claim that the contractions resulting from its administration differ from those which follow the use of posterior pituitary injection alone in being rhythmic rather than tonic. On this basis it was claimed that Thymophysin could be used with safety to stimulate weak pains in the first stage of labor and to shorten the duration of the second stage. In the publication¹ in which this preparation was presented there was only the most limited evidence for such a modification or the action of posterior pituitary injection by thymus extract.

A thorough pharmacologic study of this preparation and of the effect of thymus extract on the pressor and oxytocic actions of posterior pituitary injection was made by Nelson.² He found that there was no difference which could be detected experimentally between the oxytocic and pressor activities of posterior pituitary injection alone and of a mixture of extracts of posterior pituitary and thymus. The pressor and oxytocic potencies of Thymophysin were found to be about one fourth to one third of those claimed on the label but when equivalent

From the Department of Pharmacology, University of Michigan Medical School.

¹ Tenebaum, N. Action of Thymus Extract on Uterus and Its Practical Use in Obstetrics. *Zeitschrift für Gynäkologie* 50: 22 (Feb. 1910).

² Nelson, E. E. Thymus in a Testosterone. *J. A. M. A.* 96: 52 (Jan. 31) 1931.

doses of posterior pituitary injection and Thymophysin were compared on excised uteri or on blood pressure no difference in action could be demonstrated. Thymophysin was declared unacceptable for inclusion in New and Nonofficial Remedies (THE JOURNAL, March 14, 1931, p. 860).

The dangers and limitations in the use of posterior pituitary injection in the first stage of labor are too well known to require any discussion here. They have been emphasized again in three recently published papers.³ The demonstration by Nelson that thymus extract does not modify the action of posterior pituitary injection would seem to have established that a mixture of the two has the same dangerous properties as the pituitary extract itself. It is established beyond question that posterior pituitary injection does increase the strength of contraction of uterine musculature. It is also well known that the clinical use of this preparation frequently results in an increased blood pressure.

The clinical literature on Thyntury is scanty, and pharmacologic studies are entirely wanting. There are brief reports by Wiesen,⁴ Cadwallader, Arthur,⁵ Hissong⁷ and Clemens.⁸ Wiesen used it in 50 cases of primary and secondary uterine inertia, Cadwallader in 110 cases of labor, Arthur reports 9 cases and Hissong 3. In all five papers it is stated that Thyntury shortens the duration of labor and does not lead to untoward results. Very few details are given, and in none of these brief reports are there any control observations which could serve as a basis for evaluating the preparation. In three of the papers there are expressions which are practically identical in wording with statements that have appeared in advertising matter which has been distributed by the promoters of Thyntury.

The present studies were undertaken to establish whether there is any difference in the actions of Thyntury and of posterior pituitary injection. Comparisons were made of the effects of the two in isolated uteri of guinea pigs and of rabbits, and of the pressor effects on the dog. The Thyntury used for these experiments was received in the original sealed packages. The standard posterior pituitary injection was made from reference standard powder obtained from the Board of Trustees of the U. S. Pharmacopeia and contained 2 units per cubic centimeter, the strength prescribed for assay purposes by the U. S. P.

Several assays of the oxytocic potency of Thyntury were made by the method of the U. S. P., and these showed that, within the limits of accuracy of this method, Thyntury contains 10 units per cubic centimeter, being therefore equivalent in potency to the official Injectio Pituitarii Posterioris.

With regard to the type of uterine contraction produced, it was found that there was no essential difference between Thyntury and posterior pituitary injection. In comparable doses the effects produced by the two were qualitatively and quantitatively the same. This was true for both guinea pig and rabbit uteri. In those cases in which posterior pituitary injection caused tonic contractions, Thyntury also produced this type of activity. Where posterior pituitary injection produced rhythmic activity, Thyntury also caused rhythmic contractions. From this it is clear that, so far as can be ascertained experimentally, there is no detectable difference between Thyntury and posterior pituitary injection with respect to oxytocic action.

Comparisons of the pressor activity of the two preparations were also made on pigs anesthetized with morphine and urethane, in which bilateral vagotomy had been done. Here again it was found that the pressor activity of Thyntury was equivalent to that of the official Injectio Pituitarii Posterioris,

and the character of the blood pressure rise was the same as that caused by the latter preparation.⁹

The results of these experiments are in agreement with those obtained by Nelson,² in which it was found that the addition of thymus extract to posterior pituitary injection did not modify in any way the pressor or oxytocic activity of the latter preparation. The clinical results that have been reported can all be accounted for on the basis of the known effects of posterior pituitary injection.

CONCLUSIONS

1 Assay of Thyntury by the method of the U. S. Pharmacopeia for posterior pituitary injection showed that it contains approximately 10 units per cubic centimeter and is therefore equivalent in oxytocic activity to the official preparation.

2 When equivalent doses of Thyntury and posterior pituitary injection were compared on isolated uteri of guinea pigs and rabbits, no differences in action could be demonstrated.

3 When equivalent doses of Thyntury and posterior pituitary injection were injected intravenously into anesthetized, vagotomized dogs, no differences in pressor action could be demonstrated.

The Council is of the opinion that the evidence in the foregoing report by Dr. Sacks indicates that Thyntury is, in effect, a preparation of the posterior lobe of the pituitary, and it appears that the firm's claims of any special activity of its preparation Thyntury are without adequate basis. Authorities in obstetrics agree that the administration of posterior pituitary injection in the first stage of labor is dangerous.

The Council therefore declared Thyntury (Blue Line Chemical Company) unacceptable for inclusion in New and Nonofficial Remedies.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

LACTATE RINGER'S SOLUTION (See New and Nonofficial Remedies, 1943, p. 462)

The following dosage forms have been accepted:

ELI LILLY & COMPANY, INDIANAPOLIS

Ampoules Lactate Ringer's Solution 25 Times Concentrated 10 cc and 20 cc. When 1 volume of the solution is diluted with 24 volumes of sterile distilled water, each hundred cubic centimeters of the diluted solution is equivalent in strength to lactate Ringer's solution-N. N. R.

PURIFIED SOLUTION OF LIVER (See Liver Injection, New and Nonofficial Remedies, 1943, p. 392)

The following additional dosage form has been accepted:

THE ARMOUR LABORATORIES, CHICAGO

Liver Liquid Parenteral, 15 U. S. P. Units per Cc 1 cc, 5 cc and 10 cc rubber capped vials. A sterile aqueous solution of liver, preserved with 0.5 per cent phenol.

SODIUM r-LACTATE ONE-SIXTH MOLAR (See New and Nonofficial Remedies, 1943, p. 461)

The following dosage forms have been accepted:

ELI LILLY & COMPANY, INDIANAPOLIS

Ampoules Sodium r-Lactate Solution One Molar 10 cc, 40 cc and 100 cc. Each 10 cc contains 1.12 Gm. of sodium r-lactate. Each 1 volume of this solution must be diluted with 5 volumes of sterile distilled water to obtain a sterile approximately isotonic solution equivalent in strength to sodium r-lactate one-sixth molar.

OVARIES (See New and Nonofficial Remedies, 1943, p. 398)

The following additional dosage form has been accepted:

THE LAKESIDE LABORATORIES, INC., MINNEAPOLIS

Ampule Solution of Estrogens (in sesame oil) 1 cc. Each cubic centimeter contains the equivalent of 20 (I.U.) international units of estrone and 0.5 per cent of chlorobutyl alcohol as a preservative.

⁹ The Council office has on file the kymographic tracings of contractions and pressor responses in these experiments.

³ Sharkey, J. A. Should Solution of Posterior Pituitary Be Used in First and Second Stages of Labor? J. A. M. A. 115:1315 (Oct. 19) 1940. Pendleton, G. F. Abuse of Solution of Posterior Pituitary During Early Labor, *ibid.* 115:1318 (Oct. 19) 1940. DeLee, J. B. Use of Solution of Posterior Pituitary in Modern Obstetrics, *ibid.* 115:1320 (Oct. 19) 1940.

⁴ Wiesen, R. P. Clinical Estimation of Thyntury as Obstetric Aid, Am. J. Obst. & Gynec. 23:598 (April) 1932.

⁵ Cadwallader, J. M. A Review of 110 Obstetrical Cases. M. World 51:417 (Oct.) 1933.

⁶ Arthur, H. M. The Obstetrical Clinic, M. World 52:573 (Oct.) 1934.

⁷ Hissong, C. G. Thyntury. Eclectic M. J. 93:416 (Oct.) 1933.

⁸ Clemens, J. P. Cervix in Parturition. M. Rec. 116:33 (July 7) 1937.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

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MEDICAL EDUCATION AND THE WAR

A Series of Articles by Federal Authorities Concerning the Medical Services of Wartime and the Selection and Training of Premedical and Medical Students

THE UNITED STATES ARMY AND MEDICAL EDUCATION

Major General Norman T. Kirk
Surgeon General U. S. Army

The Army Specialized Training Program explained more in detail elsewhere in this issue, is the result of planning for the future by the War Department. Recognizing that the present demands on the Medical Dental and Veterinary Corps will be definitely increased as the war continues, it is necessary to prepare for future eventualities before critical needs arise.

An announcement of the projected plan of the Army Specialized Training Program was made by the Commanding General Army Service Forces. This was followed by a meeting between the Council on Medical Education and Hospitals and the Surgeon General in Washington. It was the feeling at this meeting that subsidization of medical education had certain drawbacks but there were other considerations which outweighed these. It should be a source of pride to the medical profession that the educational program is carried to completion and a degree granted to graduates only in the case of physicians, dentists and veterinarians. Those soldiers attending engineering schools, electronics, physics and so on may not be granted a degree.

The recognition of the requirements of medically qualified graduates set the pace for mutual agreement and understanding of medical problems between the Council and the War Department. Many problems have arisen regarding the accelerated medical educational program. My office has had to seek the cooperation of hospitals and medical schools in the solving of some of these problems. The hearty response to any request leads me to express my deep appreciation to those members of the profession who have worked so unselfishly to make this planned program a success.

It was estimated early in the war that the planned army would require 63,000 physicians by the end of 1943. However, when the total number of physicians in the United States is considered, it is estimated by reliable sources that the Army will not be able to secure more than 48,000 without subjecting the civil

population to considerable hardship. Every position calling for a medical officer in the Army Ground Forces, Army Air Forces and Army Service Forces was considered in order to determine where the services of such officers could be done away with. As a result of this work we have developed an effective plan for the utilization of the 48,000 medical officers to give the best possible care to the members of the Army. A close study of assignments must be maintained at all times in order to utilize fully the professional abilities of the physicians and leave administrative work as far as possible to those not qualified as medical officers.

We must further consider the normal attrition of medical officers, which is similar to that in civilian life but augmented by the increased casualty expectancy of armed forces. In the recent African campaign the casualty rate was much lower than expected, owing to careful negotiations and prearranged plans between the leaders of the Allied Nations and the French government in North Africa. Such a state of cooperation cannot be expected in forthcoming activities on the European continent, and this will never be true in the Pacific theater of operations. It is obvious that the offensive role in this war will increase tremendously the casualty rate of both enlisted and commissioned personnel. This means that the present attrition of medical officers will assume higher proportions as a result of losses or wounded, prisoners of war, killed or missing in action.

The increased tempo of warfare in the Southwest Pacific will also add to the casualty rate in that theater of operations. With the battle fronts extending over every part of the globe the work of the Medical Department is assuming tremendous proportions and the strain, both mentally and physically, adds to the normal attrition of medical officers.

The augmented medical program will increase the number of available physicians per year. Of this num-

ber it is contemplated that approximately 55 per cent of the medical graduates will be necessary to maintain the strength of the Medical Corps at a properly functioning level (48,000). Assuming that 6,000 (plus) graduates are available each year, this means that 3,300 physicians will be needed as replacements in the Army. Our present figure for separations from the service has increased in 1943 over the figure of 1942. The average rate of separations from the service from all causes is approximately 35 per week. This will probably be increased to 45 per week within the next twelve months, or a total of 2,340 losses for the Medical Corps.

When we consider that at the present time 25 to 35 per cent of all applicants for commission are rejected by reason of physical disqualification alone, the figure 3,300 (representing an estimated 55 per cent of the yearly graduates of medicine) is just enough to provide the estimated replacements required in the Medical Corps, with a small leeway for adjustment. In other words, the War Department is faced with the absolute necessity of obtaining that number of replacements every year without regard to increasing the overall number of medical officers on active duty.

Thus we can see the necessity of a plan which will furnish the required physicians for duty with the Army. The Army Specialized Training Program embodies this program. Civilian medical care will not be depleted to the danger stage, since approximately 20 per cent of the graduates will be available for civilian replacements while many of those physicians separated from the service will be fully capable of carrying on an average civilian medical practice. One great danger in such a program lies in the postgraduate training of the individual physicians.

Present postwar plans are being formulated to combat this weakness and enable physicians to secure advanced training. After the war many physicians will decide to remain in the service, as happened in the past war, and no doubt will be privileged to increase their training by proper assignment to professional duties within the Army. Civilian hospitals and schools will be able to provide adequately for the advanced training of those physicians who return to civilian life. Close study of this program will show the need of cooperation between the members of the medical profession, both within and without the military service.

THE ARMY SPECIALIZED TRAINING PROGRAM

Colonel Francis M. Fitts, M. C.
Army Service Forces

A review of the problems of medical education during 1942-1943 cannot disregard those occasioned by the educational programs adopted by the Army and the Navy with a view to assuring for the armed forces an uninterrupted supply of young medical officers during the period of the national emergency. It is too early to judge results, possibly an early termination of hostilities may obviate the necessity of observing the operation of the more radical features of the program's departure from normal peacetime procedures.

In December 1942 the Secretary of War and the Secretary of the Navy, in a joint statement, recommended the utilization of college facilities in specialized training for the Army and the Navy. The objective of the Army program was announced to be "To meet the need of the Army for specialized technical training of soldiers on active duty for certain Army tasks for which its own facilities are insufficient in extent or character. To that end the Army will contract with selected colleges and universities for the use of their facilities and faculties in effecting such training of selected soldiers in courses prescribed by the Army."

The reason for this action is apparent: under existing conditions the constant and adequate supply of medical officers required by the Army as replacements for anticipated losses among those on active duty could not be assured. Established civilian sources are being rapidly depleted. Additional medical officers must be procured through the specialized training of potential physicians already in, or entering, the military service.

It was not considered practicable to continue the training of members of the military establishment in medicine and premedicine on a purely voluntary basis and on an inactive duty status. Since the facilities of the Army are not those required for the training of physicians, the Army Specialized Training Division of the Army Service Forces was requested to make the necessary arrangements for the selection and training of qualified enlisted men in medicine, and in the prepa-

ration for the study of medicine, in sufficient numbers to assure the loss replacements required to maintain an adequate medical service for the Army.

The same problem confronted the War Department in 1917: provisions were imperative to guarantee the continued supply of physicians to the Army. The solution was quite analogous to that adopted in 1942 for the continuation of nonprofessional training, at the college level, of potential officer candidates: enlistment in the Enlisted Reserve Corps and deferment of call to active duty for the purpose of the completion of the academic preparation for military duties. On the establishment of the Student Army Training Corps in 1918 and the activation of units of that corps in colleges and universities throughout the country, the members of the Medical Department Enlisted Reserve were called to active duty and assigned to the Student Army Training Corps to pursue their professional studies in uniform. No provisions were made for premedical training as such or for selective procedures for assignment to Student Army Training Corps units at medical schools for the purpose of pursuing instruction in medicine, nor did the government assume the responsibility of paying for this specialized training. A month after the inauguration of the program the armistice was signed, and shortly thereafter the enlisted men of the Students Army Training Corps were discharged to return to their briefly interrupted studies.

In 1939, with the same end in view, the War Department approved measures whereby, during a national emergency, medical students then holding commissions in the Officers' Reserve Corps would not be called to active duty until after the completion of their professional studies. This was followed in 1941 by provisions for placing other medical students and premedical students accepted for admission to the next ensuing class in approved schools of medicine under Army jurisdiction. This was accomplished through their voluntary appointment in the Medical Administrative Corps. Their call to active duty has been deferred in order

that they may complete their professional training with a view to appointment in the Medical Corps, Army of the United States. Approximately 60 per cent of the students in these schools waived themselves of this opportunity to complete their medical education and accepted the obligation of future military service.

No similar provisions could be considered for premedical students whose admission to the study of medicine was not assured. However, under the general preinduction training program adopted in 1942 this group was permitted to enlist in the Enlisted Reserve Corps and, prior to the initiation of the Army Specialized Training Program, were permitted to continue their studies on an inactive duty status. Those who had not been accepted for matriculation for future entering classes in medicine have been called to active duty. They are eligible for the resumption of collegiate training if selected for assignment to the Army Specialized Training Program at the completion of their basic military training (thirteen weeks in duration). The probability of their resuming premedical studies, however, is no greater than that which they would have had of entering on the normal study of medicine in civil life.

The majority of the premedical students who were members of the Medical Administrative Corps or the Enlisted Reserve Corps and who have assured vacancies in medical schools through their normal acceptance for admission to future entering classes are continuing the premedical studies prerequisite to such matriculation on an inactive status at their own expense. Others have been assigned to Army Specialized Training units for the completion of their premedical training. Still others who have completed their premedical studies are receiving basic military training or are serving in military hospitals pending transfer to the Army Specialized Training unit at the institution by which they have been matriculated.

WOMEN NOT INCLUDED

It is anticipated that training in medicine under the Army Specialized Training Program will have been initiated by July 23, 1943, in all approved schools of medicine with the exception of the Woman's Medical College of Pennsylvania. It is not contemplated that the utilization of the facilities of this school will be requested or that female enlisted personnel of the Army will be assigned to the Army Specialized Training Program for training in medicine. Since women are not under the potential compulsion of Selective Service, their entrance into the military service is purely voluntary. There is no cause for either the interruption or the postponement of their medical education. The supply of women physicians should not be affected by the national emergency.

SELECTION OF MEDICAL STUDENTS

The assignment of enlisted men to the Army Specialized Training units at approved schools of medicine is, until further notice, restricted to those who are currently enrolled in, and to those who have been accepted by, such schools for future entering classes. This restriction of selection for the continuation of premedical training and assignment for professional training to the enlisted men for whom there are assured vacancies in a medical school is necessitated by the fact that freshman classes have been filled for 1943, the first half of 1944 and, in a number of schools, for late 1944. If these applicants are in, or enter, the active military service they will be assigned to the Army Specialized Training Program for the completion of prerequisite

premedical training and subsequent timely transfer to the Army Specialized Training unit at the school by which they have been accepted.

It is obvious, however, that medical schools cannot continue to fill their entering classes from civilian sources only. Many students contemplating or preparing for the study of medicine will have been inducted into one of the armed forces before acceptance by an accredited school is possible. Others will be unwilling to remain out of the military service for the purpose of preparing themselves for the study of medicine. If the supply of physicians not only to meet the requirements of the armed forces during the current emergency but also for postwar civilian needs is to continue beyond those now in or accepted for medical training, appropriate steps must be taken by the Army and by the Navy to assure necessary preparatory studies by qualified individuals in active military service with a view to subsequent training in medicine.

PREMEDICAL TRAINING

In order that detailed plans may be made for such premedical training under the Army Specialized Training Program the War Department is taking steps to determine the number of Army trainees who may be assigned to Army Specialized Training units at medical schools for instruction in future freshman classes. The program of the Army will require at least 55 per cent of the vacancies in medical schools. The possibility is being explored of a mutual agreement whereby carefully selected enlisted men, not accepted as individuals by the individual schools of medicine, may be assigned to fill these vacancies with a view to receiving the degree of doctor of medicine and to being appointed in the Medical Corps of the Army of the United States.

The procedures involved in the selection and training of the enlisted men whom the medical schools will be requested to train in medicine may be briefly outlined as follows:

On entering the Army the recently inducted soldier is given certain general classification tests, the results of which are entered on the record which accompanies him to the unit or installations in which he receives his basic military training. Those with certain high scores (115 or better on the Army General Classification Test) will then appear before Army Specialized Training Program field selection boards to determine whether they should be assigned to this program for training at the college level. The actual field of such training and the academic level at which training should begin will be determined at the classification and assignment units to which these selected soldiers are first assigned (Specialized Training and Reassignment unit referred to as a STAR unit).

From the STAR unit candidates who are manifestly suitable for or interested in the study of medicine will be transferred to appropriate training units to begin premedical studies at the basic level. The premedical curriculum in the first two terms, of twelve weeks each, is common to that followed by trainees tentatively selected for engineering specialties. This basic curriculum includes mathematics, physics, general chemistry and English, as shown in the accompanying table. Descriptions of the courses listed are available from the Army Specialized Training Division.

It is during the second term that the real selection for premedical training is to be made for subsequent training in medicine. Representatives of all the approved schools of medicine will participate in this

selection It is on them that the War Department is depending for expert advice in determining the enlisted men who should receive training in premedicine Since premedical training is, per se, of little value in the military service, attention must be held to a minimum At this level trainees not considered fully qualified, especially as regards fitness and aptitude for and attitude toward the study of medicine, appointment in the Medical Corps of the Army of the United States and the practice of the profession of medicine in civil life, may be considered for other fields of specialized training under the Army Specialized Training Program

Outline of Army Premedical Curriculum

Subject		1st Term	Required Distribution	
			Class	Laboratory
Mathematics	AST 406	6	6	0
Physics	AST 304	7	4	2(1*)
Chemistry	AST 205	3	3	0
English	AST 111	3	3	0
History	AST 133	3	3	0
Geography	AST 163	2	2	0
Total		24	21	3
2d Term				
Mathematics	AST 407	5	5	0
Physics	AST 305	7	4	2(1*)
Chemistry	AST 206	6	2	4
English	AST 111	2	2	0
History	AST 133	2	2	0
Geography	AST 163	2	2	0
Total		24	17	7
3d Term				
Qualitative Analysis	AST 211	9	3	6
Physics	AST 306	7	4	2(1*)
Biology	AST 951	7	3	4
English	AST 111	2	2	0
History	AST 133	2	2	0
Geography	AST 163	2	2	0
Total		29	16	13
4th Term				
Organic Chemistry	AST 261	9	3	6
Biology	AST 952	7	3	4
English	AST 112	2	2	0
Psychology	AST 904	4	4	0
Selected Courses ^b		6	6	0
Total		28	18	10
5th Term				
Organic Chemistry	AST 262	9	3	6
Comparative Anatomy	AST 953			
or				
Embryology	AST 954	7	3	4
English	AST 113	2	2	0
Psychology	AST 905	4	4	0
Selected Courses ^b		6	6	0
Total		28	18	10

^a Required by contract

* One hour for writing reports

^b 1 French, German, Spanish for students who have studied one of these in high school or college—must continue in 5th Term

2 Economics—must continue in 5th Term

3 Public administration

4 Quantitative analysis

5 Physical chemistry

The trainees selected for future training in medicine begin their biologic studies in the third term and continue them through term five, the last term of the premedical curriculum Organic chemistry and psychology are added in the fourth and fifth terms In these two terms eight semester hours are available for subjects selected by the institution based on the interest and special aptitude of the trainee This will permit a brief refresher course in a modern foreign language for trainees who have had appropriate previous instruction It has not been considered possible to include a language as a prescribed subject to the exclusion of other universal requirements

While it is felt that the complete task of preparing physically qualified male students for the study of medicine will devolve principally on the Army and the Navy, it is certain that premedical students will continue to enter the military service at various academic levels At the completion of their basic military training these enlisted men must be given serious consideration for the continuation of their premedical training and subsequent training in medicine under the Army Specialized Training Program The selection of these enlisted men for such training will be made at STAR units if they are to be assigned for premedical studies in terms above the second This selection must be conducted with the same care as—indeed even greater care than—in the case of trainees who are assigned to the Army Specialized Training Program at the basic level Separate curriculums designed to complete premedical training previously begun in civil life have been arranged for these trainees

The progress of the premedical trainee will be checked both by the usual faculty examinations and by periodic nationwide Army tests The enlisted men who satisfactorily complete the premedical curriculum will be considered available for transfer to Army Specialized Training units for training in medicine or dentistry

Such assignments must necessarily be governed by timely regional vacancies The Army trainee will not make application for admission for the study of medicine, nor will he be accepted as an individual for a class in which vacancies are reserved for the War Department His general fitness and acceptability for the study of medicine have been determined If recommended at the completion of premedical training, he will be academically qualified If it is proved that he cannot continue satisfactory progress in his medical studies, he will be relieved from the Army Specialized Training Program for assignment to other duties

Because of the necessity of assigning Army trainees to fill vacancies which have been reserved for the War Department on a strictly numerical basis, rather than by name, no assurance can be given that individual students accepted for classes in which reservations have been specifically made for the Army will be assigned to the Army Specialized Training unit at that school It is realized that such a policy will limit the personal selection of medical students which has proved so satisfactory and successful in previous years

The question of individual assignment has been given careful consideration by the War Department Measures designed to place trainees in medical schools best suited to their abilities and their possibilities for development, or to avoid assignment to particular environments for which the trainee appears unsuited, must necessarily be not only preferential but also prejudicial in character They would also open the door to unlimited political pressure and universal dissatisfaction No plan for individual selection and assignment appears feasible

The transfer of medical trainees from one unit to another is not contemplated, except, of course, in the case of those who have successfully completed their instruction in the schools of the basic medical sciences It is felt that such trainees may advantageously be transferred as individuals, and to this end it has been requested that arrangements now in force between the deans of the various approved schools of medicine be continued

Negro enlisted men qualified for medical training will be assigned to fill vacancies reserved for the War Department at Howard University and Meharry Medical College.

The preceding paragraphs present a brief outline of the general plan of medical and premedical training under the Army Specialized Training Program. The adaptation of the general Army program to the existing scheme of medical education has necessitated modifications in War Department directives governing the selection and assignment of trainees and the academic curriculums and schedules under which the training of military personnel is conducted by individual institutions other than schools of medicine, dentistry and veterinary medicine.

As previously stated, medical training under the Army Specialized Training Program consists of two distinct phases: a premedical phase of five terms of twelve weeks each with one week furlough between terms and a medical phase which conforms to the accelerated program of medical education adopted by the several schools on the recommendation of the Council on Medical Education and Hospitals of the American Medical Association and by the Association of American Medical Colleges.

THE CURRICULUM

No change is desired in the standard curriculum under which the individual medical school has been teaching medicine. However, in view of the wide variations in premedical curriculums it has been necessary to formulate one which will be followed in the colleges and universities in which Army trainees will be prepared for its logical sequel, the study of medicine. Careful selection of the enlisted men who are to receive premedical instruction will reduce the enormous wastage which unfortunately has characterized collegiate preparation for the study of medicine.

Premedical training will conform to the daily, weekly and term schedule prescribed for all other Army Specialized Training. Preliminary basic military training,

group housing and messing, military instruction, physical training and supervised study will assure that such trainees be and continue to be soldiers in fact, not in name only—soldiers in college, not students in uniform. The military aspect of the program, however, is secondary to the academic in the premedical as well as in the medical phase.

In the latter, for the time being, Army trainees will unfortunately be at a distinct disadvantage: they will have had little or no preliminary military instruction, they may fail to realize that they are soldiers, with all the responsibilities of a soldier as well as the prerogatives. Only in the exceptional cases in which facilities for group housing and messing are available at the individual institution will medical trainees live in dormitories. They will nevertheless be under careful military discipline and control. They are assigned to a definite unit and detailed to the study of medicine. The satisfactory pursuit and completion of such studies is their military duty, their contribution, at this time, to the successful prosecution of the war.

The prescribed military instruction of medical trainees has been reduced to that hitherto required in medical units of the Reserve Officers' Training Corps. Physical training is not mandatory. It is hoped, however, that satisfactory arrangements may be made at each school for their maintenance in creditable physical condition. This will certainly contribute to the academic progress of the trainee.

On graduation the trainee will be discharged from his enlisted status in order to accept a commission in the Medical Corps, Army of the United States. He will not, however, be ordered to active duty as an officer before the completion of twelve months hospital internship on an inactive duty status. Arrangement for such internships must be made, as in previous years, by the individual trainee.

On completion of the internship the young officer will be ordered to active military duty. He has completed his specialized training, he is now ready and prepared for service.

THE UNITED STATES NAVY AND MEDICAL EDUCATION

Rear Admiral Ross T. McIntire
Surgeon General U. S. Navy

The Navy V-12 Program as it relates to medical education went into operation on or shortly after July 1 in sixty-four approved medical schools throughout the nation. The medical schools have the important responsibility of offering medical education of the highest quality to the students assigned them and of helping these students put forth their best efforts so that the Navy and the country will have a continuous reservoir of outstanding medical officers to meet the needs of the service and of the civilian postwar period.

The ultimate goal of the medical phase of the Navy V-12 Program is to insure a constant flow of medical officers for the naval service, to give these prospective naval doctors the benefits of the very best medical education and, while doing this, to preserve the normal pattern of medical school life and to safeguard the scholastic integrity and identity of medical education. The medical schools are not asked or required to change their curriculums or methods of teaching and are not asked to lower their high standards. It is the Navy's responsibility to defray the cost of the student's educa-

tion and the school's responsibility to give this education unhampered.

The students assigned to schools will have been found morally, physically and intellectually fit to enter medical education as the result of a previous thorough screening by the Navy in cooperation with the deans or their representatives. The Navy will accept the recommendation of the school for withdrawal of a student for scholastic failure, inaptitude or other sufficient reason.

It is believed that this program will not alter medical education or have a deleterious effect on the student and future doctor by way of softening him, robbing him of his initiative or destroying for him the satisfaction experienced by previous students in medical schools who obtained their education through their own endeavors.

The faculties of medical schools already depleted by many members having joined the armed forces will be heavily burdened with extra teaching responsibilities, owing to the accelerated teaching program and increased enrolments. It is hoped that they will be able to main-

tain the same degree of efficiency, vigor and cheerfulness of other years.

The Navy desires the schools to reserve at least 25 per cent of the enrollment of entering classes in each medical school for the Navy premedical students. The contract with medical schools provides for the payment of tuition, laboratory fees, rental of microscopes, other required equipment and the utilization of the existing Student Health Programs. Not more than one textbook in each subject in which a textbook has previously been required by the faculty of the school will be paid for by the Navy and assigned to each student. This textbook will remain the property of the student while he remains in medical school.

The Navy medical student is classified as an Apprentice Seaman, Class V-12(S), U S Naval Reserve, on active duty, receiving the pay and allowances of this rate, also a per diem allowance in lieu of subsistence and quarters. He will wear a uniform similar to the Midshipman's uniform with an appropriate insignia and thin gold stripes on his sleeve to designate his class. It is not intended that the student be required to take time away from his normal course of studies for military drills or indoctrination courses. Although in the other V-12 Educational Units physical training is compulsory, it will not be required of medical students. However, it is my fervent hope that the medical student will carry out a voluntary program of physical exercise, swimming and similar conditioning exercises as often as the opportunity presents, so that when he is assigned to active service as a doctor his physical tone will be comparable to that of the other officers and men with whom he will be serving.

A medical student is not prohibited from marrying while he is in attendance at medical school. If he fails to maintain satisfactory standards he will be assigned to other duty for which qualified. A senior medical student may accept externships if the externship is approved by the dean and is given credit by the school, and if the student receives no financial remuneration

for it. The medical student will continue to seek an internship, as has been the practice in the past. He may either contract for civilian internship or make application for examination for appointment as Acting Assistant Surgeon for internship in the Medical Corps of the U S Navy. On satisfactory completion of his medical education he will be commissioned Lieutenant (junior grade) MC-V(G), U S Naval Reserve, and placed on inactive duty for the purpose of attending his internship or, if qualified and selected, will be appointed Acting Assistant Surgeon in the Medical Corps of the U S Navy and assigned to active duty in a U S naval hospital for his intern training. Internships will be of twelve months' duration.

As a result of the Navy's assumption of all the financial obligations for the student's medical education, the payment of a salary plus allowances, the provision of full medical care and hospitalization when sick, there should be fewer scholastic failures, an upswing in scholastic attainments and a physically and emotionally healthier student. The type of military uniform worn by the medical student is in keeping with his scholastic seniority and the kind of education pursued. Being in uniform will protect the student from unwarranted criticism and help to combat and ameliorate the restless, unpleasant feeling that young men of this age group have experienced, that is, the impatience at not being more actively engaged in and directly identified with the armed services.

The medical student who, because of a physical handicap, has not been selected to participate in the Navy's Medical Educational Program, should not develop feelings of inferiority or have a feeling of not belonging to an organization, for he is being educated to serve in a medical capacity which is as important as that of his classmate in uniform.

I feel confident that the Navy's alliance with medical schools for the training of needed medical officers will be successfully accomplished in mutual cooperation and respect and concluded with great benefit to both.

THE NAVY PREMEDICAL PROGRAM

Commander B W Hogan (MC)

Bureau of Medicine and Surgery Navy College Training Program

The Navy V-12 Program, which became effective on July 1 with units established in one hundred and thirty-one colleges and universities and in approved medical and accredited dental schools throughout the nation, is designed to protect the source of officer candidates and to produce a continuous supply of officers for the several branches of naval service.

Undergraduate V-12 units, eighty-nine of which include quotas of premedical students, conform to certain general policies and regulations. The students live in college dormitories and fraternity houses, selected and approved by the Navy, eat together in Navy messes, follow curriculums prescribed in full or in part by the Bureau of Naval Personnel and, except for members of the N R O T C and men enlisted in Marine Corps Reserve, Class III(d), are untormented as apprentice seamen. All students in the V-12 Program, including medical and dental students, receive the pay and allowances of apprentice seamen on active duty.

The primary purpose of the Navy V-12 Program is education. Military discipline and procedures are

kept to a minimum consistent with the successful operation of a naval activity, as most V-12 students will receive specialized naval training later while attending the indoctrination schools or in naval training schools. Hence the undergraduate phase of the V-12 Program, by preserving, so far as possible, the normal pattern of college life, protects premedical students in the early stages of their education, permitting them to pursue their studies without undue distraction.

There are approximately 6,500 Navy premedical students assigned to eighty-nine universities and colleges throughout the country. They are scattered through the various years of premedical education. The premedical students for the V-12 Program were selected with procedures similar to those used for other students. Students who entered the program on July 1 came from three sources.

1 The enlisted reserves constituted the first group. These were enrolled in the premedical curriculums in colleges and universities approved for the V-12 Program. The members of this group who were near the end of their fourth semester of work or who had com-

pleted four or more semesters were given a comprehensive achievement examination late in April. Students standing in the lowest 10 per cent of the distribution of scores on this examination were eliminated. The remaining students were permitted to continue with their premedical courses or to enter a medical school, provided they were accepted for admission.

2 The second group of students came from among the enlisted men in service. These students were selected on recommendation of their commanding officers provided they had attained a specified minimum score on the General Classification Test.

Outline of Navy Premedical Curriculum

First College Year	Credits per Week	
	1st Term	2d Term
Chemistry I II (C1 2)	4 (6)	4 (5)
Physics I II (I111 2)	4 (6)	4 (6)
Mathematical analysis I or III II or IV (M1 or 2 or 4)	5 (5)	5 (5)
Modern foreign language III (I1 2)	3 (3)	3 (3)
Naval organization I II (N1 2)	1 (1)	1 (1)
Physical Training	17 (21)	17 (25)
	18 (9½)	17 (8½)
	35 (30½)	34 (31½)

Mathematical Analysis I and II combination course in mathematical analysis for students entering with 2 or less units of mathematical analysis. Mathematical Analysis III and IV algebra trigonometry and analytic geometry or analytic geometry and calculus for students entering with 2½ or more units of mathematics.

Second College Year	Credits per Week	
	1st Term	2d Term
Chemistry III quantitative analysis (C3)	4 (5)	
Organic chemistry I (C4)		4 (8)
Biology I II (B1 2)	4 (8)	4 (8)
Modern foreign language III IV (I3 4)	3 (3)	3 (3)
English III (E1 2)	3 (3)	3 (3)
Historical background of present war I II (H1 2)	2 (2)	2 (2)
Psychology I general (PS1)	2 (2)	2 (2)
Physical training	18 (26)	18 (26)
	17 (8½)	17 (8½)
	35 (34½)	35 (34½)

Third College Year	Credits per Week	
	1st Term	2d Term
Biology III (embryology or Biology IV comparative anatomy) (B3 or 4)	5 (9)	
Organic chemistry II (C5)	4 (8)	
Modern foreign language V or VI (L5 or 6)	3 (3)	
Psychology II abnormal (PS2)	3 (3)	
Elective	3 (3)	
Physical training	18 (26)	
	17 (8½)	
	35 (34½)	

Figures in parenthesis indicate contact hours per week in class and laboratory. Figures outside parenthesis indicate the number of meetings per week in class and laboratory.

3 A third group of students were selected directly from civil life. These were chosen in terms of a rigid screening procedure which included (a) a scholastic aptitude test given at approximately eighteen thousand centers throughout the country, (b) a physical examination, (c) an interview by a naval officer in the Office of Naval Officer Procurement and (d) final selection by a committee of three, including a naval officer, a business man and an educator. This committee considered all the information available on each applicant. From those finally selected for the V-12 Program, only the highest ranking students with a preference for premedical training were admitted to the premedical curriculum.

Further screening of premedical students will be done on the basis of scholastic records and comprehensive achievement examinations. An achievement examination similar to that given late in April of this year will be given to other students from the V-12 group during the fourth term of work. Also students entering the prescribed premedical curriculum directly from civil life will be given an achievement examination near the end of their first two terms. Final selection of students for medical schools will be made in cooperation with the medical schools on the basis of these records. The details of this procedure are to be completed in the near future.

The premedical curriculum was worked out on the basis of past practices in colleges and universities and has the wholehearted approval of the Council on Medical Education and Hospitals and the Association of American Medical Colleges. It is generally believed that it represents the best type of premedical education that has been offered at colleges and universities. It extends over five terms of sixteen weeks each, a total of twenty months of premedical preparation. A detail outline of the curriculum is presented in the accompanying table. Course descriptions are given in detail in Bulletin No. 1 "The Navy College Training Program V-12, Curricula Schedules" issued by the Training Division of the Bureau of Naval Personnel of the United States Navy, Washington, D. C.

The method of selecting the qualified premedical student for medical education and his assignment to a medical school is as has been stated not yet finally determined. The proposed plan is to assign students to medical schools within the naval district where they are at present pursuing premedical education. A committee of the deans or their representatives of the medical schools in a naval district would select from the premedical students in that district who are finishing their preprofessional training those who are qualified for admission to medical school. These successful students would then be assigned by the Navy Department to fill the Navy's quota in the medical schools of that district. There might be in some naval districts a surplus of well qualified premedical students, and in other naval districts there might not be a sufficient number to fill the Navy's quota in the medical schools of that district. In these instances it is the suggestion of the Navy that a reciprocity agreement be established between naval district screening boards in order to fill existing vacancies with Navy premedical students found qualified by screening boards in other areas.

Premedical students who have been accepted for admission to an approved medical school and have several months to wait before matriculating in medical school will be assigned to naval hospitals under instruction in the laboratory fields of medicine and in addition at certain hospitals they will assist the educational officer in the Navy's Hospital Educational Program for convalescent patients.

I am quite sure that, from the standpoint of both selection of students and the curriculum the Navy Program will provide a very high grade type of doctor to serve in the Navy and later in civil life. Great care has been taken to insure the selection of only those men best qualified to study medicine, regardless of their economic status, and to give these men the best possible medical education.

THE UNITED STATES PUBLIC HEALTH SERVICE AND THE WAR

Thomas Parran, M D

Surgeon General, U S Public Health Service

The wide range of activities in the U S Public Health Service calls for a diversification of medical talent seldom encountered in a single organization. At the present time more than 1,800 physicians are employed full time in the Public Health Service. Almost as many hold commissions in the inactive reserve or are serving part time or on a consultant basis.

The legal functions of the service cover the three broad divisions of medicine, namely research, clinical practice and public health practice. During the war these activities have been greatly expanded and new tasks have fallen to the lot of Public Health Service physicians. In fact, 90 per cent of our manpower, material and money have been channeled into direct war work. Virtually all of the research has been turned to new problems arising from the conditions of global war. Many confidential studies have been undertaken at the request of other branches of the government. Tropical medicine, industrial toxicology, aviation medicine and nutrition have captured the interest of our physicians in the research arm of the service. The production of vaccines, blood plasma and other biologic products has expanded greatly.

In our hospitals nearly 80 per cent of the patients are members of the Merchant Marine, the Coast Guard, the Army and the Navy. The Public Health Service furnishes medical care for the entire personnel of the Coast Guard in the same way in which the Navy Medical Corps provides medical care for the personnel of the Navy. Coast Guard patients treated in our hospitals have more than doubled in number since Pearl Harbor. Medical care is now extended by law to the families of coast guardsmen.

An increasing number of women and children are applying for admission to the marine hospitals, principally dependents of coast guardsmen. The addition of this valuable experience has made possible the development of clinical research in our hospitals, and with dramatic results. In 1942 a method for relieving the pain of childbirth was developed by Drs. Hingson and Edwards, two of our young officers at the Marine Hospital, Stapleton, N Y. Leaders in the medical profession consider this an outstanding contribution. Possibilities exist for the use of continuous caudal analgesia in surgical fields and are being explored. The originators of the method have demonstrated their technique at a number of medical schools.

In our cooperative program with the War Shipping Administration for medical care of trainees and members of the Merchant Marine we have expanded psychiatric work in the Public Health Service. Already an important field in our hospitals for the treatment of narcotic drug addicts, in the medical and psychiatric service of federal prisons and in St. Elizabeths Hospital, psychiatry is now being turned to the prevention and treatment of psychic effects of enemy attack on merchant seamen.

Public Health Service physicians are now on duty in practically every theater of war. Many are seeing actual combat as medical officers of the Coast Guard cutters. Others have been assigned to the Army in India and in the Southwest Pacific under the command of Generals Stilwell and MacArthur.

Another group of young physicians is doing a superb job under exceedingly arduous conditions. They are responsible for the medical care of 20,000 men who are constructing the Alaska Highway. Their patients are dispersed over a distance of 1,500 miles of virgin territory. As the highway has progressed northward they have had to move hospital supplies and equipment over great distances with inadequate transportation and in subarctic weather.

Other medical officers are serving with the United States Typhus Commission in Africa, with the Army in Panama in connection with venereal disease work and in Trinidad as members of the Anglo-American Commission.

Four of our doctors are in the first health expeditionary force to enter a foreign country after the reoccupation of Axis held territory. Assigned to the Office of Foreign Relief and Rehabilitation, they are in Africa and are working with local public health authorities and physicians to assure adequate medical supplies, allot food to combat widespread nutritional diseases among the native population and to improve native sanitation, malaria and typhus control for the protection of American troops in the area. The Office of Foreign Relief and Rehabilitation has requested the service to undertake the recruitment and training of the medical and sanitary personnel who will be needed as this important work expands to other war areas.

At the request of the Army a number of additional officers have attended the course in military government at the University of Virginia, and those who have completed the training are now on active duty.

For now and for the future, I would recommend to the medical student that he devote as much time and effort as possible to the study of public health methods and administrative medicine. In the past there has been scant attention to these subjects in our undergraduate schools. Yet their importance both in this country and in our international relationships is apparent. The day is rapidly passing when the training of public health physicians by the trial and error method of "experience" will suffice. Already postgraduate training in public health is being required of young physicians who have no compensating experience as a qualification for employment in state and local agencies.

The emergency made it necessary for the Public Health Service to recruit hundreds of physicians for assignment to public health positions in the states. To compensate, at least to some degree, for deficiencies in public health training, as well as to inculcate new employees in the policies and procedures of the Public Health Service, an orientation course was developed. Recruits were assigned to the course for the first six weeks of their employment. Lectures by experts in various fields, seminars, problem solving and field practice under supervision of a state health department were the methods utilized in the intensive training of physicians, many of whom were soon to be "on their own" in war communities which had never had a public health service before.

Within the total field of public health practice, two other specialties are expanding with amazing speed under the pressure of war. These are industrial hygiene and nutrition.

In 1942 the chairman of the Council on Industrial Health of the American Medical Association stated that teaching in this field is inadequate in most of our medical schools. He pointed out that, ironically enough, the Woman's Medical College of Pennsylvania devotes more time to the subject than any other school. Medical students and interns should certainly obtain a sufficient grounding in industrial medicine to recognize the possibilities in the field.

The United Nations Conference on Food and Agriculture held at Hot Springs, Va., May 18 to June 8, 1943, placed an important responsibility on public health and medicine in seeking the national and worldwide goal of better nutrition. The conference recognized that at all stages of a nutrition program, from the recognition of malnutrition in a community to its elimination, knowledge of the human body is essential. Because they possess and can contribute this knowledge, physicians have a primary responsibility in the development and application of a nutrition policy. The medical

student can look forward to making an even more significant contribution through the study of human nutrition. Modern nutrition—already one of the scientific miracles of our time—is a dynamic science on the threshold of fresh discoveries. It offers the student a rich field for exploration and practice.

In the past, war with all its destruction has been a catalyzer in the progress of medicine, surgery and public health. Already important changes are being reported in military medicine. On the public health front advances are being made. We are gaining new knowledge, devising new methods and new approaches. Our attacks on malaria, tuberculosis and venereal diseases have been sharpened by the development of new weapons. Today, in the protection of our armed forces and the civilian populations, and tomorrow, in the reconstruction to peace, the public health physician is an essential man whose knowledge and skill serve his country through constructive teamwork with the military surgeon and the private practitioner.

THE PROCUREMENT AND ASSIGNMENT SERVICE—CURRENT POLICIES

Harold S. Diehl, M.D.

Member, Directing Board

MINNEAPOLIS

The basic policy of the Procurement and Assignment Service relative to medical education remains unchanged from that enunciated in earlier issues of *THE JOURNAL*.¹ This is "to retain adequate teaching staffs for the medical schools, but to do so without withholding from military service more than a minimum number of men who are physically qualified for such service."

In the application of this policy, however, certain modifications of points of view and criteria of essentiality are inevitable as a result both of increases in the size and the activity of the armed forces and the depletions in teaching staffs combined with increased teaching loads in the medical schools.

The assumption of the offensive by our armed forces requires the services of far more young medical officers than are now available. At the same time critical shortages of medical services exist in certain war industries and civilian communities. These conditions demand that medical schools, hospitals and other agencies which utilize the services of physicians again review their staffs and release as many young physicians as possible for duty with the armed forces or to meet critical civilian needs.

Both the Army and the Navy report a dangerous shortage of young medical officers. In time of war the needs of these services must be given first priority. Unless the war is won the maintenance of civilian institutions will be futile and unless the boys who are fighting the war are supplied with adequate medical care lives will be unnecessarily lost and the prosecution of the war handicapped. This situation requires that medical schools and hospitals declare immediately available all physicians whose services are not absolutely essential and all who can be replaced by physicians who are ineligible for military service.

It is reported that some institutions have made little or no reduction in their staffs because many physicians ineligible for military service are available to them. This is obviously an unjustifiable position when certain war industries and civilian communities and even other

hospitals are seriously short of physicians. Any institution which retains on its staff more physicians than are absolutely necessary is guilty of hoarding and is prejudicing the war effort and the national welfare.

On the other hand, medical schools have an equally great or even greater responsibility to maintain effective instructional programs for the students who are being trained as the physicians of the future. With the condensation of the medical course into three calendar years, with increases in the number of students and with depletions of teaching staffs this is no easy assignment. Yet to fail to meet this responsibility would mean inadequately trained and incompetent physicians for both the armed forces and the civilian population. This would be a major tragedy. Medical schools are now engaged in war production and the product must not be defective. Incompetent medical officers are a hazard and liability just as are defective planes, tanks or guns.

INTERNSHIPS

The maintenance of twelve month internships with students graduating from medical schools at nine month intervals has resulted in an overlap of three months in the services of interns. Reports from many hospitals indicate that it is frequently an impossibility to utilize the services of interns effectively during this three month period. The result is unsatisfactory intern training and waste of medical manpower, neither of which can we afford at this time. Possibilities of adjustments in the internships are being studied by various groups with a view to the elimination of the unsatisfactory features of the present program.

RESIDENCIES

According to the policy of the Army, the Navy, Selective Service and the Procurement and Assignment Service, the determination of hospital residency is justified only if they are essential for the adequate care of patients or for the development of the medical student.

The Procurement and Assignment Service is keenly aware of the necessity of providing essential medical services in hospitals and is doing everything within its power to accomplish this. On the other hand, residents are physicians in the age group most urgently needed by the Army and the Navy. As such those who are physically qualified have an obligation to go into service after a year of internship unless they are needed to fill essential hospital positions for which it is impossible to secure residents who are ineligible for military service.

Approximately six months ago hospitals were requested not to appoint as residents physicians who have failed to make bona fide applications for commissions. In order to provide for essential hospital services the Army and the Navy have granted a year's deferment of active military duty to certain residents who hold commissions and who have been recommended for deferment by the Procurement and Assignment Service. Some requests were denied because they were received too late and some because they did not seem to meet the conditions for deferment as set forth in the Procurement and Assignment Service memorandum on this subject.

Residents who do not hold commissions or who have not been officially rejected for commissions should be urged to apply for commissions at once and should not be appointed unless they do so. The Surgeon Generals

of the Army and Navy have assured the Procurement and Assignment Service that they will grant deferment of active duty until completion of the year of residency for residents who are granted commissions and whose applications for commissions are accompanied by Procurement and Assignment form 218, recommending that they be granted deferment as essential hospital residents.

There is evidence that some physically fit young physicians are avoiding military service by offering their services to hospitals as residents on condition that hospitals recommend deferment to Selective Service for them. If hospitals are parties to such practices, it may become impossible to secure deferment for residents who really should be deferred.

SUMMARY

The difficulties of maintaining effective medical schools and hospitals are becoming increasingly acute. To meet these problems it is essential that deans of medical schools, superintendents of hospitals and officials of the Procurement and Assignment Service be aware of the many urgent needs for physicians and assume a public spirited and statesmanlike attitude in passing on the availability or essentiality of individual members of medical school and hospital staffs. Only if this is done can the limited and dwindling supply of physicians be utilized effectively for the prosecution of the war and the safeguarding of the national welfare.

FORTY-THIRD ANNUAL PRESENTATION OF EDUCATIONAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Victor Johnson, M D, Secretary

In this annual compilation of data on medical education, the Council includes the latest information available on the relationships of medical education to the war in the preceding statements from military and other government officials. The collaboration between the armed services, government agencies and institutions concerned with medical education must become even more intimate in the months ahead than it has been in the past. Successful solution of the complex problems of providing medical officers and civilian physicians in large numbers and in a relatively short period of time, consistent with a high quality of training, can come only through a continuation and expansion of the present excellent cooperation between the agencies involved.

This presentation also includes data on the military status of students, now undergoing a change, developments under the accelerated program, including the staggered admission and graduation dates, and an account of faculty participation in war activities. In addition there are data on enrolments, graduates, pre-medical education, licensure, internships, fees, continuation courses and specialty boards. Medical schools are described and recent educational developments discussed.

Reduced in volume through restrictions on the use of paper, the Educational Number of *THE JOURNAL* still provides essential material of great value to military and government agencies, the medical profession, medical educators, hospital officials, students, interns, residents and those concerned with specialty certification and graduate and postgraduate medical education. Reprints of the entire study as well as copies of the lists of hospitals are available and are widely distributed.

The Council and *THE JOURNAL* express thanks and appreciation to the military officials, the officers of the institutions mentioned and others for their cordial

cooperation in supplying the material submitted in this presentation and for other records furnished throughout the year to the office of the Council and the members of its staff on inspection or visitation, enabling the Council to maintain its medical student and hospital registers efficiently and to carry on its activities as outlined by the House of Delegates of the American Medical Association and to serve the profession.

SOLDIERS AND SAILORS IN MEDICAL SCHOOLS

In close cooperation with the Army and the Navy, the medical schools of America have zealously assumed a major wartime responsibility—the training of adequate replacements of medical officers for the armed forces. In June of this year nearly 15,000 medical students held army commissions in the Medical Administrative Corps and about 5,000 held ensign commissions in the Hospital Volunteers (Probation) of the Navy (see table 1 for distribution by schools). Only one school was without Army students and only three without Navy enrolments. This total number of nearly 20,000 medical students earmarked for military service represented nearly 87 per cent of the medical students in America, with approximately 65 per cent having Army affiliations and approximately 22 per cent having Navy affiliations.

The transfer of most of these students from the inactive commissioned status to the active status as privates and apprentice seamen is now being completed. In the active status they will be soldiers and sailors in school, not students in uniform. Data on the numbers actually in uniform are not yet available, since the processing of students is still progressing.

All Navy students are on commutation or ration and quarters. Of sixty-nine schools which have completed arrangements with the Army, in only nine are all

students housed in barracks and fed at common mess. Common housing and messing would seem to be educationally undesirable in most instances. Especially students in clinical work must of necessity follow an irregular program of meals and sleep. Such men are essentially student-physicians, responsible for sick

TABLE 1—*Students Enrolled in Army or Navy Units on an Inactive Status in June 1943*

Figures are incomplete in some instances because of pending applications for commissions. Many groups listed in this compilation have now been transferred to the active status and are in uniform as privates or apprentice seamen.

	Army	Navy
University of Alabama	65	33
University of Arkansas	171	66
University of California	161	70
College of Medical Evangelists	158	17
University of Southern California	173	56
Stanford University	105	102
University of Colorado	134	48
Yale University (Connecticut)	131	58
Georgetown University (District of Columbia)	229	67
George Washington University	190	73
Howard University	119	0
Emory University (Georgia)	157	75
University of Georgia	147	56
Loyola University (Illinois)	199	82
Northwestern University	358	130
University of Chicago The School of Medicine	136	96
University of Illinois	425	150
Indiana University	428	44
State University of Iowa	209	71
University of Kansas	199	96
University of Louisville (Kentucky)	264	79
Louisiana State University	215	79
Tulane University of Louisiana	266	190
Johns Hopkins University (Maryland)	182	56
University of Maryland	255	58
Boston University (Massachusetts)	166	44
Harvard Medical School	343	151
Tufts College Medical School	244	129
University of Michigan	198	65
Wayne University	178	42
University of Minnesota	351	94
University of Mississippi	27	23
University of Missouri	66	7
St. Louis University	366	86
Washington University	273	78
Creighton University (Nebraska)	176	63
University of Nebraska	242	68
Dartmouth Medical School (New Hampshire)	15	33
Albany Medical College (New York)	100	41
Long Island College of Medicine	287	52
University of Buffalo	217	34
Columbia University	310	119
Cornell University	214	80
New York Medical College	225	75
New York University	387	86
University of Rochester	105	96
Syracuse University	122	54
University of North Carolina	55	29
Duke University	155	106
Bowman Gray School of Medicine	100	40
University of North Dakota	42	9
University of Cincinnati (Ohio)	220	69
Western Reserve University	253	48
Ohio State University	237	26
University of Oklahoma	160	6
University of Oregon	43	46
Hahnemann Medical College (Pennsylvania)	354	94
Jefferson Medical College	378	107
Temple University	265	117
University of Pennsylvania	348	124
Woman's Medical College		
University of Pittsburgh	262	48
Medical College of South Carolina	115	47
University of South Dakota	28	12
University of Tennessee	277	7
McHenry Medical College	212	0
Vanderbilt University	174	19
Baylor University (Texas)	141	37
University of Texas	123	104
University of Utah	76	35
University of Vermont	1	3
University of Virginia	154	87
Medical College of Virginia	188	75
West Virginia University	4	18
University of Wisconsin	180	71
Marquette University	115	11
Totals	14,644	4,953

patients whose hours of work are dictated by the unpredictable course of the illness of the patients assigned them. Although such considerations are less applicable to students in the basic sciences, it is true nonetheless that much of the value of an experiment may be lost

if a student is prevented from following an experiment to an inadvertently delayed conclusion by fixed times for meals. Taps at a regular hour may seriously interfere with study. It is gratifying that so small a proportion of medical students are subject to common housing and mess.

In conformity with orders from Army and Navy authorities, it seems apparent that drill and purely military instruction are sufficiently subordinated to the regular curriculum in most schools to present no interference with the chief responsibility of the medical school providing the prospective medical officer with the best in medical training. In only a few schools do such nonmedical activities involve as much as five or six hours a week, although in one school it totals ten hours a week.

THE ACCELERATED PROGRAM

Realizing the greatly expanding needs for medical officers and the continuing demand for civilian doctors—even anticipating such needs—many of the medical schools of the country increased their enrollments and adopted an accelerated curriculum even before Pearl Harbor. At present virtually all medical schools in the United States (including schools of basic medical sciences) are on the accelerated program, admitting a new class approximately every nine months and condensing the traditional four academic years of the medical curriculum into three calendar years by eliminating summer vacations, without a reduction in total classroom, laboratory or clinic hours. The only exceptions to this are the University of Michigan Medical School, which is on the full accelerated program but admits new freshman students once a year, the Woman's Medical College of Pennsylvania, which is on an accelerated program for the junior and senior years only and admits new first year students once a year, the University of Tennessee College of Medicine, which is on a full accelerated program and admits students approximately every three months, and the schools of basic medical sciences all of which are accelerating in that work which is offered and are admitting new students approximately every nine months.

Details of dates of admission and dates of graduation for the recognized four year schools are included in table 2. Admission dates for the schools of basic medical sciences follow in table 3. Of the latter schools two have developed four year programs. Bowman Gray now has junior and senior classes in operation and Utah has a junior class in session. It is noted that throughout the country new freshman classes will enter one or more medical schools during every month from September 1943 to January 1945 with the sole exception of the month of December 1944 (see table 4). Dates of graduation will also be staggered throughout these months. Table 4 includes estimates of numbers of graduates to January 1945. Most students will graduate in the months of December 1943 and September 1944, although some students will complete their work and be available for internships in every month of this period with the exception of the months of September 1943, May and November 1944 and January, 1945.

LICENSE UNDER THE ACCELERATED PROGRAM

All states in the Union as well as the District of Columbia, Alaska, Hawaii and Puerto Rico have adjusted their licensure legislation to present such adjustments were required. Under the accelerated medical program all the college

TABLE 2—Admission and Graduation Calendars of Medical Schools in the United States

School	Present Freshmen Session Began (1943)	Dates of Next Two Entering Classes		Dates of Next Two Graduating Classes ¹	
ARKANSAS					
University of Arkansas School of Medicine	July 1	April 3, 1944	Jan 2, 1945	March 27, 1944	Dec 1944
CALIFORNIA					
University of California Medical School	Feb 11	Oct 28, 1943	June 29, 1944	Oct 23, 1943	June 1944
College of Medical Evangelists	July 1	April 1944	Jan 1945	Dec 19, 1943	Oct 1944
University of Southern California School of Medicine	June 28	Feb 21, 1944	Nov 6, 1944	Oct 15, 1943	June 16, 1944
Stanford University School of Medicine	June 28	April 12, 1944	Jan 8, 1945	Dec 1943	Sept 1944
COLORADO					
University of Colorado School of Medicine	March 29	Jan 3, 1944	Oct 2, 1944	Dec 24, 1943	Sept 23, 1944
CONNECTICUT					
Yale University School of Medicine	April 5	Dec 27, 1943	Sept 25, 1944	Dec 18, 1943	Sept 16, 1944
DISTRICT OF COLUMBIA					
Georgetown University School of Medicine	March 15	Jan 3, 1944	Oct 1, 1944	Dec 15, 1943	Oct 1, 1944
George Washington University School of Medicine	March 1	Nov 22, 1943	Sept 1944	Nov 10, 1943	Aug 1944
Howard University College of Medicine	June 14	March 23, 1944	Jan 3, 1945	March 1944	Dec 1944
GEORGIA					
Emory University School of Medicine	March 23	Jan 3, 1944	Oct 1944	Dec 1943	Sept 1944
University of Georgia School of Medicine	April 7	Jan 3, 1944	Sept 27, 1944	Dec 20, 1943	Sept 1944
ILLINOIS					
Loyola University School of Medicine	April 19	Jan 3, 1944	Oct 1944	Dec 18, 1943	Sept 1944
Northwestern University Medical School	March 29	Dec 28, 1943	Sept 25, 1944	Dec 2, 1943	Sept 1944
University of Chicago, The School of Medicine	March 29	Jan 2, 1944	Oct 1, 1944	3	3
University of Illinois College of Medicine	June 28	April 12, 1944	Jan 8, 1945	Dec 1943	Sept 1944
INDIANA					
Indiana University School of Medicine	Jan 7	Sept 4, 1943	May 1944	Aug 22, 1943	April 1944
IOWA					
State University of Iowa College of Medicine	March 1	Jan 3, 1944	Oct 1944	Dec 22, 1943	Sept 1944
KANSAS					
University of Kansas School of Medicine	May 24	March 1, 1944	Nov 1, 1944	Jan 27, 1944	Oct 1944
KENTUCKY					
University of Louisville School of Medicine	April 1	Jan 5, 1944	Sept 27, 1944	Nov 13, 1943	Sept 2, 1944
LOUISIANA					
Louisiana State University School of Medicine	March 11	Jan 1944	Oct 1944	Dec 1943	Sept 1944
Tulane University of Louisiana School of Medicine	July 1	March 1, 1944	Nov 1, 1944	Feb 12, 1944	Oct 1944
MARYLAND					
Johns Hopkins University School of Medicine	March 1	Nov 29, 1943	Sept 5, 1944	Nov 25, 1943	July 27, 1944
University of Maryland School of Medicine and Coll of P and S	April 8	Jan 13, 1944	Oct 17, 1944	Dec 23, 1943	Sept 20, 1944
MASSACHUSETTS					
Boston University School of Medicine	March 31	Dec 31, 1943	Sept 1944	Dec 23, 1943	Sept 1944
Harvard Medical School	March 8	Jan 3, 1944	Oct 1944	Dec 1943	Oct 1944
Tufts College Medical School	April 7	Jan 1944	Oct 1944	Dec 1943	Sept 1944
MICHIGAN					
University of Michigan Medical School	Oct 25	Oct 1944	Oct 1945	Oct 1943	June 1944
Wayne University College of Medicine	April 5	Jan 10, 1944	Oct 1944	Dec 9, 1943	Sept 1944
MINNESOTA					
University of Minnesota Medical School	March 29	Jan 4, 1944	Sept 1944	Dec 16, 1943	Sept 1944
MISSOURI					
St. Louis University School of Medicine	Feb 23	Nov 29, 1943	Aug 1944	Nov 20, 1943	Aug 1944
Washington University School of Medicine	March 29	Jan 3, 1944	Oct 2, 1944	Dec 1943	Sept 1944
NEBRASKA					
Creighton University School of Medicine	March 18	Jan 4, 1944	Sept 1944	Dec 20, 1943	Sept 1944
University of Nebraska College of Medicine	March 26	Jan 3, 1944	Oct 2, 1944	Dec 18, 1943	Sept 23, 1944
NEW YORK					
Albany Medical College	March 29	Jan 3, 1944	Oct 2, 1944	Dec 1943	Sept 1944
Long Island College of Medicine	March 29	Jan 3, 1944	Oct 1944	Dec 30, 1943	Sept 1944
University of Buffalo School of Medicine	July 6	April 3, 1944	Jan 2, 1945	Dec 1943	Sept 1944
Columbia University College of Physicians and Surgeons	March 22	Jan 1, 1944	Oct 1944	Dec 1943	Sept 1944
Cornell University Medical College	April 5	Jan 3, 1944	Sept 28, 1944	Dec 23, 1943	Sept 1944
New York Medical College, Flower & Fifth Avenue Hospitals	March 29	Jan 3, 1944	Sept 25, 1944	Dec 20, 1943	Sept 16, 1944
New York University College of Medicine	April 5	Jan 3, 1944	Oct 1944	Dec 1943	Sept 1944
University of Rochester School of Medicine	March 29	Jan 3, 1944	Sept 29, 1944	Dec 18, 1943	Sept 23, 1944
Syracuse University College of Medicine	July 1	April 1944	Jan 1945	Dec 1943	Sept 1944
NORTH CAROLINA					
Duke University School of Medicine	April 1	Jan 3, 1944	Sept 29, 1944	Dec 22, 1943	Sept 23, 1944
OHIO					
University of Cincinnati College of Medicine	March 22	Dec 1943	Sept 1944	Dec 1943	Sept 1944
Western Reserve University School of Medicine	March 1	Nov 22, 1943	Aug 14, 1944	Oct 28, 1943	July 23, 1944
Ohio State University College of Medicine	March 30	Jan 4, 1944	Oct 3, 1944	Dec 19, 1943	Sept 11, 1944
OKLAHOMA					
University of Oklahoma School of Medicine	May 10	Jan 6, 1944	Sept 1944	Dec 23, 1943	Aug. or Sept. 1944
OREGON					
University of Oregon Medical School	March 29	Jan 3, 1944	Oct 6, 1944	Dec 22, 1943	Sept 1, 1944
PENNSYLVANIA					
Hahnemann Medical College and Hospital of Philadelphia	April 5	Jan 3, 1944	Sept 25, 1944	Dec 23, 1943	Sept 4, 1944
Jefferson Medical College of Philadelphia	April 12	Jan 10, 1944	Oct 1944	Jan 7, 1944	Sept 14, 1944
Temple University School of Medicine	April 1	Jan 3, 1944	Oct 2, 1944	Dec 16, 1943	Sept 13, 1944
University of Pennsylvania School of Medicine	April 5	Jan 3, 1944	Oct 2, 1944	Dec 22, 1943	Sept 1944
Woman's Medical College of Pennsylvania	Aug 30	Sept 1, 1944	Sept 1, 1945	March 16, 1944	Dec 1944
University of Pittsburgh School of Medicine	April 5	Jan 3, 1944	Oct 2, 1944	Dec 1943	Sept 1944
SOUTH CAROLINA					
Medical College of the State of South Carolina	March 29	Jan 3, 1944	Sept 1944	Dec 22, 1943	Sept 1944
TENNESSEE					
University of Tennessee College of Medicine	July 8	Sept 23, 1943	Jan 3, 1944	3	3
Meharry Medical College	June 14	March 1944	Jan 1945	March 2, 1944	Dec 1944
Vanderbilt University School of Medicine	March 24	Jan 1944	Sept 1944	Dec 1943	Aug. or Sept. 1944
TEXAS					
Baylor University College of Medicine	July 12	April 3, 1944	Jan 2, 1945	March 13, 1944	Dec 12, 1944
University of Texas Medical Branch	March 15	Nov 1, 1943	July 1, 1944	July 31, 1943	June 1944
VERMONT					
University of Vermont College of Medicine	April 12	Jan 3, 1944	Oct 1944	Dec 21, 1943	Sept 1944
VIRGINIA					
University of Virginia Department of Medicine	March 29	Dec 29, 1943	Sept 2, 1944	Dec 16, 1943	Sept 1, 1944
Medical College of Virginia	April 5	Dec 30, 1943	Sept 1944	Dec 18, 1943	Sept 1944
WISCONSIN					
University of Wisconsin Medical School	July 1	April 1944	Jan 1945	Nov 1943	Sept 1944
Marquette University School of Medicine	March 1	Nov 1943	July 1944	Nov 1, 1943	June 1944

¹ Or completion of senior year
² August and December 1943, March, June, August and December 1944
³ September and December 1943, March, June 1944

for admission to licensure, at least for the duration of the emergency. In Georgia no legislation has been introduced as yet. However, licensure difficulties in that state will not occur, according to a ruling of the Attorney General.

With the introduction of the Army and Navy premedical programs the question arises of licensure legis-

TABLE 3—*Admission Calendars of Schools of Basic Medical Sciences in the United States*

School	Present Freshmen Session Began (1943)	Dates of the Next Two Entering Classes for Freshmen	
ALABAMA			
Univ. of Alabama School of Med.	March 11	Dec 6 1943	Sept 11 1944
MISSISSIPPI			
Univ. of Mississippi School of Med.	Feb 1	Sept 27 1943	June 1944
MISSOURI			
Univ. of Missouri School of Med.	March 22	Dec 15 1943	Sept 1944
NEW HAMPSHIRE			
Dartmouth Medical School	Feb 7	Oct 31 1943	July 1 1944
NORTH CAROLINA			
University of North Carolina School of Medicine	March 22	Dec 1943	Sept 1944
Bowman Gray School of Medicine of Wake Forest College ¹	March 22	Jan 3 1944	Sept 27 1944
NORTH DAKOTA			
University of North Dakota School of Medicine	June 14	March 27 1944	Jan 2 1945
SOUTH DAKOTA			
University of South Dakota School of Medical Sciences	March 8	Dec 6 1943	Sept 12 1944
UTAH			
Univ. of Utah School of Med. ²	March 20	Dec 1943	Sept 1944
WEST VIRGINIA			
West Virginia Univ. School of Med.	March 22	Dec 27 1943	Sept 27 1944

¹ Now operating full four years classes graduate Dec 21, 1943 and Sept 23 1944

² Now operating clinical program first class graduates August 1944

lation as it applies to the preliminary training of students admitted to medical schools. Present legislation in all states of the Union, the District of Columbia, Alaska, Hawaii and Puerto Rico makes it possible for students with two years of premedical training to become eligible for admission to licensure on completion of the medical curriculum. In general two academic premedical years have sufficed, even though this work may have been completed in less than two calendar years, by student attendance at summer sessions or by carrying more than the normal load of academic work per term or both. The Army Specialized Training Program for premedical studies calls for a total of fifteen calendar months of work, and the Navy V-12 program for premedical students provides for eighteen calendar months of training. In both of these programs the work is essentially continuous, without the long summer vacation, and provides for the student carrying more than the normal peacetime load of work per term. Both the Army and Navy programs provide for work well in excess of the six semester hours constituting the normal two academic years of premedical work required for licensure. Therefore it would seem that the Army and Navy premedical programs should offer no licensure difficulties.

It would also appear probable that requirements in specific premedical licensure fields such as chemistry, biology and physics will probably be adequately met by the Army and Navy programs.

In the past state licensing boards have accepted the statement of the dean of the medical school from which the applicant graduated which certified his premedical training. Presumably this practice will continue.

PREMEDICAL EDUCATION

The Army and Navy premedical programs fully satisfy the minimum requirements for admission to an approved medical school as these have been formulated

by the Council on Medical Education and Hospitals, as regards both total work and coverage of specific subjects. Heretofore most medical schools have required more than two academic years of premedical training for admission. In the academic year 1941-1942, only eight schools required but two years of premedical work, and in that year only 12 per cent of all freshmen entering medical schools in the United States had this minimum training.

However, all medical schools at the present time have decided that the completion of the Army or Navy premedical curriculum will fully meet their minimum admission requirements, in the cases of students in active service who have been assigned to the Army Specialized Training Program or V-12 premedical programs.

While recognizing the adequacy of the Army and Navy premedical programs for the admission of men in active military service, most schools desire also to publish admission requirements in terms of academic years or semester hours for civilian applicants. In tables 5 and 6 the present civilian premedical requirements are shown for each medical school in the United States and Canada. A degree is required by two schools, three years of work by twenty schools and a variable amount of work in excess of two years by five schools. The remaining fifty-nine schools require two preclinical years or less, even for civilian students applying for admission.

THE SUPPLY OF PHYSICIANS

The accelerated program and enrolment increases are now producing excellently trained medical graduates for military and civilian needs in numbers far exceeding the production of doctors at any time in the history of this country. In figure 1 is plotted the number of

TABLE 4—*Distribution of Admission Dates by Schools and Estimated Number of Graduates for the Months of July 1943 Through January 1945 in the United States. Schools of Basic Medical Sciences Are Not Included.*

Date	Number of School-Admitting New Freshmen Classes	Estimated Number of Graduates From All Schools
1943		
July	9	60
August	0	125
September	2	0
October	1	265
November	6	362
December	6	371
1944		
January	37	20
February	1	121
March	4	237
April	8	17
May	1	0
June	1	421
July	2	2
August	2	16
September	1	40
October	2	40
November	3	0
December	0	12
1945		
January	13	0
Total		971

medical graduates since 1905 including the estimated number of graduates in 1943 and 1944. Developments of far reaching importance in medical education in the United States all pertinent to the present war effort may be read from these data.

In 1905 the one hundred and sixty-one schools produced 5000 graduates. There have been a large number in graduates parallel with the increase in the number of

ing from the closure of many proprietary schools and the enforcement of educational standards

Despite the reduced number of schools in recent years there has been a sustained increase in graduates, with a transient decrease in the years following 1939 resulting in part from the survey of medical schools conducted by the Council on Medical Education and Hospitals during 1934-1936

Before the results of the accelerated program were manifest in 1942 there were essentially as many graduates from seventy-seven approved schools maintaining high standards of medical training as there were thirty-five or forty years ago, when over twice the present number of medical schools operated, mainly without control over enrolments or standards

In the years 1943 and 1944 the number of graduates will far exceed the number at any time in the past history of this country. This wartime high may be contrasted with the all time low in medical graduates in

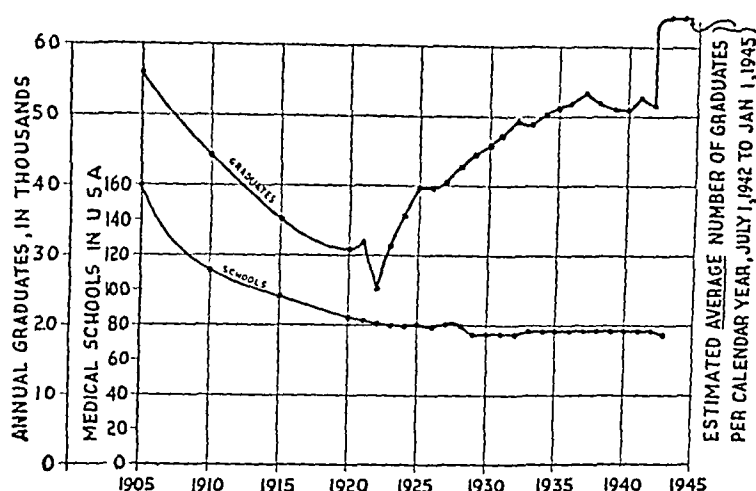


Figure 1 Numbers of medical schools and medical graduates in the United States, 1905-1942, and estimated for 1942-1945

1922, which also resulted from war—the low enrolment of freshman medical students in wartime 1918

Further data on the estimated future supply of physicians will be found under "Graduates" on p 1102

FACULTY MEMBERS IN WAR SERVICES

The accelerated program, increases in enrolment and decreases in resident personnel, have considerably increased the demands on medical school faculties. These demands are being met by faculties seriously depleted in numbers. On July 1, 1943 the seventy-six medical schools and schools of basic medical sciences in the United States had contributed a total of 5,637 of its faculty members to the armed forces.¹ This number is far in excess of the number of faculty members reported to be in active military service on July 1, 1942.² Although the figure 5,637 includes some men who are not physicians, it seems probable that more than 10 per cent of the medical officers in the armed forces (estimated at more than 47,000) have come from our faculties of medicine, which include in the neighborhood of 10 per cent of the physicians of the country. The interpretation and evaluation of these data are difficult, since many if not most of the teachers in active service were on a part time basis, in some instances contributing only an hour or two per week to instruction. Yet it

is apparent that medical schools seem to have contributed approximately as large a proportion of their faculty members to the armed forces as the proportion of physicians not engaged in academic work who have been commissioned

Further depletion of faculties has resulted from participation in war research. In twenty-one of the seventy-six medical schools there are 130 faculty members engaged in full time war research. This relatively small figure represents serious losses in teaching staff in some critical areas, since practically all these men were recruited from the full time faculty members mainly in the basic sciences. Furthermore, this figure includes only those on full time war research. The total loss in teaching manpower is much greater, since even larger numbers of teachers are devoting a considerable part, but not all, of their time to war research.

DEVELOPMENTS IN MEDICAL EDUCATION

The most noteworthy educational developments of the past year relate to the war and include the changes in premedical education, the transfer of students to an active military status, the adoption of the accelerated program by still more schools, and other wartime developments discussed in the earlier sections of this presentation.

Practically all schools report that, while the basic medical curriculum remains essentially unchanged, subjects of war significance are being stressed or have been added. The most commonly mentioned subjects in this category are Tropical Medicine and Parasitology, First Aid, Shock and Blood Substitutes, Burns and War Wounds, Venereal Diseases, Aviation Physiology and Medicine, Industrial Medicine and Public Health, Chemical Warfare, Military Medicine, Chemotherapy.

Two generalizations may be made from scanning this list. First, the subjects are not limited to clinical topics of a purely "practical" nature but involve as well material of basic scientific importance. Second, many of these subjects will continue to be of great medical importance after the war, so that these wartime additions to the curriculum are not simply necessary educational concessions to an emergency but will probably continue to justify their inclusion in our educational programs after the war.

Great impetus to the teaching of Tropical Medicine was given by grants from the John and Mary R Markle Foundation, administered by a committee of the Association of American Medical Colleges, for the training of teachers of Tropical Medicine at the Army Medical School in Washington and Tulane University. Intensive courses of two months each are given at each school. Men from many of the medical schools have taken these courses and are in charge of the teaching of Tropical Medicine in their own schools.

The Baylor University College of Medicine has moved its entire equipment, including laboratory desks, microscopes, instruments, museums and library, from Dallas to Houston. Preclinical laboratories and classrooms have been established in a spacious, well lighted building which will be utilized for these purposes during the war. Clinical work will be carried out at the Jefferson Davis (City-County) Hospital and the Hermann Hospital. Generous grants have been made to the school by the M. D. Anderson Foundation and the Houston Chamber of Commerce, to finance operations during the war and to construct buildings adjacent to Hermann Hospital to house the preclinical departments after the war. Dr. Walter H. Moursund continues

¹ Over 1,400 of these men are in the affiliated general hospital, evacuation hospital and surgical hospital units of forty-one medical schools. A list of these schools may be found in THE JOURNAL, Aug 15, 1942, p 1266, table 4.

² Three thousand and sixty faculty members from sixty-four schools were reported to be in active service at that time by Dr. Harold Diehl (J. A. Am. M. Coll. 18 15, 1943).

dean, and Dr. James A. Greene, formerly of Iowa, is professor and chairman of the department of medicine and dean of the clinical faculties, on a full time basis. His present major responsibility is the development of the program of clinical instruction.

Utilizing the former Baylor clinical facilities, including the Parkland Hospital, a new medical school has been organized in Dallas. Preclinical laboratories and class rooms are in operation or being established adjacent to Parkland Hospital in temporary quarters which will be used during the war. Funds raised by the Southwestern Medical Foundation and the Dallas Chamber of Commerce will support the new school in its temporary quarters during the war and in the construction of new buildings after the war. Most of the former Baylor faculty and many of its students remain in Dallas. The acting dean is Dr. Donald Slaughter, formerly of Baylor and more recently of Vermont.

A new medical school is also projected in Florida. On June 14 a bill became law in that state providing for the establishment of the University of South Florida, which is to be a state university having as its primary purpose the creation of a school of medicine, a school of pharmacy and a school of dentistry. The law further provides that the medical and dental schools shall be maintained and operated in accordance with the standards of education approved by the American Medical Association and the American Dental Association.

Despite the added demands made by the accelerated program and an expanding curriculum on faculties seriously reduced in numbers, developments of educational importance are projected by many schools, some of which involve basic principles of medical education in this country.

Increases in clinical facilities not only have strengthened weak spots at a number of schools but are fostering further extensions of the concept that effective clinical teaching must center about a physician-patient relationship between student and patient. Ward work and outpatient department assignments continue to increase. Purely didactic clinical instruction continues to decrease.

Several schools report the appointment of faculty committees to review the curriculum and make recommendations for closer collaboration between instruction in the various fields of medicine. In general, there are two definite tendencies.

First the line of demarcation between "preclinical" and "clinical" is becoming less sharply drawn. Medical instruction is being viewed as a four year unit rather than as two units of two years each. Introduction of well selected clinical material into the instructional program of the basic sciences is serving to emphasize the unity of the ends sought in medical education. Incorporation of material from the basic sciences into the work of the junior and senior years is stimulating a continued student interest in medicine as a science.

Second there is increased interdepartmental collaboration in the presentation of related material with the elimination of accidental needless repetition and provision for planned, desirable repetition. A given system or organ for example the kidney is being considered as a complex of problems the presentation of which requires the resources of collaborating biochemists, anatomists, physiologists, pathologists and renovascular clinicians rather than as a subject to be presented in turn by departments of biochemistry, anatomy, physiology, pathology and medicine.

A noteworthy development in the schools of basic medical sciences (see table 6) is the tendency toward expansion into schools offering the full four year curriculum. Bowman Gray is at present operating both senior and junior classes. It will graduate its first class in December 1943. Utah has started a junior class, which will graduate in August 1944. In Alabama a bill has been passed providing for the establishment of a four year medical school in that state, and appropriating \$1,000,000 for buildings and equipment and \$366,000 annually for maintenance. In at least two other states there has been discussion of expansion of the two year schools.

An arrangement has been consummated between West Virginia and the Medical College of Virginia whereby '15 to 20 students completing the work of the second year in the West Virginia School of Medicine in Morgantown will transfer to the Medical College of Virginia in Richmond for the completion of the four years curriculum, effective January 1944." This experiment in interschool collaboration may well yield results of value to other schools of basic medical sciences. It is becoming increasingly difficult to place students who have completed the basic sciences into schools with facilities adequate to accept transfer students and provide clinical instruction of high quality.

APPROVED MEDICAL SCHOOLS

Medical schools and schools of the basic medical sciences in the United States and Canada approved by the Council on Medical Education and Hospitals of the American Medical Association for the academic session 1942-1943 are listed in tables 5 and 6, pages 1100, 1101 and 1102. The table includes quantitative premedical requirements for applicants not in the A S T P or V-12 premedical programs. The enrolment by classes, including fifth year students interning or engaged in research, the total attendance, which does not include fifth year students, and the number of graduates apply to the academic year immediately preceding the date of entrance of the first class entering in 1943. The data are treated in this way because of the irregularities in dates of commencement of the academic year and in dates of graduation, which have resulted from the adoption of the accelerated program. The name of the dean or acting dean is also given. Figures for the sixth year enrolment in Canadian schools are given in a footnote.

Four schools on a probationary status are indicated by asterisks. The University of Georgia School of Medicine has been reinstated on the list of approved schools, not on probation.

Three schools, Loyola, Wayne and Marquette, have discontinued the fifth year intern requirement for the M.D. degree. The numbers listed as graduating from these schools are high, since they include students who completed their four years of work in the last two academic sessions.

The fifth or intern year is now required for the M.D. degree by only six schools in the United States: College of Medical Evangelists, Southern California, Stanford, Northwestern, Minnesota and Duke.

The number of approved medical schools in the United States has been reduced to sixty-six since no classes have been in operation at the Rush Medical College since June 1942 when the last class graduated.

Historical information regarding all institutions on the approved list of medical schools maintained by the Council is given on pages 1111 to 1118.

ENROLMENTS

Enrolment figures by classes for the academic year ending with the admission of the first class in 1943 are given in tables 5 and 6 and recapitulated in table 7. In the seventy-six schools in the United States there were 22,631 students studying medicine (excluding the fifth year), which is an increase of 600 students, or 2.7 per cent above the preceding academic session. In the Canadian schools there were 2,386 students (excluding the fifth and sixth years), an enrolment increase of 48 students, or 2.0 per cent. In addition there were 566 fifth year students in schools of the United States plus 403 fifth year and 219 sixth year students in Canada.

STUDENTS BY CLASSES, 1931-1943

The number of students enrolled in preclinical and clinical classes and in internships when required for graduation in medical schools of the United States is shown in table 9, covering the past thirteen years. The numbers in each of the four classes in 1942-1943 show a substantial increase over the preceding academic session. The sophomore and junior classes were larger than at any other time for this period. The freshman class was larger than last year's on three occasions from 1930 to 1934. The senior class was larger in 1936-1937 than that of last year. The number interning as a requirement for the degree continued to fall because of schools dropping this requirement for the degree.

TABLE 6—Approved Schools of the Basic Medical Sciences in the United States and Canada

Name and Location of School	1913-1944 Premedi- cal Require- ment by Years #	Students by Classes Session Preceding First Class Entering in 1943			Executive Officer	
		1st Year	2d Year	Totals		
ALABAMA						
1 University of Alabama School of Medicine University (Tuscaloosa)	60 sem hrs	52	47	99	Stuart Graves, MD Dean	1
MISSISSIPPI						
2 University of Mississippi School of Medicine, University	3	30	28	58	B S Guyton MD, Dean	2
MISSOURI						
3 University of Missouri School of Medicine Columbia	2	44	31	75	Dudley S Conley, MD Dean	3
NEW HAMPSHIRE						
4 Dartmouth Medical School Hanover	4	22	24	46	John P Bowler, MD Dean	4
NORTH CAROLINA						
5 University of North Carolina School of Medicine Chapel Hill	2	49	42	91	W Reece Berryhill MD Dean	5
6 Bowman Gray School of Medicine of Wake Forest Coll Winston Salem	2	49	58	114	C C Carpenter, MD, Dean	6
NORTH DAKOTA						
7 *University of North Dakota School of Medicine Grand Forks	2	25	25	53	H E French, MD, Dean	7
SOUTH DAKOTA						
8 *University of South Dakota School of Medical Sciences, Vermillion	3	27	22	49	Joseph O Ohlmecher, MD Dean	8
UTAH						
9 University of Utah School of Medicine Salt Lake City	3	44	35	79	A Cyril Callister MD, Dean	9
WEST VIRGINIA						
10 West Virginia University School of Medicine, Morgantown	3	30	26	56	Edward J Van Hiere, MD Dean	10
CANADA						
11 University of Saskatchewan School of Medical Sciences Saskatoon Sask	2	24	20	44	W S Lindsay MB, Dean	11

* On probation.
† These premedical requirements apply to civilian applicants in most instances. All schools in the United States will consider completion of the Army or Navy premedical program by male applicants on active duty as fulfilling academic admission requirements.
‡ Have started four-year programs.
§ Completion of Army and Navy requirements.
§ Third year students 33.

In schools offering the complete four years of work the three schools in the United States with the highest enrolments were Illinois 661, Northwestern 581 and Jefferson 556. The three with the lowest enrolments were Woman's Medical College 119, Vermont 133 and Albany 155. In Canada the highest enrolment occurred at Toronto with 753 students in the six years, and the lowest at Alberta with 160 students in its five year course.

In no school of the basic medical sciences did the enrolment in either the freshman or the sophomore class exceed 50, with the sole exception of the freshman class at Alabama, which was 52.

The enrolment in the classes now in session in the United States is shown for each school in table 8. For comparison with enrolments in the two preceding sessions, total figures are also given in the last column of table 7. There are now 23,204 students in the schools in the United States. This is 573 students more than were in school in the academic session last completed, an increase of 2.5 per cent. The tendency toward increased enrolments each year continues. This serves the desired end of providing more medical officers and civilian physicians. However, each school should consider carefully whether available facilities warrant further increases and whether the quality of the educational product might not be inferior to that which is desirable not only in a medical officer but in civilian practice.

TABLE 7—Total Enrolments by Classes in Medical Schools of the United States and Canada for the Academic Year Ending with the Admission of the First Class in 1943. Students in the Intern Year Are Not Included.

	Freshmen	Sophs	Jrs	Srs	Total	Total Last Session (1941-42)	Total Present (1942-43)
66 Medical Schools (U.S.)	6,050	5,516	5,245	5,100	21,911	21,322	22,149
10 Basic Science Schools (U.S.)	375	312	30*		707	631	1,225
Total (U.S.)	6,425	5,828	5,275	5,100	22,631	21,953	23,374
9 Medical Schools (Can.)†	685	50	352	345	2,072	2,200	
1 Basic Science School (Can.)	21	20			41	43	
Total (Can.)	706	70	387	345	2,108	2,243	
Total U.S. and Can.	7,131	5,898	5,662	5,445	24,736	24,196	

* At Bowman Gray.
† The first four years in some Canadian schools do not correspond to those years in schools of the United States.
‡ Includes juniors at Utah and juniors and seniors at Bowman Gray.
§ Does not include 483 students in fifth and sixth years.

GRADUATES

In table 5 are included all graduates since July 1, 1942 until the opening of the first academic session commencing in 1943. Such sessions opened in different schools anywhere from January to July. In the period thus defined there were 5,223 graduates. To this figure

may be added the estimated 10,889 students who will graduate is shown in table 4 between the time of the opening of the first academic session in 1943 and January 1945. The total figure, 16,112, is the number of students who have graduated or will graduate in a

TABLE 8—Enrollment 1943 Classes Now in Session

	1 Year	2 Year	3d Year	4th Year
University of Alabama	55	56		
University of Arkansas	52	55	67	60
University of California	72	74	65	16
College of Medical Evangelists	35	39	72	75
University of Southern California	65	64	54	54
Stanford University	62	62	60	60
University of Colorado	65	61	75	56
Yale University (Connecticut)	60	62	46	44
Columbia University (District of Columbia)	43	42	44	63
George Washington University	81	70	76	64
Howard University	75	74	74	74
Emory University (Georgia)	63	63	63	60
University of Georgia	76	75	69	46
Loyola University (Illinois)	88	80	83	74
Northwestern University	131	134	154	144
University of Chicago	65	67	61	53
University of Illinois	166	166	165	160
Indiana University	130	116	120	120
State University of Iowa	85	87	76	64
University of Kansas	104	104	84	82
University of Louisville (Kentucky)	36	83	81	89
Louisiana State University	100	75	82	77
Tulane University	141	131	137	121
Johns Hopkins University (Maryland)	75	74	73	81
University of Maryland	101	83	96	90
Boston University (Massachusetts)	78	67	56	45
Harvard Medical School	122	123	141	136
Tufts College Medical School	110	102	100	101
University of Michigan	170	146	118	113
Wayne University	73	66	66	53
University of Minnesota	126	122	138	109
University of Mississippi	30	25		
St. Louis University (Missouri)	135	130	100	113
University of Missouri	44	39		
Washington University	86	85	105	115
Creghton University (Nebraska)	70	68	60	59
University of Nebraska	91	87	86	76
Dartmouth Med School (New Hampshire)	33	29		
Albany Medical College (New York)	51	41	40	38
Long Island College of Medicine	11	105	103	92
University of Buffalo	86	78	70	61
Columbia University	119	114	122	109
Cornell University	84	77	79	75
New York Medical College	100	98	92	85
New York University	142	126	131	120
University of Rochester	68	62	64	62
Syracuse University	76	53	46	38
Duke University (North Carolina)	77	67	72	65
University of North Carolina	49	41		
Bowman Gray School of Medicine	51	41	36	34
University of North Dakota	28	25		
University of Cincinnati (Ohio)	86	81	81	75
Western Reserve University	91	86	74	67
Ohio State University	84	78	69	70
University of Oklahoma	76	63	56	51
University of Oregon	76	72	70	63
Hahnemann Med College (Pennsylvania)	154	138	113	116
Jefferson Medical College	160	140	138	133
Temple University	110	119	102	122
University of Pennsylvania	133	118	133	132
Woman's Medical College	45	42	34	21
University of Pittsburgh	86	80	78	84
Medical College of South Carolina	50	46	49	43
University of South Dakota	25	20		
University of Tennessee	105	90	107	81
McHerry Medical College	65	61	62	62
Vanderbilt University	51	52	54	50
Baylor University (Texas)	84	65*	60*	60*
University of Texas	100	105	110	96
University of Utah	42	42	40	
University of Vermont	40	36	32	34
University of Virginia	73	62	73	54
Medical College of Virginia	80	81	78	72
West Virginia University	30	25		
University of Wisconsin	72	73	61	57
Marquette University	97	93	85	72
Totals	6 440	6 016	5 560	5 188

* May require revision

period of thirty months from July 1 1942 to Jan 1 1945. For comparison with the figures on graduates of preceding classes, which have been expressed per calendar year, the figure 16,112 for thirty months may be converted into an average of 6,445 graduates per calendar year, which far exceeds the number ever graduated from schools in the United States even at the time when one hundred and sixty schools were operating in 1905.

This figure is a conservative expression of the probabilities, since there will probably be an additional 4,500

graduates in the first six months after Jan 1, 1945, totaling over 20 000 graduates in a period of exactly three years from July 1, 1942 to July 1, 1945, or nearly 7 000 a year. The latter figure is that estimated by Dr H G Wiskotten a year ago on the basis of far less information than is now available.

From table 5 it is seen that the three schools graduating the most students in the first academic session are Illinois 151 Harvard 148 and Jefferson 142. Marquette had 150 graduates, but these included students from two classes because of the elimination of the internship requirement for the M D degree. The smallest numbers were graduated from Vermont 31, Howard 27 and Woman's Medical College 22.

From the nine medical schools of Canada there were 496 graduates. The largest number 107, graduated from Toronto and the smallest number 30, received degrees from Western Ontario.

TABLE 9—Students in the United States by Years Including the Intern Year When Required for Graduation 1931-1943

	Preclinical		Clinical		Intern Year	Total
1930-1931	6 496	5 388	5 080	4 908	1 025	23 007
1931-1932	6 260	5 462	4 922	4 800	1 067	23 262
1932-1933	6 426	5 479	5 017	4 945	1 106	23 512
1933-1934	6 437	5 571	4 958	4 937	1 183	23 522
1934-1935	6 506	5 624	5 142	4 906	1 233	24 121
1935-1936	6 005	5 458	5 250	5 020	1 213	23 777
1936-1937	5 910	5 269	5 140	5 168	1 255	23 340
1937-1938	5 791	5 225	4 966	5 066	1 132	22 199
1938-1939	5 754	5 163	4 947	4 921	1 152	22 454
1939-1940	5 704	5 177	4 921	4 904	1 152	22 423
1940-1941	5 567	5 254	4 869	4 849	1 608	22 437
1941-1942	5 215	5 406	5 087	4 942	1 071	22 708
1942-1943	6 425	5 528	5 278	5 160	689	23 270

TABLE 10—Schools Students and Graduates by States*

	Schools	Students	Graduates
Alabama	1	99	
Arkansas	1	284	70
California	4	1 026	242
Colorado	1	222	49
Connecticut	1	214	44
District of Columbia	3	404	167
Georgia	2	468	98
Illinois	4	1 783	445
Indiana	1	436	104
Iowa	1	311	63
Kansas	1	388	92
Kentucky	1	268	62
Louisiana	2	584	199
Maryland	2	661	171
Massachusetts	3	1 171	266
Michigan	2	746	233
Minnesota	1	418	111
Mississippi	1	88	
Missouri	3	913	206
Nebraska	2	573	118
New Hampshire	1	46	
New York	5	2 641	641
North Carolina	3	61	61
North Dakota	1	33	
Ohio	3	314	212
Oklahoma	1	218	59
Oregon	1	73	55
Pennsylvania	6	2 497	612
South Carolina	1	199	45
South Dakota	1	49	
Tennessee	3	661	211
Texas	2	711	164
Utah	1	79	
Vermont	1	133	71
Virginia	2	574	123
West Virginia	1	50	
Wisconsin	2	622	213
Totals	6	22 631	5 223

* Excluding fifth or intern year students

GRADUATES BY STATES

The seventy-six schools in the United States are located in thirty-six states and the District of Columbia. The numbers of schools students and graduates by states are shown in table 10. Each of five states enrolled

TABLE 11—Residence

Marginal Number	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Marginal Number
1 University of Alabama School of Medicine	91								4			1			1		1					1
2 University of Arkansas School of Medicine			253																			2
3 University of California Medical School		1		255																		3
4 College of Medical Evangelists		2		100	2			3	6		2	5	2	2	7			1	10	12	15	4
5 University of Southern California School of Med		3		200				1														5
6 Stanford University School of Medicine		2		121	3	1					2	8	2	3			2		1	2	2	6
7 University of Colorado School of Medicine		1		199	1						1	1	2	1								7
8 Yale University School of Medicine	1			4	1	53				2		5	1	2	1	1	1	8	1	23	3	8
9 Georgetown University School of Medicine	1			6		15	1	20	2	1	1	1						1	14	18		9
10 George Washington University School of Med	4	4		28	1	1		82			9	2	3	2		1			12	6	4	10
11 Howard University College of Medicine	1	1	2	4				30	5	5		5	2	1		1	10		4	5		11
12 Emory University School of Medicine	13						1		44	138						1	1					12
13 University of Georgia School of Medicine									242													13
14 Loyola University School of Medicine	1		1	10		3	1					162	13	10	1					2	11	14
15 Northwestern University Medical School	2	7	1	32	7			1	2		6	208	27	13	10	5				2	17	15
16 University of Chicago, The School of Medicine		1	1	5	2	2		1	1		8	100	11	3	1	1		1		2	14	16
17 University of Illinois College of Medicine								1				640	2	1								17
18 Indiana University School of Medicine	1											1	470			1			1			18
19 State University of Iowa College of Medicine													304									19
20 University of Kansas School of Medicine														334		167				1	6	20
21 University of Louisville School of Medicine	5	4	1	10	1	2			2	1	5	7	26	1	1		294		1			21
22 Louisiana State University School of Medicine	5		1	1		1			3	1	1	2			1					3		22
23 Tulane University of Louisiana School of Med	52	5	11	10				28	12			1	1		1	8	148					23
24 Johns Hopkins University School of Medicine	2		2	7	1	6	2	10	11	8	1	7	2		1	1		4	63	20	2	24
25 University of Maryland School of Medicine	2	2		4		3		10	7	7		1	1						150	11	1	25
26 Boston University School of Medicine				5	1	13	1				1	28	8	2	3	9	1	9	5	105	6	26
27 Harvard Medical School	6	2	2	18	7	13		6	4	6	1	1					18	1	305			27
28 Tufts College Medical School						28		1			4	5	4			4				1	340	28
29 University of Michigan Medical School				6	1	4		1	3		4		4							1	244	29
30 Wayne University College of Medicine		1									2	3			1							30
31 University of Minnesota Medical School																						31
32 University of Mississippi School of Medicine																						32
33 University of Missouri School of Medicine						2	2		1		4	42	20	11	6	2		1	1	6	6	33
34 St. Louis University School of Medicine	1	3	2	42	2	2					11	46	4	4	17					2	3	34
35 Washington University School of Medicine	12	5	6	24	3	1					3	3		24	8					3	1	35
36 Creighton University School of Medicine		1		61	8	1																36
37 University of Nebraska College of Medicine								1												12		37
38 Dartmouth Medical School					2	2						2								6	1	38
39 Albany Medical College	1				1	2						1					2			2		39
40 Long Island College of Medicine	5			1	1	13	1		2			1						1		2		40
41 University of Buffalo School of Medicine				1	1	1					1							1		2		41
42 Columbia University College of Phys and Surg	6	3	2	5	2	26		3	8	3	3	9	2	2		1		4	3	30	2	42
43 Cornell University Medical College	3	1		9	1	11			1	2		2					1		1	7	1	43
44 New York Medical College		1		2		10														8		44
45 New York University College of Medicine	2			2		19	1	1	1	1					1	1				14	2	45
46 Univ of Rochester School of Med and Dentistry		1		24	4	2	1				1	2	1							3		46
47 Syracuse University College of Medicine		1		1		2			3	3	1		1							3	7	47
48 University of North Carolina School of Medicine	4	1	1	2		1	1	3	22	9	2	3		1		1	2					48
49 Duke University School of Medicine	2	1						2	2													49
50 Wake Forest College School of Medicine												8	7			13		1		1	6	50
51 University of North Dakota School of Medicine	2			4	1			2	1		4	3		1				1	1	4	12	51
52 University of Cincinnati College of Medicine				4		2	1					1										52
53 Western Reserve University School of Medicine																						53
54 Ohio State University College of Medicine	1				1						15											54
55 University of Oklahoma School of Medicine				9						1	1	3	4	3		2		1	1	7		55
56 University of Oregon Medical School	7	3	1	20		12	3	1	4	1	1	5	4	2		1		2	2	3	2	56
57 Hahnemann Medical College	5			3		11	10	1	1			4								6		57
58 Jefferson Medical College of Philadelphia	1			5	1	3	5	2	9		3	4		2		1	1		4	2		58
59 Temple University School of Medicine	10	1		6		6	8	2	3		1	1	4		2	1						59
60 University of Pennsylvania School of Medicine				5	1	3		1	2	2		7										60
61 Woman's Medical College of Pennsylvania																						61
62 University of Pittsburgh School of Medicine													1	3								62
63 Medical College of the State of South Carolina	4														2	14	1		1	1		63
64 Univ of South Dakota School of Med Sciences	16	1	21						13	3	2	5			2	6	11		1	3		64
65 University of Tennessee College of Medicine	10		3	1	1	1	2	6	8	10		18	5		3	20	1					65
66 Meharry Medical College	23								8	7					2							66
67 Vanderbilt University School of Medicine	3	3	1	2																		67
68 Baylor University College of Medicine														1				1				68
69 University of Texas Medical Branch							7									5						69
70 University of Utah School of Medicine	1						2	1	7							2						70
71 University of Vermont College of Medicine	8	1						1														71
72 University of Virginia Department of Medicine				3																		72
73 Medical College of Virginia																						73
74 West Virginia University School of Medicine	1										1	7	1	1	1							74
75 University of Wisconsin Medical School				23	2																	75
76 Marquette University School of Medicine																						76
77 University of Alberta Faculty of Medicine																						77
78 University of Manitoba Faculty of Medicine																						78
79 Dalhousie University Faculty of Medicine																						79
80 Queen's University Faculty of Medicine																						80
81 University of Western Ontario Medical School																						81
82 University of Toronto Faculty of Medicine	1			22																		82
83 McGill University Faculty of Medicine																						83
84 University of Montreal Faculty of Medicine																						84
85 Laval University Faculty of Medicine																						85
86 Univ of Saskatchewan School of Med Sciences																						86
Total	319	63	315	1099	255	307	43	150	215	465	160	1375	631	402	412	27	173	5	5	5	5	

of Students

[illegible]

TABLE 16—Distribution by Sex

	Students		Graduates	
	Men	Women	Men	Women
University of Alabama	95	1		
University of Arkansas	278	6	67	3
University of California	233	27	49	1
College of Medical Evangelists	301	18	79	3
University of Southern California	213	5	45	0
Stanford University	229	10	57	5
University of Colorado	208	11	17	2
Yale University (Connecticut)	196	18	41	3
Georgetown Univ (District of Columbia)	297	0	69	0
George Washington University	259	22	65	6
Howard University	211	12	21	3
Emory University (Georgia)	226	0	52	0
University of Georgia	231	8	43	3
Loyola University (Illinois)	276	11	110	1
Northwestern University	563	18	135	3
Univ of Chicago, The School of Medicine	211	10	11	1
University of Illinois	621	37	111	10
Indiana University	170	16	103	1
State University of Iowa	290	21	60	3
University of Kansas	332	23	85	7
University of Louisville (Kentucky)	357	8	90	2
Louisiana State University	321	23	75	3
Tulane University of Louisiana	190	20	116	5
Johns Hopkins University (Maryland)	252	36	63	10
University of Maryland	351	19	95	3
Boston University (Massachusetts)	203	22	38	6
Harvard Medical School	510	0	148	0
Tufts College Medical School	395	16	92	2
University of Michigan	462	27	92	6
Wayne University	245	12	130	5
University of Minnesota	465	33	106	5
University of Mississippi	55	3		
University of Missouri	73	2		
St Louis University	464	0	112	0
Washington University	353	21	89	5
Creighton University (Nebraska)	252	9	41	3
University of Nebraska	325	7	72	2
Dartmouth Med School (New Hampshire)	46	0		
Albany Medical College (New York)	140	15	33	1
Long Island College of Medicine	374	25	84	4
University of Buffalo	261	15	62	4
Columbia University	421	27	87	8
Cornell University	298	16	71	4
New York Medical College	303	37	64	4
New York University	465	40	117	7
University of Rochester	229	14	46	4
Syracuse University	176	8	39	2
University of North Carolina	85	6		
Duke University	256	8	58	3
Bowman Gray School of Medicine	112	2		
University of North Dakota	53	0		
University of Cincinnati (Ohio)	293	15	71	5
Western Reserve University	294	12	66	3
Ohio State University	286	14	64	3
University of Oklahoma	233	12	57	2
University of Oregon	267	6	56	2
Hahnemann Medical College (Pennsylvania)	495	17	126	0
Jefferson Medical College	556	0	142	0
Temple University	429	34	116	4
University of Pennsylvania	489	22	123	7
Woman's Medical College	0	119	0	22
University of Pittsburgh	324	12	70	2
Medical College of South Carolina	184	5	47	1
University of South Dakota	49	0		
University of Tennessee	497	13	109	0
Meharry Medical College	230	12	49	1
Vanderbilt University	204	5	50	2
Baylor University (Texas)	307	11	73	4
University of Texas	372	21	79	8
University of Utah	77	2		
University of Vermont	127	6	31	0
University of Virginia	249	9	53	2
Medical College of Virginia	284	22	65	3
West Virginia University	53	3		
University of Wisconsin	261	16	58	5
Marquette University	337	8	144	6
University of Alberta (Canada)	144	16	30	3
University of Manitoba	210	18	43	7
Dalhousie University	166	5	37	0
Queen's University	279	0	45	0
University of Western Ontario	205	19	27	3
University of Toronto	693	60	97	10
McGill University	387	22	92	2
University of Montreal	226	11	48	5
Laval University	354	10	47	0
University of Saskatchewan	38	6		
Totals	24 183	1 317	5 448	271

Seven medical schools, including one in Canada, each enrolled more than 30 women, with 60 attending Toronto and 40 at New York University

There were 271 women graduates from sixty-three of the seventy-five four year schools In the United States there were 241 women graduates and 4,982 men Canadian schools graduated 30 women and 466 men

Table 17 shows the distribution of students and graduates by sex over a period of eight years Women students have not increased in numbers in the past year, so that the small increase in total enrolments, discussed earlier, is entirely due to an increase in the number of men in medical schools

The percentages of women enrolled and graduating in the United States since 1905 are shown in table 18

TABLE 17—Distribution by Sex in the United States and Canada, 1936-1943

Year	Students		Graduates	
	Male	Female	Male	Female
1935 1936	24 219	1,254	5 388	268
1936 1937	23,787	1,244	5 624	261
1937 1938	23,234	1,307	5,439	262
1938 1939	22 919	1,293	5,290	260
1939 1940	22,903	1,291	5,430	273
1940 1941	22,803	1,308	5,527	310
1941 1942	23 551	1,333	5,397	305
1942 1943	24,183	1,317	5,448	271

TABLE 18—Women in Medicine in the United States

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905	1,073	4.1	219	4.0
1910	907	4.0	116	2.6
1915	592	4.0	92	2.6
1920	818	5.8	122	4.0
1925	910	5.0	204	5.1
1926	935	5.0	212	5.4
1927	964	4.9	169	4.7
1928	929	4.5	207	4.9
1929	925	4.4	214	4.8
1930	955	4.4	204	4.3
1931	990	4.5	217	4.6
1932	965	4.3	208	4.2
1933	1,056	4.7	214	4.4
1934	1,020	4.5	211	4.2
1935	1 077	4.7	207	4.1
1936	1,133	5.0	246	4.7
1937	1,113	5.1	238	4.4
1938	1,161	5.4	237	4.6
1939	1,144	5.4	260	5.1
1940	1,145	5.4	263	5.0
1941	1,146	5.4	260	5.3
1942	1 164	5.3	279	5.4
1943	1 180	5.1	241	4.6

For the academic year 1942-1943 the percentage of women enrolled was 5.1, a figure slightly lower than the percentages since 1937 The percentage of graduates who were women was 4.6, which is somewhat smaller than the percentages since 1938

Recent changes in Army regulations permit the commissioning of women physicians, although at present women students are not included in the Army or Navy medical or premedical programs Dr Margaret Craighill, dean of Woman's Medical College of Pennsylvania was the first woman physician to be commissioned in the United States Army Major Craighill is on leave of absence from the school

There is a women's division of the Procurement and Assignment Service, through which agency women are cooperating in the relocation of physicians In addition, women physicians are contributing greatly to the war

effort by carrying heavier loads than ever before, assuming the added responsibilities of men who have left for the armed forces

At the present time it is not anticipated that women will be included in the A S T or Navy A-12 Programs

LOAN FUNDS AND SCHOLARSHIPS

Under the accelerated program, the student with limited means faced the problem of financing his education without opportunities for earning money during summer vacations

Students were able to meet these needs largely because of the generous grants made by the W K Kellogg Foundation and loan funds made available by

TABLE 19—Medical Schools Reporting Part Time, Special and Graduate Students 1942-1943

	Part Time	Special	Graduate
University of Alabama	8		33
University of California		1	
Emory University (Georgia)	3		
University of Georgia		3	
Loyola University (Illinois)		42	78
Northwestern University		9	
University of Chicago The School of Medicine			70
University of Illinois		1	
Indiana University	1	9	
State University of Iowa			1
University of Kansas	3	1	
University of Louisville (Kentucky)	8	12	4
Louisiana State University		4	
Johns Hopkins University (Maryland)		1	
Harvard Medical School (Massachusetts)	13	3	1
Tufts College Medical School	10	1	
University of Michigan		4	
Wayne University		2	
University of Mississippi			1
Washington University (Missouri)	7	3	
University of Nebraska		5	24
Albany Medical College (New York)		9	70
University of Buffalo			
Columbia University	3	3	
New York Medical College		3	
New York University		2	
Bowman Gray School of Med (North Carolina)	2	2	
University of Cincinnati (Ohio)	1	2	2
Western Reserve University		2	7
University of Oklahoma	2	2	
University of Oregon	7		
Woman's Medical College (Pennsylvania)	2		
University of Pittsburgh		34	19
University of South Dakota		76	
University of Tennessee		29	5
Meharry Medical College			8
University of Texas		5	
University of Virginia			28
University of Western Ontario (Canada)			
University of Toronto	70	190	434
Totals			

the federal government Eighty-four schools in the United States and Canada received from the Foundation a total of \$977,700 in amounts ranging from \$5 000 granted to seven schools of basic medical sciences to \$16,000 These timely awards not only assisted deserving and needy medical students but constituted an important contribution to the war effort of the medical schools in carrying out the accelerated program

Of the \$5,000,000 appropriated by Congress for loans to students in various accelerated curriculums training for war participation, the largest single allotment was granted to students in medicine Through the United States Office of Education 3,628 loans were made to medical students in sixty-four medical schools and schools of basic medical sciences The total lent was \$1,063,573 75 for the fiscal year ended June 30, 1943

The Canadian government lent approximately \$150,000 to the students in six of the medical schools in that country

With the transfer of Army and Navy students to an active status in the United States, the need for

TABLE 20—Graduates with Baccalaureate Degrees

	Graduates	Degrees
University of Arkansas	70	19
University of California	53	52
College of Medical Evangelists	82	40
University of Southern California	45	40
Stanford University	62	61
University of Colorado	49	38
Yale University (Connecticut)	44	44
Georgetown University (District of Columbia)	69	66
George Washington University	71	37
Howard University	27	11
Emory University (Georgia)	52	36
University of Georgia	46	33
Loyola University (Illinois)	114	64
Northwestern University	138	90
University of Chicago The School of Medicine	42	41
University of Illinois	151	61
Indiana University	104	49
State University of Iowa	63	44
University of Kansas	92	88
University of Louisville (Kentucky)	92	68
Louisiana State University	78	65
Tulane University of Louisiana	121	105
Johns Hopkins University (Maryland)	73	65
University of Maryland	98	80
Boston University (Massachusetts)	44	43
Harvard Medical School	148	143
Tufts College Medical School	94	93
University of Michigan	98	83
Wayne University	135	132
University of Minnesota	111	33
St Louis University (Missouri)	112	86
Washington University	94	81
Crelghton University (Nebraska)	44	24
University of Nebraska	74	11
Albany Medical College (New York)	34	34
Long Island College of Medicine	88	80
University of Buffalo	66	50
Columbia University	95	89
Cornell University	75	75
New York Medical College	68	67
New York University	124	118
University of Rochester	50	46
Syracuse University	41	34
Duke University (North Carolina)	61	41
University of Cincinnati (Ohio)	76	65
Western Reserve University	69	69
Ohio State University	67	62
University of Oklahoma	59	36
University of Oregon	58	58
Hahnemann Medical College (Pennsylvania)	126	107
Jefferson Medical College	142	142
Temple University	120	107
University of Pennsylvania	130	127
Woman's Medical College	22	18
University of Pittsburgh	72	62
Medical College of South Carolina	48	34
University of Tennessee	109	63
Meharry Medical College	50	48
Vanderbilt University	52	51
Baylor University (Texas)	77	45
University of Texas	87	63
University of Vermont	31	30
University of Virginia	55	42
Medical College of Virginia	68	52
University of Wisconsin	63	38
Marquette University	150	90
University of Alberta (Canada)	33	0
University of Manitoba	50	20
Dalhousie University	37	14
Queen's University	45	5
University of Western Ontario	30	10
University of Toronto	107	29
McGill University	94	80
University of Montreal	53	43
Laval University	47	47
Totals	5719	4300

scholarship and loan aid is no longer acute A relatively small number of students (perhaps 15 to 20 per cent of the total) will be civilians Needy students in this group can probably be provided for by the local loan funds available in most schools In many instances

university and college funds set aside for loan purposes have increased in amount in the past year for several reasons. The Kellogg scholarship and loan funds for medical students and the government loan funds for students in several fields have resulted in a conservation of local funds. It should be emphasized that college loan funds would have been entirely inadequate to meet last year's emergency. In addition, large numbers of men in uniform in a variety of curriculums are having their expenses paid by the Army or Navy and need no loans. Finally, generally improved economic conditions have lessened the demand for loans.

There still remain funds for loans to students in the appropriation made by Congress for last year. Of the \$5,000,000 allocated for loans in several fields, about \$2,000,000 has not been lent. This sum is still available but may be used for loans only to those students who have previously received assistance through this appropriation. No new borrower is eligible for a loan from the fund this year.

PART TIME, SPECIAL AND GRADUATE STUDENTS

Students in these categories, shown in table 19 are included in none of the preceding tabulations. Part time and special students in the past year numbered about half as many as in 1941-1942. Under the acceler-

TABLE 21—Fees, 1942-1943

	Schools
Under \$99	3
\$100 to 199	4
200 to 299	21
300 to 399	14
400 to 499	18
500 or over	26
Total	86

ated program and the programs for soldiers and sailors in school, part time students are now essentially limited to women and to men with no Army or Navy affiliation. Schools encouraging part time programs for superior students carrying research along with the work of the medical school regret this war casualty but recognize it as a necessity. In fourteen schools in the United States and Canada there were 70 such students in 1942-1943, as compared with last year's 132.

Special students include those carrying work in such fields as public health, physicians reviewing for specialty board examinations, and students preparing to become physical therapists or laboratory technicians. Curriculums in these and other fields may involve some work in the medical school. There were 190 such special students reported from twenty-six medical schools as compared with 416 in 1941-1942. Forty-two took work at Northwestern, 34 at Tennessee and 29 at Texas. Other schools reported 12 or less.

There were 434 students not candidates for the medical degree pursuing medical subjects in seventeen medical schools in the United States and Canada. A number of these are students enrolled in the graduate school of the University. Over 70 such students were enrolled in each of four schools. Illinois, Northwestern, New York University and Meharry.

GRADUATES WITH BACCALAUREATE DEGREES

At the present time no school in the United States requires a degree for admission, although four schools (Kansas, Dartmouth, Western Reserve and Vander-

bilt) in 1942-1943 required the student to earn a degree during the first year in medical school. Two Canadian schools (Montreal and Laval) required the degree for admission. Yet 76 per cent of all graduates from the seventy-five four year schools in the United States and Canada also held baccalaureate degrees, as shown in table 20. This does not include those earning the B.S. in Medicine, which are presented in the next section.

In the United States 4,099 of the 5,223 medical graduates also held baccalaureate degrees, and in Canada 253 of the 496 medical graduates also held the additional degree. The percentage of graduates in Canada holding both degrees was approximately half that of the graduates of medical schools in the United States. All the graduates of the following seven schools held both degrees: Yale, Albany, Cornell, Western Reserve, Oregon, Jefferson and Laval. Three schools having a degree requirement graduated 10 students with less than their stated college education. None of the graduates of Alberta held the baccalaureate degree.

GRADUATES WITH THE B.S. IN MEDICINE

Certain graduates of twenty-seven medical schools in the United States and 1 in Canada received the Bachelor of Science degree in Medicine. There were 416 such degrees awarded in the United States and 2 in Canada, a total of 418. The largest single group to receive the degree were 87 graduates of Illinois. Minnesota awarded 74 degrees and Indiana 46. Other schools granted 34 or less and eighteen schools granted less than 10 each.

FEEES

The eighty-six medical schools and schools of basic medical sciences in the United States and Canada have been arranged in six groups in table 21 according to the tuition fees charged resident students for the session of 1942-1943. The data are based on the average tuition fee charged for the complete medical course and includes minor charges as for matriculation, breakage, diploma and graduation.

Three medical schools, Oklahoma, Texas and West Virginia, charged less than \$99 for the year. Twenty-six schools, most of which are in the Eastern section of the country, had fees of \$500 or more. College of Medical Evangelists, Yale, George Washington, Georgetown, Loyola, Tulane, Johns Hopkins, Maryland, Tufts, Mississippi, St. Louis, Washington, Albany, Columbia, Cornell, Long Island, New York Medical, New York University, Syracuse, Buffalo, Rochester, Cincinnati, Western Reserve, Hahnemann, Pennsylvania and Pittsburgh. Mississippi is the only addition to this group in the last year. The total number in the group has not changed, since Rush is no longer in the list.

The trend toward increases in tuition continues. The average resident fees charged by medical schools in the United States in the past four years, ending with the year 1942-1943, have been \$378, \$386, \$395 and \$407.

Thirty-one schools in the United States and six in Canada make an additional charge for non-residents. These sums vary considerably in amount. Toronto charges \$5 for first year students and \$10 for others. Four schools charge \$50 or less annually. Louisiana and Michigan charge \$400 annually. South Carolina charges \$420.50 for each of its two years, and Texas a \$600 fee for each of the third and fourth year.

DESCRIPTION OF MEDICAL SCHOOLS

ARKANSAS

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE, 1209 McAlmont Street—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The faculty consists of 30 professors and 112 lecturers and instructors, a total of 142. The curriculum covers four sessions of nine months each. Entrance requirements are two years of collegiate work. The B.S. Degree is conferred at the end of the second year. An accelerated program was adopted July 1, 1943, involving the admittance and graduation of a class approximately every nine months. The fees for the four years for residents of Arkansas are \$280 per year; nonresidents are charged \$225 additional each year. The registration for 1942-1943 was 284 graduates. The present session began July 1, 1943, and ends March 27, 1944. The Dean is Byron L. Robinson, M.D.

CALIFORNIA

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus Berkeley Medical Center, San Francisco—Organized in 1864 as the Toland Medical College. The first class graduated in 1864. In 1873 it became the Medical Department of the University of California. In 1909 by legislative enactment the College of Medicine of the University of Southern California at Los Angeles became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided. Coeducational since organization. Three years of collegiate work are required for admission. For the emergency students may be accepted who have completed premedical work in two years or six terms. The work of the first year is given at Berkeley and that of the last three years at San Francisco. An accelerated program has been adopted consisting of three terms or sixteen weeks in each academic year. The medical course may now be completed in two and two-thirds years. The faculty is composed of 171 professors and 306 associates and assistants, a total of 477. The fees average \$318 per academic year; nonresidents are charged \$250 additional each year. The registration for 1942-1943 was 260 graduates. The present session began February 11, 1943, and will end October 23, 1943. The subsequent session begins October 28, 1943. The Dean is Francis S. Smyth, M.D., San Francisco.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS, Loma Linda, Boyle and Michigan Avenues, Los Angeles—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles. Coeducational since organization. Three years of collegiate work are required for admission. The faculty is composed of 43 professors and 350 associate professors, assistant professors, instructors and assistants—making a total of 395. The course covers a period of three years of four nine-month academic sessions and an additional twelve-month internship in an approved hospital. The total fees are, respectively, \$602, \$590, \$612 and \$617. The registration for 1942-1943 was 319 graduates. The present session for the sophomore, junior and senior sessions began April 4, 1943, and will end December 1944; the freshman session will begin July 1, 1943, and will end March 1944. The subsequent junior and senior sessions begin January 1944; freshmen and sophomore sessions begin April 1944. The President is Walter E. Macpherson, M.D., Los Angeles. The Dean is Newton Evans, M.D., Loma Linda. The Assistant Dean is W. F. Norwood, Ph.D., Los Angeles.

Los Angeles

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE, 3551 University Avenue—Organized in 1895 as the University of Southern California College of Medicine. First class graduated in 1888. In 1908 it became the Los Angeles Medical Department of the University of California. In 1909 the College of Physicians and Surgeons established in 1904 became the Medical Department of the University of Southern California. Its activities were suspended in 1920, reorganized in May 1928 under present title. During present national emergency will operate the year round on accelerated three term basis each term continuing for sixteen weeks. The 1943 entering class began instruction on June 28, 1943. Subsequent entering classes will begin at 8 month intervals during the emergency. The faculty consists of 156 professors and 239 instructors, assistants, and others—a total of 395, 129 of whom are now on active duty with the armed forces. An internship is required for graduation. Coeducational since organization. Annual fees (1½ academic years) amount to \$842. The registration for 1942-1943 was 218 graduates. The present session began June 28, 1943, and will end January 15, 1944. The Dean is Burrell O. Raulston, M.D.

Stanford University-San Francisco

STANFORD UNIVERSITY SCHOOL OF MEDICINE, University Campus Stanford University, 2998 Sacramento Street, San Francisco. The main buildings are in San Francisco. The laboratories of anatomy, bacteriology and experimental pathology, chemistry and physiology are located on the campus at Stanford University, which is thirty miles southeast of San Francisco adjoining the City of Palo Alto. The post office is

Stanford University. Organized in 1908, when by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. The faculty consists of 138 professors and 190 lecturers, assistants and others, a total of 328. Three years of collegiate work are required for admission. The quarter plan is in operation admitting one class each year. An internship is a requirement for graduation. The fees for the four years respectively are \$474, \$438, \$418 and \$418. The registration for 1942-1943 was 239 graduates. During 1943-1944 the quarters begin June 28, October 11, January 10, April 12, July 10. The Dean is Loren Roscoe Chandler, M.D.

COLORADO

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911. Coeducational since organization. The faculty is composed of 57 professors and 130 lecturers, instructors and assistants, a total of 187. The accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The entrance requirements for nonmilitary students are three years of collegiate work. The fees average \$239 per academic year. Nonresidents are charged \$245 additional each year. The registration for 1942-1943 was 222 graduates. The present session began March 29, 1943, and will end December 1943. The subsequent session will begin January 3, 1944. The Dean is Maurice H. Rees, M.D.

CONNECTICUT

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 333 Cedar Street—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812. Instruction began in 1813. First class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884 the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887 Yale College became Yale University. Coeducational since 1916. The faculty consists of 199 professors and 187 lecturers and assistants, a total of 386. Of this number 23 are on leave of absence for war service and about 75 other staff members are in the armed forces. The requirements for admission are two years of collegiate work. An accelerated program has been adopted involving the admittance and graduation of a class every nine months. The fees average \$306 per academic year. The registration for 1942-1943 was 214 graduates. The present session began April 5, 1943, and will end December 18, 1943. The subsequent session will begin December 27, 1943. The Dean is Francis G. Blake, M.D.

DISTRICT OF COLUMBIA

Washington

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 3900 Reservoir Road N.W.—Organized in 1851. First class graduated in 1852. The faculty is composed of 61 professors, 42 associate professors, 13 assistant professors, 18 adjunct professors and 146 instructors, a total of 280, of whom 65 are on military leave. Minimum requirements for admission are the complete premedical Army Specialized Training Program or Navy College Training Program. Civilian students must finish at least two full years of premedical work in an approved college or arts and sciences. The accelerated program permits admission and graduation of a class every nine months. The fees average \$320 per academic year. The registration for 1942-1943 was 297 graduates. The present session began March 15, 1943, and will end December 15, 1943. The subsequent session begins January 3, 1944. The Dean is David V. McCauley, S.J., Ph.D.

GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, 1335 H Street N.W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except in 1834 to 1838 and 1861 to 1863 inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904 by an Act of Congress the title of George Washington University was granted to the institution. Coeducational since 1884. The faculty is composed of 81 professors and 150 instructors, demonstrators and assistants, a total of 231. Sixty semester hours of collegiate work are required for admission. An accelerated program has been adopted involving the admittance and graduation of a class every nine months. The fees average \$350 per academic year. The registration for 1942-1943 was 281 graduates. The present session began March 1, 1943, and will end November 6, 1943. The subsequent session will begin November 22, 1943. The Dean is Walter A. Bloedorn, M.D.

HOWARD UNIVERSITY COLLEGE OF MEDICINE, Fifth and W Streets N.W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Negro students comprise a majority of those in attendance. The faculty comprises 41 professors and 61 instructors and assistants, a total of 102. The admission requirements are at least two years of collegiate work. The course covers four years of thirty-three weeks each. The fees are respectively \$269, \$269, \$259 and \$260. Registration for 1942-1943 was 226 graduates. The curriculum was accelerated with the beginning class of September 1942. Classes will be admitted every 9 months as follows: June 1943, March 1944, January 1945. The 1943-1944 session began June 12, 1943, and ends March 18, 1944. The Dean is John Wesley Lawlab, M.D.

GEORGIA

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street—Organized in 1854 as the Atlanta Medical College. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915, assumed present title in 1917. Two years of collegiate work are required for admission. The course of study is four academic years of thirty-two weeks each. By the use of the long summer vacation as a teaching quarter, the time required for the completion of these four academic years has been reduced from four to three calendar years. This is in line with the accelerated program adopted by most medical schools during the present emergency. The fees for each of the four academic years are \$357. The registration for 1942-1943 was 226, graduates, 52. Classes this year began on March 23, 1943 and will end December 23, 1943. The subsequent session will begin January 3, 1944 (tentative). The Dean is Russell H. Oppenheimer, M.D.

Augusta

UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE, University Place—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. After 1873 it was known as the Medical Department of the University of Georgia. On July 1, 1933, the name was changed to the University of Georgia School of Medicine. Property transferred to the University in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. The faculty includes 62 professors and 24 assistants, a total of 86. Three years of collegiate work are required for admission (except that for the duration of the present war the minimum requirement will be two years). An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average \$225 per academic year for residents of Georgia; nonresidents are not admitted. The registration for 1942-1943 was 242, graduates, 46. The present session began April 7, 1943, and will end December 20, 1943. The subsequent session will begin January 3, 1944. The Dean is G. Lombard Kelly, M.D.

ILLINOIS

Chicago

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 South Wolcott Avenue—Organized in 1915 by acquisition of Bennett Medical College, which had been organized in 1869. Facilities enlarged upon by acquisition of Chicago College of Medicine and Surgery, faculties in basic medical sciences put on full time basis and present title assumed in 1917. Operated as an organic part of Loyola University. Coeducational since organization. The faculty is composed of 38 full time professors and 288 associate and assistant professors, associates, instructors and assistants, a total of 326. Ninety semester hours of collegiate work are required for admission. The fees average \$515 per academic year. The registration for 1942-1943 was 290, graduates, 114. The present session for all classes began on April 19, 1943 and will end December 31, 1943. The subsequent session will begin January 3, 1944. The Dean is Francis J. Braceland, M.D.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The faculty comprises 31 professors, 139 associate and assistant professors and 493 associates, instructors and clinical assistants, a total of 663. For the duration of the war the requirement for admission is two years of collegiate work. The B.S. in medicine degree may be conferred before the end of the sophomore year. An accelerated program has been adopted involving the acceptance of a class every nine months. A hospital internship is required for graduation. The total fees are \$414 each year. The registration for 1942-1943 was 581, graduates, 138. The present session began March 29, 1943 and will end December 18, 1943. The subsequent session will begin December 28, 1943. The Dean is J. Roscoe Miller, M.D.

UNIVERSITY OF CHICAGO, THE SCHOOL OF MEDICINE, Fifty Eighth Street and Ellis Avenue—Organized in 1924, as a part of the Ogden Graduate School of Science of the University of Chicago. In 1932 when the University of Chicago reorganized its departments, the medical departments were included in the Biological Sciences Division. The work of the first two years in the medical courses has been given on the University Quadrangles since 1899 but the last two years were offered only at Rush Medical College which was affiliated with the university until 1927 when actual work in the clinical departments on the campus began. After that time, candidates for the degree of Doctor of Medicine could take the work of the first two years on the campus and the work of the third and fourth years either on the campus or at the Rush Medical College. In June 1940 Rush Medical College became affiliated with the University of Illinois College of Medicine. All undergraduate instruction is now given only on the campus of the University of Chicago. The faculty of the School of Medicine is composed of 90 professors, 125 associates, instructors and others, a total of 215. The requirements for admission are 80 semester hours of collegiate work or completion of the Army or Navy premedical program, whether or not the applicant is actually in the Army or Navy. The B.S. degree may be obtained during the second year. The curriculum covers twelve quarters of work.

Sixty-five students are admitted to the first year class every nine months. The tuition fee averages \$450. The registration for 1942-1943 was 251 graduates, 42. During the academic year 1943-1944 the quarters will begin June 22, September 28, January 3 and March 27. Classes will be admitted only in January and September 1944. All correspondence relating to general policies should be addressed to W. H. Tishferro, Ph.D., Dean of the Division of Biological Sciences, or to A. C. Bachmeyer, M.D., Associate Dean, and that pertaining to student affairs to B. C. H. Harvey, M.D., Dean of Medical Students.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 1853 West Polk Street—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was cancelled in June 1912, and was restored in March 1913, when the present title was assumed. Coeducational since 1898. Two years of collegiate work are required for admission. The accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The B.S. in medicine degree is conferred at the end of the second year. The faculty is composed of 165 professors and 394 associates, instructors and assistants, a total of 559. The fees for residents of Illinois average \$288 per academic year; nonresidents pay an additional fee of \$150. The registration for 1942-1943 was 661, graduates, 151. The present session for juniors and seniors began March 29, 1943 and will end December 17, 1943. Freshmen and sophomores enrolled June 28, 1943 and will complete the year March 25, 1944. The Dean is David J. Davis, M.D., until September 1, 1943, Raymond B. Allen, M.D., after September 1, 1943.

INDIANA

Bloomington-Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE, Bloomington, 1040 West Michigan Street, Indianapolis—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The faculty consists of 334 professors, lecturers, associates and assistants. The B.S. degree in medicine is conferred. The school has been on an all time program since May 11, 1942. Each calendar year is divided into three terms. The work given in two terms is equivalent to the work formerly given in a year. The work of the first two terms is given at Bloomington, the remainder of the work at Indianapolis. Regular fee for two terms of work is \$217 for residents of Indiana and \$422 for nonresidents. The registration for the session 1942 was 486, graduates, 104. The next regular class will start work on September 6, 1943. The Dean is Willis D. Gatch, M.D., Indianapolis.

IOWA

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. The faculty is made up of 56 professors, 74 lecturers, demonstrators and assistants, a total of 130. Three years of collegiate work are required for admission. The B.A. degree in the combined course of liberal arts and medicine is conferred. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The tuition fee is \$226 each year for residents of Iowa and \$490 for nonresidents. The registration for 1942-1943 was 311, graduates, 63. The present session began March 1, 1943 and will end December 18, 1943. The subsequent session begins January 3, 1944. The Dean is Ewen Murchison MacEwen, M.D.

KANSAS

Lawrence-Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE, Lawrence, 39th Street and Rainbow Boulevard, Kansas City—Organized in 1880. It offered only the first two years of the medical course until 1905 when it merged with the Kansas City (Mo.) Medical College, founded in 1869 and the College of Physicians and Surgeons founded in 1894 and the Medico-Chirurgical College, founded in 1897. Absorbed Kansas Medical College in 1913. The first class graduated in 1906. The clinical courses are given at Kansas City. Coeducational since 1880. The faculty includes 78 professors and 136 instructors, assistants and others, a total of 214. The requirement for admission is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees for residents of the state average \$229.50; nonresidents \$437. The registration for 1942-1943 was 300, graduates 92. The first session for freshmen began May 24, 1943. Upper classmen were enrolled May 19, 1943 and will complete the year January 27, 1944. The Dean is H. R. Wahl, M.D., Kansas City.

KENTUCKY

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, 101 West Chestnut Street—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838 and a class graduated each year except 1863. In 1846 the name was changed to University of Louisville.

ville Medical Department. In 1907 it absorbed the Kentucky University Medical Department. In 1908 the Louisville Medical College the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work are the minimum requirement for admission. Preference is given applicants with a degree or three college years leading to a degree. The faculty numbers 72 professors and 70 assistant instructors and others a total of 145. An accelerated program has been adopted involving the admittance and graduation of a class every nine months. Fees average \$452 per academic year. The registration for 1942-1943 was 365, graduates 92. The present session began April 1, 1943 and will end December 4, 1943. The subsequent session will begin January 5, 1944. The Dean is John Walker Moore, M.D.

LOUISIANA

New Orleans

LOUISIANA STATE UNIVERSITY SCHOOL OF MEDICINE 1542 Tulane Avenue.—Organized January 1931 as Louisiana State University Medical Center. Present title in 1939. Coeducational. First session October 1931 with students of first and third year. Faculty comprises 25 professors and 103 associate professors, assistant professors, instructors and assistants a total of 128. Course covers four sessions of not less than 32 weeks each. Under the accelerated program adopted for the duration of the war a first year class will be admitted each nine months and the entire course will be completed within a period of three years. A minimum of two years collegiate work is required for admission. Total fees \$134 each year for residents of Louisiana, additional tuition of \$400 each year for nonresidents. The registration for 1942-1943 was 344 graduates 78. The present session began March 11, 1943 and will end December 15, 1943. The Dean is B. I. Burns, M.D.

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863 inclusive. It became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. The faculty comprises 31 professors and 220 associate and assistant professors, instructors and assistants a total of 251. An accelerated program has been adopted involving the admittance of a class at the beginning of each ninth month and the graduation of a class approximately every eight months. A minimum of two years of collegiate work is required for admission. Total fees average \$547 per academic year. The registration for 1942-1943 was 310 graduates 121. The present session began July 1, 1943 and will end February 12, 1944. The Dean is Hiram W. Kostmayer, M.D.

MARYLAND

Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE 710 North Washington Street.—The nucleus of a Medical Faculty was constituted in 1883. Systematic postgraduate instruction in pathology and bacteriology was begun in 1886. School was fully organized and opened in 1893. The first class graduated in 1897. Coeducational since organization. The faculty consists of 70 professors and 397 instructors, assistants and others a total of 467. The requirement for admission is temporarily two college years. An accelerated program has been adopted involving the admittance and graduation of a class every nine months. The fees average \$627 per academic year. The registration for 1942-1943 was 288 graduates 73. The present session began March 1, 1943 and will end November 25, 1943. The subsequent class will begin November 29, 1943. The Dean is Alan M. Chesney, M.D.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND COLLEGE OF PHYSICIANS AND SURGEONS Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. The faculty consists of 52 professors and 332 associate and assistant professors and others a total of 384 of which 137 are now absent serving with the Armed Forces. Premedical college training reduced from three to two years for the duration of the war. The medical school is now running under an accelerated program for the duration of the war and requires the admission of a freshman class approximately every nine months. The tuition fees average \$501 for residents of the state, for nonresidents approximately \$150 additional. The registration for 1942-1943 session was 373 graduates 98. Present session began April 8, 1943 and will end December 23, 1943. The next subsequent session will begin January 13, 1944. The Dean is Robert U. Patterson, M.D.

MASSACHUSETTS

Boston

BOSTON UNIVERSITY SCHOOL OF MEDICINE 80 East Concord Street.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College founded in 1848 was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Two years of collegiate work are required for admission. The faculty includes 22 professors, 207 associates and others a total of 229. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. Total fees average \$480 per year. The registration for 1942-1943 was 225 graduates 44. The present session began March 31, 1943 and will end December 7, 1943 for first year students, December 14, 1943 second and third year students and December 11, 1943 for fourth year students. The subsequent session begins December 31, 1943. The Dean is Bennett F. Avery, M.D.

HARVARD MEDICAL SCHOOL 25 Shattuck Street.—Organized in 1782. The first class graduated in 1788. It has a faculty of 205 members and 480 other instructors and assistants a total of 685. Two years of collegiate work are required for admission. The accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average \$420 plus \$5 the first year for matriculation. The registration for 1942-1943 was 540 graduates 145. The present session began March 8, 1943 and will end December 18, 1943. The subsequent session begins January 3, 1944. The Dean is C. Sidney Burwell, M.D.

TUFTS COLLEGE MEDICAL SCHOOL 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. It has a faculty of 107 professors and 335 assistant lecturers and others a total of 442. At least two academic years of college study are required for admission. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The total fees for each of the four years respectively are \$512, \$507, \$507 and \$517. The registration for 1942-1943 was 411 graduates 94. The present session began April 7, 1943 and will end December 18, 1943. The subsequent class will begin about January 1, 1944. The Acting Dean is Dwight O'Hara, M.D.

MICHIGAN

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since 1870. It has a faculty of 29 professors, 18 associate professors, 32 assistant professors, 100 assistant instructors and lecturers a total of 179. The entrance requirements are ninety semester hours. An accelerated program has been adopted involving the admittance of a class annually and the graduation of a class every nine months. The fees average \$250 per academic year for nonresidents, \$400 a year. The registration for 1942-1943 was 498 graduates, 98. The present session for upper classes began June 28, 1943 and will end February 19, 1944. Freshmen will enroll October 25, 1943. The Dean is A. C. Furstenberg, M.D.

Detroit

WAYNE UNIVERSITY COLLEGE OF MEDICINE 1516 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of the Detroit Medical College (organized in 1868) and the Michigan College of Medicine (organized in 1879). Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1869. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine as a part of the program of consolidation of the Detroit city colleges into a university system. Coeducational since 1917. Entrance requirement is 60 semester hours from an accredited college or university for the duration of the war. The faculty consists of 46 professors, 302 lecturers and others a total of 348. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average \$325 for Wayne County residents and for nonresidents \$425. The registration for 1942-1943 was 237 graduates 135. The present session began April 5, 1943 and will end December 18, 1943. The Dean is Edgar H. Norris, M.D.

MINNESOTA

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The faculty includes 214 professors of whom 79 are on full time appointment and 135 on part time and 143 instructors, 35 of whom are on full time appointment and 108 on part time a total of 357. An accelerated program has been adopted involving the admittance and graduation of a class every nine months. The entrance requirements are three years or university work which must include six semester credits of rhetoric, eight semester credits of physics, thirteen credits of general chemistry, qualitative and quantitative analysis, organic and physical chemistry, eight credits of general zoology and genetics and eugenics, four credits of general psychology and a reading knowledge of scientific German with a C average in all subjects and in the sciences. For the duration of the war entrance requirements have been reduced to two years of college work and physical chemistry, genetics and eugenics, psychology and German may be waived by the admission committee. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the course. The M.D. degree is conferred after a year of intern work of advanced laboratory work or of public health work has been completed. Total fees are \$252 per academic year for residents and \$477 for nonresidents. The registration for 1942-1943 was 493 graduates, 111. The academic year 1943 began March 29 and will end December 16, 1943. The subsequent class will begin January 4, 1944. The Dean is Harold S. Diehl, M.D.

MISSOURI

St. Louis

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE 1402 South Grand Boulevard.—Organized in 1901 as the Marion Sims-Beaumont Medical College by union of Marion Sims Medical College organized in 1870 and

Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The faculty is composed of 79 professors and 291 instructors and assistants, a total of 370. The completion of three years of college study is the minimum admission requirement but students presenting meritorious credits in excess of the minimum are accepted by preference. During the war period the minimal entrance requirements, however, are two years of college with 60 semester hours of credit. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average \$536 per academic year. The registration for 1942-1943 was 464, graduates, 112. The present session for freshmen began February 23 and for upper classmen March 2, 1943 and will end November 28, 1944. The subsequent session begins November 29, 1944. The Dean is Alphonse M. Schwittalla, S. J., Ph. D.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. The faculty comprises 142 professors and 303 lecturers, instructors and others, a total of 445. For the duration of the war the entrance requirement has been reduced to two years of collegiate work. The B. S. degree in medicine is conferred at the end of the third or fourth year. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average \$526. The registration for 1942-1943 was 374, graduates, 94. The present session began March 29, 1943 and will end December 18, 1943. The subsequent session begins January 3, 1944. The Dean is Philip A. Shaffer, Ph. D.

NEBRASKA

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, 306 North Fourteenth Street—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. It has a faculty of 79 professors and 76 instructors, lecturers and assistants, a total of 155. Sixty-four semester hours of collegiate work are required for admission. The B. S. degree in medicine is conferred at the end of the second year. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average \$376 per academic year and \$100 additional each year for students who have not taken the major part of their work at Creighton University. The registration for 1942-1943 was 241, graduates, 44. The present session began March 18, 1943 and will end December 20, 1943. The subsequent session will begin January 4, 1944. The Dean is Charles M. Wilhelm, M. D.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty Second Street and Dewey Avenue—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. The faculty is composed of 78 professors and 54 lecturers and instructors, a total of 132. Two years of collegiate work are required for admission. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The B. S. degree in medicine is conferred at the end of the second year. The fees average \$250 per academic year. The registration for 1942-1943 was 332, graduates, 74. The present session began March 26, 1943 and will end December 18, 1943. The subsequent session will begin January 3, 1944. The Dean is C. W. M. Poynter, M. D.

NEW YORK

Albany

ALBANY MEDICAL COLLEGE, 47 New Scotland Avenue—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The faculty is composed of 93 professors and 118 instructors, assistants and others, a total of 211. For the duration students who have completed two years of college and who have the proper specific qualifications will be admitted. This change in the requirements for admission has been instituted for the duration of the present national emergency. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The fees average \$532 per academic year. The registration for 1942-1943 was 155, graduates, 34. The present session began March 29, 1943 and will end December 24, 1943. The subsequent session will begin January 3, 1944. The Dean is R. S. Cunningham, M. D.

Brooklyn

LONG ISLAND COLLEGE OF MEDICINE, 350 Henry Street—Chartered in 1930, was originally organized in 1858 as The Long Island College Hospital. From the collegiate department the first class was graduated in 1860 and the last class in 1930. The first class of the Long Island College of Medicine was graduated in 1931. It is coeducational. It has a faculty of 131 professors, associate assistant, clinical and assistant clinical professors, and 196 lecturers, associates, instructors, assistants, and others, a total of 327. For the duration of the war two years of collegiate work, including specified courses, are required for admission. The medical course covers four academic years but is being given in three calendar years for the duration of the war. The fees average \$610 per academic year. The registration for 1942-1943 was 399, graduates,

88. The present session began March 29, 1943 and will end December 23, 1943. The subsequent session begins January 3, 1944. The President and Dean is Jean Alonzo Curran, M. D.

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, 24 High Street—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The faculty is composed of 99 professors and 177 associates, assistants and others, a total of 276. The minimum requirement for admission is two years of collegiate work including certain prescribed science subjects. An accelerated program has been adopted admitting a freshman class every nine months. The fees for the entire course are \$2,000. The registration for 1942-1943 was 276, graduates, 66. The present session for freshmen began July 6, 1943 and ends March 25, 1944. The subsequent session for freshmen begins April 3, 1944. The Dean is Edward W. Koch, M. D.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 630 West One Hundred and Sixty Eighth Street—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. The faculty is composed of 290 professors and 614 instructors, demonstrators and others, a total of 904. Two years of collegiate work are required for admission. During the war, the school will remain in session throughout the year and entering classes will be enrolled at intervals of approximately nine months. Fees average \$538 per academic year. The registration for 1942-1943 was 448, graduates, 95. The present session began March 22, 1943 and will end December 23, 1943. The subsequent session begins January 1, 1944. The Dean is Willard C. Rappleye, M. D.

NEW YORK MEDICAL COLLEGE, FLOWER AND FIFTH AVENUE HOSPITALS, 1 East 105th Street—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869, the title New York Homeopathic Medical College and Hospital in 1887, the title New York Homeopathic Medical College and Flower Hospital in 1908, the title New York Medical College and Flower Hospital in 1936. The present title of New York Medical College, Flower and Fifth Avenue Hospitals, June 22, 1938. The first class graduated in 1861. Coeducational since 1919. Two years of college work are required for admission. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. It has a faculty of 67 professors and associate professors, 48 assistant professors, 291 lecturers and assistants, a total of 406. The fees average \$663 per academic year. The registration for 1942-1943 was 340, graduates 68. The present session began March 29, 1943 and will end Dec 20, 1943. The subsequent session begins January 3, 1944. The President and Dean is J. A. W. Hetrick, M. D.

NEW YORK UNIVERSITY COLLEGE OF MEDICINE, 477 First Avenue—The Medical Department of New York University (then called the University of the City of New York) was organized in 1841. In 1898 it united with the Bellevue Hospital Medical College, organized in 1861, under the name of University and Bellevue Hospital Medical College. In 1935 the name was changed to New York University College of Medicine. Coeducational since 1919. The faculty is composed of 203 professors, associate, assistant, clinical and assistant clinical professors and 348 lecturers, instructors and others, a total of 551. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. Entrance requirements are two full years of study in an approved college of arts and sciences. The fees average \$600 per academic session. The registration for 1942-1943 was 505, graduates, 124. The present session began April 5, 1943 and will end in December 1943. The subsequent session begins January 3, 1944. The Acting Dean is Donald Sheehan, M. D.

CORNELL UNIVERSITY MEDICAL COLLEGE, 1300 York Avenue—Organized in 1898. Coeducational since organization. First year teaching was given formerly to approximately one third of the class at Ithaca but in 1938 this division was discontinued and all instruction is now in New York City. The faculty is composed of 171 professors and 304 instructors, assistants and others, a total of 525. All students admitted are from approved colleges for premedical training. In the past students accepted have been holders of a college degree or candidates for the degree on successful completion of the first year of medicine. Although premedical training is still regarded as a desirable attainment but for the duration of the present emergency students may be accepted who have completed only two years of college. An accelerated program has been adopted whereby a class graduates and a new class enters every nine months. The fees average \$622 per academic year. The registration for 1942-1943 was 314, graduates 75. The present session began April 5, 1943. The subsequent session will begin January 3, 1944. The Dean is Joseph C. Hinsey, Ph. D.

Rochester

UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE AND DENTISTRY, 260 Crittenden Boulevard—Organized in 1923 as the Medical Department of the University of Rochester. Coeducational since organization. The faculty is composed of 74 professors, 207 lecturers, assistants, instructors and others, a total of 281. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. Three years of collegiate work are required for admission.

sion The fees average \$500 per academic year The registration for 1942-1943 was 245 graduates 50 The present session began March 29 1943 and will end December 18 1943 The subsequent session begins January 3 1944 The Dean is George Hoyt Whipple M.D.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE 766 Irving Avenue—Organized in 1872 when the Geneva Medical College chartered in 1834 was removed to Syracuse under the title The College of Physicians and Surgeons of Syracuse University Present title assumed in 1875 when a compulsory three-year graded course was established The first class graduated in 1875 and a class graduated each subsequent year In 1889 the amalgamation with the university was made complete Course extended to four years in 1896 Coeducational since organization The faculty is composed of 64 professors and 192 associate and assistant professors lecturers and instructors a total of 256 Two years of a recognized college course are required for admission An accelerated program has been adopted involving the completion of the four-year course in three years admitting a freshman class every nine months The fees average \$600 per academic year The enrollment for 1942-1943 was 184 graduates 41 The present session for upper classmen began April 5 1943 and will end December 1943 and for freshmen July 1943 The subsequent session will begin in April 1944 The Dean is H. G. Weiskotten M.D.

NORTH CAROLINA

Durham

DUKE UNIVERSITY SCHOOL OF MEDICINE—Organized in 1925 The first class was admitted October 1 1930 Coeducational The faculty is composed of 11 professors and 213 associate and assistant professors lecturers instructors and assistants a total of 224 The premedical requirement is two years of college work The academic year consists of four quarters of eleven weeks each which must be taken consecutively with graduation in three calendar years The B.S. degree in medicine may be conferred for special work after six quarters Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years Active duty with the Army Navy or Public Health Service can replace the second year The fees are \$450 for each year of three quarters The registration for 1942-1943 was 264 graduates 61 During 1943-1944 the quarters begin July 1 September 27 January 3 March 31 and end September 22 December 20 March 26 and June 22 The first-year students will be enrolled January 3 1944 and September 29 1944 The Dean is Wilburt C. Davison M.D.

OHIO

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE Eden and Bethesda Avenues—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852) The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896 Under a similar agreement March 2 1909 the Miami Medical College also merged with the University when the title of Ohio-Miami Medical College of the University of Cincinnati was taken Present title assumed in 1915 Coeducational since organization Candidates for admission to the freshman class will be accepted in accordance with the Army and Navy plan for the training of medical students for the duration of the war Liberal Arts students of the University of Cincinnati may sign up for the seven-year combined Liberal Arts and Medical program The B.S. degree is granted on the joint recommendation of the faculties of the College of Liberal Arts and Medicine at the end of the first medical year The faculty consists of 112 professors associate and assistant professors 350 instructors etc. a total of 462 During the period of the war emergency the college will operate on an accelerated program A new class will be admitted every nine months Each session will consist of thirty-six weeks of work and there will be a short recess between the major sessions The present session began March 22 1943 and will end December 1943 The subsequent class will be admitted December 1943 Tuition is as follows For legal residents of Cincinnati \$435 a year plus breakage fees (\$50 additional for those not legal residents) The registration for 1942-1943 was 308 graduates 76 The Dean is Stanley Dorst M.D.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE 2109 Adelbert Road—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College The first class graduated in 1844 (a celebration of the Centenary is planned for October 27 1943) The school assumed the present title in 1881 In 1910 the Cleveland College of Physicians and Surgeons was merged Coeducational since 1919 The faculty includes 101 professors and 276 lecturers assistants and others a total of 377 The curriculum covers four scholastic years of 38 weeks each including four weeks of intermission During the war emergency these will be continuous so that the entire course will be completed in 150 weeks For the duration of the war the entrance requirements have been reduced to two years of college work The fees average \$529 per academic year The registration for 1942-1943 was 306 graduates 69 The present session began March 1 1943 and will end October 28 1943 The subsequent session begins November 22 1943 The Dean is Torald Sollmann M.D.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE Neil and Eleventh Avenues—Organized in 1907 as the Starling Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College which was chartered March 3 1834) with the Ohio

Medical University (organized 1890) In 1914 it became an integral part of the Ohio State University with its present title Coeducational since organization The faculty consists of 93 professors associate and assistant professors 119 lecturers instructors demonstrators and others a total of 212 of whom 70 are on military leave Two years of collegiate work are required for admission An accelerated program has been adopted involving the admittance and graduation of a class every nine months Tuition fees average \$318 per academic year and \$150 additional for nonresidents The registration for 1942-1943 was 300 graduates 67 The present session began March 30 1943 and will end December 17 1943 The subsequent session will begin January 4 1944 The Acting Dean is Rollo C. Baker Ph.D.

OKLAHOMA

Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE 801 East Thirteenth Street—Organized in 1900 Until 1910 gave only the first two years of the medical course at Norman Okla., after which a clinical department was established at Oklahoma City by taking over the Medical School of Epworth University The first class graduated in 1911 Coeducational since organization A new medical school building and a second teaching hospital became available in 1928 and since September of that year the entire four-year course has been given in Oklahoma City It has a faculty of 28 professors 24 associate professors 26 assistant professors and 120 associates lecturers visiting lecturers instructors and assistants a total of 198 Two years of college work are a prerequisite for admission during the war The course covers four years of nine months each An accelerated program was adopted beginning May 10 1943 involving admission and graduation of a class every nine months Fees \$50 maintenance and incidental fee per semester Other annual course fees average \$128 \$95 \$53 and \$58 in the order given beginning with the freshman year For students not residents of Oklahoma there is a tuition charge of \$500 a year plus laboratory and course fees as indicated for the different years The registration for 1942-1943 was 245 graduates 59 The present session began May 10 1943 and ends in December 1943 The next session begins January 6 1944 and ends in September 1944 The Dean is Tom Lowry M.D. The Acting Dean is Harold A. Shoemaker Ph.D.

OREGON

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL Marquam Hill—Organized in 1887 The first class graduated in 1888 and a class graduated each subsequent year except 1898 The Willamette University Medical Department was merged in 1913 Coeducational since organization It has a faculty of 91 professors and 164 lecturers assistants and others a total of 255 Entrance requirements are 82 semester hours of collegiate work An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months The total fees are respectively \$380 \$375 \$370 and \$376 for residents of Oregon and \$60 a year additional for nonresidents The registration for 1942-1943 was 273 graduates 58 The present session began March 29 1943 and will end December 23 1943 The subsequent session will begin January 3 1944 The Dean is D. W. E. Baird M.D.

PENNSYLVANIA

Philadelphia

THE HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA 235 North Fifteenth Street—Organized in 1848 as The Homeopathic Medical College of Pennsylvania In 1869 it united with The Hahnemann Medical College of Philadelphia taking the latter title Assumed present title in 1885 The first class graduated in 1849 Coeducational beginning with 1941-1942 session Three years of collegiate work in an approved college of arts and sciences are required for admission It has a faculty of 113 professors and 114 lecturers instructors and others a total of 227 An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months Fees are respectively \$515 \$512 \$512 and \$535 The registration for 1942-1943 was 512 graduates 126 The present session began April 5 1943 and will end December 23 1943 The subsequent session will begin January 3 1944 The Dean is William A. Pearson M.D.

JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA 1025 Walnut Street—Organized in 1825 as the Medical Department of Jefferson College Canonsburg Pa. It was chartered with its present title in 1838 Classes have been graduated annually beginning 1826 In 1838 a separate university charter was granted without change of title since which time it has continued under the direction of its own board of trustees. It has a faculty of 92 professors associate and assistant professors and 223 associates lecturers demonstrators and instructors a total of 320 The bachelor's degree requirement for admission has been suspended for the duration An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months The total fees for the current session are respectively \$505 \$490 \$430 \$450 (Transfers \$480) The registration for 1942-1943 was 556 graduates 142 Registration for the present session is 571 The current session for freshmen and sophomores extends from April 12 1943 to December 14 1943 for juniors and seniors from May 3 1943 to January 7 1944 The subsequent session for freshmen sophomores and juniors begins January 10 1944 and for seniors January 17 1944 The Dean is William Harvey Perkins M.D.

TEMPLE UNIVERSITY SCHOOL OF MEDICINE 3400 North Broad Street—Organized in 1901 The first class graduated in 1907 Coeducational since organization The faculty numbers 33 professors and 223 associates assistants and others a total of 256 An accelerated program has been

adopted involving the admittance and graduation of a class approximately every nine months. Two years of collegiate work are required for admission. The fees average \$492 per academic year. The registration for 1942-1943 was 463, graduates, 120. The present session for upper classes began April 1, 1943 and will end December 16, 1943. The subsequent session begins January 3, 1944. The Dean is William N. Parkinson, M.D.

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty Sixth and Pine Streets—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. The faculty consists of 130 professors, associate and assistant professors, and 448 lecturers, associates, instructors and others, a total of 578. Three years of collegiate work are required for admission. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The tuition fee is \$500 each year, with a deposit fee of \$15, a general fee including student health of \$15 and a matriculation fee of \$5. The registration for 1942-1943 was 511 graduates, 130. The present session began April 5, 1943, and will end December 22, 1943. The subsequent session begins January 3, 1944. The Dean is William Pepper, M.D.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Henry Avenue and Abbottsford Road, East Falls—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 87 professors and 61 assistants, lecturers and others, a total of 148. At least three years of collegiate work are required for admission and candidates with a degree are given preference. The curriculum covers four years of eight and one half months each. Total fees are \$500 yearly. The registration for 1942-1943 was 119, graduates, 22. The present session for third and fourth year students began July 5, 1943, and will end March 16, 1944. For first and second year students the next session will begin September 1, 1943, and end May 20, 1944. The Dean is Margaret D. Craighill, M.D., who is on leave of absence for military service. The Acting Dean is Marion Fay, Ph.D.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. The faculty is composed of 30 professors and 370 associates, assistants and others, a total of 400. Entrance requirements are two years of collegiate work. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. The total fees are \$500 each year. The registration for 1942-1943 was 336, graduates, 72. The present session began April 5, 1943 and will end about December 18, 1943. The subsequent session will begin January 3, 1944. The Dean is W. S. McElroy, M.D.

SOUTH CAROLINA

Charleston

MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. It has a faculty of 43 professors and 73 associates, instructors and others, a total of 116. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. Two years of collegiate work are required for admission. The total fees are \$272 each year. Fees for nonresidents of the state, \$422 each year. The registration for 1942-1943 was 189, graduates, 48. The present session began March 29, 1943 and will end December 22, 1943. The subsequent class will begin January 3, 1944. The Dean is Robert Wilson, M.D.

TENNESSEE

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 874 Union Avenue—Organized in 1876 at Nashville as Nashville Medical College. First class graduated in 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. The faculty includes 139 professors and 157 assistants, instructors and others, a total of 296. Two years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees are \$120 quarterly. For residents of the state the charge is reduced \$50 each quarter. The registration for 1942-1943 was 510, graduates, 109. During the academic year of 1943-1944 the quarters

begin July 5, September 23, January 3 and March 23, and end September 22, December 11, March 18 and June 7. The Dean is O. W. Hyman, Ph.D.

Nashville

MEHARRY MEDICAL COLLEGE, Eighteenth Avenue North and Heffernan Street (For Negro Youth)—This school was organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. The faculty is made up of 49 professors and 30 instructors and lecturers, a total of 79. Two years' work in a college of liberal arts are required for admission. Tuition fees are, respectively, \$325, \$315, \$305 and \$315 each year. The curriculum covers four academic years of thirty four weeks each. Registration for 1942-1943 was 242, graduates, 50. The next session begins March 1944. In September 1942, Meharry Medical College instituted the quarter system. Meharry initiated an accelerated schedule in July 1943. The Dean is Michael J. Bent, M.D., the President is Edward L. Turner, M.D.

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty First Avenue South at Edgehill—This school was founded in 1874. The first class graduated in 1875. Coeducational since 1925. The faculty numbers 255. For matriculation, civilian students must be graduates of collegiate institutions of recognized standing or seniors in absentia, who will receive the bachelor degree from their college after having completed successfully one year of work in the school of medicine. Army and Navy students will be accepted on completion of the Army or Navy premedical program. The course covers four academic years of nearly nine months each, but due to the accelerated program, the four year course is now completed in three calendar years. The fees average \$465 per academic year. The registration for 1942-1943 was 209, graduates, 52. The present session began March 24, 1943 and will end December 22, 1943, the following session begins January 3, 1944. The Dean is Waller S. Leathers, M.D.

TEXAS

Galveston

UNIVERSITY OF TEXAS MEDICAL BRANCH, 912 Avenue B—Organized in 1891. The first class graduated in 1892. Coeducational since organization. It has a faculty of 61 professors (including associate and assistant professors) and 106 instructors and assistants, a total of 167. The Medical Branch is operating on an accelerated program offering three terms of 16 weeks each per calendar year to correlate it with the needs of the Army and Navy for medical education. The fees average \$92.50 per academic year, including health fees for medical care and hospitalization. The registration for 1942-1943 was 393, graduates, 87. The present freshman class was matriculated March 15, 1943. There will be a second freshman class to matriculate about November 1, 1943. The last class graduated July 31, 1943. Plans now call for the acceptance of new students about every eight months. The Dean is Chauncey D. Leake, Ph.D.

Houston

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 509 Lincoln Street, Houston, Texas—Organized in 1900 at Dallas as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. The school was moved to Houston in 1943. Coeducational since organization. The first class graduated in 1901. Entrance requirements are 80 semester hours of collegiate work. The course covers four years of eight months each. An accelerated program has been adopted beginning July 12, 1943, involving the admittance and graduation of a class every nine months. The fees are, respectively, \$423, \$413, \$403, \$428. The registration for 1942-1943 was 318, graduates, 77. The present session began July 12, 1943 and ends March 13, 1944. The Dean is W. H. Moursund, M.D.

VERMONT

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park—Organized with complete course in 1822. Classes graduated in 1823 to 1836 inclusive when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. It has a faculty of 37 professors and 45 instructors, and assistants, a total of 102. Army and Navy premedical curricula accepted for admission. An accelerated program has been adopted involving the admittance and graduation of a class every nine months. For residents of Vermont the tuition fee is \$100 each session. Nonresidents are charged an additional \$150 each session. A \$25 fee is charged for the doctor's degree. The registration for 1942-1943 was 133 graduates, 31. The present session began April 12, 1943 and will end December 21, 1943. The subsequent session begins January 3, 1944. The Dean is Clarence H. Beecher, M.D.

VIRGINIA

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE—Organized in 1827. Classes were graduated in 1823 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. An accelerated program has been adopted involving the admittance and graduation of a class approximately every nine months. It has a faculty of 47 professors and 47 lecturers, instructors, assistants and others, a total of 94. Two years of college work are required for admission. For residents of Virginia the total fees average \$388 per academic year. Nonresidents are charged an additional \$50 each year. The registration for 1942-1943 was 133 graduates, 31. The present session began April 12, 1943 and will end December 21, 1943. The subsequent session begins January 3, 1944. The Dean is Clarence H. Beecher, M.D.

1943 was 258 graduates 55 The present session began March 29 1943 and will end December 20 1943 The subsequent session will begin December 29 1943 The Dean is Harvey Ernest Jordan Ph D

Richmond

MEDICAL COLLEGE OF VIRGINIA Twelfth and Marshall Streets—Organized in 1855 as the Medical Department of Hampden Sydney College Present title was taken in 1854 In 1913 the University College of Medicine was merged In 1914 the North Carolina Medical College was merged Coeducational since 1918 Classes were graduated in 1839 and in all subsequent years It has a faculty of 92 professors and 160 lecturers instructors and others a total of 250 Of this group 10 professors and 77 lecturers instructors and others are on military leave Two years of collegiate work are required for admission An accelerated program has been adopted involving the admission and graduation of a class approximately every nine months Fees average \$352 per academic year Nonresidents are charged an additional \$125 each year The registration for 1942-1943 was 300 graduates 68 The present session began April 5 1943 and will end December 22 1943 The subsequent session will begin December 30 1943 The Dean is J P Gray M D

WISCONSIN

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL 418 North Randall Avenue—Organized in 1907 Gave only the first two years of the medical course until 1925 when the clinical years were added Coeducational since organization The requirement of three years of collegiate work for admission has been reduced to two years for the duration Beginning July 1 1943 a class is being admitted every nine months An accelerated program has been adopted permitting the completion of four years of academic work in three calendar years It has a faculty of 64 professors and 67 lecturers instructors and others a total of 131 The fees average \$206 per academic year An additional fee of \$200 each year is charged nonresidents The registration for 1942-1943 was 277 graduates 63 The present session for freshmen began July 1 1943 and the following session will begin April 1944 The Acting Dean is Walter J Meek Ph D

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE 561 North Fifteenth Street—Organized in December 1912 by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons Coeducational since organization It has a faculty of 192 Three years of collegiate work are normally required for admission During the duration students are admitted in accordance with the prescribed Army and Navy programs The accelerated program will include three semesters each calendar year and complete the equivalent of four years of eight and a half months each in three calendar years The fees average \$450 per academic year The registration for 1942-1943 was 345 graduates 150 The present session began March 1 1943 and will end October 31 1943 The subsequent session begins November 1 1943 The Dean is Eben J Carey M D

CANADA

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE Edmonton—Organized in 1913 Coeducational since organization Has given the complete six-year medical course since 1924 New course—three years premedical four years medicine one year internship for medical degree—has been offered beginning with the session 1942-1943 The faculty includes 23 full time and 40 part time professors instructors assistants and others a total of 68 Tuition for the second third and fourth years is \$257 50 for the fifth and sixth years \$267 50 The registration for 1942-1943 was 160 graduates 33 The present session (accelerated) began February 1 1943 and will end September 1 1943 All medical classes are accelerated The following session opens September 27 1943 The Acting Dean is John James Ower M D

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE Bannatyne Avenue Winnipeg—Organized in 1883 as Manitoba Medical College first class graduated in 1886 and a class graduated each subsequent year The college transferred all its property to the University of Manitoba in 1919 and assumed the present title Coeducational since organization The faculty includes 36 professors and 103 instructors and assistants a total of 139 Matriculation requirements include two years of collegiate work in the faculty of arts and science of a recognized university An accelerated program has been adopted The course extends over four years of eight months each and a hospital internship The fees average \$254 yearly The registration for 1942-1943 was 228 graduates 50 The present session began for first year August 21 second year March 29 third year April 5 fourth year April 12, and will end April 1944 December 18 1943 January 8 and January 15 1944 The Dean is A T Mathers M D

Nova Scotia

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE Morris Street Halifax—Organized in 1867 Incorporated as the Halifax Medical College in 1875 Reorganized as an examining faculty separate from the Halifax Medical College in 1883 In 1911 in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College the work of the latter institution was discontinued and a full teaching faculty was established by the university First class graduated in 1872 Coeducational since 1871 It has a faculty of 39 professors and 38 demonstrators lecturers and others a total of 77 9 of whom are in active service and are on leave for the

duration Requires for matriculation two years of arts The regular medical course covers four years and a hospital internship of one year In order to meet the needs of the Canadian Armed Forces the classes in the last three years have been accelerated The content of the third and fourth years remains the same but holidays have been practically eliminated The final year internship has for the time being been reduced to eight months The third year began their studies on May 10 and continue until the end of December The fourth year began their studies on January 4 and continue until the middle of August The first and second years will begin on September 8 1943 and end on May 11 1944 The fees average \$314 yearly \$250 additional registration fee payable by students outside the British Empire The registration for 1942-1943 was 171 graduates, 37 The Dean is H G Grant M D

Ontario

QUEEN'S UNIVERSITY FACULTY OF MEDICINE Kingston—Organized 1854 first class graduated in 1855 and a class graduated each subsequent year The faculty numbers 65 Fees for the first year amount to \$231 and for the following years \$253 The course covers six years of thirty teaching weeks each An accelerated program has been adopted and the course may now be completed in four and one-half years Freshmen will be admitted annually The registration in September 1942 was 279 graduates during the session 1942-1943 45 The next session begins for second year students August 23, 1943 for first, fifth and sixth year students on September 27 1943 for fourth year students on January 3 1944 and for third year students on April 10 1944 Classes graduated July 28 1943 and another class will be graduated April 30 1944 The Dean is Frederick Etherington M D

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto—Organized in 1843 as the Medical Faculty of King's College Abolished in 1853 Reestablished in 1887 In 1902 it absorbed Victoria University Medical Department and in 1903 it absorbed the Medical Faculty of Trinity University Coeducational since 1903 The BSc (Med) degree is conferred at the end of the third or sixth year It has a faculty of 76 professors and 342 (including 81 on leave of absence for the duration of the war) lecturers associates and others a total of 418 The fees are \$240 for the first year for the second \$315 \$315 for the third year \$340 for the fourth and fifth years and \$358 for the sixth year The registration for 1942-1943 was 753 graduates 107 The next first year course begins September 28 1943 and ends May 6 1944 Students in the final year graduated July 30 1943 and will graduate every eight months thereafter The Dean is W E Galle M D

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL Ottawa Avenue, London—Organized in 1881 as the Western University Faculty of Medicine first class graduated in 1883 and a class graduated each subsequent year Present title in 1923 The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913 Coeducational since 1913 The faculty numbers 101 The normal course of study covers five years of ten months each The total fees to residents of Canada for the last four years respectively are \$352 \$352 \$348 and \$252 nonresidents are charged \$642 \$642 \$638 and \$438 for each of the last four years The registration for 1942-1943 was 224 graduates 30 The next session begins for the sixth year August 30 1943 and ends April 15 1944 Classes for the second third and fourth years begin August 30 1943 and end June 17 1944 The Dean is F J H Campbell M D

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE Quebec—The Quebec School of Medicine organized in 1848 became in 1852 the Laval University Faculty of Medicine first class graduated in 1855 and a class graduated each subsequent year An accelerated program was adopted in 1942 on account of the war The faculty numbers 91 The fees for each of the medical years are \$200 for residents of Canada Nonresidents are charged an extra fee of \$200 each year The premedical requirement is a B A degree or its equivalent The registration for 1942-1943 was 364 graduates 47 The next class will graduate in September 1943 Freshmen will enrol Sept. 1 1943 The Dean is Charles Vezeau M D

MCGILL UNIVERSITY FACULTY OF MEDICINE 3640 University Street Montreal—Founded in 1823 as Montreal Medical Institution became the Medical Faculty of McGill University in 1829 first class graduated under the university auspices in 1833 No session between 1836-1839 owing to political trouble In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College Coeducational since 1919 Three years of collegiate work are required for admission An acceleration program has been adopted for the upper classes The faculty consists of 82 professors and 204 lecturers and others a total of 286 The total fees for each of the four medical years are \$391 plus \$100 for non British subjects The registration for 1942-1943 was 409 graduates 94 The present session began for sophomores June 7 juniors February 17 and seniors May 6 1943 Freshmen will enroll September 7 1943 The next class will graduate November 1943 The Dean is J R Fraser M D

UNIVERSITY OF MONTREAL FACULTY OF MEDICINE 2500 Mount Royal Boulevard Montreal—Organized in 1843 as the Montreal School of Medicine and Surgery In 1891 by Act of Parliament the Medical Faculty of Laval University (organized in 1878) was absorbed Present name by Act of Parliament in 1920 A class was graduated in 1845 and each subsequent year Coeducational since 1925 The faculty numbers 150 The B A or B S degree or its equivalent is the premedical requirement An accelerated program has been adopted An internship is required for graduation The fees average \$235 yearly The registration for 1942-1943 was 257 graduates 53 The present session for juniors and seniors began June 1 1943 and will end Nov 30 1943 Freshmen and sophomores will enroll Sept. 1 1943 and will complete the year April 17 1944 The Dean is Albert LeSage M D

DESCRIPTION OF SCHOOLS OF THE BASIC MEDICAL SCIENCES

ALABAMA

University (Tuscaloosa)

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus near Tuscaloosa. Coeducational since 1920. Minimum entrance requirements meet Army and Navy specifications. An accelerated program has been adopted and a new freshman class will be admitted approximately every nine months. The faculty includes 14 professors and 14 instructors, assistants, and others, a total of 28 of whom 7 are absent in the Armed Forces. The tuition fees are \$154 each academic year plus \$75 differential for non residents. The registration for 1942-1943 was 99. The present session began March 11, 1943, and will end November 6, 1943. The subsequent session will begin December 6, 1943. The Dean is Stuart Graves, M.D.

MISSISSIPPI

University

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE—Organized in 1903. Coeducational since organization. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. An accelerated program has been adopted and a new freshman class is admitted each nine months. Entrance requirement is three years of collegiate work or ninety semester hours of credit. The B.S. degree in medicine is conferred at the end of the second year. The faculty includes 9 professors, 2 assistant professors, 1 adjunct professor, 17 instructors, assistants and others, a total of 29. The total fees for the first year are \$375, and for the second year \$348. The registration for 1942-1943 was 58. The present session began February 1, 1943, and will end September 20, 1943. The subsequent session begins September 27, 1943. The Dean is B. S. Guyton, M.D.

MISSOURI

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE—Organized at St. Louis in 1845, was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. An accelerated program has been adopted involving the admittance of a class every nine months. The faculty includes 23 professors and 19 instructors, lecturers and others, a total of 42. The entrance requirements are 60 semester hours of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. Total fees for the first year are \$266, for the second, \$224. The registration for 1942-1943 was 75. The current session began March 22, 1943 and will end December 18, 1943. The subsequent session will begin December 27, 1943. The Dean is Dudley S. Conley, M.D.

NEW HAMPSHIRE

Hanover

DARTMOUTH MEDICAL SCHOOL—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Courses of the third and fourth year were discontinued in 1914. The faculty consists of 22 professors and 14 instructors, a total of 36. Army and Navy premedical curricula accepted for admission. An accelerated program has been adopted admitting a freshman class approximately every nine months or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The tuition is \$450 for each year. The registration for 1942-1943 was 46. The present session began February 7, 1943 and will end October 23, 1943. The subsequent session begins October 31, 1943. The Dean is John P. Bowler, M.D.

NORTH CAROLINA

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department in Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of college work are required for admission. Certificates are awarded on the completion of two years work in medicine. The faculty is composed of 20 professors and 13 instructors, a total of 33. The fees for each year are \$300 for residents for nonresidents an additional fee of \$100. The registration for 1942-1943 was 91. The school has gone on the accelerated schedule for the duration of the war. The 1943 session began March 22 and new sessions will begin approximately every nine months. The next session will begin December 1943. The Dean is W. Reece Berryhill, M.D.

Winston-Salem

BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE, WINSTON SALEM—Organized in 1902 at Wake Forest as a school offering only the first two years of the curriculum. In 1941 the school

was moved to Winston-Salem and expanded to a complete four year medical school under its present name. Ninety semester hours of college work are required for admission. For the duration of the present war students may be admitted who have completed only sixty semester hours. The B.S. degree is given to those who on admission have completed ninety semester hours of academic work after the completion of the first year in the medical school. Under an accelerated program classes are admitted every nine months. The next class will be admitted on January 3, 1944. The faculty numbers 119, 18 of whom are on leave of absence in active military service. Tuition for each academic session is \$450. Registration for the session 1942-1943 was 114. The present session began March 22, 1943 and will end in December 1943. The Dean is C. C. Carpenter, M.D.

NORTH DAKOTA

Grand Forks

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years work in a college of liberal arts are required for admission. (For the duration of the war about two years as per Army and Navy plans.) The B.S. degree in combined arts medical course is conferred at the end of the second year. The faculty consists of 7 professors and 8 instructors, a total of 15. The fees are \$170 each year for resident students and \$340 for nonresidents. The registration for 1942-1943 was 53. The present session began June 14, 1943 and ends March 26, 1944. The Dean is H. E. French, M.D.

SOUTH DAKOTA

Vermillion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICAL SCIENCES—Organized in 1907 as the University of South Dakota School of Medicine. Present title in 1937. Coeducational since organization. Offers only the first two years of the medical course. Three years work in a college of liberal arts are required for admission. Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to the A.B. degree. The B.S. degree is conferred at the end of the second year on those students who do not hold a combination (Arts and Sciences and Medicine Course) A.B. degree. The faculty numbers 18. An accelerated program has been adopted involving the admittance of a class approximately every nine months. The tuition is \$150 each year for residents and \$250 for nonresidents. The registration for 1942-1943 was 49. The present session began March 8, 1943 and will end December 4, 1943. The subsequent session will begin December 6, 1943. The Dean is Joseph C. Ohlmacher, M.D.

UTAH

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE, University Street—Organized in 1906. Coeducational since organization. Four year course started in March 1943, when the first junior class began its work. The complete four year course is now in the process of being organized. An accelerated program has been adopted involving the admittance of a class every nine months. Three years of collegiate work are required for admission. The medical faculty consists of 16 professors, 3 instructors, 35 lecturers and 5 fellows, assistants and technicians, a total of 59. The fees for each quarter are \$135. There is a nonresident fee of \$55 each year. The registration for 1942-1943 was 79. The present session began March 20, 1943 and ends December 3, 1943. The subsequent session begins December 13, 1943. The Dean is A. Cyril Callister, M.D., C. B. Freudenberger, M.D., being Associate Dean.

WEST VIRGINIA

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE—Organized in 1902, gives the first two years of the medical course but agreement has been made for the transfer of 20 students each year to the Medical College of Virginia. Coeducational since organization. Entrance requirements are normally three years of collegiate work but a minimum of two years will be accepted when necessary during the war emergency. The B.S. degree in medicine is conferred at the end of the second year. An accelerated program has been adopted involving the admittance of a class every nine months. Faculty numbers 24. Fees for residents of the state are, respectively, \$225 and \$265 nonresidents \$150 additional each year. The registration for 1942-1943 was 56. The present session began March 22 and will end December 17, 1943. The subsequent session begins December 27, 1943. The Dean is Edward J. Van Liere, M.D.

CANADA

Saskatchewan

UNIVERSITY OF SASKATCHEWAN SCHOOL OF MEDICAL SCIENCES—Organized in 1926. Coeducational. Offers the first two years of the medical course. An accelerated program has been adopted. Three years of collegiate work are required for admission. The B.S. degree is conferred at the end of the second year. The medical faculty consists of 7 professors and 4 lecturers and assistants, a total of 11. The fees are \$150 for each year. The registration for 1942-1943 was 44. The present session begins October 5, 1943 for the first year and ends December 2, 1943. The second year began June 1, 1943 and ends December 2, 1943. The Dean is W. S. Lindsay, M.B.

INTERNSHIPS, RESIDENCIES AND FELLOWSHIPS

(Lists Available on Request see footnote 1)

In January 1943 the civilian hospitals approved for intern training could accommodate 7,959 interns. When compared with 5,567 actually on duty it is apparent that these hospitals were operating with a shortage of 2,392 interns. Under normal conditions, however, many of these vacancies would have been filled by interns continuing beyond the usual twelve months period. For example, in January 1942 there were 7,219 interns employed, or approximately 2,000 more than the number of medical graduates in the preceding year. In the face of this continuing shortage it is becoming increasingly important that hospitals cooperate in maintaining an equitable distribution of interns by limiting appointments to actual minimum needs. As a general rule the ratio of house officers to patients should not exceed one intern to six hundred annual admissions.

NEW INTERNSHIPS

Many hospitals that were formerly employing resident physicians as general house officers are now facing a dearth of resident personnel and are considering the possibility of establishing an intern training program. The main concern in such a plan is the ability of the hospital to fulfill the requirements of the fifth year of medicine for the internship is primarily an educational function and should not be viewed as a means of supplying personnel in relation to institutional service. It should also be taken into account that with the present scarcity of applicants it is unlikely that any new hospital entering the educational field will be able to attract a sufficient number of qualified medical graduates to establish and maintain a satisfactory rotating service. Prospective interns will naturally continue to seek appointments in hospitals whose educational services have long been established and are already favorably known. The 759 hospitals currently approved for intern training are supplying more internships than are required even under the present accelerated program of medical education.

LIMITATION OF DUTIES

With the present shortage of interns and residents economy in the use of house officers should be observed not only from a numerical point of view but also in relation to individual assignments. If possible, therefore, the routine procedures which do not contribute materially to the training program should be transferred to nursing and technical personnel so that the intern's time may be devoted to essential hospital and educational needs. Record work can often be reduced in volume without sacrificing any of the essential clinical data. In this manner considerable time can be saved as well as through the use of dictaphones and stenographic assistance whenever available. When operating with a limited house staff it might become necessary for the attending physicians to take over some of the duties ordinarily assigned to interns and residents. While this would seem difficult under present conditions, it should be noted that the elimination of parallel services, multiple emergency assignments and other duplications of staff efforts has made it possible in some hospitals to obtain at least a partial solution to this problem.

OVERLAPPING OF INTERNSHIPS

Under the present accelerated program of medical education there is considerable difficulty in coordinating the regular one year internship with a new graduating class every nine months. The main difficulty when graduation and internship periods do not coincide is the overlapping of services that will necessarily occur. Thus hospitals may experience alternate periods of shortage and overabundance of house officers with the attendant problems of housing and readjustment of schedules. Many hospitals, however, which do not have their full quota of interns can readily accept new applicants three months before the previous group has completed its year of service. Others may find a solution in the establishment of affiliated services in neighboring hospitals that are prepared to offer satisfactory

Classification of Approved Residencies and Fellowships—1943

Specialty	Residencies		Asst. Res.		Fellowships		Total		Number of Hospitals
	Offered	Filled	Offered	Filled	Offered	Filled	Offered	Filled	
Anesthesiology	77	55	29	15	23	15	123	85	45
Cardiology	6	1	1		1		8	1	7
Communicable diseases	50	32	13	5			63	37	28
Dermatology & syphilology	41	30	21	11	20	18	82	59	34
Epilepsy	1	1					1	1	1
Fractures	5	1	3	2			8	3	4
Gynecology	29	26	15	14			44	40	21
Malignant diseases	47	41	2				49	41	17
Medicine	418	297	321	192	200	163	939	657	221
Mixed	159	48	15	5			154	53	61
Neurology	43	34	26	19	21	21	90	74	30
Neurosurgery	27	17	13	7	20	13	60	42	27
Obstetrics	53	72	54	36			142	103	63
Obstetrics & gynecology	168	142	131	94	19	16	315	252	96
Ophthalmology	116	106	47	35	20	17	183	158	44
Otolaryngology	86	50	26	24	6	2	118	85	42
Orthopedic surgery	146	112	53	29	36	23	235	169	85
Otolaryngology	99	77	58	28	16	8	170	111	70
Pathology	204	124	70	34	37	29	311	187	151
Pediatrics	157	127	159	126	13	13	329	266	120
Physical therapy	1	1	1		3	1	5	2	3
Plastic surgery	2	2	1		3	1	6	3	4
Psychiatry	377	221	61	31	16	13	454	265	126
Radiology	166	90	71	50	44	36	251	176	131
Surgery	453	366	430	322	156	172	1,069	860	266
Thoracic surgery	26	23	7	7	8	7	41	37	20
Traumatic surgery	2	2					2	2	2
Tuberculosis	234	169	53	34			257	203	93
Urology	88	55	51	33	20	17	156	105	72
Totals	3,323	2,331	1,762	1,151	711	609	5,706	4,022	*

* Number of hospitals approved for residencies and fellowships 648

training. If this method is adopted, the educational assignments should be carefully planned in relation to the total internship program of the individual graduate. It should also be noted that only when a hospital is prepared to assume supervision and responsibility for the affiliated three months training will it be in position to certify the completion of the required twelve months internship. Because of the shortage of residents it has also been possible in some institutions to give the senior interns advanced houseships during the last three months so that their work will not conflict with the assignments of the incoming group. A few hospitals are planning to assign interns to senior staff physicians in their last three months of service. Such preceptorships should be under the supervision of the hospital intern committee and so correlated with the previous training as to furnish a well rounded internship program.

In some parts of the country it has been advocated that the internship be reduced to nine months. Hospitals, however, would still be confronted with the

1 Government wartime restrictions on the use of paper necessitates omission of the Council's revised list of approved internships, residencies and fellowships. However, copies of the lists will be printed and sent to all approved medical schools, medical libraries, approved hospitals, state licensing bodies, specialty boards and other interested agencies. The lists will also be included in the reprint edition of the Educational Number which has a wide distribution and is available on request.

problem of organizing internships in relation to the various dates of graduation. Furthermore, the need for giving medical students the full experience of a twelve months internship seems even greater now that the undergraduate curriculum has been compressed into a shorter time period. The Council on Medical Education and Hospitals, the Association of American Medical Colleges, the Army and the Navy have all recommended that the internship should not be reduced below the level of twelve months. Six medical schools require the completion of an internship before the degree of doctor of medicine is awarded. Twenty-two states, the District of Columbia, Alaska, Hawaii and Puerto Rico have a similar requirement in relation to licensure, and in some ten states the medical practice acts specify that applicants must have completed an intern service of at least one year. Any reduction, therefore, in the customary one year assignment would necessitate legislative change in these particular states in order that the interns might be eligible for licensure.

RESIDENCIES AND FELLOWSHIPS

In January 1943 the hospitals approved for residency training were offering 3,323 residencies, 1,762 assistant residencies and 711 fellowships, a total of 5,796. At that time 4,082 positions were filled, indicating a shortage of 1,714 in comparison with the number of applicants desired. Reference should be made to the accompanying table showing the present classification of approved residency training programs.

Because of military requirements it has been indicated that civilian hospitals will need to reduce their resident staff to less than 50 per cent of the number employed before the war. Residencies and fellowships, therefore, should be limited to such assignments as are essential for the provision of adequate hospital care and for the clinical training of medical students. When vacancies exist it has been recommended that essential residencies be filled by women physicians, men physicians disqualified for military service, other interns or residents deferred by Selective Service and qualified graduates of foreign medical schools.

While curtailment of civilian residencies must necessarily take place, it is encouraging to note that opportunities are being provided for continued specialty training in army and naval hospitals for which credit

may be assigned in accordance with the regulations of the individual certifying boards. Many of the hospitals of the Army Air Forces, for example, have recently established well organized residency training programs under the direction of the Air Surgeon's Office. These educational services, which may extend over a period of one year, have been found to fulfill the standards of the Council on Medical Education and Hospitals and have been approved as offering acceptable residencies in medicine and in surgery.

POSTWAR NEEDS

It is anticipated that immediately after the war large numbers of physicians will be seeking opportunities for graduate or postgraduate training in medicine. Many will wish to resume courses interrupted by the call to military service, while others will enter new training programs to prepare themselves for specialty practice.

To help meet this demand the Council has initiated a preliminary survey to determine all available and potential facilities for advanced training in connection with intern and residency hospitals, undergraduate and graduate medical schools, clinics, departments of health, state medical associations and other agencies interested in graduate or postgraduate education.

A total of 1,267 institutions and agencies included in this survey were asked to indicate what educational opportunities might be available if additional needs should develop. Information was requested primarily in relation to residency and fellowship training, basic science instruction, public health education and postgraduate courses in the various divisions of medicine and surgery. It was recognized that there would be opportunities for the development of additional high grade training programs in institutions that had not yet reached their full educational capacity. However, the Council did not wish to encourage the organization of new residencies, fellowships and postgraduate courses unless satisfactory facilities could be provided.

Replies have now been received from 682. While these have not yet been tabulated and analyzed, it is apparent from individual reports that genuine interest has been created and that institutions are anxious to cooperate to the full limit of their facilities. The Council is continuing its study of the opportunities for postwar graduate medical education.

CONTINUATION STUDY FOR PRACTICING PHYSICIANS

Realizing that many scientific meetings and other programs of graduate medical education have been canceled because of war conditions, the Council on Medical Education and Hospitals has endeavored, nevertheless, to provide information regarding opportunities still available for the continuing education of practicing physicians as well as medical officers in the armed forces. It has published quarterly in *THE JOURNAL* during the past year opportunities currently available. The last such listing appeared in *THE JOURNAL* for July 3, 1943. The next will appear in a September issue. These courses have proved valuable for physicians returning to practice in the present emergency as well as for those formerly limiting their practice to a specialty but who are now assisting in the general care of patients. In presenting this material, mention is made of recent and noteworthy developments in graduate education.

Graduate and postgraduate courses have been subdivided into three groups: courses in which instruction was offered to physicians in or near their home communities, courses providing ample facilities for clinical instruction and, lastly, a group including clinical conferences, graduate assemblies, study courses and so forth.

RECENT NOTEWORTHY DEVELOPMENTS

Under the auspices of the committee representing the American Medical Association, the American College of Physicians and the American College of Surgeons, a series of War-Time Graduate Medical Meetings is being developed. These programs have been organized for physicians in the Army, Navy and Public Health Service and for physicians in civilian life who are resident within reasonable traveling distance of the camps and hospitals in which these postgraduate oppor-

tunities will be offered. For organizational purposes the country has been divided into twenty-four sections, and key committees of three men have been appointed in each section to carry on the details of the program. In order to insure the best results a group of qualified authorities has been designated to serve as national consultants in the various special fields. Likewise the Surgeon Generals of the Army, Navy and Public Health Service have appointed a committee of three, one man from each organization to collaborate in the work of administration. This program is essentially an elaboration of a teaching plan that has been used successfully in the Boston, Chicago and Philadelphia areas, originated by the American College of Physicians. Arrangements have been made with fifty-five medical schools to participate in these teaching programs. The section committees in conferences with commanding officers of service hospitals in their areas are selecting subjects, dates and teaching personnel for graduate courses. A directive was issued from the office of the Surgeon General of the Army calling the attention of commanding officers to this educational project and urging their cooperation and active participation. Tentative programs have appeared in *THE JOURNAL* of June 5, June 26 and July 3.

A preliminary survey has been initiated by the Council on Medical Education and Hospitals of the American Medical Association to determine all available and potential facilities for advanced postwar training in connection with hospitals, undergraduate and graduate medical schools, clinics, departments of health and other agencies interested in graduate or postgraduate education. It is anticipated that large numbers of physicians will be seeking such opportunities. Many will wish to resume courses interrupted by entrance into military service while others will enter new training programs to prepare themselves for specialty practice. It is recognized that there will be opportunities for the development of additional high grade training programs in institutions which have not yet reached their full educational capacity. An analysis of questionnaires sent out for this purpose is now being made by the Council.

Courses for medical officers of the Army, Navy and Public Health Service have been given repeatedly throughout the year. In addition the Public Health Service has arranged courses of six months to three years duration throughout the United States in the diagnosis and treatment of cancer for civilian physicians. Lectures sponsored by the Public Health Service and other agencies in occupational dermatoses have been held at the National Institute of Health. These facilities were available to physicians, specialists and naval medical officers. In Chicago the Dermatoses Investigation Section of the Public Health Service offered without charge to physicians a two weeks course, clinical and didactic in nature, in occupational dermatoses using the facilities of industrial plants.

Eight universities were given subsidies by the United States Public Health Service to provide opportunities for instruction in public health including venereal diseases. These courses vary in length from three months to one year and were given throughout the year. Of these eight universities which were given subsidies, only five were active in providing these courses. The total attendance was fifteen. Weekly since June 15 the Public Health Service and the Philadelphia Living-In Hospital have given clinical courses in continuous caudal anesthesia, with a weekly attendance of seven

The four week course annually offered in the fall and spring at Hot Springs National Park by the Public Health Service in the clinical management and public health control of the venereal diseases was again offered during the past year. This course was made available to sixty-eight physicians and no fee was charged.

Financed by the Western Association of Industrial Physicians and Surgeons, the California State Board of Health and the California Medical Association, didactic courses in wartime industrial health were offered in seven centers. No fee was exacted, and the courses covered one day in the autumn of the year.

At Yale University School of Medicine one session a week for twelve weeks was devoted to industrial health and medicine in wartime, with a total attendance of sixty-one physicians.

Again during the past year the Georgia Warm Springs Foundation offered instruction in poliomyelitis, the course being of one week's duration.

The Institute for Psychoanalysis in Chicago, together with the University of Illinois and the Michael Reese Hospital has developed three courses in psychiatry and neurology emphasizing war neuroses varying in length from two weeks to four months. The physician attendance at these courses throughout the year totaled 145.

The twenty-seventh annual assembly of the Interstate Postgraduate Medical Association of North America was held in Chicago. The assembly occupied a five day period devoted to both clinical and didactic instruction. The recorded attendance at the assembly was 2,500.

Arranged short courses as well as courses up to one year's duration, both clinical and didactic in nature, were available at the Menninger Foundation, Topeka, Kans., in psychiatry and neurology. The Topeka Psychoanalytic Society and the Southard School in that city cooperated in this endeavor in some instances.

The Maine Medical Association, together with the Bingham Associates and the Commonwealth Fund, arranged courses varying in length up to two months.

A three week course in industrial medicine was given to physicians in Michigan without fee by the Michigan Department of Health in collaboration with the Michigan State Medical Society, the Council on Industrial Health of the American Medical Association, the Social Security Agency and the Procurement and Assignment Service.

At the Center for Continuation Study at the University of Minnesota, in cooperation with the National Foundation for Infantile Paralysis, two courses were offered in the Kenny method of treatment of poliomyelitis. One course of five days duration was offered in the autumn of 1942 and the summer of 1943. A course six days in length was offered on seven occasions also at the Center for Continuation Study. A registration of 214 physicians was reported for these courses. The fee charged was \$25. These courses are in addition to the complete program of graduate studies offered in various subjects at the Center.

Courses in obstetrics and pediatrics consisting of one day in each of eleven centers, given in the autumn of the year were offered by the University of Nebraska College of Medicine and the Nebraska State Department of Health.

The West Virginia Medical Association and Department of Health conducted one day industrial health institutes in each of four centers of the state.

Industrial apprenticeships of one day's duration were sponsored by the Long Island College of Medicine. The facilities of industrial plants in various states were used under the direction of a director of preventive medicine and community health.

The excellent opportunities heretofore offered by organized graduate schools were again presented in various subjects at such institutions as Tulane, Hopkins, Harvard, Tufts, University of Michigan, the Center for Continuation Study of the University of Minnesota, Buffalo, Columbia, New York Eye and Ear Infirmary, New York College of Medicine, New York University, the New York Polyclinic, the University of Pennsylvania and many others.

These examples emphasize the fact that even though the staff physicians of all institutions are sorely taxed, they have been able to develop or continue opportunities for graduate education, many of which have not been mentioned. The Council welcomes information regarding graduate education for publication in its quarterly compilation of courses.

ANALYSIS OF COURSES OFFERED, 1942-1943

At least sixteen states provided opportunities for physicians to continue professional study in or near their home communities. Courses on industrial problems in medical practice were most commonly in demand, although opportunities were presented in obstetrics and pediatrics, internal medicine and tuberculosis as well as courses of interest to the general practitioner. In addition, courses of one day's duration in the treatment of gonorrhea were given by the West Virginia Department of Health and the United States Public Health Service in sixteen centers in West Virginia. The War Sessions of the American College of Surgeons, consisting of a full day's program, were available in the winter and spring months in twenty cities throughout the United States. All together, these programs were given in more than eighty centers.

Agencies which were active participants in providing these opportunities either independently or jointly included committees on graduate medical education of state and county medical societies, state departments of health, medical schools and graduate schools of medicine. Other agencies were industrial and tuberculosis associations, industrial concerns, the Commonwealth Fund, the United States Public Health Service, the United States Army, the United States Navy, the Social Security Agency, the Procurement and Assignment Service and the Council on Industrial Health of the American Medical Association.

The courses varied in length from two evening sessions to a full month of work. Sessions of one day were most common and consisted of both didactic and clinical instruction in most instances. The instructors for these extramural courses were chosen from physicians practicing in the state in which the courses were offered as well as from out of state men. The faculties of four medical schools made a large contribution to this type of instruction. The facilities used consisted of hospitals, clinics, medical schools, industrial plants and local buildings. No fee was charged in the majority of instances. The War Sessions of the American College of Surgeons attracted 14,000 physicians. The attendance reported for other opportunities was well over 4,500.

Home study courses were made available by three agencies: two courses in ophthalmology and otolaryn-

gology of nine months' duration, a year's course in public health and four courses on various subjects. These home study courses were offered by the American Academy of Ophthalmology and Otolaryngology, the Maine Medical Association and the Albany Medical College in collaboration with the New York State Department of Health. The facilities reported were the public mails and physicians' homes, while in the third instance physicians' homes, laboratories, hospitals and the medical school were used. The instruction included selected readings, quizzes, didactic work and clinical field trips. An enrollment of 265 was reported for the courses given by the American Academy of Ophthalmology and Otolaryngology. Fifty-nine physicians availed themselves of the opportunities afforded by the Maine Medical Association and fifty students were enrolled in the home study course of the Albany Medical College.

In centers where ample clinical facilities are available, 440 graduate courses of less than one year's duration were offered in twenty-three states and the District of Columbia. Eighty-three agencies or combinations of agencies participated in the planning of the programs. Of the medical schools of the country, thirty-five have given courses for practicing physicians during the year, including nine postgraduate schools or graduate departments of medical schools. Five state medical societies and eight state or local departments of health collaborated on courses or independently planned courses for physicians of the state. In nine instances hospitals were the agencies offering short periods of study. Other sponsors included three county medical societies, five special societies, the Office of Civilian Defense, the Public Health Service, the Children's Bureau of the Department of Labor, the Commonwealth Fund and more than ten other miscellaneous agencies. While the majority of courses were in various subjects as the demand seemed apparent, specific courses in ophthalmology and otolaryngology were offered in fifty-six instances, general medicine in thirty-five, obstetrics and gynecology and dermatology and syphilology both in thirty instances, military medicine in twenty-six, both surgery and gastroenterology in twenty-three, public health in twenty-two and psychiatry and neurology in twenty instances. More than ten but less than twenty courses were offered in anesthesiology, cardiology, electrocardiology, orthopedics, pathology, pediatrics, roentgenology and tuberculosis. Other courses were offered in allergy, anatomy, bacteriology, cancer, chemical warfare, diagnosis, dietetics, endocrinology, endoscopy, general practice, hematology, industrial medicine, legal medicine, physical therapy, physiology, poliomyelitis, proctology, tropical medicine, urology, venereal diseases and two which were not stated. Fifty-six definite centers in these twenty-three states were used in presenting these 440 courses, excluding the facilities made available by the Navy, the Public Health Service and the National Institute of Health. Notably, courses were offered in eleven centers in one state and in eight in another state. In presenting graduate courses, thirty-nine hospitals, thirty-eight medical schools and twenty-four clinics cooperated by placing their facilities at the disposal of instructors and students. The description of these intensive courses gave evidence that clinical instruction was emphasized. In only three instances was the work wholly didactic. The faculties of the medical schools served as instructors in most courses. Additional instructors were specialists in their fields.

chosen mainly from physicians residing within the state in which the course was offered, but including as well physicians from outside the state. The duration of study in centers with clinical facilities varied from five days to one year. The majority, however, were completed within three weeks. The number registered for any one course ranged from 1 to 2,500. In seven instances the attendance was well over 200. The attendance reported, although incomplete, totaled 8,786.

Clinical conferences, graduate assemblies and study courses of less than five days were held in nineteen states. Fifty-two such opportunities were afforded. This type of study was sponsored by eleven medical schools, six state medical societies, ten county medical societies, twenty-three special societies, seven state and local governmental agencies, two hospitals, the United States Public Health Service, the Office of Civilian Defense and nine miscellaneous agencies. A specially appointed director or the clinics or chairman of the committee was responsible for most of the courses. The nature of these study courses was mainly subjects allied to war medicine, including the medical aspects of chemical warfare, aviation medicine and tropical medicine. Opportunities were also afforded in

public health, cardiovascular diseases, glaucoma, industrial health, pediatrics, health education, anesthesia, obstetrics and venereal diseases. Other assemblies surveyed pertinent topics in medicine and surgery. The assemblies were usually held in centers large enough to accommodate the registrants and with facilities for clinical and practical work and for scientific exhibits. In one state instruction was offered to medical officers of the Army and Navy in four military centers, while a three day course was offered in another state. In addition the American College of Physicians held wartime regional meetings in eight states and the District of Columbia and also conducted postgraduate nights in two states, both of which were available to members of the College and medical officers of the armed forces.

Here again the instruction was both didactic and clinical in the majority of instances. The instructors consisted of physicians residing in the state wherein the assembly was held, physicians from other states and members of the professorial faculties of medical schools. Registration fees ranged from \$2 to \$25, but for the most part no fee was charged. The largest single attendance reported was 2,453. The total recorded attendance was 15,301.

APPROVED EXAMINING BOARDS IN MEDICAL SPECIALTIES

In 1933 the Council on Medical Education and Hospitals of the American Medical Association was authorized by the House of Delegates of the American Medical Association to formulate standards and approve examining boards in the medical specialties. The resolution urged that the machinery of the American Medical Association, including the publication of the American Medical Directory, be used in furthering the work of boards accredited under this plan.

Standards governing the approval of specialty boards were compiled by the Council and approved by the House of Delegates in 1934 and have since been revised. The Essentials of Approved Examining Boards in Specialties include, in addition to regulations relating to the organization and operation of specialty boards, the minimum qualifications deemed necessary for certification as a specialist, namely, graduation from a medical school approved by the Council on Medical Education and Hospitals, an internship in a hospital approved by the Council, and a period of specialized training in a selected field.

Fifteen boards have now been organized. These boards are fully approved by the Council and represent the specialties of anesthesiology, dermatology and syphilology, internal medicine, neurologic surgery, obstetrics and gynecology, ophthalmology, orthopedic surgery, otolaryngology, pathology, pediatrics, plastic surgery, psychiatry and neurology, radiology, surgery and urology. The American Board of Internal Medicine by special examination certifies specialists in allergy, cardiovascular disease, gastroenterology and tuberculosis. Similarly the American Board of Surgery certifies specialists in proctology.

A key number has been assigned to each approved specialty board, such as A B I, and the biographic records of physicians published in the American Medical Directory include by this means reference to those certified by these boards.

Early in 1939 there was published by the Advisory Board for Medical Specialties the first edition of the Directory of Medical Specialists containing the names and biographic data of all men certified by the several specialty boards as well as information regarding the organization and functions of these boards. The second edition appeared early in 1942 and contains the names of about 18,000 certified specialists, including their biographic records and hospital and teaching appoint-

Total Numbers of Certificates Awarded by the Specialty Boards to March 1, 1943

Name of Board	Certificates Awarded
American Board of Anesthesiology	183
American Board of Dermatology and Syphilology	644
American Board of Internal Medicine	2,965
American Board of Neurological Surgery	135
American Board of Obstetrics and Gynecology	1,676
American Board of Ophthalmology	2,195
American Board of Orthopaedic Surgery	819
American Board of Otolaryngology	3,570
American Board of Pathology	954
American Board of Pediatrics	1,959
American Board of Plastic Surgery	157
American Board of Psychiatry and Neurology	1,220
American Board of Radiology	1,923
American Board of Surgery	2,144
American Board of Urology	942
Total	21,733

ments. Since that time, nearly 4,000 additional physicians have been certified. The accompanying table shows the distribution of these specialists among the boards.

Each of these boards has published a booklet containing a brief statement regarding its organization, personnel, purposes and qualifications for eligibility for certification. In addition, some of the boards publish lists of specialists they have certified. Booklets and lists and other data on examinations may be obtained from the secretaries of the various boards, whose addresses are given herewith.

Under the present policies of the Procurement and Assignment Service (see p 1093) an even greater reduction in numbers of men permitted to take residencies is to be expected. It is stipulated that residencies may not be taken for training purposes, in the case of young men qualified for military service. Any such residents must be essential as teachers or house physicians. This will greatly curtail the numbers of men preparing for specialty certification. Consideration to this problem is being given by the specialty boards, which are granting some credit toward certification for work carried by a medical officer in the armed forces. A summary of the present policies is given for each of the boards listed. In announcing these policies, the boards state that requirements will not be lowered because of war conditions.

It is highly important that prospective applicants who are in military services should obtain a copy of the "Record of Professional Assignments for Prospective Applicants for Certification by Specialty Boards" from the secretary of any board. This booklet describes procedures pertaining to military credit and will enable prospective applicants and candidates to keep an accurate account of work done in the military service and will constitute part of the credentials to be submitted to the board on application for certification.

AMERICAN BOARD OF ANESTHESIOLOGY

President JOHN S LUNDY, M D, Rochester, Minn

Secretary PAUL M WOOD, M D, 745 Fifth Avenue, New York

"To officers who are practicing anesthesia in the armed services, the American Board of Anesthesiology allows the actual time up to one year credit for training. If they are not practicing anesthesia in service, they are allowed no credit for training but may be allowed up to a maximum of one year credit for practice in anesthesiology toward the five year time requirement. If practicing anesthesia in service the candidate is allowed actual time credit towards the five year practice in anesthesia time requirement."

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY

President HOWARD FOX, M D, New York, N Y

Secretary C G LANE, M D, 416 Marlboro Street, Boston

"The amount of credit for military service so far as training in this field is concerned will be decided in each case upon the evidence submitted by the candidate. Three years of full time training are required, and up to the present time no center in either Army or Navy has been developed where satisfactory training in this field may be obtained.

"So far as experience in dermatology and syphilology is concerned, the board will accept not more than one year of Army military or naval medical service as part of the required two years' experience, after the three years of training. For an officer who has completed or nearly completed his training in civil life, it is expected that the medical officer will file his 'Record of Professional Assignments' with his application as evidence of his service in the specialty."

AMERICAN BOARD OF INTERNAL MEDICINE

Chairman ERNEST E IRONS, M D, Chicago, Ill

Assistant Secretary W A WERRELL, M D, 1301 University Avenue, Madison, Wis

"One year of service in the armed forces may be considered as one year of formal training or as one year in the practice of medicine. Further evaluation of service in the armed forces will be made after the emergency is over."

AMERICAN BOARD OF NEUROLOGICAL SURGERY

Chairman HOWARD C NAFFZIGER, M D, San Francisco, Calif
Secretary-Treasurer PAUL C BUCY, M D, 912 South Wood Street, Chicago

"The amount of credit to be allowed for training received while with the armed forces will be determined in each individual case by the board on the basis of the extent and nature of the training received. The only blanket concession which the American Board of Neurological Surgery has made in the cases of men in the armed service, is as follows. The Charter and By-Laws of the American Board of Neurological Surgery, Article 4, Section 1, Group B (c), page 16, states 'an additional period of not less than two years in the practice of neurological surgery' shall be required following the three year period of training in neurological surgery before the individual will be admitted to examination by the board. The board has waived this two year practice requirement and now permits men to take the examination immediately after completing the three year period of training in neurological surgery. However, men who have taken the examination under such circumstances and passed it, will have their certificates withheld by the board until they have given the board satisfactory evidence of having completed two years of practice in neurological surgery. Such practice may be in an institution, private, or in the armed services, providing that it meets with the approval of the board and is practice in neurological surgery, and not general surgery or some other specialty. This action was taken in order to permit the board to place its stamp of approval upon the training these young men have received and upon what they had learned in order that the surgeon generals of the various armed services may make the most possible use of their abilities."

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

President WALTER T DANNREUTHER, M D, New York, N Y

Secretary PAUL TITUS, M D, 1015 Highland Building, Pittsburgh 6, Pa

"An applicant in military service in the present national emergency and assigned to work in general surgery under conditions acceptable to the credentials committee may receive credit up to a maximum of six months applicable toward his three required years of special training. An applicant in service under military orders in an Army or a Navy hospital under supervision in an obstetrical and/or gynecological service will be given the same credit as if he were working under a preceptor, since most of these departments are supervised by men who are diplomates of this board or who are recognized obstetrician-gynecologists. Additional time in military service with any type of general medical assignment may be applied toward the board's years in practice requirement."

AMERICAN BOARD OF OPHTHALMOLOGY

Chairman CONRAD BERENS, M D, New York, N Y

Secretary JOHN GREEN, M D, 6830 Waterman Boulevard, St Louis

"The amount of credit for military service is determined in each individual case, depending entirely upon the amount and type of ophthalmology done while in service. In evaluating credentials much depends on the size of the hospital and whether the work is supervised by responsible ophthalmologists."

AMERICAN BOARD OF ORTHOPEDIC SURGERY

President PHILIP D WILSON, M D, New York, N Y

Secretary G A CALDWELL, M D, 3503 Prytania Street, New Orleans

"During the present national emergency, credits up to a maximum of two years may be allowed for experience gained in surgery and orthopedics while serving with the armed forces. Credits will be given only upon presentation of evidence that such

service has, in the opinion of the Committee on Eligibility, been equivalent to similar periods of approved hospital training. Record of all such military service should be kept in the Record of Professional Assignments prescribed by the Advisory Board for Medical Specialties and submitted with his application.

(a) A year of orthopedic experience with the armed forces may be accepted to replace one of the three required years of orthopaedic resident training.

"(b) A second year of orthopedic service with the armed forces may be credited as a year toward the practice requirement."

AMERICAN BOARD OF OTOLARYNGOLOGY

President HARRIS P MOSHER, M.D., Marblehead Mass
Secretary D M LIERLE, M.D., University Hospital Iowa City

"Credit for training received while in the armed forces will be governed by the merits of the individual case and will be determined by the credentials committee. Such credit is given for the time actually spent in restricted practice of otolaryngology."

AMERICAN BOARD OF PATHOLOGY

President A H SANFORD M.D., Rochester, Minn
Secretary F W HARTMAN M.D., Henry Ford Hospital, Detroit.

"Credit is allowed for training and experience in pathology as it may be acquired by the applicant during his military service. This credit for training or experience or both is given on an individual basis and will depend upon the opportunity the applicant has had as indicated in his medical service record in the specialty of pathology."

AMERICAN BOARD OF PEDIATRICS

President EDWARD B SHAW, M.D., San Francisco, Calif
Secretary C A ALDRICH, M.D., 707 Fullerton Avenue, Chicago

"Applicants are allowed credit for one year of military service toward the required two years of specialized practice. Military service cannot be substituted for preliminary training."

"Written examinations may be taken in camp under a Monitor, appointed by the commanding officer but the applicants must appear before the board for oral examination."

AMERICAN BOARD OF PLASTIC SURGERY

Chairman JOHN STANGE DAVIS M.D., Baltimore Md
Acting Secretary V P BLAIR, M.D., 508 North Grand Boulevard, St. Louis

"A man assigned to do plastic surgery in the armed forces, under suitable conditions, would be given credit toward requirements for the time thus spent, the final amount of credit in each individual case to be left to the discretion of the board and determined by the board after the information is submitted."

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY

President C MACFIE CAMPBELL, M.D., Boston Mass
Secretary WALTER FREEMAN, M.D., 1028 Connecticut Avenue NW, Washington, D C

"A maximum of two years of appropriate military service is allowed in lieu of experience, two years being the minimum time required as experience. A maximum of one year of military service is allowed in lieu of training, three years of training being required."

AMERICAN BOARD OF RADIOLOGY

President G W HOLMES, M.D., Boston, Mass
Secretary BYRL R KIRKLIN, M.D., 102-110 Second Avenue SW, Rochester, Minn

"Full credit is allowed for all work done in an approved x-ray department of the Army, Navy or Marine Corps."

AMERICAN BOARD OF SURGERY

Chairman ARTHUR W ELTING, M.D., Albany, N Y
Secretary J STEWART RODMAN, M.D., 225 South Fifteenth Street, Philadelphia

"Officers in either branch of the service are given one year's credit on the necessary five years' training required. Further credit will depend in individual instances upon the assignments and must be surgical in nature in order to be acceptable."

AMERICAN BOARD OF UROLOGY

President HERMAN L KRETSCHMER, M.D., Chicago, Ill
Secretary G J THOMAS, M.D., 1409 Willow Street, Minneapolis

Applicants who join the armed forces before they have had the required two years of private practice are accepted as candidates for the examinations without immediate fulfillment of this requirement. When other requirements are satisfactorily fulfilled and the members of the credentials committee are convinced that the candidate has had sufficient training they may recommend that he submit to the written, pathological and oral-clinical examinations after he has submitted twenty-five acceptable case histories that he has personally examined, operated upon and followed while a senior resident. A candidate handled in this special manner will not become a certificatee until such time as he is able to complete the balance of the requirements, that is two years of private practice following the completion of his training in the specialty and the preparation of an additional twenty-five acceptable case histories taken from this private practice.

The members of this board have not established a precedent nor rigid specifications concerning the amount of credit allowed to candidates in the armed forces in lieu of training or private practice.

Candidates who have completed as many of the requirements for certification as possible and who have taken the examinations will be furnished statements carrying the official seal of the board outlining their status as candidates for certification."

ADVISORY BOARD FOR MEDICAL SPECIALTIES

President WILLARD C RAPPLEYE, M.D., New York N Y
Secretary C G LANE, M.D., 416 Marlboro Street, Boston

Organized 1933-1934 to coordinate graduate education and certification of medical specialists in the United States and Canada this board reports directly to its member groups, and functions in close cooperation with the Council on Medical Education and Hospitals of the American Medical Association and with the Advisory Council on Medical Education.

COMING SPECIALTY BOARD EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written* Various centers Sept 27 *Oral* Philadelphia Nov 5-6
Final date for filing application is August 16

AMERICAN BOARD OF INTERNAL MEDICINE *Oral* San Francisco Sept 16-18 Final date for filing application is Aug 15
Written Oct 18 Final date for filing application is Sept 1

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written* Part I Locally, Feb 12 Final date for filing application is Nov 15

AMERICAN BOARD OF OPHTHALMOLOGY *Oral* Parts I and II Chicago, Oct 8-9

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Written and Oral* Part II Chicago, Jan 21-22

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Chicago Oct 6-9

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *Written* Locally, Oct 30 *Oral* Locally, Dec 20-21 Final date for filing application is Sept 30

AMERICAN BOARD OF UROLOGY *Oral* Chicago February *Written* Various centers December Final date for filing application is Nov 1

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SATURDAY, AUGUST 14, 1943

MEDICAL EDUCATION IN WARTIME

The medical students of the United States, almost all of whom have Army or Navy affiliations, are soldiers and seamen in medical school. They swell the numbers of uniformed men assigned to colleges and universities to pursue a wide variety of studies in preparation for special military duties. In one important respect, medical students will differ from most of their campus mates in uniform. Essentially they will be following the same curriculum and will receive the same degree for the same work as in peacetime. The Army and Navy have recognized that the wartime task of medical schools is the training of physicians and that this task, even as it pertains to the production of medical officers, can best be accomplished by a continuation of the well established medical program. The major change is acceleration, this was inaugurated even before Pearl Harbor and eliminates from the medical curriculum little except the long summer vacation.

In the collaborative educational-military responsibility of producing medical officers, by common agreement the military is wisely subordinated to the educational. Purely military instruction and drill are kept at a minimum. In all Navy units and in almost all medical schools so far under Army contract students live and eat where they please. Study is not abruptly terminated by taps. Common mess does not dictate the premature conclusion of an experiment or the physical examination of a patient.

Numerous courses inaugurated or especially stressed since the war began represent emphasis on topics which will justify their permanent inclusion in the medical curriculum. The shrinking of world distances through modern methods of transportation will bring tropical diseases to our doors. Industrial medicine and public health will increase in peacetime. Chemotherapy and the control of shock are not limited to war.

There are continuing tendencies away from clinical didactic teaching and also from the subdivision of medicine into isolated compartments. The line between preclinical and clinical is being less sharply drawn.

Interdepartmental collaboration in the presentation of related material is replacing a philosophy of medical education which states that the human body may be divided into its anatomy, its biochemistry, its pathology and its physical diagnosis. It is encouraging to note that the stress of the accelerated program has not prevented depleted faculties from a critical scrutiny of past performance and planning for means to improve the presentation of that most complex of subjects, man, in health and in disease.

Problems of postwar adjustments in medicine deserve inclusion in the undergraduate curriculum of more schools. How, if at all, is the practice of medicine likely to be different from that of the past? How may we arrive at a sound evaluation of the innumerable plans and proposed laws for improved medical care projected by lay and medical groups? These and related questions are being asked by medical students everywhere. A knowledge of the facts and analysis of the factors, forces and mechanisms at work, and the application of the searching scientific spirit which is the foundation of medical education, may lead more promptly to workable and acceptable methods.

PREMEDICAL EDUCATION

The accelerated programs developed by the armed forces for the training of premedical students differ in two essentials from the accelerated programs of the medical schools. First, acceleration in medical schools does not involve any basic change except the elimination of the long summer vacations. A significant increase in weekly work by the student is not required. The premedical programs, however, shorten the program mainly by a weekly increase in the quantity of work carried by the student. The Army Specialized Training Program provides for approximately 60 per cent more work per week by the student than in peacetime programs, and the Navy V-12 program also increases the weekly work considerably. Whether or not students will be able to carry this heavy load remains to be seen. These students will, however, be free from financial worries and the necessity for outside employment. They will receive medical care, and more attention will be paid to the students' physical condition.

The results of this experiment in concentrated premedical education will be watched with interest by all who are concerned with preprofessional education in every field, since it may offer a solution of the problem of reducing the long years of training required by the learned and scientific professions.

Second, all premedical students are subjected to a standardized curriculum. This is probably necessitated by the large number of participating premedical institutions, in some of which an attempt at standardization might elevate standards. By contrast, the medical curriculum prescribed by the armed forces is "do the best

you know how, as you have been doing." Such liberty can probably be granted only to educational institutions whose quality and programs of instruction have been well established.

The criticism has been made that the premedical programs are too heavily weighted with "tool" courses of purely utilitarian value and that they are deficient in human values. The justification for this criticism may be questioned. Properly presented, the natural sciences are rich in human values. Honesty and integrity in science are as rigorous as the tenets of any ethical system. A carefully controlled scientific experiment, testing deductions from a hypothesis, is as illustrative of correct thinking as are syllogisms and inductions of formal logic. The history of science and scientists incorporates fully as much of cultural values as does political, economic or military history. It would be preposterous to maintain that the natural sciences alone can provide a liberal education, it is even more obtuse to argue that these sciences lack human values.

THE SUPPLY OF PHYSICIANS

More than 4,000 seniors who entered the accelerated medical education program over a year ago are now well into their intern year and will complete that training before March 31, 1944. They will thus become available for military and civilian practice three months earlier than in normal times. Even half of these should only that small proportion be commissioned can care medically for over 300,000 troops. If this number of men is thereby enabled to enter active service three months early, before April of next year, the accelerated program will have justified itself in supplying the men required. All medical schools are accelerating throughout the four year program except one which limits the program to the junior and senior years. All are admitting classes every nine months except one which admits a class every year and one which admits a class each quarter.

A study of the number of graduates in the past forty years reveals trends of interest and importance. During approximately the first half of this period the number of graduates declined from over 5,000 annually to about half that number. This reduction paralleled the closing of many medical schools, one half of which disappeared during the period of enforcement of high standards in medical education. During the last two decades the number of graduates gradually rose, even before the war it again exceeded 5,000. This occurred in spite of an essentially unchanged number of medical schools. In 1942 there were about as many graduates from seventy-seven high grade schools as there were in 1905 from a hundred and sixty schools, most of which were decidedly inferior. This upward trend is probably warranted in the cases of many schools which have increased their faculties and facilities. In other instances

increased enrolments and graduates are probably not justified by proportional increases in staff and facilities.

Now the annual number of graduates far exceeds that of any period in the history of this country, approximating twice the number of physicians who die in normal years. This present large number of graduates is to be contrasted sharply with the figure for 1922, when only 2,500 received the M.D. degree. This figure—in all time low in medical graduates—was also related to war. It followed the low registration of freshmen in 1918 when less consideration was given to the necessity for continued training of physicians in wartime. Fortunately the last war ended relatively quickly, so that this lack of adequate medical preparation was not as much in evidence as it would surely be in the present conflict.

Current Comment

THE CONTROL OF DIPHTHERIA

The epidemiologic study of diphtheria by Russell¹ is of great significance with respect to the control of the disease. In the preface it is pointed out that, while progress has been made in reducing the deaths from diphtheria in England and Wales, the advance is disappointing in view of the fact that, of the infectious diseases of childhood diphtheria is the one of which exact biological knowledge is most complete and was earliest obtained. Russell's figures show a decline of nearly 60 per cent in the death rate from diphtheria in England and Wales during the past forty years, but this decline is 'unsatisfactory' compared with the reduction of 80 per cent of the mortality of diphtheria in white children aged 1 to 15 years in the United States between 1920 and 1938. In this decline in the United States active immunization of children against diphtheria is a factor of major importance. The number of children immunized in Britain before 1940 was small, but since then good progress has been made and at the end of 1942 46.5 per cent of the child population under 15 in England and Wales had been immunized. Russell discusses particularly the effects of active immunization on the incidence of diphtheria in New York City and Toronto. His summary follows:

There is very strong evidence that immunization particularly since the inclusion of preschool children has reduced the morbidity and the mortality from diphtheria in New York City and in Toronto. The statistical experience of diphtheria in these cities in the postimmunization period is significantly better than might have been expected from the trend of either the morbidity or the mortality in the preimmunization period. According to past experience the disease had a periodicity of six years in New York and of four years in Toronto. On this basis there should have been epidemics in both cities between 1930 and 1940 but none has occurred. The best explanation of this absence is that the health authorities in both cities by artificially immunizing the school and preschool children have prevented the occurrence of the epidemics.

Mass immunization in Canada and in the United States has saved thousands of lives which otherwise

1 Russell W. T. The Epidemiology of Diphtheria During the Last Forty Years. Medical Research Council Special Report Series No. 47. London, 1943.

would have been lost. Present indications are that active immunization against diphtheria is the best means at hand to control the disease and should be used "on the widest scale possible."

"RECREATION—A RESOURCE OF WAR"

Recreation and relaxation are a definite contribution to the war effort.¹ Obviously the American people in these days cannot have the same kind or amount of relaxation or recreation that prevailed in normal times, many do not realize, however, that the opposite extreme—omission of recreation or relaxation—is detrimental to the war effort. A human being cannot exist continuously on an artificially high plane of productive effort or emotional tension. He must have release and relief, especially from the high intensity of machine production and from the psychologic strains of war. A pamphlet just made available by the Federal Security Agency tells what can be done toward community recreation by public agencies, private social agencies, labor unions, war plants, commercial enterprises and churches and in housing projects, dormitories and trailer camps. There is an extensive check list of recreational programs including social activities, active games and sports, music, arts and crafts. References are given, additional publications, and sources of further information. A more comprehensive report entitled "Spare Time—A War Asset for War Workers" describes the experiences of some communities and serves as an example of what might be done. Copies of this report can be had without charge by addressing the Division of Recreation, Office of Community War Services, Federal Security Agency, Washington 25, D. C.

POSTWAR EDUCATIONAL FACILITIES

Recognizing that large numbers of physicians will be seeking advanced training immediately after the war, the Council on Medical Education and Hospitals is making a careful study of the educational facilities in the graduate and postgraduate fields. A preliminary survey has already been instituted to determine what institutions and agencies will be able to expand their regular educational activities to meet additional postwar needs. Questionnaires were sent to all undergraduate and graduate medical schools, intern and residency hospitals, state medical associations, departments of health and other agencies interested in graduate or postgraduate education. The response has indeed been gratifying, for individual reports indicate that constructive planning is under way and that institutions are anxious to cooperate to the full limit of their facilities. The returns are not yet complete, but the available data are now being evaluated and will be supplemented by further studies in the near future, so that complete lists of facilities will be available to physicians returning from the war. These include hospital residencies, fellowships, basic science courses, graduate studies and short term refresher courses in the various branches of

medicine. Many physicians will wish to resume courses interrupted by the call to military service, while others will enter new training programs in preparation for general or special practice. Those who remain in military service after the war will be able to increase their professional training through the educational programs of the respective services. Even under wartime conditions, opportunities are being provided for specialty training in Army and Navy hospitals for which credit may be assigned by the individual certifying boards. The large number of physicians who return to civilian life will likewise find that the medical profession, the schools and the hospitals stand ready to meet the educational needs of the postwar period.

THE MEDICOLEGAL NECROPSY

In discussing the medicolegal necropsy in the symposium on legal medicine at the meeting of the American Society of Clinical Pathologists in Philadelphia, a year ago, Moritz¹ emphasized certain obvious shortcomings in law that hinder the use of the necropsy in the interest of public welfare. In most states, he pointed out, the statutory provisions for the medicolegal investigation of deaths under certain circumstances need to be revised and expanded. For the public good effective provision should be made for official, thorough investigation with necropsy in all deaths "known or suspected to have been caused or contributed to by mechanical, physical or chemical injury, all deaths occurring unexpectedly from obscure causes and all deaths known or suspected to be related to occupation." Investigators for these purposes should be selected on the basis of technical competence rather than politics, and of course the funds and facilities necessary for expert work must be provided. Moritz places the major responsibility for betterment of the low state of forensic pathology in nearly the whole of this country on the pathologists, because they know best what is needed. In planning for postwar medical services, opportunities to advance the usefulness of the medicolegal necropsy should not be neglected.

INFRA-RED TREATMENT OF ELECTRIC OPHTHALMIA

Recently infra-red radiation has been advocated as successful treatment of "flash" burns of the eye due to overexposure to ultraviolet emanation, the usual source being the welders' arc. The practice is at present being evaluated by competent observers. The Joint Committee on Industrial Ophthalmology of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology believes that a word of warning is warranted about the practice until additional supporting evidence is available. The harmful effects of any forms of radiation on the eye are sufficiently well known to suggest that physicians who treat flashed eyes refrain from using infra-red lamp treatment until the results of the present research work are made available.

¹ "Recreation—A Resource of War," a pamphlet publication of the Federal Security Agency, Division of Recreation Office of Community War Services, Washington 25, D. C.

¹ Moritz, A. R. The Medicolegal Necropsy. *Am. J. Clin. Path.* 13: 123 (March) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

ARMY

ARMY TAKES OVER TWO NEW YORK HOSPITALS

According to the *Bronx Home News* of July 12 the New Lebanon Hospital at Mount Eden Parkway and the Concourse New York City has been taken over by the Army Medical Corps for the duration. At the time of the dedication of the new hospital on June 6 it was equipped with 250 beds. Plans were made, however to increase this number to 400 in the near future. In addition to general medical and surgical wards there are five operating rooms, a fully equipped dispensary, pediatric division, dental clinic, special wards for the treatment of rheumatic cardiac cases and handicapped children and laboratories. The regular work of the hospital will be continued at the old hospital building at Westchester and Cauldwell avenues.

According to the *New York Times* of July 1 the Pilgrim State Hospital at Brentwood L I N Y has been leased by the War Department in view of making it a 1500 bed army general hospital. The hospital buildings will be remodeled at a cost of about \$2,000,000 and probably will be put in service by Feb 1, 1944.

BORDER SERVICE MEDAL FOR RESERVE OFFICERS

H R 2619 introduced by Foster Stearns of New Hampshire is aimed to correct an unintentional discrimination against medical reserve officers who were on active duty in the Army between Jan. 1 1916 and April 6, 1917 and who served elsewhere than on the Mexican border. This bill would make such medical reserve corps officers serving at that time eligible for the Mexican Border Service Medal. The present law makes National Guard officers who served during this period either on the border or elsewhere eligible for this medal. H R 2619 would therefore right an injustice to the remaining few and now aged, physicians who rendered active service in 1916 and 1917 as officers of the old medical reserve corps as well as to any other member of a reserve component of the army not eligible under existing law to receive this medal.

THE NEWTON D BAKER GENERAL HOSPITAL

The War Department announced on June 17 that the new 1727 bed army general hospital under construction near Martinsburg, W Va has been named in honor of the late Secretary of War, Newton D Baker. The hospital will occupy 180 acres located almost 4 miles southeast of Martinsburg the birthplace of Mr Baker. The hospital will cost about \$5,500,000.

MILITARY DENTAL WORK

Brig Gen. Robert H Mills chief of the Army Dental Corps recently announced that the Army is now turning out dentures at the rate of 60,000 a month and that 1,600,000 dental fillings are completed each month. More than 2,000,000 soldiers are treated for dental defects of some kind each month. The Army recently ordered 24,000,000 dental burrs with which to care for cavities in the teeth of military personnel. According to a press release from the American Dental Association on July 16 the

number of dental officers in the armed forces total 13,000, leaving 1 dentist for every 2,000 civilians in the country. Civilians were therefore advised to take all preventive dental measures possible in the way of mouth hygiene and of nutrition and thus relieve the load on the civilian dentist's shoulders. The civilian should not abandon his regular visits to the dentist but should make his appointments well in advance and then keep them. Civilians also were advised to adhere to a careful program of mouth hygiene and of nutrition. Brushing the teeth properly after every meal becomes a patriotic contribution in that it not only adds to working efficiency in wartime but preserves dental and general health as well.

MAJOR SPRONG RECEIVES THE AIR MEDAL

Major Aaron A Sprong flight surgeon with the Eleventh Group for nine months prior to his recent assignment to Strother Field, Kansas has received notice that the Air Medal will be conferred on him for meritorious achievement while participating in a flight last December 16 in the Solomon Islands. Before entering the Army Air Corps in June 1941, Major Sprong was a practicing physician at Sterling, Kan. Subsequently he was stationed at Randolph Field, Texas, and at Carlisle Barracks, Pennsylvania. He arrived in Hawaii in February 1942 whence he flew to Midway and was present throughout that furious battle. After Midway he flew back to Hawaii. From July 1942 until March 1943 he served in the Solomon Islands. Recently he was ordered to the homeland. Major Sprong graduated from the University of Kansas School of Medicine in 1934.

LIEUT COL PERRIN H LONG IN NORTH AFRICA

Dr Perrin H Long professor of preventive medicine at Johns Hopkins University School of Medicine Baltimore according to the *Baltimore Evening Sun* of July 10 is now a lieutenant colonel serving as medical director in the North African war theater. The North American Newspaper Alliance dispatch further concerned a front line treatment for nervous breakdowns which Lieutenant Colonel Long is said to have described as one of the greatest advances in military psychiatry during the war and also a great manpower saver. The type of case on which this treatment has been found effective was formerly erroneously called shell shock. Under the plan of treatment referred to some of the patients are sent back to duty on the second day, it is said and they usually ask to go back on the fourth day.

Dr Long served in the first world war as a private in the U S Army and was awarded the Croix de guerre. In view of his pioneer work with the sulfonamide drugs he was sent to Honolulu soon after the Japanese attack on Pearl Harbor to observe the effects of those drugs on the wounded.

FLIGHT SURGEONS' ASSISTANTS

A class of seventy-nine flight surgeons assistants completed the six weeks course in aviation medicine at the School of Aviation Medicine Randolph Field Texas July 3. Brig Gen Eugen G Reinartz U S Army is commandant of the school.

MISCELLANEOUS

INCREASED PRODUCTION OF PENICILLIN

Additional facilities for the manufacture of penicillin have been acquired in Rensselaer, N. Y., by the Winthrop Chemical Company, Inc., according to Dr. Theodor G. Klumpp, president of the company. This drug is now allocated exclusively to the armed forces, millions of units being supplied weekly. The "unit" system of measurement derives from Oxford University. Pure penicillin has not yet been isolated. The "Oxford unit" is based on comparison with standard material furnished by Oxford University to laboratories throughout the world. One million units weigh about $\frac{1}{2}$ ounce. Sulfonamide resistant cases of gonorrhea can be cured promptly by as little as 100,000 units of penicillin. Larger doses are usually needed for osteomyelitis and other infections.

Penicillin was discovered by Dr. Alexander Fleming, English scientist, in 1929. It was not then available for treatment of disease because of the extremely small quantities that could be produced and the instability of the substance. The present interest in penicillin dates from 1939, when important information regarding the chemistry of the extract was obtained and it was found that the calcium and sodium salts are more stable than the parent substance. The exact structure of penicillin is unknown at present, and until it has been determined artificial production by synthesis is impossible. However, much has been learned about the "empirical" or general chemical formula.

Penicillin is now under strict allocation of the War Production Board for national defense and there is no prospect that a surplus will soon be available for civilian use.

NURSING DIVISION FOR PROCUREMENT AND ASSIGNMENT SERVICE

The Nursing Supply and Distribution Unit of the War Manpower Commission has been made the Nursing Division of the Commission's Procurement and Assignment Service, Paul V. McNutt, chairman of the commission, announced on July 27.

"The objectives of the Nursing Division," Mr. McNutt explained, "are the same as those divisions of the Procurement and Assignment Service now dealing with the dentist, veterinary, physician and sanitary engineer for their professions. They involve the recruitment of sufficient nurses to meet the needs of the armed forces and the provision of minimum adequate nursing care for the civilian population, nonmilitary governmental agencies and industry."

Recommendations regarding the operation of the nursing division will be made to the Directing Board of Procurement and Assignment Service, headed by Dr. Frank H. Lahey, Boston, by a nursing advisory committee. The nursing division is represented on all the present advisory committees to the directing board that are concerned with problems that affect nurses. Miss Katherine Tucker, Philadelphia, and Miss Laura Grant New Haven, Conn., have been appointed to the directing board.

Miss L. Louise Baker has been named an assistant executive officer of the Procurement and Assignment Service to work under the general direction of the directing board, and Dr. Maxwell Lapham executive officer. She will have the responsibility of carrying out the functions of the nursing division and will be assisted by Miss Ruth A. Heintzelman. The already existing technical, clerical and statistical sections of the Central Office of Procurement and Assignment Service will be utilized, and four nurse consultants will be added to the staff to supervise the work in the field.

The activities of the nursing division in the field will be carried out by separate state and local committees. The Supply and Distribution Committee of the State Nursing Councils for War Service, representing the various nursing organizations in each state and serving without compensation, will act as the state committee for nurses for the Procurement and Assignment Service, and the local nursing council for war service will act as the local committee in each community. Both state and local committees will function independently of but in cooperation with the state committees for physicians of the Procurement and Assignment Service.

CONFERENCE ON VENEREAL DISEASE PROGRAM

Representatives of the Anglo-American Caribbean Commission and members of the Interdepartmental Committee on Venereal Disease held a three day conference in Washington late in June to consider the inauguration of an adequate program for control of venereal disease in the Caribbean area. The conference was attended by representatives of the British government, of the U. S. Army, Navy, Public Health Service, State Department, Federal Security Agency, Federal Works Agency and Bureau of the Budget of the Rockefeller Foundation and of the American Social Hygiene Association.

Although the present programs for venereal disease control in Puerto Rico and Panama have brought about a reduction in infection rates, there is great need for expansion of facilities and additional trained personnel in these areas. In the Trinidad area, however, there has been apparently no program of venereal disease control and the inauguration of one will involve, literally, according to Dr. N. M. MacLennan, Great Britain's director of medical services in Trinidad, working from the ground up and our U. S. Army and Navy officials now working in that area corroborated his opinion. Public health legislation is also needed as a foundation for adequate control measures in Trinidad. The proposed budget for an immediate control program in Trinidad would set up a fund for establishing clinical service there and a well equipped laboratory, staffed by physicians, nurses and technicians recruited when possible from the native personnel. The establishment of the proposed plan for Trinidad would need a budget for the first year of about \$200,000 to be divided between Great Britain and the United States. The necessary expansion of the existing programs in Puerto Rico and Panama could be accomplished by yearly budgets of \$480,000 and \$300,000 respectively, it was estimated.

The last day of the conference was devoted to discussion on malaria control in the Caribbean area with the object of developing a coordinated plan for the control of malaria in both the armed forces there and in the civilian population.

RESTRICTION ON MANUFACTURE OF MEDICAL FURNITURE

The War Production Board issued on July 13 Schedule 3 to General Limitation Order L-214, placing restrictions on the manufacture of items and models of medical and surgical furniture and related equipment. This order provides, among other things, that no manufacturer shall make or continue to make any items of such equipment and furniture other than those on list A attached to the schedule, and the listed items shall be made only in the number of models specified on the list which conform with the descriptions set forth. However, a manufacturer may make any number of models of medical and surgical furniture and related equipment not listed on list A and any number of models and items on list A in excess of the number specified provided they do not contain any metal other than iron and carbon steel and that the weight of such metal comprises not more than 25 per cent of the total weight of the model. No manufacturer shall incorporate in any medical and surgical furniture and related equipment any stainless steel or other alloy steel, monel metal, copper, copper base alloy, nickel, aluminum or zinc, except as specified in list A. This restriction does not apply to the use of copper and copper base alloy in the electrical circuit or electrical connections of any items listed in list A.

MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

The Medical and Surgical Relief Committee of America with headquarters at 420 Lexington Avenue, New York, has launched a campaign for medical supplies to be parachuted to guerilla bands in France in answer to an appeal by Capt. Douglas Smith, French Foreign Legion representative at Gen. Charles de Gaulle and Georges Catroux. A goal of one thousand surgical kits for units of twenty-five men, and twenty-five thousand individual first aid kits has been set.

PUBLIC HEALTH UNDER HITLER

According to NDZ, Germany, of February 24 the call up of doctors and Feldschers' for service at the front has made it necessary to increase the number of women employed on youth welfare work and in the wartime health services. A large proportion of this work is done by the Health Service Girls of the HJ, whose training was considerably extended last year. On principle, all 16 year old girls receive an appropriate basic training consisting in the general structure of the body, hygiene, health and physiology, and first aid. This training which is carried out in twelve lectures of two hours each is in the hands of efficient doctors and members of the DRK. By passing the final test the girl acquires the title of Health Service Girl. Then follow the Working Groups for Health Living or the Faith and Beauty Scheme of the BdM, which provide additional training in the fields of nutrition and nursing. Over 73 000 girls were trained and became Health Service Girls last year a considerable increase compared with the previous years. In all, 175 000 Health Service Girls are now available.

Transocean news agency, June 13 reports from Berlin that a number of institutes have been established in the eastern regions occupied by the German forces to combat epidemic diseases. These institutes are to protect German soldiers and civilians. Of the greatest importance is the German Hygienic Institute for the Ostland at Riga which is equipped with all modern apparatus, mobile and stationary bacteriologic field laboratories, several mobile delousing trains and others for producing drinking water. The institute also has trains fitted with everything necessary for the medical examination of the population even in the remotest part of the Ostland. The institute has a department for medical research and another for training practical helpers in fighting diseases. Similar institutes were also opened at Kiev and at Kherson. The latter is chiefly concerned with fighting malaria.

In order to save lives which are being lost owing to the shortage of German specialists the German Volkshilfe has established six maternity homes at Zemun, Indjija, Ruma, Vinkovci, Djakovo and Verec according to the *Deutsche Zeitung* in Kroatian Yugoslavia of May 23. The home at Verec must be closed for an indefinite period because the locality is unsafe. These homes have been established primarily for Volksdeutsche women who are expecting children under difficult conditions in small far away settlements where they are in continuous danger or are continuously being attacked by the bandits.

According to DNB, Germany, June 5 the war has considerably intensified the need for blood donors and in order to meet it the SA, members of which formed the core of the official blood donors' organization even before the war, has increased its efforts in this respect. The Hansa Group of the SA alone has till now given 190 623 cc of blood and many other groups have reported similarly high figures. The Berlin-Brandenburg group has 2 900 blood donors for the armed forces alone at its disposal. The list of donors is headed by an obersturmfuhrer of the SA, who has given a total of 74 520 cc of blood on 191 occasions.

According to Transocean, June 11, the former dean of the Leningrad Medical Institute and head of the surgical department, Prof W. Schaak, has been appointed chief physician of Potsdam Municipal Hospital. Schaak was looked on in Soviet Russia as one of the greatest specialists in surgery. In April 1942 he was evacuated from Leningrad to Kislovodsk. When the German troops in the summer of 1942 approached the Kislovodsk area Schaak succeeded in reaching the German medical corps. Up to his appointment to the Potsdam hospital Professor Schaak served as a surgeon in a German field hospital.

According to NPD of May 29 a special German-Russian medical dictionary has been published for all doctors and officials employed in the health service in the East. This will facilitate the comprehensive work of the German doctors for the Russian civil population.

DNB (for Europe), June 8, reports from Riga that in the Districts General of Estonia, Latvia and Lithuania a new law comes into force on July 1 replacing the existing Bolshevik law on health and combined health and accident insurance, which closely follows German law. Considerable improvement is achieved, particularly where insurance grants are concerned. In each of the Districts-General an independent health insurance office will be set up as part of the autonomous administration.

Pester Lloyd Hungary, of May 7 states that in April there were 27 cases of typhus in Budapest, and 11 cases of endemic typhoid were brought from the country to the Budapest hospitals.

Sari Bor writes from Breslau according to the *Magyar Nemzet* of May 5 that. The people of Breslau vigorously protest against the suggestion that there is a peaceful atmosphere in the town. They are perfectly justified in doing so, for, although owing to its favorable situation the town has had little direct experience of the war air raids are not unknown even here. The people have simply suffered more seldom and less from them than the people of most German towns.

According to *Pester Lloyd* Hungary, of May 4 the minister of agriculture has made the inoculation of pigs against plague obligatory in the counties of Barcs, Hont, Csik, Csongrad, Esztergom, Heves, Kolozs, Nograd, Szabolcs, Udvarhely and Ung and in the municipalities of Ungvar (Uzhorod) and Komarom (Komarno).

All the more active is the war effort in the old capital of Silesia in other spheres. As the most easterly metropolis in the reich it is the first place at which the hospital trains from the Russian front arrive. At the present time the town is looking after 160 000 wounded. It deals with this gigantic task for the most part from its own resources with its own doctors and with enormous numbers of voluntary nurses. There are doctors who are on the street from dawn till late in the evening before they can get through their days work in the six or seven hospitals with which they are concerned.

According to *le Journal* May 25, French and German medical services inspecting Frenchmen working in Germany made distressing observations. The third contingent of the "releves" will mobilize 220 000 workers for Germany and 180 000 for the Todt Organization in France. Heretofore the percentage of sick and unfit did not exceed normal limits but today there has been an enormous increase. Those registered as invalid in Paris were over 50 per cent and in the provinces 36 per cent. Those escaping labor conscription owing to ill health are chiefly suffering from tuberculosis and syphilis.

According to Radio Lyons June 24 a law has been published regulating the medical protection of French workers in Germany. Doctors, chemists and dentists will be mobilized as well as students of medicine, pharmacy and dental surgery. Persons liable to mobilization will be designated by the High Council for Medicine and Pharmacy.

Sydenska Dagbladet Malmö May 23, reports that there are about three hundred doctors aged 80 and over and three thousand aged 70 and over in practice in Germany.

Radio Lyons June 10 reports that the Regional Councils of the Medical Profession (*Ordres de medecins*) will take a census of medical vacancies caused by the ban on foreign doctors who are forbidden to carry on their practice. Vacancies will be reserved for French doctors who are at present prisoners of war and put forward an application to this effect.

NPD Czechoslovakia June 3 reports from Bratislava that the birth rate in Slovakia has risen by 80 per cent since 1939 which is mainly due to the introduction of family allowances.

ORGANIZATION SECTION

OFFICIAL NOTES

HEALTH EDUCATORS VISIT A M A HEADQUARTERS

Twenty-seven young women holding fellowships in health education for training at the University of North Carolina, made possible by the W K Kellogg Foundation, Battle Creek, Mich., through a grant to the United States Public Health Service, spent the week of August 2 to 6 at the headquarters of the American Medical Association in classes and demonstrations of the health education work of the Association. Such demonstrations, authorized by the Board of Trustees of the American Medical Association, are under the direction of the Bureau of Health Education. The visit to the American Medical Association was part of a three months assignment of field

training in connection with the fellowship courses. From the American Medical Association the group went to the Cleveland Health Museum, where they will spend the rest of the month of August.

SUMMER HEALTH HINTS

The last program for the series of broadcasts over WLS on Thursdays at 2:45 under the title "Summer Health Hints" will be

August 19 "Hay Fever Time"

A new series of broadcasts on appropriate, timely health topics is contemplated on station WLS beginning in early autumn.

THE CURRENT TAX PAYMENT ACT OF 1943

Prepared by the Bureau of Legal Medicine and Legislation, American Medical Association

The first step to put federal income taxpayers on a pay as you go basis, under the Current Tax Payment Act of 1943, approved by the President on June 9, was taken on July 1, when the withholding features of the new act became effective. Since that date employers have been required to withhold 20 per cent of the compensation paid employees in excess of withholding exemptions of \$624 for single persons, \$1,248 for married persons or heads of families and \$312 for each dependent.

GROUPS EXEMPTED FROM WITHHOLDING

Designated groups are exempted from the withholding procedure, namely (1) members of the military and naval forces, (2) agricultural workers, (3) domestic employees, (4) casual employees, (5) United States citizens or residents working for a foreign government, including the Philippines, (6) non-resident aliens except, unless exempted by regulations, Canadians and Mexicans, (7) United States citizens or residents if the major part of the work done by them for the employer during the calendar year was done outside of the country and (8) ministers of the gospel.

METHOD OF WITHHOLDING

Employers may follow one of two methods in withholding the tax. They may compute with exactness the amount, that is, 20 per cent of the wage or salary above exemptions, or they may withhold in accordance with wage groupings contained in tables incorporated in the act. Most employers will use the latter method because of its simplicity. The use of the tables, however, will in some instances result in overwithholding, but the excess withheld may be adjusted when the taxpayer files his final return, as he must do on or before March 15, 1944.

DISPOSITION OF WITHHELD TAXES, REPORTS

Physicians who are employers have since July 1 been withholding the 20 per cent tax from the wages of employees who come within the withholding provisions of the act. If a total of more than \$100 is withheld during any month, the amount withheld must be transmitted, within ten days after the close of the calendar month, to a depository authorized by the Secretary of the Treasury, the names and addresses of these may be obtained from any bank. Physicians who withhold less than \$100 a month must make quarterly returns on form W-1 to their collectors of internal revenue, showing the aggregate amount of taxes withheld during the quarter. This return must be filed on or before the last day of the calendar month following the close of each quarter and must be accompanied by the payment of the full amount of the tax withheld. The first return will be due not later than Oct 31, 1943, covering the months of July, August and September.

Physicians must furnish each employee a "Statement of Income Tax Withheld on Wages" (form W-2), to be delivered to the employee on or before January 31 next. If employment terminates before the end of the year, the statement must be furnished within thirty days of the date on which the last payment is made. Duplicate copies of such statements must be retained by physicians and transmitted to the collector of internal revenue with the final return for the fourth quarter of the calendar year. All forms may be secured from the collector's office. Physicians should obtain from the same source a copy of circular WT, which will explain in detail the duties imposed on employers in connection with the withholding process, the types of records to be kept and the various kinds of reports to be made.

PHYSICIANS WHO ARE EMPLOYEES

Physicians who are employed on a salary basis went on a current tax payment basis, July 1. They normally need not concern themselves with the procedure. They will be furnished by their employers all statements to which employees generally are entitled. Many such physicians, however, will be required to file on or before Sept 15, 1943, a Declaration of Estimated Tax and will be required together with all other taxpayers to file a final return for 1943 on or before March 15, 1944, at which time necessary adjustments of taxes can be made.

DECLARATION OF ESTIMATED TAX

The withholding procedure has placed on a current payment basis an estimated fifty million federal income and victory tax payers. There remains another group, the self employed and employees expressly exempted from the withholding process, who are yet to be placed on a pay as you go basis. To accomplish that end, a second step must be taken on or before Sept 15, 1943, when the following persons will be required to file with the collector of internal revenue a Declaration of Estimated Tax covering the calendar year 1943.

1 Single or married but not living with a spouse at the date prescribed for the making of the declaration (whether or not head of a family), if he had for the taxable year 1942, or reasonably expects to have for the taxable year 1943, (a) gross income of more than \$2,700 from wages subject to withholding or (b) gross income of more than \$100 from sources other than wages subject to withholding, and also gross income of \$100 or more from all sources.

2 Married and living with spouse at the date prescribed for the making of the declaration, if he had for the taxable year 1942, or reasonably expects to have for the taxable year 1943, (a) gross income from wages subject to withholding and when added to gross income from such sources of his spouse,

exceeds \$5,500, or (b) gross income other than from wages subject to withholding which when added to gross income other than from such wages of his spouse exceeds \$100, and also his gross income from all sources exceeds \$24 for 1943 or the aggregate gross income from all sources of both spouses amounts to \$1200 or more for either 1942 or 1943.

Individuals regardless of marital status who were required to file an income tax return for the taxable year 1942 and whose wages subject to withholding for the taxable year 1943 are reasonably expected to be less than such wages for the taxable year 1942.

CONTENTS OF DECLARATION

With relatively few exceptions all physicians will be required to file the declaration. Forms for use in filing the declaration have not been released, but it is understood that they will be mailed to taxpayers on or before September 1. They will be short and will differ materially from previous income tax returns. On them the taxpayer will merely state the amount of his estimated income tax and net victory tax liability for the year, based on the estimated income and deductions and allowing for the current credit against the victory tax liability to be explained later, in case the taxpayer elects to take the credit currently. From the estimated taxes due there may be subtracted the two instalments already paid in 1943 any amount in the case of employees withheld during the year on account of the victory tax as such and on account of the 20 per cent withholding that went into effect July 1 together with estimated amounts that will be withheld during the remainder of the year. The difference will represent the remainder of the tax due on account of 1943 income. One half of the total tax due must be paid when the declaration is filed and the remainder on or before December 15, subject to the right of a taxpayer in service to postpone payment if his ability to pay is materially affected by reason of his service.

While the declaration will be short, it will be necessary for most physicians to compute their taxes in the same manner in which computations have been made in the past. There has been no change in rates and no change in exemptions and deductions except in the case of taxpayers in the armed forces. Physicians therefore, may rely on the statement that was published in *THE JOURNAL*, Jan. 30 1943 for suggestions as to the credits and exemptions that may be claimed. The change that has been recently made relates solely to the method and time of the payment of victory and income taxes.

Form 1040-ES will be used in filing the declaration. Complete instructions will accompany the form when it is sent to taxpayers, including a table that will aid in the computation of estimated income and victory tax for 1943 on incomes not over \$10,000. A careful study of the instructions will simplify the procedure of completing the declaration.

UNDERESTIMATED TAX PENALTY

The actual income and deductions can be accurately computed by physicians for the part of the calendar year immediately preceding the filing of the declaration and the remainder of the calendar year estimates must be carefully made in view of the penalty of 6 per cent that attaches if the estimated tax proves to be 20 per cent less than the tax actually due. If before December 15, a taxpayer discovers that he has under-estimated his tax by more than 20 per cent he should on that date file an amended declaration, correct his mistake and avoid the possibility of penalty.

SUBSTITUTION OF 1942 TAX

Having estimated his 1943 tax liability on the basis of actual and anticipated 1943 income exemptions and credits the physician who is not in service must then compare the estimated tax with the 1942 tax computed last March. If the 1942 tax was greater he must enter the 1942 tax on the declaration and pay that tax instead of the 1943 estimate. In order to prevent any advantage accruing to taxpayers by reason of the shift to a pay as you go basis, the law provides in effect that the current 1943 tax liability shall not be less than the 1942 liability. This does not apply to taxpayers who are in the armed forces as will be explained later.

ABATEMENT OF TAX

To prevent an undue doubling up of taxes as a result of the change to a current collection basis, the law provides for an abatement of 75 per cent of one year's tax, or the first \$50 thereof, whichever amount is the greater. The abatement is based on the lower tax of the two years, except in the case of taxpayers in service. If the 1943 tax is lower 75 per cent of it will be abated. If the 1942 tax is lower 75 per cent of it will be abated. Physicians need not give this abatement procedure any concern at the time the declaration is filed. The 25 per cent unabated portion of the tax will become a liability on March 15 1944, when the final return for 1943 is filed. The unabated portion may then be paid in full or one half must be then paid and the remaining half paid on or before March 15 1945.

THE VICTORY TAX

The Revenue Act of 1942 imposes a special victory tax on individuals amounting to 5 per cent of their victory tax net income. This tax is in addition to all other taxes imposed by the act applies to income received after Dec. 31 1942 and will continue in effect for the duration of the war unless sooner repealed. A discussion of this tax as it relates to the medical profession was published in *THE JOURNAL* Dec. 5, 1942. That discussion, however, emphasized the withholding of the tax by physicians from the wages of employees and the withholding of the tax from the salaries of physicians who are themselves in an employee category. Physicians now must estimate the amount of the victory tax they themselves must pay during the calendar year 1943 and report that amount on the declaration to be filed on or before September 15.

VICTORY TAX GROSS AND NET INCOME

The 5 per cent victory tax is imposed not on the taxpayer's net income that serves as a basis for normal and surtaxes but on his victory tax net income. Many of the deductions allowable from gross income to arrive at net income for income tax purposes are not allowable in determining net income for victory tax purposes. Physicians should keep that fact in mind in estimating the special tax.

Gross income for victory tax purposes includes all income except (1) gain from the sale or exchange of capital assets, (2) interest on United States government obligations allowable as a credit for income tax purposes and (3) compensation for injury or sickness includible otherwise as a part of gross income because of a deduction claimed for medical expenditures. Victory tax net income is gross income minus the following exclusions: 1. Business expenses allowable generally for income tax purposes. 2. Interest and taxes only to the extent incurred in carrying on a trade or business or incurred for the production or collection of income or for the management conservation or maintenance of property held for the production of income. For ordinary income tax purposes interest and taxes are deductible even if incurred for personal purposes as for example interest on personal loans and taxes on property used as a home. (3) Uncompensated losses sustained during the year it incurred in a trade or business. Losses from wager transactions may be excluded only to the extent of the gains from such transactions. 4. Depreciation depletion amortization pension trust contributions alimony payments (to the extent deductible for ordinary income tax purposes) and certain other exclusions not of particular concern to physicians. Charitable contributions are ordinarily not deductible from gross income for victory tax purposes. In the case of a taxpayer who uses the simplified return form his victory tax net income is his gross income.

VICTORY TAX EXEMPTION

From the victory tax net income a specific exemption of \$24 is allowed each taxpayer as a credit, irrespective of his marital status. There is no other personal exemption. The liability on account of the victory tax therefore will be computed on the basis of 5 per cent of the victory tax net income after the \$24 credit has been taken and the amount so computed must be included in the declaration to be filed on or before September 15.

VICTORY TAX WITHHELD

Amounts withheld from the salaries of physician employees during the year on account of the victory tax may be credited against the computed tax. For the first half of 1943 5 per cent was withheld for victory tax purposes. Since July 1 the 20 per cent withholding includes 17 per cent for income tax purposes and 3 per cent for victory tax purposes, it being assumed that most taxpayers subject to withholding will take advantage currently of the postwar credit, later to be discussed, and that therefore the 3 per cent will cover the net victory tax due. Physician employees, however, will not be required when they file their declarations to break down the 20 per cent withholding to indicate the amount withheld for income tax purposes and for victory tax purposes.

POSTWAR CREDIT OR REFUND OF VICTORY TAX

As pointed out in THE JOURNAL for Dec 5, 1942, the Revenue Act of 1942 provides that as soon as practicable after the date of cessation of hostilities the following amounts of victory tax paid for each taxable year will be credited against any income tax payment or installment thereof then due from the taxpayer and any balance will be refunded immediately.

1 In the case of a single person or person married but not living with husband or wife, 25 per cent of the victory tax or \$500, whichever is the lesser.

2 In the case of the head of a family, 40 per cent of the victory tax or \$1,000, whichever is the lesser. In the case of a married person living with husband or wife where separate returns are filed by each, 40 per cent of the victory tax or \$500, whichever is the lesser. In the case of a married person living with husband or wife where a separate return is filed by one spouse and no return is filed by the other spouse, or in case of a husband and wife filing a joint return, only one such credit will be allowed and such credit may not exceed 40 per cent of the victory tax or \$1,000, whichever is the lesser.

3 For each dependent, excluding as a dependent in the case of the head of a family one who would be excluded as a dependent for income tax purposes, 2 per cent or \$100, whichever is the lesser.

If during the taxable year the status of the taxpayer (other than a taxpayer whose gross income is \$3,000 or under and who uses the simplified return form) changes with respect to his marital relationship or with respect to his dependents, the amount of the credit or refund on the victory tax for the year will be apportioned under rules and regulations prescribed by the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury in accordance with the months prior to and after the change. For the purpose of such apportionment the fractional part of a month will be disregarded unless it amounts to more than one half of a month, in which case it will be considered as a month.

CURRENT CREDIT FOR POSTWAR REFUND

A taxpayer may, when he files his declaration on September 15, take credit currently for the postwar refund of the victory tax to which he would be entitled after the war. The law provides that there may be allowed as a credit against the victory tax, to the extent of the postwar credit (1) the amount paid by the taxpayer during the year as premiums on life insurance, in force on Sept 1, 1942 on his own life, on the life of his spouse or a dependent, less the amount of dividends received from such insurance, (2) the amount by which the smallest amount of indebtedness of a taxpayer outstanding at any time during the period beginning Sept 1, 1942 and ending Dec 31, 1942 exceeds the amount of indebtedness of the taxpayer outstanding at the close of the taxable year, and (3) the amount by which the amount of obligations of the United States owned by the taxpayer on the last day of the taxable year, or Dec 31, 1943, exceeds the amount of such obligations owned by the taxpayer on Dec 31, 1942.

If the taxpayer owns an obligation of the United States jointly with one other person, he will be entitled to full credit for the amount of the obligation only in case he himself paid for it. The term "obligation of the United States" means United States saving bonds, series E, F and G. The term "amount of obligations" means the amount paid for the obligations. The term "owned" means acquired by purchase.

An example may serve to clarify. Dr. A, an unmarried physician with no dependents, at the time he files his declaration on September 15 estimates that he will owe a victory tax of \$100. During 1943 Dr. A had purchased United States saving bonds, or paid premiums on life insurance, or reduced indebtedness, expending a total of \$1,000 for such purposes. Dr. A may pay the victory tax of \$100 during 1943 and after the cessation of hostilities obtain a refund or credit of 25 per cent of the tax, or \$25, the percentage of credit that will be allowed a single person. Or, when he files his declaration he may reduce his victory tax by taking credit for the amount expended for bonds, insurance premiums or reduction of indebtedness, but only to the extent of the postwar credit to which he would be entitled after the cessation of hostilities, that is, \$25. In one case Dr. A pays the full victory tax of \$100 and gets a refund or credit later, in the other case he pays \$75 and will not thereafter receive a credit or refund.

PHYSICIANS IN MILITARY AND NAVAL SERVICE

While the Current Tax Payment Act does not refer to taxpayers in service in connection with the filing of declarations, it is understood that the requirements heretofore existing as to the necessity of filing regular income tax returns will be extended to declarations. Physicians in service, therefore, should comply promptly with the new requirement, but if they are on duty outside the United States they may delay filing the declaration until after the war or until after their separation from the service, whichever may be earlier.

The requirement in the new act that taxpayers must in effect pay for 1943 a tax equal to the higher tax of the two years 1942 or 1943 does not apply to taxpayers in service. As explained in House Document No 237—Current Tax Payment Act of 1943. Questions and Answers—this special relief provision for taxpayers in service will be applied as follows.

Members of the armed forces do not have to pay on the higher of the two years 1942 or 1943, with respect to that portion of the 1942 tax which is attributable to "earned" income (i. e., from wages or salary) not in excess of \$14,000. Thus, if a soldier earned \$3,000 in 1942 as a civilian, incurring a tax liability of say \$300 and has no tax liability on his 1943 service pay he would not be required to increase his 1943 liability by the excess of the 1942 tax over the 1943 tax. In effect, his 1942 liability is completely abated.

On the other hand, if part of the serviceman's 1942 tax was attributable to "unearned" income and part to "earned" income (i. e., income from investments or wage and salary income in excess of \$14,000) the 1943 tax will be increased by the amount by which the tax on the "unearned" portion of the 1942 income exceeds the 1943 tax. For example, suppose a single man had a civilian salary of \$15,000 in 1942 and had income from rents, dividends and interest amounting to \$5,000 on which the total tax was \$6,800. In 1943 he went into the Army as an officer and receives a service pay of \$2,400. His final 1943 tax liability would be computed as follows:

He would figure the tax on his 1943 service pay, after excluding from consideration the first \$1,500 thereof under the provisions of the new law. The resulting 1943 tax would be approximately \$80. He would then add to his 1943 tax liability the excess of the 1942 tax over the 1943 tax, after deducting from such excess the amount by which the 1942 tax was increased by reason of the inclusion of the first \$14,000 of the amount of the "earned" net income in 1942. He finds that the 1942 tax exceeds the 1943 tax by \$6,720 (\$6,800 minus \$80). He computes the 1942 tax to see how much of this excess was due to the inclusion of the "earned" income (i. e., from wages or salary) up to \$14,000. Subtracting from the 1942 income all salary income not in excess of \$14,000 would leave \$1,000 of the salary income and the \$5,000 of investment income, or a total of \$6,000 on which the tax would be approximately \$1,200. This shows that the 1942 tax was increased by \$5,600 (the excess of \$6,800 over \$1,200) by reason of the inclusion of the "earned" income up to \$14,000. Therefore the \$5,600 is subtracted from the \$6,720 excess of the 1942 tax over the 1943 tax, leaving a balance of \$1,120, which is the amount to be added to the tax on 1943 income in computing the final 1943 liability of the serviceman in question. His total 1943 liability, therefore, would be \$80 (the tax on his 1943 service income) plus \$1,120 (the excess of the 1942 tax attributable to "unearned" income over the 1943 tax) or a total of \$1,200.

This is the amount he would include in his Declaration of Estimated Tax for 1943. In this instance he still pays on the higher of the two years after eliminating from the 1942 income all wage and salary income up to \$14,000. The serviceman in question would also owe the unabated portion of the lesser year's tax, 25 per cent of the 1942 liability of \$80 in this case or \$20.

SPECIAL EXEMPTION FOR MEMBERS OF ARMED FORCES

The new act declares nontaxable the first \$1,500 of the service pay of members of the armed forces, including commissioned officers. Under the prior law, servicemen below the grade of commissioned officers were permitted to exclude from gross income the first \$250 of their annual pay.

and the first \$400 if married. In effect the new law raises the personal exemption of servicemen to \$2,000 if single and \$2,700 if married plus \$550 for each dependent.

CANCELLATION OF TAX ON DEATH OF SERVICEMEN

Any tax liability owed by a member of the military or naval forces who dies in active service is canceled, the provision being retroactive to Dec. 7, 1941. If the tax has already been assessed it will be abated and if the tax has already been collected it will be refunded as an overpayment. This tax forgiveness applies only to income taxes, not to the estate tax. In view of the \$60,000 exemption from estate tax liability

possibly it was assumed that the estates of most deceased servicemen would not be liable to the estate tax.

FINAL RETURN FOR 1943

Taxpayers will be required to file on or before March 15, 1944 a final return for 1943 when necessary adjustments can be made. At the same time an estimate for 1944 taxes must be made. The final return for 1943 and the estimate for 1944 will be made; it is understood on a single form. Taxpayers not subject to withholding will be permitted to pay their 1944 taxes quarterly, the first payment being due when the estimate is filed.

WOMAN'S AUXILIARY

Arkansas

Dr. Herbert K. Abrams of the Miller County Public Health Service was the chief speaker at the public relations meeting of the Bowie-Miller County medical auxiliary recently. Representatives of the parent teacher associations were among the guests.

California

The Woman's Auxiliary to the San Francisco County Medical Society set a day in February at the Irwin Memorial Blood Bank, 2180 Washington Street, for its members to donate blood for use in local hospitals and to build a reserve in case of enemy attack or other disaster. The Irwin Memorial Blood Bank operates under the direction of the county medical society and as a project the members of the auxiliary entirely staff the following departments: couriers, drivers of the blood bank station wagon, delivery service and Canteen Corps. These volunteers work six days a week from 8 a. m. to 6 p. m. This service has been in operation for the past year. The Telephone Committee, under the direction of Mrs. Frank Hand, contracted the membership to make appointments and furnish all necessary information. Members were asked to give the usual pint of blood needed for adult transfusions or a portion of a pint for infant transfusions, a unique service of the Irwin Memorial Blood Bank.

The regular meeting of the Alameda County auxiliary was held at the Claremont Country Club on February 19 with Mrs. T. Floyd Bell presiding. The third Tuesday of each month the members take over Hospitality House and serve during the day and evening. All food is donated by members. Mrs. Rosner Graham, Hospitality House chairman, has announced that cash contributions during January totaled \$45. The fund necessary to carry on this work is dependent on the voluntary contributions of members.

Indiana

Dr. Carl H. McCaskey, president of the Indiana State Medical Association and Dr. Homer G. Hamer, chairman advisory committee Woman's Auxiliary to the Indiana State Medical Society, were guest speakers at the meeting of the auxiliary in May. A survey of the work done by the members of the Allen and Marion counties in civic and war service was presented. Allen County has a complete cross index file of all doctors, wives in their community and the kind of work done by them.

Oregon

The Woman's Auxiliary to the Oregon State Medical Society has been concentrating mainly on work for the Medical Surgical Relief Committee or America. Instruments and samples of drugs have been collected from doctors' offices. Appeals have been made to housewives for scissors, wooden handled knives and mirrors. In this field the dental auxiliary and through it the Eastern Star has been of great help. When the call came for fishing tackle, anglers' clubs were approached. With their aid a great deal of deep sea tackle has been obtained for use on life rafts. Many of the counties have given money with which to purchase emergency medical kits.

A streamlined annual meeting of the auxiliary will be held when the medical society meets on September 4-5 in Portland. Two new auxiliaries have been organized in Baker County and in Ontario County.

Pennsylvania

The Philadelphia auxiliary held a bazaar recently in the County Medical Society Building, Philadelphia, from which more than \$800 was netted as a result of the efforts of the chairman of welfare, Mrs. John B. Lowmes, and her committee. The executive board with the president, Mrs. George C. Yeager, in the chair, voted to give \$500 to the Aid Association of the Philadelphia County Medical Society. The speaker was the Rev. W. Sherman Skinner, pastor of the First Presbyterian Church in Germantown.

Mrs. Anna de Planter Bowes, chief of the division of nutrition, state department of health, recently addressed the Cambria auxiliary.

The Huntingdon auxiliary recently sponsored its first Health Day. Mrs. Anna de Planter Bowes spoke on "Food Is Power." About 250 people were in attendance.

Texas

Kerr-Kendall-Gillespie-Bandera counties auxiliary held a meeting recently in Fredericksburg. Members reported a total of one hundred and eight hours on Red Cross work during December and the making of 368 surgical dressings. The auxiliary voted a donation of \$10 to the Memorial Fund and \$5 each to the state student funds for 1943. Mrs. Walter Minsch, reporting on the sale of tuberculosis seals in Kerr County, which project was sponsored by the auxiliary, announced that \$765 had been received to date. The auxiliary voted to buy a \$25 War Bond to be placed in the savings with other bonds already owned by the auxiliary.

Virginia

In spite of the difficulty in securing linens, the annual hospital linen shower of the Petersburg auxiliary netted donations of 116 sheets, 17 spreads, 73 bath towels, 59 face towels, 61 pillow slips, 39 wash cloths and 1 quilted pad. In addition \$39.50 was given in cash with which necessary linens will be bought.

Changes have been made in the officer personnel of the auxiliary because of the fact that some of the officers have left the city with their husbands who are in the armed forces. Officers now are president Mrs. H. M. Snead, president-elect Mrs. J. E. Hamner, vice president Mrs. C. S. Dodd, treasurer Mrs. Meade Edmunds, recording secretary Mrs. W. B. McIlwaine and corresponding secretary Mrs. C. T. Jones.

Wisconsin

Two hundred members and guests attended the meeting of the Woman's Auxiliary to the Medical Society of Milwaukee County on Lincoln's Birthday. Among the guests were members of the Washington, Ozaukee and Waubesa county medical auxiliaries and members of the Milwaukee dental auxiliary. The guest speaker was Commander Bart W. Hogan, Senior Medical Officer aboard the aircraft carrier *U.S.S. Memphis*, of the auxiliary who are nurses have been asked to fill out questionnaires which will be used in a survey of nursing services in Wisconsin. Mrs. Edith M. Partridge, Clinical Executive Secretary of the Wisconsin State Nurses Association has charge of this survey.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

ARKANSAS

New Director of Crippled Children—Dr Vida H Gordon, director of the Sanilac County (Mich) Health Department since June 1941, has been appointed director of crippled children activities in Arkansas with headquarters in Little Rock. Dr Gordon was recently elected president of the Sanilac County Medical Society.

CALIFORNIA

Personal—Dr Harold Shyrook, assistant professor of anatomy (microscopic), will be acting dean of the College of Medical Evangelists, Loma Linda-Los Angeles, until the recently appointed dean, Dr Newton G Evans, is able to move to Loma Linda and to accept full administrative activities.

California's Health—With the July 15 issue the *Weekly Bulletin* of the state department of public health became *California's Health*, which hereafter will be issued every other week instead of every week. The *Weekly Bulletin* has been published since Feb 18, 1922. Prior to that date the departmental publication was a monthly bulletin, which was first published in June 1905.

DISTRICT OF COLUMBIA

Department of State Visitors—The following have recently arrived in Washington as the guests of the Department of State. Madame Jacqueline Wiener-Silvera, leader in child welfare from Haiti and founder and president of the League for the Protection of Children there, Dr Xavier da Silveira, head of the Surgical Clinic in the Polyclinic at Rio de Janeiro, who arrived for a tour of the United States under a similar invitation, Dr Lauro Cruz Goyenola, Uruguayan specialist in rural medicine, who will make a special study for his government on popular health education and is a former president of the Medical Society of Eastern Uruguay and at present an officer in the clinical surgical service of the national hospital system of Uruguay, and Dr Heitor P Froes, chairman of tropical diseases on the federal faculty of medicine at Bahia.

Personal—John B Parker, Ph D, since 1910 a member of the faculty of the Catholic University of America, Washington, has been made professor emeritus of biology. Charles L Newcomb has been named acting executive secretary of the Tuberculosis Association of the District of Columbia, succeeding Harald H Lund. Brig Gen Fred W Rankin, Army Medical Corps, received the honorary degree of doctor of science at the commencement exercises of Northwestern University, Chicago, on June 16. Dr Joseph T Roberts, formerly assistant professor of internal medicine and anatomy and director of the experimental laboratory department, University of Texas School of Medicine, Galveston, has been appointed adjunct clinical professor of medicine on the faculties of the schools of medicine of Georgetown University and George Washington University, Washington, he is also chief medical officer at Gallinger Municipal Hospital.

ILLINOIS

Personal—Dr Amzi P Kannapel has been appointed editor of the *Peoria Medical News* to succeed Dr Emil Z Levitin, who held the office for almost fifteen years.

Chicago

Luncheon in Honor of Dr Lebedenko—The Russian War Relief, Inc, announces a luncheon in honor of Dr V V Lebedenko, professor of surgery, First Moscow Medical Institute, and representative of the Russian Red Cross and Red Crescent, at the Palmer House on August 17. Dr Lebedenko will give an address on "Soviet War Medicine."

Bevan Bequest to Surgical Fund—The will of the late Dr Arthur D Bevan provides for a bequest of \$5,000 to the Trustees of Rush Medical College. The amount is to be added to the Thomson-Bevan Surgical Fellowship Fund, established in 1914 by gifts of Mr A D Thomson and Dr Bevan. The annual income from the fund provides a fellowship for a resident surgeon or head surgeon at Presbyterian Hospital. On the death of the primary beneficiaries of the will, \$25,000 will go

to the Lake Forest Hospital, Lake Forest, Ill, as a surgical endowment and the residue will go to the Presbyterian Hospital to establish a perpetual endowment.

Society Urges Complete Filtration for Lake Water—At a special meeting of the Council of the Chicago Medical Society on July 20 approval was given to a report recommending that complete filtration of Lake Michigan should be carried out. The report, submitted by an advisory committee headed by Dr Robert A Black, stated that "the pollution of the water at the south end of Lake Michigan at the intakes of the 68th Street and Dunne cribs is a potential danger to the health of 1,400,000 citizens on the south side of Chicago. Chlorination alone will not make it safe during periods of high pollution. The only adequate protection of Chicago water is filtration followed by chlorination." In a Washington conference Abel Wolman, D E, chief consultant for the water division of WPB, stated that in his opinion the amount of impurities in Chicago water at present does not require any immediate action. Dr Herman N Bundesen, president of the Chicago Board of Health, said that the increase in bacteria count in the first eight days of July was alarming. Dr Bundesen submitted figures showing that the impurities during this period were nearly three times as great as in June, it was reported.

MARYLAND

Personal—Dr Theodore R Shrop, Cumberland, has been appointed a deputy state and county health officer of Garrett County, succeeding Dr Henry Rolfe DePuy, Oakland, who resigned on Sept 1, 1941. Dr Henry N Harkins, a member of the staff of Henry Ford Hospital, Detroit, on July 1 became associate professor of surgery at Johns Hopkins University School of Medicine, Baltimore.

Yellow Fever Volunteer Dies—Clyde L West, a trial magistrate in Calvert County and one of the group of volunteers who was infected by mosquitoes in the experimental inoculation conducted in Cuba during the Spanish American War by Major Walter Reed, M C, U S Army, died on July 16 of heart disease, aged 66. According to an Associated Press dispatch from North Beach, Mr West was taken sick with yellow fever on Feb 3, 1901 and discharged from the service on July 10, 1902 at Fort Meyer, Va. He had been inoculated at Camp Lazear, Cuba.

MISSOURI

Annual Fall Clinical Conference—The Kansas City Southwest Clinical Society will hold its annual fall clinical conference, October 4-6. The conference will be made up of round table discussions, lectures, demonstrations and refresher courses in medicine and surgery and the specialties. The preliminary program includes the following speakers: Drs Frank H Lahey, Boston, Harrison F Flippin, Philadelphia, William F Mengert, Iowa City, Edward H Ryncarson, Rochester, Minn, Tom D Spies, Birmingham, Ala, Cyrus C Sturgis, Ann Arbor, Mich, and Paul D White, Boston.

Health Forum—The Jackson County Health Forum, sponsored by the auxiliaries of the accredited hospitals of Jackson County, will begin its 1943-1944 season on September 15 with a talk by Dr French K Hansel, St Louis, on "Hay Fever and Asthma." Others in the series, which is open to the public, will be

Dr Fred M Smith, Iowa City, Some of the Things That a Layman Should Know About His Heart October 20

Lon W Morrey DDS Chicago Your Teeth and Their Importance to General Health November 17

Dr William W Bauer director of the Bureau of Health Education American Medical Association, Chicago Eat What You Want, January 19

Dr Walter Freeman, Washington, D C, War—Is Good for the Nerves But! February 16

Dr Ralph Pemberton Philadelphia Rheumatism Arthritis and Related Diseases March 16

Dr Morris Fishbein Editor of THE JOURNAL, New Knowledge of Cancer April 19

NEW JERSEY

Personal—Rutgers University, New Brunswick recently conferred the honorary degree of doctor of science on Dr Wells P Eagleton, Newark, for his many attainments during the many years of his practice as a physician. William O Frohman, recently elected director of the American Home Products Corporation, Jersey City, has been appointed special technical consultant to the corporation and its subsidiaries. He will concentrate on research and development work in connection with new products to be introduced when the war ends. Mr Frohman resigned as president and general manager of S M A Corporation, a subsidiary of American Home Products.

accept the new position—Dr Stephen A Douglass Paterson, has been elected president of the New Jersey Tuberculosis League, Newark, succeeding Dr Livia D Abell, Morristown

NEW MEXICO

State Medical Election—Dr Carl H Gullenheim Valora, was chosen president elect of the New Mexico Medical Society at its recent meeting and Dr Joseph E J Harris Albuquerque was installed as president Dr Leo B Colenour, Albuquerque is the secretary treasurer The next session will be in Albuquerque sometime in May

NEW YORK

Examination for Assistant District Health Officer—The state department of civil service will conduct an examination for assistant district health officer of the New York State Department of Health on September 1 The salary range of the position is \$4,000 to \$5,000 Applications and tests must be submitted to the department of civil service by August 24 Accepted candidates will be notified when and where to appear for examination If an applicant is rejected notice will be sent and the fee will be refunded after the examination has been held Candidates must be United States citizens who have been legal residents of New York State for not less than one year Additional information may be obtained from the department of civil service at Albany

Dr Parnall Placed in Charge of Hospital Survey—Dr Christopher G Parnall, medical director of the Rochester General Hospital, Rochester has been granted a six months leave of absence to serve as director of a survey of the twenty-six state operated mental hospitals The survey is a part of the investigation recently inaugurated under the Moreland Act (THE JOURNAL, June 12 p 456) and will be divided into six main fields of study studies and inquiries into admission and discharge procedures, personnel professional care of patients, physical plans in the hospital structures collection of funds for patient care and the administrative setup of the department Archie O Dawson, lawyer chairman of the five members comprising the Moreland act commissioners states in an announcement to the press that Dr Parnall will be assisted by a staff of experts in the field of hospital administration, nursing care, social service, dietetics, psychiatric work and the medical care of patients

New York City

Chinese Blood Bank—The Chinese Blood Bank opened at 134 Nassau Street in June, is the first blood bank in the world entirely manned by Chinese doctors, nurses and technicians to prepare plasma for the armies of China Dr J Heng Liu medical adviser to the Chinese division of the Lend Lease Administration was the first donor Eighty-three donations were received during the first week of operation nearly all of which were from Chinese The staff is headed by Dr Chienlung Yi, who has studied the technique of plasma drying with Dr John Scudder at Presbyterian Hospital and Sloane Hospital for Women and with Dr Max Strumia at Bryn Mawr Hospital, Bryn Mawr Pa Dr Arthur Liu is clinical director and Mrs Jean Chum Liu is the nurse in charge Louis de Fott oversees the mechanical equipment, which includes a refrigerated cabinet and a Strumia dehydration unit with a shell-freezing bath Because malaria is endemic in China there is also a Seitz filter which, by sterilizing blood plasma, can eliminate malaria micro-organisms Preparations for the opening of the blood bank had been going on for more than a year under the supervision of Dr Scudder, director of the blood bank at the Presbyterian Hospital Special training was provided so that the Chinese personnel will be able to take the machinery back to China after its trial run in New York There they will set up the blood bank and pass on their knowledge to others so that more blood banks may be operated as needed by the Chinese army (THE JOURNAL, June 26 p 630)

OHIO

Reid Memorial Fund—A public campaign to raise at least \$300,000 to be donated to the University of Cincinnati College of Medicine as a fund dedicated to the memory of Dr Mont R Reid was launched on July 12 under the auspices of a local committee of sponsors The fund is to be used to supplement the regular budget of the college of medicine and is intended to honor the memory of a great citizen to advance the cause of medical science and teaching and to promote the health of our community An annual deficit varying from \$18,000 to \$25,000 was usually met through the personal efforts of Dr Reid and it is believed that a fund to insure the activities of the department will be a suitable memorial in his honor

Physician Honored by Academy of Medicine—At a recent meeting of the Academy of Medicine of Cleveland, Dr Howard Dittrick, for many years a member or chairman of the publications committee was presented with the academy's distinguished service award for 1943 The award consisted of a silver plate and went to Dr Dittrick in recognition of his service to the academy over a long period of time He has been on the membership committee, chairman of the clinical pathologic section and program committee and director and chairman of the publication committee and editor of the *Bulletin of the Academy of Medicine of Cleveland* almost uninterruptedly since 1934 He has been a trustee of the Cleveland Medical library since 1927 serving for a time as director of membership and director of programs In 1928 he became curator and in 1935 director of the Museum of Historical and Cultural Medicine

PENNSYLVANIA

Position Available as Venereal Control Officer—The Merit System of the state department of health announces an examination to fill the position of chief of the venereal disease division Applications, which must be received from the Merit System Office 207 Blackstone Building, Harrisburg, must be postmarked before August 20 Requirements include graduation from an approved school licensure or eligibility for licensure in Pennsylvania one year's graduate training and experience in venereal disease work and completion of a year's acceptable course in public health prior to appointment or within three years after assuming office The examination will consist of a rating of training and experience and of an oral examination

TEXAS

Members of State Medical Board—Dr Marion M Brown Mexia was recently elected president of the Texas State Board of Medical Examiners, Dr Everett W Wilson San Antonio vice president and Dr Thomas J Crowe, Dallas reelected secretary-treasurer Miss Marion Wood Dallas is the executive secretary Other new members of the board are Drs William E Watt Austin Seeley T Pulliam, Houston, and Gilliam M Stephenson, Cisco

Baylor Opens in New Quarters in Houston—Baylor University College of Medicine now occupies quarters in Houston the equipment from Dallas having been installed in a large building formerly used as a Sears Roebuck retail store Houston physicians are cooperating in the teaching facilities and clinical accommodations are available through the Jefferson Davis Hospital, a city-county unit of 500 beds and the Hermann Hospital of 240 beds The new school has eighty-four students in its freshman class The upper classes are smaller Baylor has Army and Navy contracts, and all of the Navy students who were in Dallas have been ordered to the Houston school Recent appointments to the Baylor faculty include that of Dr James A Greene associate professor of theory and practice of medicine State University of Iowa College of Medicine Iowa City who has been named professor and chairman of the department of medicine and dean of the clinical faculties Baylor University College of Medicine was first organized in Dallas in 1900 as the University of Dallas Medical Department In 1903 assuming its present title the school became the medical department of Baylor University at Waco In 1904 it acquired the charter of the Dallas Medical College and in 1918 absorbed the Fort Worth School of Medicine Dr Walter H Moursund Sr is dean of Baylor

WISCONSIN

Lectures on Medicomoral Problems—Dr Ervin T Huber St Louis University School of Medicine, gave the first in an annual series of lectures on medicomoral problems at Marquette University School of Medicine Milwaukee recently The lecture series named after the Jesuit medical missionary Rene Goupil, is intended to provide physicians with an insight into moral and religious problems in practice

Twenty-Five Years of Service—Gold keys and certificates for twenty-five or more years of service were recently presented to the faculty of Marquette University School of Medicine Milwaukee Dr Fben I Carey dean of the medical school was toastmaster Four of those honored had served the medical school since its organization in 1912 They are Henry L Banzhaf DDS and Drs Matthew N Federspiel Chester A Kissinger and Simpson M Markson Other faculty members honored included Drs Edward F Barta Charles J Coffey Charles Fidler Harry J Heeb Samuel G Higgins Joseph Lettenberger, Francis B McMahon Herbert W Power Louis F Ruschhaupt James C Sargent Frederick A Stratton and Joseph C Bock PhD In addition to faculty members several staff members of the school were also honored

GENERAL

Obstetricians Postpone Meeting—The American Association of Obstetricians, Gynecologists and Abdominal Surgeons has voted to postpone the annual meeting, which was to have been held at The Homestead, Hot Springs, Va., September 9-11.

More Fellowships in Health Education—Fellowships in health education for training at Yale University, the University of Michigan and the University of North Carolina have been announced by the United States Public Health Service. These fellowships have been made possible by the W. K. Kellogg Foundation, Battle Creek, Mich., through a grant to the United States Public Health Service. Twenty-six young women are now enrolled in the School of Public Health at the University of North Carolina working for their master's degree in public health. The additional fellowships will be awarded for the fall term beginning this September. Basic requirements for application include a B.A. or B.S. degree from an accredited university with major emphasis in the medical and social sciences and education. The successful completion of a year's work leads to a master's degree in public health. Interested and qualified persons must submit their applications to the Surgeon General of the U. S. Public Health Service not later than September 4. Announcement of the successful candidates will be made on September 7.

U. S. Pharmacopeia Sales Increase—A report on the financial status of the U. S. Pharmacopeial Convention for the year ended April 30 indicates that the increase in income over the expense of the year is primarily found in the sale of pharmacopeias, represented principally by the U. S. Pharmacopeia XII sales. It is interesting to note that volume sales of U. S. P. XII almost parallel those of U. S. P. XI, U. S. P. XII sales leading, however, at all periods to date. It is obvious that the increased income during this initial period represents a reserve for the maintenance of the revision program for the coming years, a program which will finally bring forth another edition of the Pharmacopeia, new, up to date and in keeping with the times. The increased publication and sales expenses naturally represent, for the most part, costs of printing and binding for the U. S. P. XII to date. A portion of the initial printing is yet to be bound. Administration, convention, revision and research costs have all shown a decided decrease for the year in practically every phase of expense. The report states that the total income was \$201,065.79 and the expenses \$62,014.87, leaving an excess of income over expense of \$139,050.92.

Leslie Dana Medal Awarded to Dr. Lancaster—Dr. Walter B. Lancaster, now in private practice in Boston, has been awarded the Leslie Dana Gold Medal, awarded annually for outstanding achievements in the prevention of blindness and the conservation of vision. Dr. Lancaster was chosen for the honor by the St. Louis Society for the Blind, through which the medal is offered by Mr. Leslie Dana of St. Louis. The award is given on the recommendation of the Association for Research in Ophthalmology. To commemorate his eightieth birthday, which he recently observed, the *American Journal of Ophthalmology* for May was designated the Lancaster Testimonial Issue. He was chairman of the Section on Ophthalmology of the American Medical Association in 1928. He was president three times of the New England Ophthalmological Society, serving in a similar capacity in 1924 with the American Academy of Ophthalmology and Otolaryngology and in 1935 with the American Ophthalmological Society. Recently he concluded two years as chief of staff of the Dartmouth Eye Institute and ophthalmic surgeon of the Mary Hitchcock Memorial Hospital, Hanover, N. H. (THE JOURNAL June 5, p. 387).

Automobile Deaths Decrease—Deaths resulting from motor vehicle accidents throughout the country in the first six months of 1943 totaled 10,030, a reduction of 41 per cent from the total of the comparative period in 1941 before the outbreak of the war and 32 per cent in 1942, according to the National Safety Council. Public cooperation is held largely responsible for the decrease even though most of it may be attributed to wartime restrictions on speed and mileage. All but one of the thirty-eight states whose motor vehicle death figures were available for the first six months of 1943 showed drops from 1942 levels. Every one showed a reduction from 1941. The 1941-1943 changes for the first half of both years ranged from a 77 per cent drop in Wyoming to almost no change. South Carolina's 67 per cent reduction from 1941 was the second largest drop, and Indiana and Georgia were next with 56 per cent reductions. North Atlantic and South Atlantic regions have not shown the drops in fatalities anticipated because of the drastic curtailment of motor vehicle travel in those areas. Other regions have shown larger decreases in fatalities. A total of 337 cities of 10,000 or more population, whose motor vehicle

traffic death figures for the first half of the year were available, showed an average fatality reduction of 19 per cent as compared with the first half of 1942. According to the safety council, this is substantially under the nationwide drop of 32 per cent, so the largest traffic fatality reduction evidently is continuing to come from rural areas.

Government Services

Dr. Vonderlehr Named Director in Puerto Rico and Virgin Islands

Dr. Raymond A. Vonderlehr has been appointed director of district number 6 of the U. S. Public Health Service covering Puerto Rico and the Virgin Islands. Dr. Vonderlehr recently completed eight years' duty as assistant surgeon general in charge of the division of venereal diseases. He has been identified since 1925 with the U. S. Public Health Service. He was first assigned to the U. S. Marine Hospital at Boston in charge of the venereal disease wards. The following year he was stationed at Ellis Island, New York. From 1927 to 1930 Dr. Vonderlehr was assigned to foreign duty in the Irish Free State, England, Germany and Belgium. During this period he furthered his specialty by postgraduate study at syphilis clinics in Germany, England, Scotland and Wales. In 1931, shortly after his return to the United States, he was assigned to the division of venereal diseases and continued in that work to the present time.

New Head of Bureau of Animal Industry

Arthur W. Miller, D.V.S., since 1927 assistant chief of the Bureau of Animal Industry, U. S. Department of Agriculture, Washington, has been appointed in charge of the bureau to succeed John B. Mohler, D.V.M., who retired on July 31 after holding the position for twenty-six years. Dr. Mohler, who received his degree of doctor of veterinary medicine from the University of Pennsylvania in 1896, has been associated with the Bureau of Animal Industry in various capacities since 1897. He has been awarded many honorary degrees and is a member of numerous scientific societies, serving as president of the American Veterinary Medical Association in 1913, U. S. Livestock Sanitary Association in 1925 and of the International Veterinary Congress in 1934. In 1940 he was awarded the twelfth International Veterinary Congress prize and in 1941 was the Kober lecturer. Dr. Miller, who received his degree at the Kansas City Veterinary College in 1901, has been connected with the Bureau of Animal Industry since 1907.

Guard-Attendants and Medical Technical Assistants Needed

The U. S. Civil Service Commission has announced an examination to secure medical guard-attendants and medical technical assistants for the U. S. Public Health Service. Applicants for medical guard-attendant positions, which pay \$1,970 (counting overtime compensation) a year, must be registered graduate nurses or have had at least three years' service in the medical corps of the Army or Navy or have had eighteen months' service as hospital attendant-guards in any one of the Department of Justice penal or correctional institutions, in the Medical Center for Federal Prisoners, Springfield, Mo., or in the U. S. Public Health Service Hospital at Lexington, Ky., or at Fort Worth, Texas. It is desirable that applicants should have had satisfactory experience as guards in penal or correctional institutions, as soldiers, sailors or marines, or as hospital or asylum attendants. Applicants for the technical assistant positions, which pay \$2,433 a year (counting overtime compensation), must possess the qualifications for medical guard-attendant and in addition must have had one year of training or experience in one of the following options: clinical laboratory technique, pharmacy or x-ray laboratory technique. Applicants must have reached their twenty-first birthday. There is no maximum age limit. No written test is required. Persons now in their highest skills in war work should not apply. Appointments in federal positions are made in accordance with War Relocation Commission policies and employment stabilization plan. Persons who received eligible ratings under the examination announced for these positions in July 1941 need not apply again. Further information and application forms may be obtained at first or second class post offices, at U. S. regional offices and the commission in Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 30, 1943

Struggle Over Government Scheme for State Medical Service

It has been indicated in previous letters to *THE JOURNAL* that the main subject of contention between the medical profession and the government in the Beveridge scheme will be control by lay bodies. A controversy on the point is now being waged in the *Times*. In a joint letter a number of public men point out that local authorities are the backbone not only of our democratic machine but also of our health services. They are responsible for maternity and child welfare, midwifery, the school medical and the tuberculosis services and the provision of an extending scale of clinics for various specialized services. They play a major part in providing general and special hospitals and almost entirely provide the mental hospital. It is therefore argued that it would be disastrous if they had no function in the forthcoming development of the nation's health services and as a result many of their other functions were crippled.

To this Dr G. C. Anderson, secretary of the British Medical Association, replied that the main issue has been avoided. It is whether existing local health authorities are satisfactory bodies for administering a comprehensive including a personal health service. Does the layman want the doctor-patient relation to be invaded by the state and the doctor to serve the state rather than the patient? Does he desire that a free profession should be converted into a salaried branch of local government? Doctors are convinced that local government is ill equipped to bear the responsibility of a vast and comprehensive personal health service. Local government areas do not coincide with natural hospital areas and the mere grouping of local authorities will not put this right. There should be a comprehensive health administration locally as well as centrally. The existing proposals only add yet another local authority to the present jigsaw administration.

The caliber of local government membership varies greatly in different areas. Those elected by the people all too often on a political ticket, are not necessarily equipped to administer a service which includes personal health. Doctors agree with the contention that the users of a public service should have free access to those responsible for its general management. But they say that it is in the public interest that they and the voluntary hospitals should be adequately represented on local representative bodies as well as constituting an advisory machinery.

Fall in the Death Rate Due to Use of Sulfonamides

The improvement in our vital statistics during the war has been previously described in *THE JOURNAL*. In the *Lancet* May 29, page 672, Dr Percy Stocks, medical statistician in the General Register Office, states that the vital statistics of England and Wales in 1942 would have been remarkable even in peacetime. The standardized death rate of civilian females was 68 per thousand living, of which 0.08 was due to enemy action and the selective effect of recruitment on the civilian population. The previous lowest rate was 7.43 in 1939. Thus the third year of the war had a rate 9 per cent better than that of any peace year. Civilian males gave a standardized rate of 9.54, which was 0.18 below the previous record of 1939, despite considerable inflation of the rate by selective recruitment.

Comparing 1942 female death rates with those of 1939 there is found a 3 per cent fall in childhood, increasing on passing up the years to 15 per cent in old age. Some important influence tending to reduce mortality, Dr Stocks thinks, must have operated first on the younger ages and then spread up the scale in the period 1939-1942. Natural or social causes can scarcely have been responsible, but sulfonamide therapy, applied, like most remedies in the first instance to younger patients while the drugs were in short supply, and later to older people also, as they became more plentiful, provides a possible explanation. Much of the mortality of childhood, and indeed of all ages arises from the infective complications of diseases which otherwise are not highly fatal.

If this is the true explanation, the diseases treated by sulfonamide compounds ought to account for most of the decline. This has been found. Comparing 1942 with 1938, the deaths from the following diseases diminished in the percentages given: scarlet fever 33, whooping cough 76, measles 30, gonococcal infection 75, erysipelas 41, lobar pneumonia 61, other pneumonia 84, septicaemia and pyemia 80, mouth and throat diseases 60, ear and mastoid diseases 72, appendicitis 67, puerperal sepsis 77, diseases of the skin and subcutaneous tissues 72. Taking together all the sulfonamide groups, the deaths fell from 41,335 in 1938 to 30,482 in 1942. Dr Stocks concludes that though alternative explanations might be advanced, the lives saved by sulfonamides in 1942 ran well into five figures, neutralizing the increase in deaths since 1938 due to the rising population of old people and sensibly reducing the standardized death rate.

The Danger of Overspecialization

The triennial Hunterian Oration at the Royal College of Surgeons was delivered by Mr Victor Bonney, consulting obstetric and gynecologic surgeon to the Middlesex Hospital. Mr Bonney took for his subject *The Forces Behind Specialism in Surgery*. He traced the beginning of specialism to the time when primitive man must have found that better clubs and clothes would be produced if one man made the one and another man the other. Passing from the general to surgery in particular there later arose the medicine man, who combined the roles of doctor, priest and wizard. The separation of surgery from medicine became distinct in England in 1308, when the Company of Barber Surgeons is first mentioned. Not till 1744 was this association dissolved and the surgeons became a separate company. Now surgery had twelve separate departments in which he included obstetrics and gynecology.

The need for and the advantages of this subdivision were manifest but a master of one specialty himself he gave a warning against overspecialization which produced a narrow outlook. To guard against this every aspirant to surgical specialism should undergo adequate training in surgery in general. Since all parts of our art overlap nothing would be so harmful as its division into a number of watertight compartments. Every one working in a special department should have rooted in his mind that his prime allegiance is owed to surgery as a whole and not to the subsidiary shrine where his immediate service lies. He should be competent to deal with every condition with which he may be confronted. Thus the gynecologic surgeon should be familiar with the surgery of the bladder, the rectum and the abdominal contents generally and should perform such operations as the occasion demands. If he cannot occasions will certainly arise when his limitation will be harmful and even disastrous to the patient.

The Threatened Decrease of Population

The threatened decrease in our population due to the fall of the birth rate is causing much concern. In the House of Lords Earl de la Warr said that in 1939 109 women of child bearing age were producing only 75 girls to take their place. This figure compared with 155 in 1880 and 115 in 1911.

Assuming no further decline on the present figure, our population would fall to 34 million in 1980. The gravity of the position was masked by a decrease in the mortality of the aged, which meant nothing as regards reproduction. Not only would we be fewer in 1980 but the age composition of our population would be different. Nearly a fourth of us would be old age pensioners, those over 60 having risen from 7.5 per cent in 1880 to 11.5 in 1930 and 22.5 in 1980, with a corresponding smaller proportion of young people to support the old. A steady decrease of population with an ever growing proportion of old to young was the way to extinction as a nation.

In the debate which followed it was stated that the cause of the fall in the birth rate was mainly economic and that the profound effects of the practice of contraception were not realized. Lord Dawson (consulting physician to the London Hospital) said that the churches had made a fundamental mistake in condemning contraception as such. They should have said that contraception should be rightly used and that adequate parentage was a duty of young people. Family allowances were sound and would be a great help. There should also be better housing. With these and suitable propaganda the idea of larger families could be engendered. For the government the duke of Devonshire said that the whole question bristled with difficulties. He was one of those who viewed the position with alarm. The birth rate of 35.1 per thousand in 1855 had fallen to 15.3 in 1935. Our population doubled in the nineteenth century. The decline of population was now threatened in nearly all northwestern Europe except Russia. The governments of Italy and Germany made considerable efforts to stimulate the birth rate. In Italy these had comparatively little effect, but in Germany there was substantial, though not enormous, success. By all kinds of devices they had raised the birth rate to about half what it was fifty years ago. With the object of meeting a real need, the minister of health proposed to publish a document in which the statistical outlook would be set out and discussed in a balanced manner.

Anglo-Soviet Medical Cooperation

Prof. S. A. Sarkisov, representing the executive committee of the Soviet Red Cross and Red Crescent societies, has arrived here to establish contact with the British Red Cross and British medical scientists and to develop mutual exchange of experience in the treatment of sick and wounded soldiers and in assistance to the civil population who have suffered as a result of the war.

BRAZIL

(From Our Regular Correspondent)

June 30, 1943

Brazilian Physicians Offer an Airplane to the Army

In March 1942 the medical associations of the city of Rio de Janeiro decided to open among their members the subscription for the sum necessary to buy a military airplane to be offered to the Brazilian army. These associations are the National Academy of Medicine, the Society of Medicine and Surgery of Rio de Janeiro, the Brazilian College of Surgeons, the Brazilian Medical Syndicate, the Society of Neurology, Psychiatry and Legal Medicine, the Society of Dermatology, the Society of Pediatrics, the Society of Biology, the Society of Obstetrics and Gynecology, the Society of Ophthalmology, the Society of Gastroenterology and Nutrition, the Society of Tuberculosis, the Society of Traumatology and Orthopedics, the Society of Mental Hygiene, the Society of Traumatology and the St. Lucas Medical Society. The acting committee included Drs. C. de Sant'Ana, Aenor E. Lins and Oscar Alves. The total sum has almost been raised and the committee has

decided that the airplane shall be fitted to serve as a medical transport and will be named after a great army physician of the past, Dr. Severiano de Rezende.

New University School of Nursing

The first school of nursing of high standard in Brazil, the Ana Nery School of Nursing, founded in the Rio de Janeiro Health Department by a group of American registered nurses in 1923, was transferred to the University of Rio de Janeiro in 1937. A few months ago the arrival of Miss Mary E. Tennant, staff member of the International Health Board of the Rockefeller Foundation in São Paulo, was reported (*THE JOURNAL*, May 2, 1942, p. 96) to study local conditions in order to start a school of nursing at the university in cooperation with the foundation. This plan will be put into effect immediately except that it will not be the foundation that will cooperate with the São Paulo University but the Special Service of Public Health, the institution organized by the coordinator of Inter-American affairs to cooperate financially and technically with the Brazilian government in the tremendous work of sanitation of the Amazon basin (rubber), of the Rio Doce valley (iron deposits) and several other tasks. On the university grounds a new building will be erected to accommodate the school and the nurses' residence. The Special Service of Public Health will finance the construction of the building, and the state of São Paulo will equip the school and the residence. The building will cost \$300,000, and the equipment \$100,000. Everything in the new school will be the best and the newest American brand.

Brazilian-American Committee of Pediatrics

A meeting of Brazilian specialists in pediatrics was held recently in Rio de Janeiro to choose the Brazilian physicians who will represent this country in a Brazilian-American Committee of Pediatrics to be established in the near future. Dr. J. Martinho da Rocha, professor of pediatrics at the University of Rio de Janeiro, Dr. Mario Olyntho, professor of child hygiene of the course of public health of the Oswaldo Cruz Institute, and Drs. Adamastor Barbosa, Leonel Gonzaga and Cesar Pernetta were chosen for the committee. All these specialists have served in succession as presidents of the Brazilian Society of Pediatrics during recent years.

Dr. Bernardo A. Houssay

Dr. Bernardo A. Houssay, professor of physiology of the University of Buenos Aires, Argentina, arrived at Rio de Janeiro, June 28, on invitation of the University of Rio de Janeiro, of the Committee of Intellectual Cooperation, of the Brazilian Academy of Science and of the Biologic Society of Brazil to deliver several lectures in his specialty. On June 29 Dr. Houssay was received by the faculty of the Medical School of the University of Rio de Janeiro. Dr. Moysio de Castro, professor emeritus of medicine, presided at the meeting and welcomed Dr. Houssay. Immediately afterward Dr. Houssay delivered his lecture on the subject of "The Scientific Investigation." On July 6 and 8, at the Brazilian Academy of Sciences and at the National Academy of Medicine, Dr. Houssay lectured respectively on "Thyroid and Diabetes" and on "Regulation of the Internal Secretion of the Pancreas."

Course in Hospital Administration

Dr. Felix Lamela, executive secretary of the Inter American Hospital Association, founded in September 1911 at the meeting of the American Hospital Association, is now in Rio de Janeiro, where he is organizing, in collaboration with Brazilian specialists, the first course in hospital organization and administration, to be given in 1944, in this city. Dr. Lamela is a member of the board of directors of the School of Tropical Medicine of Puerto Rico.

Deaths

Orville Harry Brown Arcadia, Calif., St. Louis University School of Medicine 1905, specialist certified by the American Board of Internal Medicine, member of the American College of Chest Physicians, Royal Society of Medicine, Lecturer and American Association of Biological Chemists, fellow of the American College of Physicians, assistant in physiology at the University of Kansas 1901-1902, fellow and assistant in physiology at the University of Chicago from 1902 to 1904, assistant professor of pharmacology at the St. Louis University School of Medicine from 1904 to 1907 and assistant professor of medicine from 1910 to 1916, associate director of the Mount St. Rose Sanatorium, St. Louis, from 1905 to 1907, superintendent of the Missouri State Sanatorium, Mount Vernon, Mo., from 1907 to 1910, member of the visiting staff of the St. Louis City Hospital from 1910 to 1916, at one time state superintendent of public health of Arizona, for many years editor of *Southeastern Medicine*, received the doctor of philosophy degree from the University of Chicago in 1905, author of "Laboratory Physiology" and "Asthma," aged 67, died July 26 of carcinoma.

Grover Hewitt Poos * Palm Springs, Calif., St. Louis College of Physicians and Surgeons 1905, specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology and the Southern Medical Association, fellow of the American College of Surgeons, at one time president of the State Bank at Summit, Ind. III, and a member of the school board, served on the examining board of St. Clair County, Ill., during World War I, formerly practiced in St. Louis where he had been an instructor in clinical ophthalmology at the Washington University School of Medicine and on the staffs of the De Paul Hospital, Barnes Hospital and the Evangelical Deaconess Home and Hospital, aged 58, died May 29 of uremia.

Arthur Walter Bingham * East Orange, N. J., Columbia University College of Physicians and Surgeons, New York 1899, specialist certified by the American Board of Obstetrics and Gynecology, past president of the Essex County Medical Society, fellow of the American College of Surgeons, chairman of the committee on maternal welfare of the Medical Society of New Jersey for many years, consulting obstetrician to the Dover (N. J.) General Hospital, Orange (N. J.) Memorial Hospital and the Presbyterian Hospital, Newark, served as chief consulting obstetrician to the New Jersey Department of Health, in February 1943 was presented with the fourth Dr. Edward J. III Award of the Academy of Medicine of Northern New Jersey, aged 70, died May 18 of carcinoma of the stomach.

John Taylor Watkins, Detroit, University of Michigan Department of Medicine and Surgery, Ann Arbor 1906, specialist certified by the American Board of Internal Medicine, fellow of the American College of Physicians, member of the American Heart Association, at one time associate professor of medicine at the Detroit College of Medicine and Surgery, served as attending physician and vice chief of staff at the Grace Hospital and during World War I as head of the heart and lung division of the medical advisory board, formerly consultant in medicine at the Woman's Hospital and consulting physician to the Highland Park (Mich.) Hospital, aged 59, died May 8 of cerebral hemorrhage.

Walter Allan Minsch * Kerrville, Texas, Louisiana State University Medical Center, New Orleans 1934, past president and secretary-treasurer of the Limestone County (Ala.) Medical Society, formerly health officer of Limestone County, member of the American Public Health Association and the National Tuberculosis Association, served on the board of directors of the Kerr County Tuberculosis Association, on the staff of the Kerrville General Hospital, on the courtesy staff of the Shannon West Texas Memorial Hospital, San Angelo, aged 43, died May 22 of pulmonary tuberculosis and diabetes mellitus.

Henry Burner Anderson * Newark, Ohio, Ohio Medical University, Columbus, 1902, for many years surgeon for the Baltimore and Ohio Railroad, aged 65, died May 24.

Raymond West Andrae, Plainfield, Wis., Milwaukee Medical College, 1907, member of the State Medical Society of Wisconsin, aged 61, died June 2, in the State of Wisconsin General Hospital, Madison, of pneumonia.

Claude Wilber Ashley * Bloomsburg, Pa., Jefferson Medical College of Philadelphia 1932, diplomate of the National Board of Medical Examiners, specialist certified by

the American Board of Pediatrics, Inc., fellow of the American College of Physicians, pediatrician to the Bloomsburg Hospital, aged 38, died May 22, of coronary thrombosis.

William Taylor Barry, Santa Barbara, Calif., Bellevue Hospital Medical College, New York, 1884, past president of the Santa Barbara County Medical Society, formerly president of the city board of education, aged 84, died May 18 of bronchopneumonia, coronary artery disease and cardiac insufficiency.

Frank Clare Bawden * Pontiac, Ill., Rush Medical College, Chicago 1902, aged 66, on the staff of St. James Hospital where he died May 26 of cerebral hemorrhage.

Alfred Chapman Benedict * South Orange, N. J., Columbia University College of Physicians and Surgeons, New York 1901, health officer of South Orange, past president of the New Jersey Health Officers' Association, examining physician for the draft board recently and during World War I, aged 68, died May 28, in the Orange (N. J.) Memorial Hospital of acute bacterial endocarditis, *Streptococcus viridans* and chronic heart disease.

Louis de Milly Blocker * Cincinnati, University of the City of New York Medical Department, New York 1889, past president of the Escambia County (Fla.) Medical Society, at one time member of the city board of health of Pensacola, Fla., and past president of the chamber of commerce, medical director of the American Can Company of Cincinnati, aged 76, died May 28 of tumor of the right kidney.

Ray Allen Bowman * Elkhart, Ind., Indiana University School of Medicine, Indianapolis 1925, coroner of Elkhart County, served during World War I on the staff of the Elkhart General Hospital, aged 40, died May 30 of brain tumor.

John Rufus Bruce, Marshfield, Mo., Tufts College Medical School, Boston 1907, for many years secretary of the Webster County Medical Society, served during World War I, served as a member of the city board of health and as county health commissioner and coroner, registrar of vital statistics for the townships of Ozark, High Prairie, Grant, Jackson, Washington, Niangua and Union, aged 59, died May 16.

Julian Cohen Chandler * Tampa, Fla., Atlanta College of Physicians and Surgeons 1910, aged 65, on the courtesy staff of the Municipal Hospital where he died May 20 of carcinoma of the splenic flexor colon.

William Bicknell Coats, Brainerd, Minn., Syracuse University College of Medicine 1886, aged 79, died May 15 of burns received in a gasoline stove explosion.

John Barstow Coryell * St. Louis, St. Louis Medical College 1885, aged 73, on the staff of the Alexian Brothers Hospital where he died May 31 of pneumonia as the result of injuries received when struck by an automobile.

John Vance Cowles, Kansas City, Mo., Kansas City Homeopathic Medical College 1898, aged 67, died June 11, of leukemia.

James Henry Crouch, Norman, Okla., Medical College of Ohio, Cincinnati 1879, aged 87, died May 6 in the Wesley Hospital, Oklahoma City, of hypertensive heart disease.

Joseph De Horatius * Detroit, Regia Università di Napoli, Facoltà di Medicina e Chirurgia, Italy 1905, Detroit College of Medicine 1909, aged 63, died June 21, in the Receiving Hospital of shock and hemorrhage following a skull fracture received during a race riot.

Charles Aloysius Dillon, Tulsa, Okla., University of Pennsylvania Department of Medicine, Philadelphia 1910, served on the staff of St. John's Hospital, aged 64, died May 29 of heart disease and hypertrophy of the prostate.

Elliott Isaac Dorn * Newark, N. J., Long Island College Hospital, Brooklyn 1904, member of the American College of Chest Physicians, for many years director of the tuberculosis clinics of the state department of health, on the staff of the Newark Memorial Hospital, aged 65, died May 26 in the Beth Israel Hospital of cerebral hemorrhage.

George M. Dunaif, Brooklyn, Long Island College Hospital, Brooklyn 1905, aged 64, died May 9.

William F. Eimbeck, New Haven, Mo., Washington University School of Medicine, St. Louis 1896, member of the Missouri State Medical Association, aged 71, died April 15 of arteriosclerosis and senile dementia.

Frank Coral Eldred Sparrows, Point Md., University of Maryland School of Medicine, Baltimore 1891, member of the Medical and Surgical Faculty of Maryland, aged 75, on the staff of the Church Home and Inn, Baltimore, where he died May 24 of nephritis.

William Crozier Fawcett, Starkweather, N. D., Western University Faculty of Medicine, London, Ont., Canada, 1901, member and past president of the North Dakota State Board of Medical Examiners and the North Dakota State Medical Association, member of the staff of the Mercy Hospital, Devils Lake, aged 65, died, June 21, of carcinoma of the sigmoid.

Hubert Flurry, Booneville, Miss., University of Pennsylvania School of Medicine, Philadelphia, 1930, served during World War I, head of the Prentiss County Health Department, formerly acting assistant surgeon in the U. S. Public Health Service and on the staffs of the Veterans Administration facilities in Lake City, Fla., and Aspinwall, Pa., aged 48, died, May 6, of heart disease.

Elsie Fox ⊕ New York, Cornell University Medical College, New York, 1911, aged 58, died, June 30, of cerebral hemorrhage.

Fred Le Grande Gibbs ⊕ St. Louis, Washington University School of Medicine, 1913, served as a captain in the medical corps of the U. S. Army during World War I, a member of the staffs of the Evangelical Deaconess Home and Hospital, Missouri Baptist Hospital and the De Paul Hospital, where he died, June 4, of myocardial infarction and coronary sclerosis, aged 52.

Larkin White Glazebrook, Washington, D. C., College of Physicians and Surgeons, New York, 1890, Long Island College Hospital, Brooklyn, 1890, at one time chief surgeon of the Washington Railway and Electric Company, formerly attending physician to the Central Dispensary and Emergency Hospital and physician to the Washington City Orphan Asylum, aged 75, died, June 3, of heart disease.

James Henry Haberlin, Providence, R. I., Yale University School of Medicine, New Haven, Conn., 1903, formerly on the staffs of the New York Post-Graduate Medical School and Hospital, New York, St. Mary's Hospital, Brooklyn and St. Joseph's Hospital, aged 63, died, May 1, of coronary thrombosis.

Risq Gautus Haddad, Brooklyn, University and Bellevue Hospital Medical College, New York, 1901, served on the staff of the Shore Road Hospital, aged 68, died, May 8, of coronary thrombosis.

Elizabeth K. Miller Halkett, Philadelphia, Woman's Medical College of Pennsylvania, Philadelphia, 1895, aged 82, died, May 23, of heart disease.

Leo Frederick Hall, Helena, Mont., Medical School of Maine, Portland, 1910, member of the Medical Association of Montana, served as health officer of Helena and of Lewis and Clark County, formerly deputy health commissioner and health commissioner of Cuyahoga County, Ohio, at one time health officer of Auburn, Maine, served in the medical corps of the U. S. Army during World War I, formerly on the staff of the Community Hospital, Berea, Ohio, aged 55, died, May 9, of myocarditis, edema and nephritis.

Robert Dudley Harris ⊕ Fulshear, Texas, Medical Department of Tulane University of Louisiana, New Orleans, 1893, served during World War I, aged 73, died, May 9, of cerebral arteriosclerosis.

Henry Gehardt Hartman ⊕ Louisville, Ky., Louisville Medical College, 1907, also a pharmacist, served in the medical corps of the U. S. Army during World War I, aged 61, died, May 6, in St. Anthony's Hospital of injuries received when he was struck by an automobile.

Wesley Romeo Hawkins, Glasgow, Mo., Louisville (Ky.) Medical College, 1892, member of the Missouri State Medical Association, past president of the Howard County Medical Society, aged 74, died, April 17, of myocarditis.

William Allen Hayes, Louisa, Ky., University of Louisville (Ky.) Medical Department, 1908, member of the Kentucky State Medical Association, on the staff of the Louisa General Hospital, aged 65, died, May 22, of coronary occlusion.

Ralph Reid Hendershott ⊕ Tiffin, Ohio, Starling Medical College, Columbus, 1898, president of the Ohio State Medical Association 1935-1936, past president of the Seneca County Medical Society, during World War I was commissioned a captain in the medical corps of the U. S. Army, aged 66, died, May 1, of coronary occlusion.

Henry F. Hill, Baltimore, University of Maryland School of Medicine, Baltimore, 1877, aged 88, died, May 12, in the University Hospital of coronary thrombosis.

Joseph Alton Hoegen ⊕ Wyoming, Iowa, New York Homeopathic Medical College and Flower Hospital, New York, 1915, served during World War I, aged 49, died, May 8, of pulmonary embolism due to hypertensive heart disease.

George H. V. Hunter ⊕ Brooklyn, Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1908, member of the American Academy of Orthopaedic Surgeons, fellow of the American College of Surgeons, served as a captain with the Harvard Unit in the British army in 1916, for many years on the staffs of the Norwegian and Brooklyn hospitals, attending orthopedic surgeon to St. Agnes Hospital, White Plains, aged 63, died, May 21, of carcinoma at his home in Scarsdale, N. Y.

George Oscar Jenkins, Newton, Mass., Harvard Medical School, Boston, 1874, aged 92, died, May 10, of bronchopneumonia.

Fred Garfield King ⊕ Canton, Ohio, University of Wooster Medical Department, Cleveland, 1908, past president of the Stark County Medical Society, past president of the staff of Aultman Hospital, aged 60, died, May 28.

Francis Ronan Mahony, Lowell, Mass., Harvard Medical School, Boston, 1901, also a lawyer, member of the Massachusetts Medical Society, for many years a member and since 1936 chairman of the Massachusetts Board of Registration in Medicine, chairman of the board of health of Lowell, fellow of the American College of Surgeons, senior visiting surgeon, St. John's Hospital, aged 64, died, May 17.

Alban Leo Mann, Elgin, Ill., Bennett College of Eclectic Medicine and Surgery, Chicago, 1883, for twenty-five years health officer of Elgin, aged 83, died, June 1, in St. Joseph's Hospital.

William Moffatt, Utica, N. Y., Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1898, member of the board of directors of the Oneida National Bank and Trust Company, at one time on the staff of St. Luke's Home and Hospital, aged 74, died, May 10, in a New York hospital of carcinoma of the bladder.

Archie Clay Monroe ⊕ Richmond, Va., University College of Medicine, Richmond, 1907, member of the staff of the Stuart Circle Hospital, aged 59, died, May 21, of hypertension.

Nimrod Woodford Moore, Cynthia, Ky., Medical College of Ohio, Cincinnati, 1881, formerly health officer of Harrison County, aged 85, died, May 26, in the Harrison Memorial Hospital of arteriosclerosis.

Julia C. Cotton Mutchler, Dover, N. J., Woman's Medical College of Baltimore 1908, member of the Medical Society of New Jersey, at one time on the staff of the Norristown (Pa.) State Hospital and the New Jersey State Hospital, Gracystown Park, formerly a member of the state legislature and member of the board of health of Dover, school physician, aged 58, on the staff of the Dover General Hospital, where she died, July 16, of carcinoma of the throat.

Emanuel F. Napieralski, Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903, served as a member of the city health department, examining physician for the draft board during World War I, aged 65, died, June 25, of chronic myocarditis and interstitial nephritis.

Lewis Knode Neff ⊕ New York, Bellevue Hospital Medical College, New York, 1886, at one time clinical professor of medicine at the University and Bellevue Hospital Medical College, veteran of the Spanish American War and World War I, member of the old Eighth Regiment of the New York National Guard, formerly director of the medical service at Harlem Hospital, aged 81, died in the Pennsylvania Railroad Station, May 6, of heart disease.

Frank Neufeld ⊕ Davenport, Iowa, John A. Crughton Medical College, Omaha, 1901, also a pharmacist, past president of the Scott County Medical Society, served on the staffs of St. Luke's and Mercy hospitals, a director of the Home Savings Bank, aged 68, died, May 1, of coronary occlusion.

George Charles Oldag ⊕ Paulina, Iowa, State University of Iowa College of Medicine, Iowa City, 1907, past president of the O'Brien County Medical Society, aged 64, died, May 14, in Cherokee of myocarditis and coronary occlusion.

Earl Welbourn Owen, Spencer, W. Va., Vanderbilt University School of Medicine, Nashville, Tenn., 1925, member of the West Virginia State Medical Association, served during World War I, for many years health officer of Spencer, aged 44, died, May 17, in Los Angeles of hypertension.

Norman O. Paulin, Cleveland Heights, Ohio, Western Reserve University Medical Department, Cleveland, 1895, aged 71, died, May 24, in the Cleveland Clinic Foundation Hospital, Cleveland, of coronary thrombosis.

Louis Willard Pease, Chicago, Detroit College of Medicine, 1890, member of the Illinois State Medical Society, veteran of the Spanish-American War, served on the staff of the Veterans Administration Facility, Hines, Ill., aged 68, died, May 20, of heart disease.

Henry Christian Petersen, Stockton, Calif., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905, member of the California Medical Association, aged 67, died, May 17, of heart disease.

Benton Sanders Pettus, Athens, Ala., University of Nashville (Tenn.) Medical Department, 1892, Vanderbilt University School of Medicine, Nashville, 1892, member of the Medical Association of the State of Alabama, aged 74, died, May 19, at Birmingham of heart disease.

Thomas Redmond ♂ St. Joseph Mo., Rush Medical College, Chicago, 1906, an Affiliate Fellow of the American Medical Association, aged 68, died, May 23, of acute coronary occlusion.

Roland H. C. Rhea, Louisville, Ky., Vanderbilt University School of Medicine, Nashville, Tenn., 1881, University of Nashville (Tenn.) Medical Department, 1882, aged 84, died, May 22, in the Norton Infirmary of coronary sclerosis and arteriosclerosis.

Clarence Bingham Ripley ♂ Galesburg, Ill., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1902, past president of the Knox County Medical Society, fellow of the American College of Surgeons, served during World War I, chief of staff of the Galesburg Cottage Hospital, member of the staff of St. Mary's Hospital, formerly medical examiner for the Chicago Burlington and Quincy Railroad, aged 66, died, May 6, of coronary occlusion.

Albert Nelson Robinson ♂ La Belle Pa., Cleveland Homeopathic Medical College, 1904, aged 62, died, May 14, of heart disease.

Monroe Leon Rosenberg ♂ Dallas Texas, Baylor University College of Medicine, Dallas, 1932, aged 38, on the staff of St. Paul's Hospital, where he died, May 1, of subacute bacterial endocarditis.

Grant F. Rulifson ♂ Chicago, Harvey Medical College, Chicago, 1904, served on the staffs of the American and Edgewater hospitals, aged 78, died, May 16, of carcinoma of the tongue.

Wesley Claude Runyon, Belleville, Ill., Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1907, member of the medical examining board of the county draft board number 1, served on the staffs of the state institutions in Lincoln, Alton, Peoria and Anna, aged 57, died, May 10, of heart disease and cerebral hemorrhage.

William Everett Rushing, Millhaven, Ga., University of Georgia Medical Department, Augusta, 1900, member of the Medical Association of Georgia, aged 68, died, May 5, in Augusta of heart disease.

Martha Shalter, Dover, Ohio, National Normal University College of Medicine, Lebanon, 1889, at one time superintendent of the Tuscarawas Hospital, aged 86, died, May 17, of arteriosclerosis.

Alexander Spingarn, Brooklyn, Columbia University College of Physicians and Surgeons, New York, 1901, since 1941 honorary consulting physician and for many years visiting physician to the Kingston Avenue Hospital, formerly a member of the staff of the Methodist Episcopal Hospital, at one time assistant editor of the *Medical Record*, aged 66, died, May 23, of acute coronary thrombosis.

Henry Steudel ♂ Ansonia, Conn., Christian-Albrechts-Universität Medizinische-Fakultät, Kiel, Prussia, Germany, 1889, on the courtesy staff of the Griffin Hospital, Derby, aged 76, died, May 29, of edema of the lungs, myocardial failure and carcinoma of the stomach.

Andrew Willis Stevenson, Vancouver, Wash., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906, aged 60, on the staff of St. Joseph's Hospital, where he died, May 16, of pneumonia.

Edward R. Stewart, Blair, Neb., Missouri Medical College, St. Louis, 1887, past president of the Washington County Medical Society, aged 81, died, May 1, of pneumonia.

H. Kathleen O'Connor Sullivan ♂ Omaha, John A. Creighton Medical College, Omaha, 1903, past president of the Nebraska Association of Medical Women, aged 62, died, May 6, in a hospital at Rochester, Minn., of carcinoma of the stomach.

Freeman Augustus Tower, Brattleboro, Vt., Tufts College Medical School, Boston, 1904, member of the Vermont State Medical Society, American Psychiatric Association and the New England Society of Psychiatry, assistant superintendent of Brattleboro Retreat, aged 66, died, May 22, of cardiorenal vascular disease.

Union Samuel Ward, New York, Bellevue Hospital Medical College, New York, 1888, aged 80, died, May 1, of heart disease.

Stephen A. Whinery, Grand Rapids, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1890, aged 76, formerly on the staff of St. Mary's Hospital, where he died, May 1, of coronary thrombosis.

Charles Fiske Wood, Westfield, N. J., New York Homeopathic Medical College and Hospital, New York, 1901, at one time a lieutenant in the U. S. Navy, formerly medical inspector for the schools of Westfield and member of the board of health, at one time member of the board of health of Saginaw, Mich., served on the staffs of the Montclair (N. J.) Community Hospital and the Rahway (N. J.) Hospital, aged 66, died, May 2, of coronary thrombosis.

Herbert Samuel Worthley, Joliet, Ill., Northwestern University Medical School, Chicago, 1893, member of the Illinois State Medical Society, served on the board of St. Joseph's and Silver Cross hospitals, for thirty-seven years medical examiner for the Metropolitan Life Insurance Company, aged 75, died, May 7, of cerebral hemorrhage.

Edgar Williams Young ♂ Petersburg, Va., Baltimore Medical College, 1911, served overseas during World War I and was decorated with the Order of the Purple Heart, aged 55, on the staff of the Petersburg Hospital, where he died, May 22, of pneumonia.

Alfred Angelo Zangrilli, Pittsburgh, Jefferson Medical College of Philadelphia, 1931, member of the Medical Society of the State of Pennsylvania, medical examiner for draft board number 12, school physician, on the staff of the Pittsburgh Hospital, aged 43, died, May 27, of coronary occlusion.

Avrum Herman Zeiler ♂ Los Angeles, Columbia University College of Physicians and Surgeons, New York, 1905, specialist certified by the American Board of Pathology, Inc. on the staffs of the California Hospital, Hospital of the Good Samaritan, Queen of Angels Hospital and the Cedars of Lebanon Hospital, where he died, July 16, of carcinoma of the colon, aged 61.

William Walter Zwick, Riverside, N. J., University of Louisville (Ky.) Medical Department, 1919, served during World War I at one time a medical missionary in China, in 1924 had been appointed university physician to the University of Kentucky, Lexington, public school physician and examining physician for the local Selective Service Board, aged 54, died, May 23, in Philadelphia of coronary occlusion.

DIED WHILE IN MILITARY SERVICE

Ralph Clarke Bradley ♂ Philadelphia, University of Pennsylvania School of Medicine, Philadelphia, 1929, served as an instructor in pharmacology at the Temple University School of Medicine for nine years, flight surgeon for the Pennsylvania National Guard, captain in the medical corps, Army of the United States, aged 44, died, April 28, in the Tilton General Hospital, Fort Dix, N. J., of malignant lymphoma of the stomach with metastasis.

Earl V. Ferguson, Cincinnati, University of Cincinnati College of Medicine, 1930, member of the Ohio State Medical Association, served on the staffs of the Christ, Bethesda and Cincinnati General hospitals, lieutenant commander, medical corps, U. S. Naval Reserve, aged 39, died, June 20, in the U. S. Naval Hospital, Pearl Harbor, T. H. of purpura hemorrhagica.

Manuel Heine Shear ♂ York Pa., Hahnemann Medical College and Hospital of Philadelphia, 1932, member of the Medical Society of the State of Pennsylvania, captain in the medical reserve corps of the U. S. Army, aged 35, killed, July 24, 1942, in an airplane accident in the African area.

Lucius Townshend Wing, New York, Harvard Medical School, Boston, 1939, diplomate of the National Board of Medical Examiners, first lieutenant in the medical reserve corps of the U. S. Army, aged 28, died, May 24, in the European area.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Pharmacists Atropine Negligently Included in Filling Prescription for Tonic—The defendant drug company on June 25, 1939 filled a prescription for a tonic in capsule form given the plaintiff by Dr Sibley, which, among other things, called for phenacetin, arsenic acid and strychnine sulfate. The size of the dose called for by the prescription the reported case does not make clear, although the prescription directed the taking of four capsules daily. The plaintiff took two capsules on the 25th. His wife then noticed that the pupils of his eyes were dilated. He took capsules in the morning and at noon on the 26th. While eating his noon meal he choked on a piece of meat because he could not swallow. His vision became impaired and by afternoon he was unable to read numbers on freight cars or to distinguish people. He began to stagger, his throat was dry and he could hardly talk. The plaintiff consulted his physician that afternoon who after examining him, as also did the physician's son another physician ordered him to discontinue taking the capsules and gave him bromides "to settle his nerves." The physician meanwhile had been assured by the drug company that his prescription had been correctly filled. The next day the attending physician called in Dr Tripp, an eye and ear specialist and Dr Krigsten. The four physicians believed that the symptoms all pointed to an acute poisoning from atropine. These physicians, and one other physician also called by the plaintiff as a witness in the suit he instituted against the drug company stated also that there was no probability that the drugs prescribed by Dr Sibley would or could cause the plaintiff's condition. The plaintiff subsequently brought suit against the drug company, alleging that it had negligently included in the capsules called for by Dr Sibley's prescription "atropine, a poisonous and injurious drug not called for in said prescription." From a judgment for the plaintiff the drug company appealed to the Supreme Court of Iowa.

The principal contention of the drug company on appeal was that the evidence adduced before the trial court was insufficient to show that the capsules contained atropine. In addition to the testimony of the five physicians referred to, a pharmacist of the defendant drug company, who had filled the prescription, testified that in the pharmacy of the defendant arsenic, strychnine and atropine were kept together in different bottles in the same compartment. There was testimony that the bottles and tablets of the three last named drugs were similar in size and shape. Also there was testimony by Professor Coss, head of the Morningside College chemistry department, that he had made a chemical analysis of some of the capsules and that one of the tests he performed on the capsules was "Vitali's test," which was positive for atropine or the atropine group, and that in his opinion there was atropine in the capsules. This witness stated also that he performed a biologic test by putting a solution from the capsules in one of his eyes and that the solution dilated the pupil and indicated that the capsules contained atropine or compounds of the atropine group. The defendant called as a witness in its behalf Dean Teeters of the Pharmacy College of Iowa University, who denied much of Professor Coss's testimony. He testified that he performed Vitali's test (which he said was the best for atropine) on the contents of three of the capsules and found no atropine. He testified also that it was impossible "to make a chemical examination that would be absolutely trustworthy" of the combination of prescribed drugs. On cross examination Professor Coss stated that hyoscyamine and hyoscyne, with atropine, are related drugs of the atropine group and that he could not be positive from his tests that the capsules contained atropine rather than hyoscyamine or hyoscyne, that these three drugs of the atropine group have the same properties and would have the same effect, although they are separate drugs. On the basis of this testi-

mony brought out in the cross examination the drug company claimed that the plaintiff had failed to prove that the capsules contained atropine.

That this argument, said the Supreme Court, is somewhat technical is disclosed by the fact that the chemical formula for hyoscyamine is identical with that for atropine, according to the U. S. Pharmacopeia, of which we take judicial notice. We think that there was sufficient evidence that the capsules contained atropine. The plaintiff's medical witnesses testified that the plaintiff, who had taken four of the capsules, showed the characteristic symptoms of atropine poisoning. The jury could have found that, owing to the appearance and location in the prescription counter of the tablets and bottles containing arsenic and strychnine, which were prescribed, and those containing atropine, the latter may have been included. There was no evidence that the drug company kept on hand any hyoscyamine or hyoscyne, the other two drugs of the atropine group to which Professor Coss referred, nor that the capsules in fact contained either drug, but only Professor Coss's admission that either would produce similar results in Vitali's test. Dean Teeters, the expert witness called by the defendant, did not claim that either of the other two drugs of the atropine group was present in the capsules. It was not necessary for the plaintiff to prove conclusively the presence of atropine in the capsules or to exclude to a certainty every other suggested poison. The evidence was such as to make the plaintiff's theory of atropine poisoning reasonably probable—not merely possible—and more probable than any other theory based on such evidence. This is sufficient.

At the trial counsel for the plaintiff asked a medical witness "May there be permanent effects of atropine poisoning even though no organic trouble can be demonstrated?" It was proper, said the court, for the trial court to permit the expert witness to answer even though the answer was "It is possible." While an expert may not express a mere guess or conjecture, he may testify to what might have been the cause of a certain result. An opinion as to what was the possible cause of a given result is not too uncertain.

During the trial the plaintiff propounded a long hypothetical question to Drs Sibley and Krigsten in which one of the assumed facts was that the "Vitali test as made by Professor Coss was positive for atropine and compounds of the atropine group." The drug company objected to the question because any answer to it would be based in part on the opinion of Professor Coss, an expert witness. It was proper, said the court, for the trial court to permit an answer to this question. While it is true that the opinion of an expert should not be based on the opinion of another expert witness, facts testified to by one expert may properly be included in a hypothetical question propounded to another expert. The quoted portion of the question referred to a fact and not an opinion of an expert witness and therefore was proper.

For the reasons stated the judgment in favor of the plaintiff was affirmed—*Cody v. Toller Drug Co., 5 N. W. (2d) 824 (Iowa, 1942)*.

Society Proceedings

COMING MEETINGS

- American Association of Obstetricians Gynecologists and Abdominal Surgeons Hot Springs Va., Sept 9-11 Dr James R. Bless, 418 Eleventh St., Huntington W. Va., Secretary
- American Congress of Physical Therapy Chicago, Sept 8-11 Dr Richard Kovacs 2 East 88th St. New York Secretary
- District of Columbia Medical Society of the Washington, Sept 30-Oct 2 Mr Theodore Wiprud, 1718 M St. N. W., Washington Secretary
- Indiana State Medical Association Indianapolis Sept 28-30 Mr F. A. Hendricks 23 East Ohio St., Indianapolis, Executive Secretary
- Michigan State Medical Society Detroit Sept 22-24 Dr L. Fernald Foster, 2020 Olds Tower Lansing, Secretary
- Northern Minnesota Medical Association Duluth Aug 28 Dr R. I. Jones, 8 Sixth Avenue N. St. Cloud Secretary
- Oregon State Medical Society Portland Sept 4-5 Dr Thomas D. Robertson St. Vincent's Hospital Portland, Secretary
- Utah State Medical Association, Salt Lake City, Aug. 27-28 Dr D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary
- Wisconsin State Medical Society of Milwaukee, Sept 13-15 Mr C. A. H. Crownhart, 110 East Main St. Madison, Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in the continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1912 to date. Requests for issues of a later date cannot be filled. Request should be accompanied by cash to cover postage (6 cents if one or 14 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reports as a rule are the property of authors and can be loaned for private use only from them.

Titles marked with an asterisk (*) are abstracted below.

American J Digestive Diseases, Fort Wayne, Ind

10 161-200 (May) 1943

- Clinical Roentgenologic Review of Literature for 1942 Pertaining to Digestive Tract. M. Fellman—p. 161
Influence of Vitamin C on Wassermann Fastness in Syphilis. S. I. Ruskin—p. 170
Absorption of Vitamin A in Chronic Ulcerative Colitis. R. C. Price and Z. Bercovic—p. 174
Diabetes Mellitus. W. C. Cutting and C. B. Kolson—p. 177
Continuation. Clinical and Roentgenologic Evaluation of Use of Bran. M. H. Streicher and Lucille Quira—p. 179
Fluorescent Aid in Gastroscopy. H. M. Robinson—p. 181
Meets of Sigmoidoscopy. Preceding Barium Enema Study of Colon. M. Golob—p. 182
Allergy as Factor in Thrombosis. J. A. Turnbull—p. 184
Mach's Diverticulum Containing Calculi. Case Report. F. W. Mulow—p. 188
Normal Appearing Gallbladder (Report of 32 Operated Cases with Long Follow Up). J. R. Verbrueke Jr.—p. 190

Influence of Vitamin C on Wassermann Fastness—According to Ruskin vitamin C apparently enhances the spirocheticidal effect of bismuth and the trypanomicidal effect of antimony. With all other factors equal the addition of bismuth cevitate produced negativity in 7 out of 10 syphilitic patients with positive Wassermann fastness. Vitamin C and glutathione influence the capacity for spirochetes and trypanosomes to take up arsenic antimony bismuth and gold. Vitamin C acts as a detoxifier of antimony arsenic and bismuth in the reduced state and can enhance the spirocheticidal and trypanosomal action of these metals during the process of oxidation. Bismuth cevitate may be considered an important addition to the therapy of Wassermann fast syphilis.

Am. J Roentgenol & Rad Therapy, Springfield, Ill

49 433-574 (April) 1943

- Bleeding in Hiatus Hernia. O. D. Sahler and A. O. Hampton—p. 433
Bleeding Associated with Extramucosal Tumors of Stomach. O. D. Sahler and A. O. Hampton—p. 442
Secondary Lymphosarcoma of Stomach. F. Buchke and S. T. Cantlil—p. 450
Prenatal Diagnosis of Osteopetrosis. E. L. Jenkinson, W. H. Pfisterer, K. A. Lattier and Mary Martin—p. 455
Ghons Tubercle. Reevaluation of Concept. R. G. Bloch—p. 463
Ten Thousand Chest Examinations with Stereoscopic Photoroentgen Unit. J. Levin—p. 469
Roentgenologic Diagnosis of Dilatations of Spinal Cord Veins. Report of Case. B. S. Epstein and L. M. Davidoff—p. 476
Experiences with Roentgen Irradiation Following Operation on Brain Tumors. S. N. Rowe and H. W. Jacob—p. 480
Cancer of Uterus. Results of Present Method of Radium Therapy as Influenced by Stage and Grade of Lesion. H. H. Bowring and R. E. Fricke—p. 487
Elimination of Irradiation Injuries in Treatment of Cancer of Cervix. C. L. Martin—p. 494
Instrument for Inserting Multiple Capsules of Radium within Uterus in Treatment for Corpus Cancer. J. F. Nolan and A. N. Arneson—p. 504
Cancer of Cervix. Effect on Rate of Cure of Increased Roentgen Radiation to Parametria. W. P. Healy and G. H. Twombly—p. 519
Production and Characteristics of 3000 Kilovolt Roentgen Rays. J. G. Trump and R. W. Cloud—p. 531
Preliminary Clinical Observations on Use of a Million Volt Roentgen Rays. R. Dresser—p. 536

Bleeding in Hiatus Hernia—Sahler and Hampton state that a study of hiatus hernia carried on at the Massachusetts General Hospital for a period of ten years brought out two important points. One is that hemorrhage may be a symptom of hernia; the second that the incidence of hiatus hernia is considerably higher than has been appreciated. The diagnosis of

hiatus hernia is dependent on two roentgenologic points: an asymmetrical relationship between the lower end of the esophagus and the herniated fundus of the stomach, and a narrowing of the fundus where it passes through the diaphragm. A soft tissue mass in the lower mediastinum should suggest the possibility of hiatus hernia as well as the usual differential diagnosis of tumor abscess.

Ghons Tubercle—According to Bloch the term Ghons tubercle has been universally accepted as signifying the calcified single or multiple remnants of a tuberculous lesion resulting from a primary infection acquired in childhood. This interpretation is made regardless of the age of the patient in whom such a lesion is found; its origin is placed back in the early years of life from the adolescent and senile age period alike. Bloch points out that authors from different continents studying tuberculosis in various races have demonstrated that calcifications are found more frequently in old than in young persons and that there is a steady rise in the frequency of such findings with increasing age. Observations in case finding programs in Chicago demonstrated the greater incidence of calcified foci in higher age groups. The majority of such lesions originating during adult life can be traced to exogenous superinfection of individuals known to have been exposed to infection as adults. Serial roentgenographic evidence of the development of calcifying foci in adults is presented. They cannot be differentiated from childhood (primary) lesions. A reevaluation of the so-called Ghons tubercle or primary tuberculous calcification is needed. In the light of the present knowledge the only justifiable interpretation to be placed on the finding of a calcified tuberculous lesion by roentgen examination is that it represents the innocuous residual of a tuberculous infection either primary or reinfection at some prior time either in childhood or adulthood without its being possible to determine the time at which the infection occurred. The term 'Ghons tubercle' should be dissociated entirely from the time element and applied to all small calcifying or calcified tuberculous foci regardless of age or it is to be retained as signifying the residuals of a childhood infection; it should be applied only when the calcified residuals are found in a child.

Surgery, St. Louis

13 653-822 (May) 1943

- Utilization of Encephalomyography in Selected Cases of Post Traumatic Focal Epilepsy. J. H. Sims—p. 653
Cranial Serigraph and Its Utility in Neurologic Radiology for Cerebral Angiography. J. M. Sanchez Perez—p. 661
Suppression of Infection in Recent Wounds by Use of Antiseptics. T. Beath—p. 667
Carbamide Sulfonamide Mixtures in Wound Therapy. H. G. Holder and E. M. MacKay—p. 677
Pathogenicity of Bacteroides Melanogenicus and Its Importance in Surgical Infections. C. Weiss—p. 683
Early Postoperative Walking. I. Influence of Exercise on Wound Healing in Rats. B. Newburger—p. 692
Study of Physical Factors Concerned in Inflammation. II. Some Factors Which Influence the Spread of Bacteria in Tissues. C. J. Bellis—p. 696
Analysis of Reaction of Human Gallbladder and Sphincter of Oddi to Magnesium Sulfate. E. A. Bowden, G. S. Bergh and J. A. Layne—p. 723
Perforations of Gallbladder Occurring in General Surgical Practice in Moderate Sized Community. S. L. Stout and J. S. Hibbard—p. 734
Experimental Study of Methods for Closing Duodenal Stump After Gastric Resection. A. Slive, D. Shook and S. J. Fogelson—p. 741
Treatment of Flexion Deformities of Knee. R. S. Reich—p. 746
Chronic Empyema Due to Dermoid Tumors of Mediastinum. J. M. Dorsey—p. 755

Urea-Sulfonamide Mixtures in Wound Therapy—Holder and MacKay show that urea (carbamide) acts in a number of ways to enhance the action of the sulfonamides. They mention the removal by urea of gross sulfonamide inhibitors or of the source of such inhibitors in the form of necrotic tissue pus and tissue exudates. Urea increases the solubility of the sulfonamide drugs. It urea had none of its other known advantages its value as a diluent for the sulfonamides would almost be sufficient reason for its addition to these drugs. The degree of active cellular defense within the wound is aided by urea. It is probable that the hypertonicity of the solution leads to diapedesis and an increase in the resection within the wound tissues. Urea-sulfonamide mixtures have been most satisfactorily employed for first aid in contaminated traumatic wounds.

Experience indicates that with their use formal surgery may be safely delayed long after twelve hours have elapsed. In the handling of wounds resulting from military action this extended period during which a wound may be kept from becoming infected provides for delay in evacuation of wounded and their transportation to facilities allowing adequate treatment. It permits the adequate treatment of shock during the initial period, thereby rendering the patient the best possible risk for surgical treatment. Wounds in which tissue loss prevents primary closure are treated by daily application of urea-sulfonamide mixtures after suitable surgery, including adequate debridement. This is immediately productive of clean, healthy, rapidly growing granulation tissue which permits early successful skin grafting with attendant reduction of disability from scar tissue contraction as well as improvement in the final cosmetic results. Wound therapy with urea-sulfonamide mixtures is simple and inexpensive.

Pathogenicity of *Bacteroides Melaninogenicus*—Weiss maintains that *Bacteroides melaninogenicus*, a small, gram-negative, anaerobic, nonsporulating, black pigment producing germ, should be regarded as a pathogen which is of importance in surgical infections. He has isolated it in combination with other aerobic and anaerobic bacteria from 45 surgical cases representing various infected wounds, lesions of the pleura and peritoneum as well as of the gastrointestinal, respiratory and genitourinary tracts. Others have cultivated it from the blood stream during puerperal infection. The author found it at necropsy in the heart's blood, the peritoneum and the visceral organs. Experimentally he has shown that it possesses a fibrinolysin which permits it to dissolve human blood fibrinogen, thus interfering with one of the essential defense mechanisms of the inflammatory process, local fixation of micro-organisms. In cultures it produces a putrid, foul odor and together with the anaerobic *Streptococcus putrificus* is responsible for the unpleasant odor of some types of pus. Strains of *B. melaninogenicus* were recovered from human lesions which, if inoculated within a few days after cultivation, were pathogenic for rabbits and mice. Intradermal injection produced in the former intense local inflammation, dermonecrosis and occasionally death. Previous damage of the tissue by a bacterial toxin enhances the dermonecrotic properties of the germs. The use of mucin as a menstruum for suspending the bacteria supplies them with a capsule, thus augmenting their pathogenicity and invasiveness. *B. melaninogenicus*, like *Bacteroides funduliformis* and certain other members of the genus *bacteroides*, may therefore be regarded as an "opportunistic" which must find conditions suitable for invasion and multiplication.

United States Naval Med Bulletin, Washington, D C 41 613-916 (May) 1943 Partial Index

- War Wounds of Peripheral Nerves W M Craig—p 613
- *Meningococcal Meningitis in San Diego Area During 1942 Recent Advances in Epidemiology and Treatment C D Awe, R W Babione and J N DeLamater—p 625
- Treatment of Acute Proctologic Conditions Afloat E Granet—p 635
- Pneumonia Review of 388 Cases at Philadelphia Naval Hospital F Fetter—p 653
- Effort Syndrome or Neurocirculatory Asthenia in Navy A M Master—p 666
- Injuries of Head Evaluation and Management J H Siris—p 670
- Observations on Growth of *Endameba histolytica* in Mediums Containing Sulfathiazole Preliminary Report W W Ayres—p 714
- Treatment of Cicatricial Entropion W L Berkley—p 729
- *Treatment of Photophthalmia Following Exposure to Rays of Welding Arc C E Benson—p 737
- Practical Points in Refraction A A Knapp—p 750
- Simple Methods for Detection of Ocular Malingerers G M Bruce—p 755
- Hyperventilation and Hyperventilation Syndrome R W Quinn—p 769

Meningococcal Meningitis—Awe and his associates report 50 cases of meningococcal meningitis which were treated at the Naval Hospital of San Diego during 1942. Two deaths occurred, one twenty minutes, the other four hours after admission. These are not chargeable to therapeutic failure, as 1 received no drugs, the other only one dose. The fact that 11 patients were comatose and 27 were stuporous, irrational or otherwise disturbed mentally indicates that the cases were not unusually mild. Fifteen patients received serum and sulfapyridine and 31 only sulfapyridine. No difference was noted in the

patients treated with serum as compared with those not receiving it, save the high incidence of troublesome serum sickness. Therapeutic success depended on early and large doses of sulfapyridine, 12 Gm intravenously in the first twenty-four hours. Adequate fluid intake, 3,000 cc intravenously daily, prevented serious drug complications. All factors, excepting avitaminosis, which are accepted as fostering outbreaks of meningitis, were noted in 32 marine recruits: (1) rapid hardening of physically soft men, (2) mobilization of large numbers of susceptible men in crowded quarters, (3) prevalence of colds, (4) temporary overload of immunologic processes (inoculations against typhoid, tetanus and the like), (5) an underlying carrier state, (6) excessive heat and dust. With early diagnosis and adequate treatment the mortality and complications of meningococcal meningitis will approach zero. Sulfonamides alone, in large doses with ample fluid, provide adequate treatment. Serum is unnecessary and impractical for military use. Sporadic cases are to be expected in men subjected to the conditions found in recruit training. Chemoprophylaxis is recommended in an epidemic of meningococcal meningitis, and alterations in the training program may be necessary.

Photophthalmia Due to Rays of Welding Arc—Benson directs attention to the problem of exposure of the eyes to the radiant energy of the welding arc with the resultant photophthalmia, actinic ray ophthalmia or "flash." This type of eye injury is frequent in shipyards and in plants where welding plays a large part. It is not the welder who is the most frequent victim of his own arc but the workmen engaged in work near the welder. The welder protects himself with his hood. He may, however, receive an actinic injury from the arc of another welder near him or from his own "accidentally struck" arc while his own hood is raised. After exposure to the arc a latent period ensues which may vary from two to fifteen hours. The lesion then manifests itself with a sudden onset of intense photophobia, lacrimation and a burning sensation in the eyes. The most frequent complaint is that of a feeling of "sand in the eyes." The lesion is bilateral, although at times the symptoms will appear earlier in one eye than in the other, in the present series the majority of "one-eyed flashes" were found to be caused by foreign bodies. Moderate dilatation of the conjunctival vessels is present, but this congestion is usually limited to the area of the palpebral fissure. Prevention can be accomplished by protecting the eyes with shields, hoods and goggles. Seventy-three cases were treated with a 2 per cent butyn sulfate and a 1 per cent diothane hydrochloride, 447 cases were treated with a solution containing 0.25 per cent nupercaine hydrochloride and 0.5 per cent neosynephrine hydrochloride as the active principles. The nupercaine was used because of its relatively prolonged anesthetic action. Neosynephrine was added to overcome the vasodilatation and to attempt a partial neutralization of the contraction of the pupils accompanying many actinic ray lesions. The nupercaine-neosynephrine was dissolved in a zephiran 1:5,000 aqueous base to decrease the surface tension of the solution, for better penetration and to furnish an antiseptic medium. About 2,500 additional cases have been treated by the nupercaine-neosynephrine routine. The treatment has not appreciably decreased the duration of the reparative process. It gave considerable symptomatic relief and helped return men to their work with a minimum of lost time and with no apparent permanent injury.

Virginia Medical Monthly, Richmond 70 279-330 (June) 1943

- Navy Doctor in War L Sheldon Jr—p 283
- Management of Pleural Effusion Associated with Pneumothorax B Cole and L J Buis—p 289
- Treatment of Lymphopathia Venereum R Buxton—p 291
- Multiple Saccular Aneurysms of Aorta with Roentgen and Necropsy Findings F B Mandeville—p 293
- Treatment and Analysis of 350 Consecutive Cases of Acute Appendicitis H L Skinner and R D Duncan—p 297
- Clinical Aspects in Treatment of Syphilis F E Hadlock—p 299
- Recent Trends and Current Attitudes in Orthopedics D T Irwin—p 302
- Remarks on Treatment of Meningitis C F Jones Jr—p 303
- Pharmacist Looks at Physician K L Kauffman—p 311
- Recommendations for Venereal Disease Control Program in Industry Report of National Advisory Committee on Control of Venereal Diseases in United States O L Anderson—p 314

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted from a single case report and trials of new drugs are usually omitted

Brain, London

66 188 (March) 1943

- St Les of Neuro-muscular Disorders. Myoarth Blood Cholinesterase and Effect of Prostigmine in Myasthenia Gravis and Progressive Muscular Atrophy. G Odum C K Russel and D Mckachern—p 1
Subdural Empyema. C S Kubik and R D Adams—p 18
So-Called Laryngeal Epilepsy. C W M Whitty—p 41
Genetic and Familial Aspects of Dystrophia Myotonica. O Maas and A S Paterson—p 55

Subdural Empyema—Kubik and Adams review 14 cases of subdural empyema. The sources of infection were pyramidal sinusitis in 12 cases, otitis media in 1 case and bronchiectasis with metastatic infection in 1 case. The symptoms in the cases complicating sinusitis consisted of exacerbation of chronic sinusitis, orbital swelling, headache, rise in temperature, stiffness of the neck, drowsiness or stupor and focal neurologic signs. Hemiparesis or hemiplegia occurred in every case. Paralysis of contralateral deviation of the eyes nearly always developed. Aphasia was observed in most cases of left sided empyema. Jacksonian seizures were fairly common. Spinal fluid pressure was nearly always increased, ranging from normal to the equivalent of 370 mm. of water. Cell counts generally ranged from 150 to 600 per cubic millimeter with polymorphonuclear leukocytes predominating. The sugar content of the spinal fluid was normal. The total protein ranged from 49 to 186 mg per hundred cubic centimeters. No organisms were found in smears or culture. Except for absence of sinus infection and orbital swelling the clinical manifestations in the 2 other cases secondary to otitis and to bronchiectasis, were similar to those complicating sinusitis. The course was rapidly progressive. In 12 cases death occurred six to twenty days after onset of headache, and two to five days after focal signs were first observed. In 2 cases recovery took place after drainage of the empyema. Infection of the subdural space took place by direct extension through the dura or as a result of thrombophlebitis involving the venous sinuses, usually the superior longitudinal. The subdural pus covered the greater part of the lateral surface of the hemisphere the greatest amount being situated over the lateral surface of the frontal lobe. There was a localized sub-arachnoid exudate conforming in its distribution to that of the subdural exudate but scarcely any generalized leptomeningitis. In the underlying cortical gray matter there was severe ischemic necrosis and in most cases thrombosis or thrombophlebitis involving the subarachnoid veins. Surgical treatment should consist in drainage through a lateral frontal craniotomy and not through the frontal sinus or a mastoidectomy wound. The operation is simple and quick and if the results are negative little or no harm is done provided the brain is not explored.

So Called Laryngeal Epilepsy—Whitty reviews a condition originally described by Charcot as laryngeal vertigo. Theories on the etiology of the condition fall into two main groups, those which regard it as primarily neurologic and those which regard it as primarily cardiovascular. In the first group is Charcot's theory of reflex vertigo and the epileptic theory of origin while in the second appear the theories of cerebral anoxemia, venous congestion and cardiac asystole. The condition occurs in middle aged men of plethoric type and is associated with a laryngitis or bronchitis. A previous personal or family history of epilepsy may occur but is not common. The presenting symptom is an attack of dizziness or loss of consciousness preceded by a tickling sensation in the larynx and a cough which may be slight or severe. Epileptiform movement may occur during the attack but a more constant feature is a slight mental confusion afterward. About a fourth of the cases appear to recover or remit following local treatment of any abnormality which may be present in the upper respiratory tract. Four cases are reported in detail. It is suggested that the condition is primarily epileptic. The name laryngeal epilepsy would appear more suitable than that under which the condition is at present most widely known.

Dystrophia Myotonica—Maas and Spencer Paterson base their study of the familial aspects of dystrophia myotonica on an analysis of 94 affected families. Dystrophia myotonica is essentially the same as myotonia congenita and paramyotonia. The disease is more frequent than is generally supposed. In the families of the 94 propositi 261 individuals showed definite signs of the disease while another 285 had suggestive symptoms. Although the disease is frequently noticed for the first time in the third and fourth decades of life the authors have observed it in persons aged 14, 12, 9, 8, 6, 5, 4 and 3. Although patients generally die by the age of 50 they have occasionally found one comparatively well beyond the ages of 60 and 70. In certain families in which for the most part symptoms were slight members were often remarkably prolific. However mental defect and other symptoms affecting earning power combined with atrophy of the testes caused a definite fall in the number of children in later generations. There was a high incidence of miscarriage and infantile mortality which was probably due to the disease process and not merely to the low social status of the families affected. Twinning appears to be particularly frequent and this may be related to a nova affecting the germ plasma. Although patients are occasionally found of high social status most families are low in the social scale. The disease is transmitted in a dominant manner; it is inherited from male and female with equal frequency. Consanguinity is probably not infrequent in early generations. There is evidence that in many families the disease comes on at an earlier age and in a more intense form in successive generations. It was also usual for younger members of a sibship to develop the disease at an earlier age than the older sibling and in a more severe form.

Medical Journal of Australia, Sydney

1 267-290 (March 27) 1943

- *Investigation of Renal Function with New Nomographic Method for Determination of Urea Clearance. M C Davis—p 267

1 291-306 (April 3) 1943

- Physiology of Chronic Nephritis. J M Hayman—p 291
Hippuric Acid Excretion Test in Pregnancy. L Sloman—p 293
Precipitation in Stored Human Serum. Preliminary Note on Factors Concerned. P M de Burgh and R N Lyons—p 298

Nomographic Method for Determination of Urea Clearance—Davis has correlated the urea clearance test with clinical and other observations in 54 cases involving 67 tests. By comparison with other tests and by follow-up investigation of clinical histories a careful estimation of the test has been possible. The importance of giving urea by mouth to subject the kidney to load or stress is emphasized. The simple Van Slyke test by omitting this factor is of less value than the modified urea clearance which is described. All aspects of a case must be considered before final conclusions are reached. A simple nomographic chart is presented which will allow the clinician to determine from all available data the true clearance value. The chart has four scales. One scale marked V indicates the volume of urine in cubic centimeters excreted each minute. The scale marked U records urea concentration (grams of urea per hundred cubic centimeters). The B scale shows the blood urea level (milligrams of urea per hundred cubic centimeters of blood). The C scale indicates the blood urea clearance as a percentage of the normal value. To determine clearance (C) a straight line is placed through values U and B which intersects a central unscaled line. Then a straight line is placed through this point and value or V. The point of intersection of this line with the C scale gives the value of C that is clearance. This nomograph chart eliminates all mathematical formulas. The author concludes that the urea clearance test is reliable and accurate and in many cases provides the only guide to renal damage. Because other means of biochemical assessment often prove misleading older methods should be discarded. The urea clearance test should be employed in assessment of prognosis or of fitness for operation. The test appears to be of great value in chronic nephritis and prostatic enlargement in which urea concentration and blood urea level may be misleading.

South African Medical Journal, Cape Town

17 51-66 (Feb 27) 1943

- Tiredness and Eyesight H de Villiers—p 55
 *Pneumonic Plague Recovery in Proved Case B M Clark and S Goldberg—p 57
 Plasmocytosis of Bone Marrow Associated with Metastatic Carcinoma E Miller—p 61

Recovery from Pneumonic Plague—According to Clark and Goldberg the mortality of pneumonic plague may be considered as 100 per cent. The authors report an outbreak which, although the number of cases involved was small (11 in all), was potentially serious as it took place in a crowded location in the native part of a town in the northern Orange Free State. The measures taken to control the outbreak consisted in quarantine and the giving of live avirulent vaccine. Concentrated serum was given as a prophylactic measure to close contacts. Antirodent work was carried out in the area. The patient who recovered was an old woman who belonged to the same household in which 4 fatalities from pneumonic plague occurred. She had the same symptoms as the others. She had been given 1 cc of live avirulent vaccine and 50 cc of antiplague serum as a prophylactic measure five days before the onset of her illness. She was treated early with large doses of serum, 400 to 500 cc intramuscularly and subcutaneously. She had remittent pyrexia for a period of a week and was acutely ill but finally recovered. Bacteriologic evidence of pneumonic plague was found in the sputum.

Semana Médica, Buenos Aires

50 357-412 (Feb 18) 1943 Partial Index

- Angina Pectoris of Thyroid Origin P Heredia—p 357
 Wounds of Heart in Civil Practice L M Martiarena—p 367
 Etiology of Psoriasis Clinical Observations A Bigatti—p 380
 *Twenty Years' Experience in Puerperal Eclampsia A J Guiryo, R Dubrovsky and N O Di Fonzo—p 394

Treatment of Puerperal Eclampsia—Guiryo and his associates review 233 cases of puerperal eclampsia observed in the course of twenty years. The maternal mortality was 6.43 per cent and the fetal mortality 9.43 per cent. When the dead and macerated fetuses whose death was caused by gestosis and other causes rather than by the eclampsia are included, the fetal mortality reaches 15 per cent. Cesarean section is losing ground as a therapeutic method in puerperal eclampsia. It is indicated only in exceptional cases. Prophylactic treatment during pregnancy by hygienic measures and a well chosen diet continue to be the essential factors in the reduction of the maternal and fetal mortalities from puerperal eclampsia. The outpatient departments of the maternity hospitals play an important part in this prophylaxis. At the maternity hospital with which the author is connected satisfactory results were obtained with Stroganoff's prophylactic method, which combines morphine, magnesium sulfate and venesection. Absolute isolation is enforced to keep away all excitement, necessary manipulations are carried out under mild anesthesia, the patient is kept warm, and hypnotics of low toxicity are administered.

Munchener medizinische Wochenschrift, Munich

89 299-322 (April 3) 1942 Partial Index

- *The Clinical Picture of Typhus G Walther—p 299
 Index of Epidemic Typhus Infection G Seiffert—p 304
 Recurrence of Disease of Bile Ducts After Gallbladder Operation Special Reference to Cholangitis G Leopold—p 306
 *Psittacosis Pneumonia L Stehr—p 311
 Treatment of Obesity from Biologic Point of View R Trumpp—p 313
 Treatment of Hidradenitis Suppurativa Axillaris W Schuchard—p 315

The Clinical Picture of Typhus—Frequently the onset is abrupt after a period of incubation of from twelve to fourteen days. There is a rise in temperature on the first day up to 102.2 F and a severe headache. The temperature falls but not to normal on the second and third days and this is followed by a new and even higher rise for about eight days. The rash appears on the third to the fifth day. Brauer's eraser phenomenon (fine scales of the horny layer of the epidermis may be removed by rubbing with the finger) precedes the desquamation, which begins between the twelfth and the fifteenth day. Yellow pigmentation of soles and palms may be present. Disturbances of the central nervous system are important. The

course of the disease depends on the behavior of the heart and circulation. These are indicated by the changes in the electrocardiograms. The spleen is enlarged during the first half of the febrile phase. Tracheitis and bronchitis are frequent. There is a mild leukocytosis. Decrease or absence of eosinophils corresponds with the degree of infection. Disturbances of chlorine and water metabolism are manifest by the degree of thirst. Abnormal breaking down of albumin results in increase in residual nitrogen. Occasional anomalies such as absence of the rash and of cerebral and circulatory disturbances may occur in an otherwise typical course. A strong active immunity for a long period follows a single attack. Favorable results were obtained with oral administration of diazotized prontosil (4 sulfonamide 2-4 diaminoazobenzol, 6 carbonic acid). Symptomatic treatment however, is recommended. Eradication of lice as hosts of *Rickettsia prowazekii* is decisive in the combat against an epidemic, although active and passive vaccination is of value.

Psittacosis Pneumonia—Pneumonia with few symptoms and little sputum is the essential feature of psittacosis in man. The bronchi may be considered as the port of entrance for the infection and the disease may be transmitted by inhalation of infectious dust. Although bacteriologic diagnosis may fail, the x-ray film shows certain changes which together with an atypical clinical picture facilitates the diagnosis. Roentgenograms show single or multiple fluffy shadows of the type of central pneumonia or of an entire lobe. Since similar x-ray pictures may be seen in grippal pneumonia, the roentgenogram by itself is not sufficiently typical to make a diagnosis. The roentgenographic shadows are evanescent and there is an absence of inflammatory symptoms on the part of the pleura and the pericardium. The discrepancy between the meager or absent clinical findings and roentgenographic changes is characteristic. Psittacosis in man is probably a familial disease since several members of the same family may be affected at the same time or at short intervals.

Zentralblatt für Chirurgie, Leipzig

69 929-960 (June 6) 1942 Partial Index

- Cystic Lymphangioma of Diaphragm P E A Nylander—p 929
 *Experiences in Neurosurgical Treatment of Megacolon V Ripant—p 934
 Perforated Gastric Ulcer of the Greater Curvature E Sipos—p 949
 Problem of Defects of Mesentery T Hornitzki—p 952

Neurosurgical Treatment of Megacolon—The cause of idiopathic megacolon is dystonia of the sympathetic nervous system, the mechanism of which is not understood. The clinical picture of idiopathic megacolon is not the same in children and in adults, although the pathogenesis and the anatomic changes are the same. Conservative treatment in childhood is not satisfactory. Conservative treatment, however, is indicated during the first year of life when surgical intervention is contraindicated. Neurosurgical treatment of unilateral inferior lumbar sympathectomy is, however, advisable even at this period of life if the conservative treatment fails. The bilateral resection of the dilated segment may be the method of choice, but it will fail in the presence of atonia combined with dilatation of the ampulla recti. Kummel-Kirschner's invagination method is indicated in such cases. The Delor-Gomard-Merz method combines the advantages of unilateral resection with exteriorization of the colon and later anastomosis. The neurosurgical treatment, while the anatomic changes in the colon are not pronounced, is the logical conclusion to the concept that idiopathic megacolon is a manifestation of dystonia of the vegetative system in the sense of sympathetic hypertonia. Favorable results were obtained in 4 out of 5 cases in which neurosurgical treatment was practiced. It consisted in bilateral inferior lumbar sympathectomy combined with resection of the superior hypogastric plexus in the first and with additional resection of the inferior mesenteric plexus in the second case, or unilateral inferior lumbar sympathectomy in the third and fourth cases of two infants. It was demonstrated that the inferior lumbar sympathectomy will not replace the resection of the superior hypogastric plexus. The bilateral inferior lumbar sympathectomy alone will be sufficient only in early cases in which only the sigmoid flexure is involved. Both the neurosurgical and the radical method are justified in surgery of the megacolon.

Book Notices

Neurology and Thoracic Surgery Prepared and edited by the Committees on Neurology and Thoracic Surgery of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Neurosurgery Prepared and edited by the Subcommittee on Neurosurgery. Howard C. Naffziger, Chairman. With contributions by Francis C. Grant, J. Crafton Love and John F. Scarff. Thoracic Surgery Prepared and edited by the Subcommittee on Thoracic Surgery. Earls A. Graham, Chairman. Military Surgical Manuals. Volume VI. Cloth. Price \$2.00. Pp. 215 with 73 illustrations. 510 with 30 illustrations. Philadelphia & London: W. B. Saunders Company, 1943.

This is an important book on a subject that is well treated and most briefly and comprehensively presented. The student must remember in reading this book that we are dealing here almost exclusively with traumatic conditions of the central nervous system as well as of the peripheral nervous system. It cannot be too strongly emphasized that any one who masters the book as it is outlined is not necessarily a neurologic surgeon and surely this little volume does not intend to create that impression.

The prophylactic treatment particularly in reference to immunization should be forcefully impressed on any one who reads the book because it certainly is a step in the right direction. The use of the sulfonamide drugs cannot be too highly emphasized because of the potentialities of making a twenty-four hour wound or older one possible for primary suture.

The treatment of gunshot and other injuries to the scalp, skull and brain except for the factor mentioned is the same as has been carried out for many years and nothing particularly new has been added. One thing that is emphasized is the advisability of transportation of these patients to a hospital where proper neurosurgical therapy can be instituted. Transportation by plane is emphasized and the dangers are noted.

The treatment of injuries to the spinal cord is comprehensive although the reviewer does not agree in its entirety with the contents of the book. Traumatic spine conditions may be operated on irrespective of the Queckenstedt test. No one can determine clinically whether a cord is completely severed or whether there is a physiologic block.

The chapter on intervertebral disks in military service is no different than in civilian life. This is one of the most abused diagnoses in medicine and unless a myelogram is made the diagnosis is always questionable.

Peripheral nerve injuries are handled quite well, nothing new having been added since World War I. Unfortunately some of the newer methods in the treatment of peripheral nerve injuries are not incorporated in the text. True these have not been proved clinically but an addendum may be made after proof of the clinical value of the new type of treatment is established.

The section dealing with infections of the scalp, skull and meninges is comprehensive. Certainly after reading this section physicians should be conscious of the fact that infections of the central nervous system require excellent judgment and proper timing relative to the institution of therapy. The charts for examination and recording purposes are ideal and should be studied carefully and utilized in their entirety.

This book, therefore, is a complete treatise on injuries to the central nervous system and peripheral nerves. To all surgeons who will be confronted with this type of work whether in military or in civilian life this book is highly recommended.

Textbook of Periodontia (Oral Medicine) By Samuel Charles Miller, DDS, F.A.C.D., Associate Professor of Periodontia in Charge of Periodontia Department, New York University College of Dentistry, New York. An Introduction by John Oppie McCall, AB, DDS, F.A.P.P., Director, Murray and Leonie Guggenheim Dental Clinic, New York. Second edition. Fabrikoid. Price \$9.00. Pp. 733 with illustrations. Philadelphia: Blakiston Company, 1943.

It is significant of the progress of periodontia as a science that after only four years the author felt impelled to revise his former textbook to include valuable new findings and improvements in technique. This volume is comprehensive not only as to all phases of dental health but as to its relation to physical health as well. The increasing life span has brought gerodontia (dentistry for the aged) to the fore as an obligation of the practicing dentist. The highest goal in oral health service may

be achieved by the dentist only through sound knowledge of disease processes and efficient methods for their treatment.

The conquest of periodontal disease is an accomplished fact, where heretofore pyorrhea was considered incurable. Prevention of the disease is of primary importance. It not too far advanced it may be cured. This book gives an adequate presentation of the principles of treatment from therapeutic and surgical points of view.

Every chapter treats its subject in minute detail, with illustrations and chemical formulas. Diagnosis and treatment cover physiologic as well as dental symptoms and diseases. Laboratory procedure includes metabolism and blood chemistry, with colored illustrations of normal development of blood cells contrasted with pathologic shifts, also tests for vitamin C content of the blood plasma, urinalysis and skin tests for allergic reactions. All conditions of periodontal pockets are illustrated with the proper instruments and their use as the case requires.

An exceptional chapter is the one on traumatic occlusion, its detection and correction. So many dental diseases have been traced to traumatic occlusion that all branches and specialties of dentistry are readily recognizing the value of occlusal coordination. A comparative study of X-ray films over a period of years of teeth having no occlusal adjustment shows clearly the condensation of bone to resist strain. The alveolar support cannot resist strain indefinitely so teeth eventually loosen and require extraction even though they are vital and examination of the socket reveals diseased bone. Because of its very nature the degrees of traumatic occlusion are difficult to describe, as the distinctions are so fine as to be comparable to a minute degree of shading in color. Adjustment of occlusion may so alter the movements of the mandible as to enhance the symmetrical evolution of the face.

Habits may be an etiologic factor in periodontal disease and should be carefully noted and corrected. Dysfunction from non-occlusion may be a contributing cause also. The establishment of healthy circulation by passive massage is of paramount importance in such cases as the increased blood supply from massage raises the resistance of the tissue to disease. Orthodontia and restorative procedures may be required. In the case of migrating teeth first the cause must be removed then they must be restored to their proper functional position.

Necrotic gingivitis is 'a painful inflammation of the gingival tissues characterized by a type of pseudomembranous formation (made up of bacteria and necrotic tissue) and superficial ulceration'. A differential diagnosis should be made to give proper treatment as various diseases have been traced to the associated organisms. Experiments have been made with sulfonamide compounds and results with their local application appear promising. Other drugs and their application are described at length. Diet has a direct relationship to dental and periodontal disease. Leading nutritionists use the oral changes for determining deficiencies of vitamins as well as the efficiency of vitamin therapy. The mouth is the zone of greatest susceptibility and its structures are most accessible for observation making it the ideal place to find early and advanced lesions not only of nutritional deficiencies but of many systemic diseases before they become apparent through other symptoms.

The endocrine system is presented in its relation to dental health as well as to systemic disturbances. In hypothyroidism dentition is retarded and teeth erupt in the wrong sequence and are poorly calcified. In hyperpituitarism teeth are found to erupt prematurely and to be too widely spaced. Metabolic disorders are not always manifestations of pathologic conditions since they may also represent evidences of self healing. Periodontitis and diabetes are interrelated. Lintz assumes that local infection is frequently the cause of diabetes. Sugar percentage has shown lower value after periodontic treatment. The medical practitioner should work in close cooperation with the dentist in the treatment of systemic diseases related to periodontal disturbances.

Education of the public to the value and necessity of periodontal treatment will require patience as the idea that pyorrhea is an incurable disease has been too firmly established. Miracles cannot be performed if the disease has gone so far that the tissue around the tooth has been nearly destroyed leaving the member without support of any kind in a mass of 'labby tissue.'

But when the cause is discovered in time and the proper remedy is applied, the tightening of the teeth borders on the miraculous. The method of presenting the benefits of periodontal treatment necessarily varies, according to individual eccentricities. Slides, models, photographs and verbal and printed comments find their place in this missionary work. In periodontia the patient must be kept constantly aware and constantly interested in his part of home care, tooth brushing technic and alterations in diet to obtain lasting results. The dentist then should clearly define his reasons for reconstructing bridges, if necessary, and replacing missing teeth to establish a balanced occlusion.

Proteins, Amino Acids and Peptides as Ions and Dipolar Ions. By Edwin J. Cohn and John T. Edsall. Including Chapters by John G. Kirkwood, Hans Mueller, J. L. Oncley and George Scatchard. American Chemical Society Monograph Series. Cloth. Price, \$13.50. Pp. 686 with illustrations. New York: Reinhold Publishing Corporation, 1943.

This book is not a systematic treatise on the chemistry of amino acids, peptides and proteins or even on the physical chemistry of these important substances. It deals with them from the limited point of view of the number and distribution of the electrical charges they bear and the "implications of their charged structure for their physical properties and their physicochemical interaction with other molecules." The field covered by the monograph was opened by the studies of Debye and Huckel on the interionic forces in electrolyte solutions and by the work of Bjerrum, who demonstrated that aliphatic amino acids, even in the isoelectric state, bear positively and negatively charged ionic groups, by virtue of which they react as zwitterions, or dipolar ions. By applying these fundamental concepts to theoretical and experimental studies of amino acids, peptides and proteins, the authors and their associates have paved the way to new and fruitful methods of protein investigation. This book is therefore the result of years of discussion and collaboration by a number of leading workers in this field. It is divided into two parts: part 1 on amino acids and peptides, part 2 on the size, shape and electric charge of protein molecules. Individual chapters in the book have been contributed in general by individual authors. The nature of the subject is such that this is not an easy book to read. It is, however, a book which will repay the serious student of the subject by giving him a deeper understanding of the structure and reactions of protein molecules and of their importance in living cells. The more casual reader will find it invaluable as a work of reference in this rapidly developing field.

Physiological Regulations. By Edward F. Adolph, Associate Professor of Physiology in the University of Rochester, Rochester, New York. Cloth. Price, \$7.50. Pp. 502, with 186 illustrations. Lancaster, Pennsylvania: Jaques Cattell Press, 1943.

"Animals preserve their constitutions and activities like themselves, within the limits of variation that characterize the normal, either by preventing disturbances from occurring, or by compensating for each actual and incipient departure from normal" (p. 479). Summarized with that statement, this monograph represents a quantitative study of the restoration of physiologic equilibrium after its disturbance. Drawing freely on published work from his own and other laboratories, while presenting also appropriate hitherto unpublished data, the author mathematically characterizes recovery from increments or decrements ("loads") of components such as water or heat. Relationships between variables are portrayed graphically, using, in many instances, quotients and coefficients in order to increase the number of variables represented on a single pair of axes. Chapters and sections are provided with valuable summaries, and the last chapter contains recapitulations that may be read with profit before one approaches the more specific and detailed presentations of experimental data.

On casual inspection the title of the book appears to be misleading because of the many pages of text devoted solely to the subject of water exchange. More careful examination reveals, however, that a quantitative description of water exchange is used as an introduction to the study of a variety of types of regulation, including heat, "total substance," dextrose, carbon dioxide, oxygen and lactic acid. Although the book as a whole is written in an impersonal first person, here and there one encounters passages which intimately disclose the likes and dislikes, favors and prejudices of the author. Appar-

ently anticipating criticism of his having selected a descriptive method of research, the author includes also a defense of that method in which he justifies his use of quantitative description.

Endocrinologists and neurophysiologists may not agree with the concept that regulation is "a generalized statement of uniformities of relations among [phenomena]" (p. 451). Little attention is given to the role of specialized cells in the maintenance of balances. For example there is no comprehensive discussion of the activity of the supraoptico-hypophyseal system in water equilibration or of the function of the hypothalamus in the regulation of body temperature. But the study does not pretend to exhaust the possible interrelations of physiologic variables. Since the experimental method here utilized can be applied not only to description of the behavior of the whole organism but also to study of its parts, there remains an opportunity for a similar investigation of the function of "regulatory mechanisms" composed of specialized cells of the nervous system or the endocrine glands.

Mind, Medicine and Man. By Gregory Zilboorg, M.D. With a foreword by Arthur H. Ruggles, M.D. Cloth. Price, \$3.50. Pp. 344. New York: Harcourt, Brace and Company, 1943.

The author is engaged in private practice in psychiatry and psychoanalysis in New York. With George W. Henry he has written a history of medical psychology which has been well received. The chapter headings indicate the nature as well as the wealth of the material in the present book on certain misconceptions, instincts and their manifestations, normal neuroses and personality, certain aspects of mental illness, theories and practice, civilization and social sciences, varieties of human aggression, crime and judgment, psyche, soul and religion. The discussions are able, scholarly and comprehensive, leading the way to better understanding of psychiatric problems. In his foreword Dr. Ruggles writes "How fortunate it is that in these days of disordered thinking, feeling and acting we have a pathfinder who so ably helps us in correcting psychological misconceptions." The book has a special appeal to those who are interested in the advances of knowledge of the human mind—churchmen, lawyers, scientists, physicians.

Brucellosis in Man and Animals. By I. Forest Huddleson, D.V.M., M.S., Ph.D., Research Professor in Bacteriology, Michigan State College, East Lansing. Contributing Authors: A. V. Hardy, M.S., M.D., Dr. P.H., Associate Professor of Epidemiology, DeLamar Institute of Public Health, Columbia University Medical School, New York; J. E. Debono, M.D., M.R.C.P., Professor of Pharmacology and Therapeutics, Royal University of Malta; and Ward Giltner, D.V.M., M.S., Dr. P.H., Dean of Veterinary Division and Professor of Bacteriology, Michigan State College, East Lansing. Second edition. Cloth. Price, \$3.50. Pp. 379, with 43 illustrations. New York: Commonwealth Fund, 1943.

Brucellosis has assumed a place in medicine of worldwide importance. It is only proper, therefore, that in the revised edition of this book Dr. Huddleson should supplement his extensive observations on the disease in animals with the experience of physicians on the disease in human beings both in this country and in Europe. Dr. J. E. Debono of the Royal University of Malta presents a discussion compiled on the large number of cases that have occurred on that island, while Dr. A. V. Hardy surveys the ramifications of the disease as found in the United States. The clinician, the pathologist and the epidemiologist will find detailed and specific recommendations in the material. Numerous case reports appear in the appendix that should be of service to the physician. The control of the sources of brucellosis infection is discussed by Dr. Ward Giltner with emphasis on the area eradication program for cattle. Sheep, goats and hogs present a lesser problem in the United States.

Patología funcional de la glándula mamaria. Las mastopatías hormonales. Por Antonio Egües. Paper. Pp. 190 with 17 illustrations. Buenos Aires, 1942.

This is a complete review of the long debated topic of precancerous changes of the mammary gland and on the Reclus or Schimmelbusch's disease, the author contributing numerous personal cases. It is concluded that a precancerous condition can be feared only when the evolution of a cystic mammary tissue is toward papillomatous formation and not toward simple atrophy. The study is purely clinical, no mention being made of the important contributions from workers on the same problem in rabbits and mice.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICE. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THIS WILL BE OMITTED ON REQUEST.

FLAT FEET SPASM AND MUSCULAR ATROPHY

To the Editor—A boy aged 3 has had flat feet since birth and walks with a humped gait (dragging the right leg much like a hemiplegic). He has arophy of the right leg which measures about an inch smaller than the opposite one in all dimensions. There is no shortening. Can flat feet cause atrophy of either extremity and if so how?

C. H. Whiting M.D. New York

ANSWER—This is an interesting question. First to answer the question as to whether flat feet can cause atrophy of either extremity yes it can. Flat feet can occur with atrophy and may be associated with muscle spasm either in only one foot or in both since the spasm is a physiologic reaction to prolonged strain. A muscle spasm of this type would give a hemiplegic like drag of the leg. The probability is that the boy has flat feet with a functional decompensation meaning that he has flat feet but the feet are not strong enough to do normal work. Therefore spasm may develop and he may have a dragging foot like a hemiplegic.

Treatment should consist in correction of the flat feet by bringing the heel into varus and correction of the supination of the anterior part of the foot that is bringing the head of the first metatarsal bone plantarward. In this way the arches can be reestablished. By holding this position and using the feet in normal exercise such as normal walking it is possible ultimately to change the position of the feet.

SEVERE LANCINATING PAINS

To the Editor—A man aged 50 has been suffering from intermittent attacks of idiopathic lancinating pain for twenty years. The pains are sudden or gradual in onset localized anywhere on the body at different times last for variable periods of time from a few minutes to hours and may come in groups of pains for a few hours to a few days. The patient has had syphilis and was treated for it repeatedly but irregularly. He has just completed a course of antisyphilitic treatment and his Wassermann reaction is negative. He had the pains before and after this treatment and there has been no noticeable change from the treatment. Visits by literally at least two dozen doctors in the United States and in Puerto Rico have failed to relieve him. All other studies have been normal including blood sugar, nonprotein nitrogen, uric acid, basal metabolic rate, urinalysis, calcium, phosphorus, spinal fluid, neurologic studies and stool examination. There is no history of alcoholism or heavy metal poisoning or avitaminosis. His picture does not fit in with any diagnosis suggested by neuritis in Barton and Yates' Symptom Diagnosis. There is no muscle weakness or any cutaneous evidence of a pathologic condition at any time. It is not affected by weather. The nearest I could come to a diagnosis was idiopathic neuritis and since no other treatment which had consisted of salicylates, calcichone, vitamins of every nature, low protein diet, analgesics and arsenicals had helped him I tried a dose of intramuscular pitressin on the theory that herpes zoster was sometimes helped by pituitary extracts and that even if he didn't have herpes it might be a variation of it. Miraculously his pains disappeared for a month which was the longest time they had ever gone. Then the pains returned the same as ever. Another dose of pitressin caused a good bowel movement immediately disappearance of the pains for ten minutes recurrence for twelve hours and then disappearance for two weeks which is the present time and the pains have not returned yet. Please help me relieve this perennial sufferer.

M.D. Puerto Rico

ANSWER—The description given of the patient's pains is quite typical of the lightning pains or tabes dorsalis but patients with such involvement usually show some objective evidence of syphilitic involvement of the central nervous system such as pupillary changes, decrease or increase in deep reflexes, or sensory changes.

In about 15 per cent of the tabetic in whom the spinal fluid has become negative the lightning pains will persist. In many of these patients the "arrest" of the disease may occur spontaneously, without the benefit of antisyphilitic therapy. Neither does treatment with arsenic, bismuth, mercury or iodides offer these individuals relief from the pain after the spinal fluid has become negative. Fever therapy is likewise disappointing but an occasional patient obtains relief from the use of thiamine hydrochloride in large doses such as 100 mg by hypodermic once a day for thirty or more injections. Exposure to cold, barometric changes, fatigue and nervous exhaustion, excess of protein or sugar in the diet, focal infections and infected urinary bladders are some of the factors that these patients have reported as increasing their pain.

It is difficult to prevent such patients who derive no benefit from the medications mentioned or similar drugs from becoming morphine habitues. Neither is it possible to assure them that time will ameliorate their pain, because in the majority the pains persist indefinitely.

VALUE OF URINARY ALBUMIN AND CASTS IN DIAGNOSIS OF NEPHRITIS

To the Editor—I am clinical pathologist for an army induction team. We are having difficulty in knowing when to reject a man with albuminuria. The U. S. Army defines nephritis as persistent albuminuria with or without casts. The Army routine is this: "Whenever a man shows albumin (regardless of microscopic findings) urine is immediately repeated, even five or six times in one day." If a urine becomes normal it is called a transient albuminuria and the man is accepted. I myself feel that if one sample shows casts there is renal disease. I also feel that even with nephritis not every sample will be abnormal. If urine persistently shows albumin throughout one day the inductee is held over and reexamined the following day. If several samples still show albumin the same thing is done on the third day and sometimes even on the fourth but as soon as an albumin free urine appears he is accepted. Do you think albumin should be called transient under these conditions? Do you think we would be justified in postponing examination for an interval say of one month after even one albuminuria even without casts?

M.D. New York

ANSWER—In answer to the first question it is just as much an error to assume that the kidneys are normal because one urine sample out of five is negative for protein as to assume that there is kidney disease because one urine sample out of five is positive for protein. Several factors determine whether the test for proteinuria is positive or negative—sensitivity of the test, the amount of electrolytes in the urine, the reaction, and especially the dilution or concentration of the particular sample.

It is not entirely correct to assume renal disease because of the presence of casts in one sample unless one takes into account the number and nature of the casts. A few hyaline casts may have no significance whereas one red cell, epithelial cast or fatty cast may mean serious renal disease. The effects of exercise, exposure to cold, posture and acid-forming salts must be considered in interpreting the finding of a few casts.

It is quite true that even in nephritis not every sample of urine will be abnormal if the specimens are obtained under ordinary conditions. However, it is rare to fail to find albumin casts or excessive red cells and white cells in a concentrated acid urine obtained as a result of deliberate dehydration or the patient. No diagnosis of the presence or absence of nephritis should be made without the examination of such a urine specimen.

In the case of the inductee who is held over for several days until he can produce a urine sample free from albumin, the underlying assumption seems to be that the original positive tests were due to extraneous or extrarenal factors. This is a risky assumption unless a more thorough investigation of the cause of the original albuminuria is undertaken. Postponing the examination for a given interval would not clarify this situation because the same condition that produced "transient" albuminuria on the first examination may do so again. The proper procedure is to obtain as concentrated a urine as possible by keeping the subject on a dry diet for twelve to twenty-four hours, and examining this urine for specific gravity, protein and sediment.

If a concentrated and acid urine sample cannot be obtained the inductee should be held over until such is produced or until other studies such as blood chemistry and intravenous pyelography furnish sufficient normal or abnormal findings to settle the question of renal disease.

IMMUNIZATION AGAINST TETANUS

To the Editor—Can you tell me whether or not there have been any fatalities in the United States Army from immunization against tetanus? I write this because some army officer (not medical) has been telling me that 600 soldiers have died from these injections and I am anxious to refute this type of rumor immediately and authoritatively.

Don Tucker Miller M.D. St. Louis.

ANSWER—It is apparent that some one has been grossly misinformed concerning reactions and fatalities from the administration of tetanus toxoid. True in the early part of the tetanus immunization program some reactions or sensitivity to the toxoid were experienced. It was learned soon that the great majority of these reactions were resulting from sensitivity to certain peptone components of the toxoids in use at that time. These peptones have not been used in making tetanus toxoid for use by the Army since the late summer of 1941. Since that time several million doses of tetanus toxoid have been

administered and the reports of reactions of sensitivity received have been so few as to be practically negligible

This subject was covered in some detail in an article published by one of the officers in the Preventive Medicine Division of the Office of the Surgeon General in the *American Journal of Public Health*, January 1943. The title of this article is "Tetanus Toxoid, Its Use in the United States Army." An estimate was given in that report of the frequency of reactions of sensitivity, and this frequency was considered to be somewhat less than 1 in 10,000 injections. While exact figures are not available, the incidence of these reactions is in all likelihood considerably less than 1 in 50,000 injections.

There is no truth in the allegation that 600 soldiers have died from injections of immunizations against tetanus. The fact is that the occasional reactions that do occur are for the most part extremely mild and are characterized by nothing more alarming than a generalized urticaria.

PSEUDOANGINA AND CONSTIPATION AS SYMPTOMS OF PROBABLE NEUROSIS

To the Editor—For the past two years I have been treating a white woman aged 41. She has a history that started nine years ago when she fell the street while walking. She fell on her abdomen with great force. A few weeks after this, while she was walking with her husband, he was suddenly seized with a fatal coronary occlusion. Soon after this the patient began complaining of precordial pains. The attending physician felt that this was nervous in origin and prescribed sedatives. Two months after her original fall she began complaining of epigastric pain, severe pain immediately after every bowel movement and pain in the precordium. This syndrome has defied diagnosis on an organic basis. The patient suffers severely from constipation and despite every known method of therapy she cannot move her bowels oftener than once every four to six days and only then with a saline cathartic. In the past three months she has lost about 10 pounds (4.5 Kg.), and this has been the most aggravating part of her illness because now she is convinced that she is severely ill. I might add that she was married again about one year ago to a kind and thoughtful man, but he is impotent in that he cannot maintain an erection and therefore they have never had intercourse. The patient is neat, extremely pretty and of fine character. The family history is negative. She weighs 127 pounds (57.6 Kg.) nude. There is not a single positive clinical finding, aside from a midline abdominal scar, the result of an appendectomy. She has had a thorough workup, including an electrocardiogram, an x-ray examination of the chest, gastrointestinal and gallbladder series, complete blood count, blood sugar and urea nitrogen, urinalysis, stool culture and study for blood, special x-ray studies for possible diaphragmatic hernia, psychiatric examination, Wassermann test and a basal metabolic test. All these have been found normal. The psychiatrist believes that she has neurasthenia. I have talked with the patient for hours and despite everything she still has her pains and her constipation. Can you help me?

M D, New York

ANSWER—Pseudoangina is a common disease of nervous persons, and especially of persons who have watched a loved relative dying of heart disease. This woman had enough of a psychic shock to produce a neurosis, and a common symptom of neurosis is pain.

Pain right after defecation in a nervous, hypersensitive woman is practically always of functional origin. It is an exaggeration of the distress and weakness some persons feel after a large diarrhetic bowel movement. Such patients generally do best if permitted to stay constipated. Some take an enema once every four or five days. A half hour before taking the enema, they may take a dose of bromide to dull the distress that will follow the bowel movement.

Often, if sufficiently reassured, these patients will endure the pain without much more complaint. The husband's impotence may well be a factor in keeping up the distress. If this is true, the woman must be told to expect no improvement until she makes up her mind definitely either to stay in her bed and acquiesce to the situation or else to get out and ask for an annulment.

COARCTATION OF AORTA

To the Editor—I should appreciate knowing something of the history of coarctation of the aorta. Who first described the condition and when? When the clinical and roentgenologic findings are observed in an adult with a history of no previous symptoms or signs, can this be construed as an acquired form of stenosis of the aorta rather than a congenital anomaly?

M D, South Dakota

ANSWER—Coarctation of the aorta has been well known for more than a hundred years. Early cases were reported by Paris in 1791, Sir Astley Cooper in 1818, Otto in 1824 and Laennec in 1826. As a matter of fact the case of greatest longevity (92 years) on record was reported as long ago as 1828 by A. Reynaud. The collateral circulation in coarctation of the aorta was well described by Meckel in 1827 and by Jordan in 1830. Bonnet in 1903 divided coarctation into the two types (1) infantile, which is the serious short lived type, and (2) adult, which is the ordinary clinical type, which can be usually readily diagnosed in childhood and middle age.

The clinical and roentgenologic findings in coarctation of the aorta discovered in an adult with a history of no previous symptoms or signs are to be construed as evidence that coarctation of the aorta developing at birth had been present all along but previously missed. So far as is known, it is not acquired later on in childhood or adult life. It is not rare for these cases to be overlooked for many years, and this fact is one of the reasons why it should be thought of and looked for in any young person with unexplained hypertension.

CHRONIC TRACHEAL AND BRONCHIAL IRRITATION

To the Editor—Patients with chronic hemolytic streptococcus bronchitis with cough and expectoration constitute my problem. All studies, including the tuberculin skin test, x-ray and bronchoscopy in some, have been negative except persistent cultures of beta hemolytic streptococci. Various remedies have been tried, including sulfonamide drugs, without any apparent benefit. Is there any specific therapy of value in these cases aside from the general upbuilding of the patient? Stock and autogenous vaccines have apparently been without benefit.

M D, New York

ANSWER—The persistent hemolytic streptococci in such cases may or may not be the actual cause of the condition. These bacteria more often cause acute rather than chronic infections. Unless they are constantly present in great predominance over other varieties, it is probable that they are saprophytes in the cases referred to. If they are, it is not surprising that the sulfonamide compounds had no effect in treatment. There is of course, no logical basis for the use of specific vaccine therapy of any kind. However, beneficial effects sometimes follow the nonspecific reactions which may be provoked by vaccines. There is therefore no specific therapy available at present to recommend for these patients. The questioner is probably correct in suggesting general upbuilding of the patient. Perhaps a change in climate may be helpful. Inquiry should also be made into the amount of smoking or talking the patient does. Patients often cough unnecessarily hard or too frequently, which may in itself aggravate and perpetuate laryngotracheobronchial irritation. Inhalations of plain or slightly medicated steam, or spraying a 0.5 per cent solution of mono-p-chlorophenol in liquid petrolatum deeply into the trachea once or twice daily for a short time often alleviate cough.

MALARIA IN ALABAMA

To the Editor—How common is malaria in southern Alabama? What are the chances of one's contracting malaria in moving from the North to a gulf town in Alabama?

M D, Florida

ANSWER—Malaria in southern Alabama is endemic, and among the more susceptible groups of individuals it is quite common to find typical and even virulent cases.

By far the greater number of cases, however, are chronic. The symptoms are atypical (afebrile generally) and as a rule parasites are not demonstrable in the blood and, if demonstrated, are scanty in number and low in virulence.

The chances of contracting the disease by unacclimated persons would be great. This applies particularly to the coastal regions and river valleys and to those who fail to take reasonable precautions by screening after nightfall.

SMALLPOX REVACCINATION AFTER POSTVACCINAL ENCEPHALITIS

To the Editor—At the age of 7 a patient of mine suffered a postvaccinal encephalitis and was desperately ill for several days. She recovered completely, has done well in school and college and has a pleasing personality. She now wishes to join the Waves and consulted me to ask if there was any reason why she should not be revaccinated, which is, of course, required in the service. I have been unable to find any reference to this in the medical literature. Can you tell whether there is any danger entailed in revaccinating the patient, who is now 20 years old?

Warren Ripley, M D, Montclair, N J

ANSWER—References dealing specifically with this question have not been found. There are, however, a number of articles which quite clearly indicate that the risk of revaccination to a young woman who suffered postvaccinal encephalitis many years ago would be so slight as to be insignificant. Gordon and Rhea (*Postvaccinal Encephalitis*, *Am J Hyg* 181:104 [July] 1932) say that "postvaccinal encephalitis is essentially a disease following primary vaccination of patients between 6 and 11 years of age." Scott (*Postvaccinal Encephalitis in Infancy*, *Brit J Child Dis* 27:245 [Oct-Dec] 1930) says "Immunity or even partial immunity to vaccination appears to carry with it an immunity to postvaccinal encephalitis. No case of encephalitis has occurred in a negative take, and after revaccination the condition is extremely rare."

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dl-GLUTAMIC ACID HYDROCHLORIDE IN TREATMENT OF PETIT MAL AND PSYCHOMOTOR SEIZURES

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AND

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NEW YORK

In the majority of cases the treatment of epilepsy is moderately satisfactory.¹ Grand mal attacks are controlled completely or reduced in frequency by phenytoin or phenytoin-phenobarbital combinations in the majority of cases. Psychomotor attacks yield less readily to anticonvulsant therapy. Petit mal attacks are infrequently affected by medication but respond favorably to fasting² and the ketogenic diet.³

The hypothesis advanced by Wilder³ and supported by Keith's experiments⁴ that the mechanism of the ketogenic diet depended on the sedative effect of the ketone bodies was not generally accepted. Fay⁵ and McQuarrie⁶ attributed the effect to dehydration incidental to ketosis. Bridge and Iob⁷ were doubtful that either to acidosis or to ketosis alone could be ascribed anticonvulsant properties.

Maintenance of a dietary regimen that will produce ketonuria is not a simple task. Hospitalization and an intensive educational program for the patient and his

parents are necessary. A search for acidosis producing drugs was the outgrowth of these disadvantages of the ketogenic dietary regimen. We have used ammonium chloride (2 cases included in this series) without striking results. Azosulfamide⁸ reduced the frequency of seizures moderately and concomitantly lowered the p_H of the blood. Brilliant vital red also seemed to have a moderate anticonvulsant effect.⁹

Putnam and Merritt¹⁰ suggested that the "physiologic" anticonvulsants dextrose, carbon dioxide, pyruvic acid and acetoacetic acid and the synthetic anticonvulsants produce their effect by giving rise to an acid milieu within or about nerve cells. The synthetic anticonvulsants are of a composition which suggests that they are broken down by cellular activity, perhaps chiefly in the brain, to stable acid products such as benzoic acid. Anticonvulsant treatment of epilepsy is suggested as a substitution rather than drug therapy.

The use of *dl*-glutamic acid was suggested by one of us (H W) on the basis of the following considerations.

It is known that some racemic amino acids, among them *dl*-glutamic acid, give rise to the excretion of the unnatural isomer in the urine when administered to animals. If *d*-glutamic acid has a similar metabolic inertia¹¹ in human metabolism, 1 mole of *d*-glutamic acid hydrochloride should furnish 1 mole of hydrochloric acid and two carboxyl groups of which one would be available for acidification. The *l*-glutamic acid hydrochloride also furnishes one equivalent of hydrochloric acid.

Furthermore, *l*-glutamic acid has been stated to be intimately related to brain metabolism. It is the only amino acid known to be metabolized by slices of brain tissue.¹² Brain tissue contains an enzyme which synthesizes glutamine from *l*-glutamic acid and ammonia, decreasing by this mechanism the concentration of free ammonia in the tissue.¹³

Patients with seizures usually associated with slow wave activity in the electroencephalogram were selected for treatment. The amount of the amino acid hydrochloride required to maintain the p_H of the urine at about 5.0 was 4 Gm three times a day. Larger doses

Read before the American Psychiatric Association, Detroit, May 10, 1943.

This study was aided by grants from the Joshua Rosett Research Fund and from Parke Davis & Co.

From the Departments of Neurology and Biochemistry, Columbia University College of Physicians and Surgeons.

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16 and 20 Gm, were administered in 2 cases. Oral administration of the drug in dilute solution or capsules was seldom associated with gastric distress. Anti-convulsant therapy, though ineffective, was continued throughout the trial period.

Nitrazine paper tests of the morning specimen of urine were made by the patient in the majority of instances. This test gives the relative degree of acidity within half a pH unit approximately. The *dl*-glutamic acid hydrochloride was prepared by one of us (H. W.).

REPORT OF CASES

CASE 1—K. Mac, aged 12 years, had had petit mal seizures which recurred at a frequency of about forty to fifty a day for four years. A six months trial of the ketogenic diet reduced the seizures moderately. The patient refused to continue the rigid regimen.

General physical and neurologic examinations were within normal limits. Negative laboratory tests included a complete blood count, urinalysis, a blood Kline test, psychometric studies and x-ray examination of the skull. Frequent petit mal seizures were accompanied by typical three per second wave and spike formations in all leads of the electroencephalogram.

Maximum tolerated doses of phenytoin sodium and phenobarbital reduced the seizures slightly, that is, the number of days on which fifty seizures occurred were reduced. *dl*-Glutamic acid hydrochloride administration was accompanied by a sharp decrease in seizures. The dose required to maintain a urinary pH of about 5.0 was 12 Gm daily. Attacks were reduced to about five to twenty-five a day in contrast to twenty-five to fifty.

In addition to the reduction in seizures, the patient's parents and instructors in school noted a decided improvement in the patient's personality. He accepted disciplinary measures without prolonged arguments. He was more congenial, cooperative and affable. Peculiar egocentric aptitudes were decreased. Concentration and application in his school work were improved.

Ammonium chloride (40 Gm daily) administered for five weeks failed to influence the frequency or severity of seizures.

In this case *dl*-glutamic acid hydrochloride reduced the total number of seizures and produced an improved physical and mental alertness pleasing to patient, parents and other interested parties. Ammonium chloride proved ineffective.

CASE 2—M. B., aged 13 years, had had petit mal seizures (fifteen to thirty daily) for three to four months. Mild depressions were noted occasionally as a result of the recurrent seizures. General physical and neurologic examinations gave negative results. Negative laboratory examinations included a blood count, urinalysis, a blood Kline test, an x-ray examination of the skull, a pneumoencephalogram and psychometric studies. The electroencephalogram showed a pattern commonly associated with convulsive disorders, petit mal type.

Phenytoin sodium and phenobarbital therapy was ineffective. *dl*-Glutamic acid hydrochloride reduced the number of seizures to two to five a day. The pH of the urine was lowered to 5.0 in forty-eight hours and maintained at this level. The decrease in frequency of the seizures paralleled the lower pH values of the urine.

The ingestion of the drug was accompanied by an immediate improvement in the clinical condition of the patient. In the past nine months the drug has repeatedly been discontinued with the result that the symptoms have immediately recurred. Improvement has followed readministration of the drug in adequate doses.

The decrease in seizures was accompanied by an improved mental and physical alertness. Exacerbation and remissions of symptoms were closely correlated with glutamic acid therapy.

CASE 3—C. H., aged 7 years, had recurrent petit mal seizures which had resisted phenytoin sodium, phenobarbital and a combination phenytoin-phenobarbital therapy. General physical and neurologic examinations gave negative results. Negative

laboratory examinations included x-ray examinations of the skull, psychometric studies, urinalysis, a blood count and a blood Kline test. The electroencephalogram revealed a pattern commonly associated with convulsive disorder, petit mal type.

Following the determination of tolerant doses of phenytoin sodium and phenobarbital, *dl*-glutamic acid hydrochloride was administered. The drug in concentrated solution caused severe gastric distress. He later rejected dilute solution (in water, milk, fruit juices). During this period of inadequate treatment petit mal seizures increased from six to ten to twenty to twenty-five a day.

This is the lone instance of severe gastric distress caused by the drug. Obviously the concentrated solution caused the gastric discomfort. The increased frequency of seizures was related to the emotional response rather than to the effect of the drug. Petit mal seizures are often increased in frequency and severity by excitement, worry, stress and strain.

CASE 4—S. K., a girl aged 8 years, had a recurrent abdominal pain which was first noted at the age of 6 years. Acute pain followed by vomiting recurred weekly for four months. The recurrence of pain ceased, but frequent short periods of staring were noted by the parents. Subsequently this symptom was accompanied by right sided signs (facial asymmetry, clonic movements of the right hand and face and a tendency to fall to the right). Though predominantly on the right, seizures have been noted to occur on the left side for periods of as long as two weeks. The frequency of seizures varied from one hundred to two hundred a day. Personality disturbances (disobedience, destructiveness, cruelty to her playmates and indifference) were not related to the frequency of seizures or medication and responded readily to the use of customary disciplinary measures.

Pneumoencephalograms have been normal on three occasions. Psychometric studies disclose an average intelligence (intelligence quotient 101 Stanford-Binet, 114 Arthur). The electroencephalogram repeatedly demonstrated a focus of slow wave activity in the left temporoparietal area.

Right facial weakness and impairment of motor function, voluntary and involuntary, in the right arm and leg has progressed slowly. She is now unable to write with her right hand.

Various combinations of phenytoin sodium, phenobarbital, thyroid, *dl*-pyrrolidone carboxylic acid and *dl*-glutamic acid hydrochloride, ammonium chloride, ketogenic diet, nicotinic acid and methyl ethyl phenobarbital were administered. Phenobarbital in increasing dosage to 0.3 Gm daily was moderately effective over the longest period of time any one drug was administered. *dl*-Glutamic acid hydrochloride in combination with phenobarbital was strikingly effective. Except for an increase in the number of seizures accompanying the excitement of going home, the greatest number of days on which twenty-five seizures or less could be counted was noted within the ensuing two months. Five seizures or less were noted for two consecutive weeks. Seizures recurred at the pretreatment frequency immediately after withdrawal of the drug. Renewal of treatment was not accompanied by a decrease in frequency of the attacks, but this fact is difficult to evaluate because thyroid in toxic doses was administered during the second trial period.

Methyl ethyl phenobarbital in conjunction with nicotinic acid and phenytoin sodium was also accompanied by a striking improvement. Initially the seizures decreased in severity and later in frequency. For two months from one to ten seizures occurred daily, accompanied by a moderate return of function of the right hand. Unavoidably methyl ethyl phenobarbital was discontinued, and the seizures immediately recurred.

On readmission to the hospital, right sided seizures recurred at intervals of five to fifteen minutes.

Evaluation of medication is difficult, but we were impressed with the response accompanying *dl*-glutamic acid hydrochloride therapy, in conjunction with phenobarbital.

CASE 5—J. R., a youth aged 21, had recurrent psychomotor seizures preceded for an hour of repeated myoclonic twitches and mental confusion which were decreased by phenytoin sodium, phenobarbital and thyroid.

General physical and neurologic examinations were negative. Negative laboratory examinations included a complete blood count, urinalysis, x-ray examinations of the skull, pneumoencephalogram, psychometric studies and blood Kline and sugar tolerance tests. The basal metabolic rate was minus 18 minus 22 and minus 20 and serum cholesterol was 271 mg per hundred cubic centimeter. The electroencephalogram showed a pattern commonly associated with convulsive disorders.

Seizures recurred at weekly intervals without treatment. Administration of phenytoin sodium, phenobarbital and thyroid in maximum tolerated doses was accompanied by a reduction in seizures, namely one attack every one to three weeks. Extra phenytoin sodium and phenobarbital administered after the onset of the aura had no effect on the impending seizures.

Ammonium chloride (4 to 6 Gm daily) reduced the frequency of seizures slightly, but the appearance of severe acne prevented its prolonged administration.

After addition of *dl*-glutamic acid hydrochloride to the foregoing combination seizures could be prevented by the use of phenytoin sodium (0.1 Gm) and phenobarbital (0.1 Gm) during the phase of the aura. Attacks were prevented for a period of three months, the longest inter-seizure interval in two years.

The dosage required to maintain a urinary *pu* of 4.5 to 5.0 was 12 to 20 Gm.

Equally encouraging was the subjective improvement. Parents, friends and business associates volunteered the information that the patient's behavior had changed for the better. He was decidedly more affable. His gymnasium instructor reported an improved physical alertness. His assistant noted an increased mental acuity. For the first time he desired and sought social contacts outside the family circle. Hospital attendants noted a decided improvement in cooperation in respect to both hospital routine and clinical tests.

In this case a decided psychologic improvement followed an increased mental and physical alertness which has aided measurably in social and economic rehabilitation. Seizures recurred at one to four week intervals following withdrawal of the drug irrespective of supplementary medication after the onset of the aura. Though the major portion of the psychologic improvement has been maintained, there has been no progress on other forms of medication.

A regimen designed to determine the effect of *dl*-glutamic acid hydrochloride on the acid-base balance of the blood has recently been instituted. Twelve Gm doses of the drug have failed to alter the acid-base balance and likewise to affect the frequency of seizures. Failure to respond is probably associated with an intake of excessive doses of thyroid, as in case 4. Symptoms of thyroid intoxication (weakness, sweating, fatigue, restlessness and emotional lability) have been noted recently. After thyroid was discontinued the favorable response to glutamic acid has been reproduced.

Even though seizures may be aborted by supplementary therapy after the onset of the aura, the latter occurs more frequently during the period of *dl*-glutamic acid hydrochloride therapy. The aura is associated with the fast activity and the psychomotor seizures with slow wave activity in the electroencephalogram. This suggests that the drug is effective only in seizures associated with slow wave activity. Improved mental and physical alertness have aided measurably in social and economic rehabilitation.

CASE 6—B. J., a man aged 25, had a moderately severe head injury at the age of 3 years; this was the only suggestion of an etiologic factor disclosed in the history. Unlike his brother and sister, the patient had always been irritable, restless, emotionally labile (temper tantrums, indifference, depressions) and retarded mentally (school work difficult and far below standards of the family). Anxiety states resulting from recurrent periods of mental dullness prevented employment. He

resented his mother's habit of repeatedly recounting his inadequacies to him and others. Though he honestly attempted to maintain employment, recurrent grand mal, petit mal, psychic equivalents and periods of mental dullness prevented contact with the public.

Hemiatrophy of the left arm and leg suggested the presence of diffuse involvement of the right hemisphere of the brain, probably post-traumatic in origin. Confirmation of this opinion was demonstrated in the electroencephalogram, namely a diffuse abnormal pattern was most severe in the right frontal area.

Except for psychic equivalents and periods of mental dullness the patient has been symptom free with phenytoin sodium (0.4 Gm) and phenobarbital (0.1 Gm) therapy.

dl-Glutamic acid hydrochloride was administered in 12 Gm doses daily. Objectively the psychic equivalents and periods of mental dullness were unaffected. Subjectively interseizure periods were accompanied by an increased mental and physical alertness new to the patient. Though not dramatic, the effect was definitely encouraging to him. The drug was discontinued suddenly six weeks later, following which symptoms were intensified and a grand mal seizure occurred, the first in seven months. Readministration of the drug was accompanied by an improvement similar to the previous one. Exacerbation of the symptoms again followed interruption of treatment four weeks later.

In this case subjective improvement accompanied ingestion of *dl*-glutamic acid hydrochloride. Interruption of treatment was followed by an exacerbation of symptoms and improvement occurred on reinstitution of therapy. Exacerbation of symptoms commonly associated with irregular inadequate treatment of epilepsy is exemplified in this case.

CASE 7—M. B. S., a woman aged 41, had onset of seizures at the age of 20. Severe social, educational and economic restrictions have been a serious handicap. Seizures were strikingly reduced by phenytoin sodium. Personality disturbances combined with social maladjustment prevented a satisfactory rehabilitation following control of the seizures. Severe emotional instability is far more incapacitating than infrequent psychic equivalents, grand mal, petit mal and psychomotor attacks.

General physical and neurologic examinations have been repeatedly negative. Negative laboratory studies include x-ray examinations of the skull, psychometrics, urinalysis, complete blood count and blood sugar determination. The electroencephalogram disclosed a pattern consistent with convulsive disorder.

dl-Glutamic acid hydrochloride in conjunction with phenytoin therapy reduced petit mal seizures and psychic equivalents. A daily dose of 12 Gm maintained a urinary *pu* of about 5.0. Psychomotor and grand mal attacks were also reduced in frequency.

Improved mental and physical alertness was noted objectively and subjectively. Tolerance of the opinions of others was noticeably improved. Insight was acquired into her pronounced introversion, egocentric responses to minor stimuli, recurrent anxiety states and mild depressions. The efficiency with which she performed the details of her position as a librarian was augmented by the increased mental alertness. Gymnasium exercises became less laborious.

In this case petit mal attacks and psychic equivalents were decreased during the administration of *dl*-glutamic acid hydrochloride. A decided regression of mental and physical alertness followed withdrawal of the drug. Periodic rest in bed and a winter vacation were required to overcome a serious emotional instability.

CASE 8—J. K., aged 20, had had recurrent grand mal seizures for three years. General physical and neurologic examinations were negative. Negative laboratory examinations included a complete blood count, blood Kline test, urinalysis, x-ray examinations of the skull and psychometric studies. The electroencephalogram demonstrated a pattern commonly associated with convulsive disorder.

dl-Glutamic acid hydrochloride in 12 Gm daily doses reduced the urinary μ to about 50. Increased mental and physical alertness was noted, but only to a slight degree.

Seizures occurred at the pretreatment rate of one every one to two weeks. Phenytoin sodium in 0.4 Gm daily doses relieved the patient of seizures but had no effect on mental or physical alertness.

In this case, as noted previously, grand mal seizures were not affected by *dl*-glutamic acid hydrochloride.

COMMENT

Tolerance to *dl*-glutamic acid hydrochloride has proved surprisingly high. Gastrointestinal symptoms have been minimal. Objections to the taste have been alleviated by administration of the drug in capsules. Furunculosis has not occurred. Renal irritation has not been noted.

Improvement was noted in those cases in which the seizures are related to slow wave activity in the electroencephalogram, namely petit mal and psychomotor types. Seizures are decreased in frequency on medication which previously had been proved either ineffective or partially satisfactory. Petit mal seizures have been decreased from thirty to fifty to five to twenty-five daily in 1 case and from fifteen to twenty to three to five in another.

Universally, mental and physical alertness have been increased. The degree of improvement in mental efficiency cannot be correlated with the incidence of seizures. Without solicitation the patient, family and other interested parties have volunteered a favorable response to *dl*-glutamic acid therapy. Usually the patient is noted to be more energetic and happier, mood swings are less pronounced, behavior mannerisms are ameliorated and he is more congenial with associates.

Readministration of *dl*-glutamic acid hydrochloride was ineffective in 2 cases in both of which there was evidence of thyroid intoxication. Withdrawal of thyroid therapy was followed by a response similar to that of the initial treatment. In 2 other cases responses to readministration of the drug were quite similar to that of the initial treatment.

Ammonium chloride was administered in 2 cases (1 and 5). It proved ineffective in case 1, and severe acne resulted from its use in case 5.

Grand mal seizures were unaffected by the drug in 1 case (case 8). Focal motor cortical seizures and myoclonus likewise responded less favorably, as noted in cases 4 and 5 respectively.

It seems hardly necessary to emphasize that the beneficial effects of an additional aid in the treatment of epilepsy can be appraised only after a period of years. The preliminary results reported in this note may serve as a lead in further investigations. A comparison of the effect of *l*-glutamic and *d*-glutamic acid and their hydrochlorides as well as pyrrolidone carboxylic acid will show whether glutamic acid exerts a specific effect on the brain metabolism of epileptic patients.

SUMMARY

dl-Glutamic acid hydrochloride has been used in cases in conjunction with known anticonvulsant therapy. Seizures associated with slow wave activity in the electroencephalogram, namely petit mal and psychomotor types, were decreased in frequency. Increased mental and physical alertness have been most gratifying to patient, family and physician. Grand mal seizures were unaffected by the drug.

706 West 168th Street

BULLIS FEVER

(LONE STAR FEVER—TICK FEVER)

AN ENDEMIC DISEASE OBSERVED AT BROOKE GENERAL HOSPITAL, FORT SAM HOUSTON, TEXAS

COLONEL JOHN C WOODLAND

MAJOR MORDECAI M McDOWELL

AND

CAPTAIN JOHN T RICHARDS

MEDICAL CORPS, ARMY OF THE UNITED STATES

During the spring and summer of 1942 many patients suffering from various acute febrile diseases were admitted to the contagious disease section of Brooke General Hospital, Fort Sam Houston, Texas. Most of these illnesses presented no great diagnostic problem, being recognized as seasonal diseases, such as infections of the upper respiratory tract, tonsillitis and mild influenza. In April it became apparent that in this group of patients we were confronted with a number of acutely ill ones who were suffering from a clinical disease entity which had defied definite identification. A search of the available literature failed to throw any light on this perplexing problem, and no report of similar cases could be found.

There were several outstanding clinical features characteristic of this disease, i. e. an unusually low white blood cell count with moderate neutropenia, a severe postorbital and occipital headache, and a constant lymphadenitis varying from involvement of a few glands to general lymphadenopathy. All the soldiers comprising this group were members of the field force of Fort Sam Houston, Texas, and all gave a history of having been on maneuvers at Camp Bullis, Texas, an area used for the training of troops of this post a week or more prior to the onset of symptoms. In all cases there was evidence of multiple tick bites, especially of the legs and thighs. In a great many instances, ticks were found still clinging to the skin of the patient at the time of admission to the hospital. In each instance the tick was identified as *Amblyomma americanum*, commonly known as the Lone Star tick, so named because of the star shaped marking on its back. While chigger bites were a common experience to all commands, massive exposure to tick bites was peculiar to men who had been on duty in the maneuver area at Camp Bullis, Texas.

Soon recognizing the fact that we were dealing with a disease entity which defied identification, the commanding officer of the hospital, Col George C Beach, M. C., in a communication to the Office of the Surgeon General, U. S. Army, in July 1942, requested the services of consultants especially qualified in this field of medicine. In response to this request Drs Kenneth F Maxcy, Norman H Topping and John C Snyder of the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army arrived at the hospital on July 8, 1942. After a thorough examination of the patients suffering from this disease still remaining in the hospital and after minute scrutiny of the clinical records of those who had been returned to duty, these consultants agreed that we were dealing with a definite disease found only in those soldiers who had been subjected to tick bites at Camp Bullis. They

Dr Kenneth F Maxcy, consultant to the Secretary of War in the Board for the Investigation and Control of Epidemic Diseases in the Army, Dr Norman H Topping, passed assistant surgeon of the United States Public Health Service, and Dr John C Snyder staff member, Rockefeller Foundation, International Health Division gave assistance and cooperation and constructive suggestions.

gave this syndrome a tentative designation of "tick bite fever".¹ It was their opinion that the epidemiologic evidence associating this illness with tick bites was highly suggestive but that the causative agent had not been conclusively identified, nor could it be definitely shown at that time that the disease was transmitted to man through the medium of the tick bite.

SYMPTOMS

Usually the onset was abrupt with an initial chill or a chilly sensation ushering in the attack. Fever soon followed the temperature ranging from 102 to 105 F. A few of the patients gave a history of prodromal symptoms for a few days prior to the onset of chill and fever. A great majority of the men complained of post-orbital and occipital headache. Pronounced lassitude, prostration, anorexia and general weakness were noted during the febrile stage of the disease, and a few patients were nauseated and vomited. The fever lasted from four to fourteen days, with the temperature ranging from 102 to 105 F, and subsiding by lysis. In the average case the temperature was elevated for a little over five days. Convalescence was protracted, especially if the illness had been severe. Loss of weight was observed in a great many of the men, one patient losing more than 20 pounds (9 Kg.) within two weeks.

PHYSICAL FINDINGS

There was a paucity of physical findings in these patients, but all had an enlargement of at least one set of lymph glands and commonly general lymphadenopathy. The glands were easily palpable and in many instances were acutely tender. This glandular involvement persisted throughout the acute stage of the illness but disappeared rather promptly with the clearing of symptoms. The throat was usually slightly red and injected, but in none of the cases did the appearance resemble that usually seen in acute infection of the upper respiratory tract. In fact, complaints of involvement of the respiratory tract were conspicuous by their absence. Physical findings in the chest were normal, and roentgenograms failed to reveal any pathologic condition. In the more severe forms of the disease a maculopapular rash involving the trunk was noted. In some the eruption had the appearance of that seen in endemic typhus fever, and in others it resembled the rash seen in German measles. This manifestation of the syndrome rapidly faded and usually disappeared completely within forty-eight hours. In all instances examination revealed multiple tick bites.

LABORATORY FINDINGS

A constant laboratory finding characteristic of this disease was definite leukopenia occurring on or about the second or third day. In many instances the leukocyte count dropped to 3,000 and in one case to a low level of 1,750. With this abrupt drop in the total white blood cell count there was associated neutropenia, one patient having a polymorphonuclear count of 23 per cent. During the period of convalescence the total white blood cell count gradually approached normal, however moderate lymphocytosis persisted up to the time of discharge. The red blood cell count and the hemoglobin determination remained normal throughout the course of the disease. Urinalyses yielded negative results except in a few instances in which an occasional trace of albumin was noted. Specimens of blood from 6 patients

(cases 2, 3, 4, 30, 32 and 33 in the table) were examined at the National Institute of Health Laboratories for Q fever, Rocky Mountain spotted fever and typhus by the complement fixation method. Completely negative results were obtained. Blood specimens were examined by the Weil-Felix test using *Proteus* X₁₉, X₂ and X₄, with negative results. Agglutination determinations were accomplished for undulant fever, tularemia, typhoid and paratyphoid A and B with negative results. Repeated blood cultures and smears were found negative. The heterophile antibody reaction was negative in all cases examined. Laboratory investigation of the spinal fluid in several cases yielded normal findings. Biopsy of enlarged lymph glands disclosed only lymphoid hyperplasia.

CLINICAL COURSE

There were no deaths in this series of cases, the disease being self limited. The syndrome varied from a mild febrile illness of short duration to a severe debilitating prolonged disease with a protracted convalescence. In the more severe forms a rash resembling German measles, and at times typhus made its appearance early in the disease but disappeared within forty-eight hours. In about 10 per cent of the cases skin manifestations developed. The elevation in temperature continued for about five days in a majority of the cases and returned to normal by lysis. The temperature once it reached normal remained normal except in a few instances in which an occasional rise to 99 F was noted. From clinical observation it is apparent that the incubation period of this disease is from seven to ten days.

TREATMENT

Patients were placed in bed during the acute stage of the illness and received routine nursing care. Codeine sulfate $\frac{1}{2}$ to 1 grain (0.032 to 0.06 Gm.) with acetylsalicylic acid 5 to 10 grains (0.32 to 0.65 Gm.) every two or three hours and an ice bag to the head were used for relief of the severe headache. The intake of fluids was encouraged. Dextrose and saline solution was given intravenously to patients showing dehydration from deficiency of fluid intake or from vomiting. Hydrotherapy was employed as indicated to combat the febrile reaction and to make the patient more comfortable. Chemotherapy was used in a few of the cases but was observed only to increase the toxicity associated with this disease. The syndrome was self limited and apparently it conferred immunity, since no recurrences have been observed. In this series of cases no complications or sequelae have been noted.

A TYPICAL CASE

Sergeant W. A. S. (case 1 in the table), infantryman, Fort Sam Houston, Texas, with two years' military service, was admitted to the Brooke General Hospital on June 25, 1942, complaining of severe generalized headache of four or five hours duration. His face was flushed as with fever and he appeared acutely ill. The onset of illness was sudden with nausea, vomiting and severe headache. He had noted no prodromal symptoms and no symptoms involving the respiratory tract. He gave no history of previous serious illness. Occupation, habits and family history were noncontributory. He had been at Camp Bullis, Texas, for one week, June 13 to June 20 inclusive and had returned to Fort Sam Houston five days prior to the onset of symptoms. While at Camp Bullis he suffered numerous tick and chigger bites. Physical examination revealed flushed skin and evidence of numerous insect bites on the abdomen and the legs. Moderate lymphadenopathy was found. Otherwise physical examination gave negative results.

¹ A Report of the Board for the Investigation and Control of Infectious and Other Epidemic Diseases in the Army, Aug. 10, 1942.

Laboratory Findings—Studies of the blood gave results as follows June 26 the white blood cell count was 4,600 with 84 per cent polymorphonuclears, 13 per cent lymphocytes and 3 per cent monocytes, the blood smear was negative for malarial plasmodia July 3 the white blood cell count was 3,550 with 41 per cent polymorphonuclears, 55 per cent lymphocytes and 4 per cent monocytes, the blood smear was negative for malarial plasmodia July 11 the white blood cell count was 6,800 with 43 per cent polymorphonuclears, 52 per cent lymphocytes and 5 per cent monocytes The red cell count and the hemoglobin content remained normal throughout

1 80 The heterophile antibody reaction was negative All the agglutinations were considered of no diagnostic significance
Progress in Hospital—June 27 the patient's temperature was still elevated There were no complaints other than headache—no nausea, no vomiting and no rash He was mentally clear Neurologic examination gave entirely negative results Some general weakness, lassitude and malaise were noted June 30 the patient still had generalized enlargement of lymph glands, and his temperature was still elevated He had no chills July 4, the fourth afebrile day, he was ambulatory and completely asymptomatic There was still generalized glandular

Composite Table of Bullis Fever Observed at Brooke General Hospital, Fort Sam Houston, Texas

Case	Duration of Fever, Days	White Blood Cell Count	Polymorphonuclears, per Cent	Lymphadenopathy	Exposure to Tick Bites	Comment	Case	Duration of Fever, Days	White Blood Cell Count	Polymorphonuclears, per Cent	Lymphadenopathy	Exposure to Tick Bites	Comment
1	6	4,600 2,300 3,550 6,800	84 52 41 13	Yes	Yes	Severe headache, fever nausea and vomiting	17	8	5,700 4,350 13,300	61 57 26	Yes	Yes	Fever, headache
2	6	2,900 2,800 7,000	52 55 60	Yes	Yes	Fever only complaint	18	6	12,000 4,000 5,250 8,900	24 62 47 45	Yes	Yes	Fever 6 days, highest temp 104.4 F., skin covered with tick bites
3	6	5,600 4,100 5,300 8,750	62 52 50 55	Yes	Yes	Severe postorbital and occipital headache, chill and fever	19	6	4,800 7,200 7,000 11,000	75 59 37 57	Yes	Yes	Fever only complaint
4	2	6,300 4,900 4,450 9,250	79 57 39 50	Yes	Yes	General malaise and headache	20	5	3,100 6,550	56 47	Yes	Yes	Severe myalgia
5	4	8,200 3,200 9,600	73 52 39	Yes	Yes	General malaise and headache	21	6	4,050 5,350 11,750	68 62 30	Yes	Yes	Chill, fever and aching
6	5	3,100 2,700 2,300 8,600	64 58 51 55	Yes	Yes	Backache, severe headache and fever	22	8	3,650 5,650	23 52	Yes	Yes	Chill, fever and general weakness
7	5	4,300 4,500 5,500 8,300	57 53 40 56	Yes	Yes	Aching in joints headache and vomiting	23	5	5,600 3,500 7,800	48 63 55	Yes	Yes	General aching
8	7	3,700 3,100 5,250	80 57 55	Yes	Yes	Severe occipital headache and fever	24	4	2,950 3,100 8,200	69 59 56	Yes	Yes	General malaise, nausea and vomiting
9	4	11,000 4,750 6,900	80 53 54	Yes	Yes	Ill defined abdominal pain, headache and fever	25	7	5,400 4,000 8,900	66 62 45	Yes	Yes	General malaise backache and abdominal pain, not localized
10	9	3,700 7,850	40 52	Yes	Yes	Severe photophobia, occipital headache and fever	26	5	4,200 8,700	72 60	Yes	Yes	Mild illness headache pain back of eyes
11	5	6,100 4,200 8,550	69 53 27	Yes	Yes	Chills headache, fever and weakness	27	6	2,650 5,000 3,600 10,300	76 70 74 28	Yes	Yes	Frontal headache anorexia mild nausea and vomiting
12	11	8,100 5,800 6,400	68 76 55	Yes	Yes	Generalized headache and fever	28	4	3,200 4,500 6,800	61 66 32	Yes	Yes	No complaints except fever
13	6	2,700 2,800 7,250 8,440	58 59 25 53	Yes	Yes	Temp 104 F for 3 days gradual return to normal	29	3	3,500 3,200 5,000 8,600	63 39 28 52	Yes	Yes	Mild illness with slight occipital headache
14	5	6,500 2,100 7,900	81 50 50	Yes	Yes	Temp 103 F for 4 days general malaise	30	5	3,900 3,200 5,000 8,600	77 39 28 52	Yes	Yes	Severe headache and slight chill at onset
15	5	2,400 1,750 7,500	85 63 55	Yes	Yes	Slight headache only complaint	31	5	4,000 5,500	59 64	Yes	Yes	No complaints except slight nausea
16	6	3,700 6,300 7,300 6,450	40 63 24 52	Yes	Yes	Fever backache, light chills, insidious onset	32	13	4,500 3,000 2,300 9,600	59 77 80 21	Yes	Yes	General malaise, headache
							33	9	4,300 3,950 2,850 9,300	73 51 51 55	Yes	Yes	Generalized mottling of entire body—severe infectious disease

Complement fixation yielded negative results for Q fever Rocky Mountain spotted fever, and typhus Agglutination tests were negative, including Widal, Proteus X₁₀, X₂ and X_k, paratyphoid A and B undulant fever and heterophile antibody reaction

Urinalyses revealed only a slight trace of albumin during the febrile course of the disease
The spinal fluid cell count was normal The smear and the culture were negative The protein and globulin contents were normal, the gold curve was flat, the chloride and sugar levels were normal The spinal fluid pressure was normal The Wassermann reaction was negative
Tests for agglutination of Proteus X₁₀, X₂ and X_k were made on July 11, 14 and 17, with results as follows July 11, Proteus X₁₀ positive 1 160, X₂ negative, X_k negative, July 14, Proteus X₁₀ positive 1 80, X₂ negative, X_k negative, July 17, Proteus X₁₀ positive 1 80, X₂ positive 1 40, X_k positive

enlargement, which was the only constant physical derangement in this case July 8 the lymphadenopathy was no longer discernible There were no complaints July 17 convalescence was considered as uneventful The total white blood cell count was normal The patient still showed moderate lymphocytosis

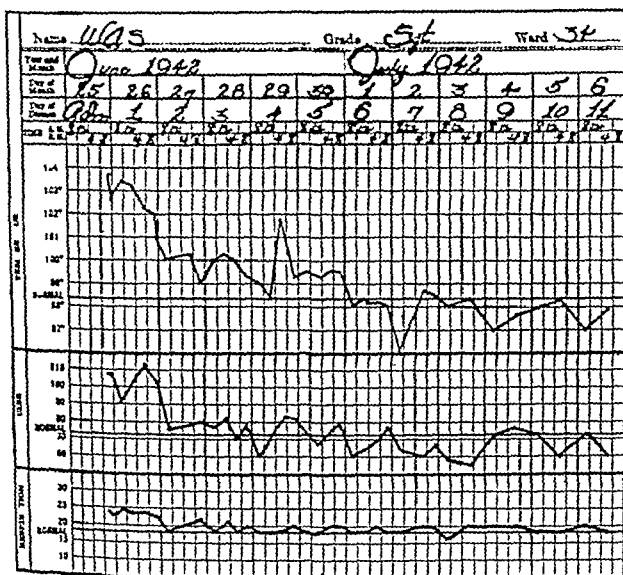
A LABORATORY INVESTIGATION

The laboratory and field work to be reported now was accomplished by Col H R Livesay, Medical Corps, and Capt Morris Pollard, Veterinary Corps, of the Eighth Service Command Laboratory, Fort Sam Houston

ton, Texas, in an attempt to determine the cause and the mode of transmission of this disease and to identify the vector

Citrated and clotted bloods were inoculated intraperitoneally into rabbits and male guinea pigs. Spinal fluids with significant cytologic alteration were inoculated intracerebrally into guinea pigs, mice and rabbits. Spinal fluids and citrated bloods were also inoculated into developing 8 to 11 day old chick embryos by the chorioallantoic route and intravenous routes. In addition periodic serologic examinations were made for typhus, equine encephalomyelitis and lymphocytic choriomeningitis by the complement fixation test and for the Weil Felix reaction.

All serologic examinations yielded negative results. The spinal fluids in several cases induced a mild transient febrile reaction in guinea pigs by intracerebral inoculation on the ninth day after inoculation. One serial passage at this point of brain material to normal guinea pigs reproduced this reaction with no apparent increase in virulence of the agent. No histologic abnormality could be detected in the brain tissue. When the febrile reaction developed in guinea pigs, brain material was transferred to chick embryos. Five generations of chick embryos in series were killed after inoculation by the intra-



Temperature pulse and respiration

venous route within periods of six to nine days. There was no apparent increase in virulence of the agent by passage, and no lesions could be detected in the dead chick embryos. The spinal fluids induced no visible effect in mice or rats.

A consistent low grade febrile reaction was induced in guinea pigs with intraperitoneally inoculated citrated and clotted blood. This reaction developed on the ninth or tenth day after inoculation and usually lasted one or two days. No orchitis was observed in any of the guinea pigs inoculated, however fibrinous peritonitis developed in 2 instances, and this material is now being transferred to normal guinea pigs.

One hundred and fifty ticks collected at random from Camp Bullis were pooled, triturated in saline solution and inoculated into male guinea pigs. One guinea pig inoculated intracerebrally with tick emulsion showed a one day temperature of 106.2 F on the ninth day after inoculation.

Several deer armadillos and jack rabbits were examined from Camp Bullis, and no lesions were detected grossly or histologically. Of the ticks collected the predominating type was *Amblyomma americanum*, and several belonging to *Haemaphysalis leporis palustris* were removed from the jack rabbits.

No implication is being made as to the identity of the etiologic agent in these cases. The laboratory work is still in progress, and perhaps the results will merit a future report.

COMMENT AND CONCLUSION

The cases of "Bullis fever" comprising this group resemble in some respects the cases of Colorado tick fever reported by Topping, Cullyford and Davis². In those cases, however, a typical saddle back type of fever curve was noted, the initial fever lasting two or three days, then becoming normal only to rise again. In the cases under our observation this type of temperature curve was not seen, except that in a few cases a secondary rise to 99 F or slightly above was noted after a remission of one to three days. Lymphadenopathy, which was a constant finding in our series of cases, was not reported as found in the cases of Colorado tick fever. Dengue fever was thought of as a possible diagnosis, but the absence of exposure to mosquitoes and the clinical course of the disease aided in ruling out this condition as a possibility. Malaria was considered in view of the leukopenia, chills and fever, but this too was ruled out by the clinical course of the disease and by the negative blood smears. Acute mononucleosis was excluded by the negative heterophile antibody reaction, the absence of sore throat and the failure to find the typical white blood cells characteristic of this disease. Typhus and Rocky Mountain spotted fever were discarded as possibilities in view of the clinical course of the disease and the absence of laboratory findings in blood specimens. It is our opinion that Bullis fever constitutes a new disease entity heretofore undescribed.

All the men whose cases are included in this report gave a history of repeated and prolonged exposure to tick bites while undergoing training in the maneuver area known as Camp Bullis. This military reservation, approximately 20 miles west of Fort Sam Houston, Texas, has a heavy tick infestation.

Although no positive proof of the association of bites of *Amblyomma americanum* with this disease has been established, it is our opinion that further laboratory investigation will prove that this disease is transmitted to man through the tick bite. Recovery of the rickettsias of Rocky Mountain spotted fever from nymphs of *A. americanum* has been reported by R. R. Parker, G. M. Kohls and E. A. Steinhaus of the Rocky Mountain Laboratory of the National Institute of Health³. With this proof at hand it is reasonable to suspect that the disease under discussion is transmitted to man by the same vector.

In view of the fact that there will be heavy troop concentrations in rural areas during the present national emergency, and since it is felt that this disease is more widely distributed than has been recognized, we feel that the attention of medical officers should be called to the occurrence of this syndrome. Unless the possibility of the presence of this disease is kept constantly in mind, it will challenge one's diagnostic acumen, since it resembles in many respects other acute febrile illnesses.

(It is apparent that this disease is increasing in frequency and severity in the San Antonio area. During the past two months [May and June 1943] 485 patients with the syndrome have been admitted to this hospital. A higher percentage of patients in this group have manifested the more serious symptoms and there has been

² Topping, N. H., Cullyford, J. S. and Davis, C. E. Colorado Tick Fever. Pub. Health Rep. 55:224 (No. 29) 1941.
³ *Amblyomma americanum* a Vector of Rocky Mountain Spotted Fever. Pub. Health Rep. 55:291 (March 19) 1941.

one fatality (May 21, 1943) attributed to this syndrome. In the patient who died the terminal clinical picture was that of severe aggranulocytic angina and septicemia. A complete report on the autopsy material thus far has not been received. Grossly nothing was found that would aid in identifying this disease from a pathologic standpoint.)

ADJUVANT ALKALI THERAPY IN THE PREVENTION OF RENAL COMPLICATIONS FROM SULFADIAZINE

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Although the incidence of toxic reactions in general is lower with sulfadiazine therapy than with the other commonly employed sulfonamide drugs,¹ renal complications from this drug occur with sufficient frequency to demand particular attention.² The severity of these renal reactions varies greatly, in some instances there occur only small numbers of red cells in the urine and/or ureteral colic or pain in the loins or abdomen, in others there is gross hematuria, oliguria, or anuria with increasing nitrogen retention. Ureteral catheterization has been employed in many instances to remove concretions of sulfadiazine products,³ there have been several deaths from anuria reported.⁴ As the renal complications from sulfadiazine are generally, if not always, due to the precipitation of some form of the drug within the kidney or urinary tract, it seemed that a means of preventing this "chemical" toxic effect might be available. Since the renal complications comprise more than half of the toxic reactions due to this sulfonamide,⁵ the safety of therapy with this drug would be much enhanced by prevention of this toxic effect.

We⁶ have recently reported briefly laboratory and clinical studies which demonstrate that the administration of appropriate amounts of alkali during oral therapy with 4 to 6 Gm of sulfadiazine daily prevents crystalluria and renal reactions due to precipitation of drug compounds. This investigation has been extended, and the effect of alkali administration on the prevention of renal complications has also been studied in patients receiving higher dosages of sulfadiazine orally and sodium sulfadiazine intravenously.

From the New York Hospital and Department of Medicine, Cornell University Medical College.

1 Finland, Maxwell, Peterson, O. L., and Goodwin, R. A., Jr. Sulfadiazine. Further Clinical Studies of Its Efficacy and Toxic Effects in 460 Patients, *Ann Int Med* 17: 920 (Dec) 1942. Dowling, H. F., and Lepper, M. H. Toxic Reactions Following Therapy with Sulfapyridine, Sulfathiazole and Sulfadiazine, *J A M A* 121: 1190 (April 10) 1943. Flippin, Schwartz and Domm.²⁰ Plummer and Wheeler.⁵

2 Raines, S. L. Ureteral Obstruction Following the Use of Sulfadiazine, *J A M A* 119: 496 (June 6) 1942. Finland, Peterson and Goodwin.¹ Flippin, Schwartz and Domm.²⁰ Dowling and Lepper.¹ Plummer and Wheeler.⁵ Bradford and Shaffer.⁹ Schulte, Shidler and Niebauer.²¹ Hellwig and Reed.³ Keitzer and Campbell.¹² Jeck and Orkin.²⁷

3 Hellwig, C. A., and Reed, H. L. Fatal Anuria Following Sulfadiazine Therapy, *J A M A* 119: 561 (June 13) 1942. Finland, Peterson and Goodwin.¹ Schulte, Shidler and Niebauer.²¹ Raines.² Jeck and Orkin.²⁷

4 Finland, Peterson and Goodwin.¹ Bradford and Shaffer.⁹ Hellwig and Reed.³ Jeck and Orkin.²⁷

5 Plummer, Norman, and Wheeler, Charles. To be published.

6 Gilligan, Dorothy Rourke, Garb, Solomon, and Plummer, Norman. Prevention of Crystalluria During Sulfadiazine Therapy. Experimental and Clinical Studies, *Proc Soc Exper Biol & Med* 52: 248 (March) 1943.

COMPOSITION AND SOLUBILITIES OF THE URINARY PRECIPITATES FROM SULFADIAZINE

Composition of Precipitates—Analyses by the Bratton and Marshall⁷ method showed that the urinary crystals and small stones from the kidney pelves of 8 patients receiving sulfadiazine orally were chiefly acetylsulfadiazine⁸ (table 1). These results confirm reported analyses of stones from 3 other patients treated with sulfadiazine.⁹ The crystals from 1 of our patients (3, table 1) who received the drug orally were positively identified with the polarizing microscope and were chiefly acetylsulfadiazine.¹⁰ It is of interest that the urinary crystals from 1 of 3 patients who were being treated with 5 Gm daily of sodium sulfadiazine intravenously were found to consist largely of free sulfadiazine (table 1).

A study of the solubility in buffer solutions of the urinary crystals from 1 patient showed a solubility curve (chart 1) similar to that of pure acetylsulfadiazine (chart 2).

Solubilities of Sulfadiazine and N₄-Acetylsulfadiazine in Buffers and in Normal Urine—The solubilities of both sulfadiazine and acetylsulfadiazine¹¹ in phosphate and citrate buffer solutions increase greatly with increasing p_H over the physiologic range of urinary p_H .¹²

TABLE 1—Composition of Urinary Crystals from Patients Receiving Sulfadiazine *

Patient	Route of Sulfadiazine Medication	Composition of Crystals	
		Sulfa diazine per Cent	Acetyl sulfadiazine, per Cent
1	Oral	7	93
2	Oral	13	87
3	Oral	5	95
4	Oral	13	87
5	Oral	37	63
6	Oral	10	90
7	Oral	6†	94
8	Oral	4†	96
9	Intravenous	10	90
10	Intravenous	12	88
11	Intravenous	78	22

* The urinary sediments from centrifugation were washed once with distilled water. From 70 to 100 per cent (average 90 per cent) of the weight of the sediments consisted of sulfadiazine compounds.

† These specimens were small stones from kidney pelves at autopsy.

(chart 2) When sulfadiazine and acetylsulfadiazine are dissolved together in phosphate buffers of varying p_H 's the solubility curve for each solute is the same as that obtained when the compounds are dissolved separately. Curves of solubility identical to those obtained with buffers (chart 2) were obtained from a study of 25 aliquot samples (adjusted to varying p_H levels) of urine from 5 normal subjects. Rose, Martin and

7 Bratton, A. C., and Marshall, E. H., Jr. A New Coupling Component for Sulfanilamide Determination, *J Biol Chem* 128: 337 (May) 1939.

8 Throughout this paper the N₄acetyl derivatives of the sulfonamides are referred to simply as the "acetyl" derivative.

9 Bradford, H. A., and Shaffer, J. H. Renal Changes in a Case of Sulfadiazine Anuria, *J A M A* 119: 316 (May 23) 1942. Keitzer, W. A., and Campbell, J. A. Renal Complications of Sulfadiazine, *ibid* 119: 701 (June 27) 1942.

10 Dr. E. F. Williams of American Cyanamid Company, Inc. made this examination.

11 These compounds were supplied to us by Lederle Laboratories, Inc.

12 The solubility data in buffers⁸ and in urine were obtained by shaking an excess of the compound in the buffer or urine sample for eighteen hours at 37 C., filtering at the same temperature, measuring the p_H of the filtrate with a Beckman glass electrode p_H meter and determining the amount of compound dissolved by the Bratton and Marshall method.⁷ It was established that equilibrium was reached in eighteen hours in both buffers and in urines by comparing findings after eighteen and forty-two hours of shaking. This method of study does not allow for "saturation" which Jensen and Fox¹³ found complicated their studies of the solubility of these sulfonamides in urine.

Bevan¹³ and Jensen and his co-workers¹⁴ also recently reported curves showing increasing solubility of these compounds with increasing p_H in water plus varying amounts of sodium hydroxide¹⁵ and in normal urine¹⁵

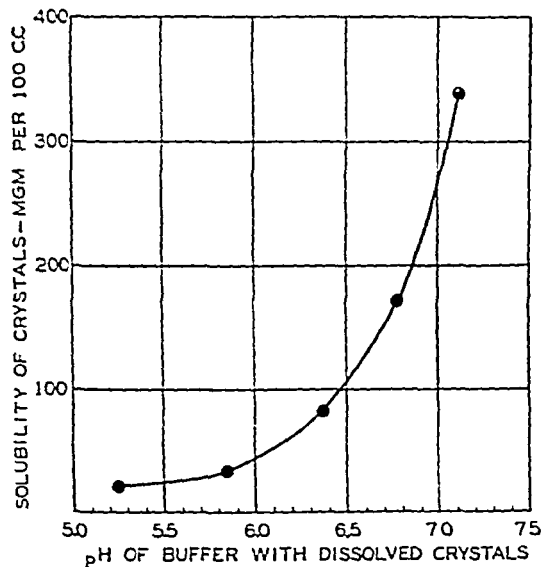


Chart 1—The solubility in niteenth molar phosphate buffers of the urinary crystals from a patient receiving sulfadiazine. The values plotted represent the solubility of the acetylsulfadiazine component which was 93 per cent of the total crystal weight.

As shown in chart 1, sulfadiazine is approximately twenty times and acetylsulfadiazine thirty times, more soluble in buffers and in normal urine at p_H 7.5 than at p_H 5.0. In fact, at neutrality (p_H 7.0) sulfadiazine is approximately seven times and acetylsulfadiazine thirteen times more soluble than at p_H 5.0 (chart 2)

CLINICAL STUDIES OF THE PREVENTION OF CRYSTALLURIA AND RENAL REACTIONS DURING SULFADIAZINE THERAPY

From the facts that the precipitated products causing the renal toxicity from sulfadiazine in man are acetylsulfadiazine and, less frequently, free sulfadiazine (table 1) and that the solubilities of these compounds are much higher at p_H 7.0 and above than at p_H 5.0 to 6.0 (chart 2), it seemed likely that the maintenance of a neutral to slightly alkaline urine might prevent renal reactions during sulfadiazine therapy.

Studies of Patients Receiving the Usual Oral Dosages of Sulfadiazine—In a carefully controlled study of the incidence of crystalluria in acid and alkaline urines from 73 patients receiving 4 to 6 (usually 6) Gm daily of sulfadiazine and varying amounts of sodium bicarbonate, crystals were found in 27 per cent of 172 acid specimens and in only 14 per cent of 147 neutral or alkaline specimens¹⁶ (table 2).⁶ Factors other than p_H which might affect the incidence of crystalluria, namely the average daily urinary volume, the average specific gravity of the urine specimen examined and

the average daily dose of sulfadiazine, were essentially the same in the two groups. The urines examined were almost always the first specimens voided in the morning and were not refrigerated. These specimens were considered most appropriate for study since they are generally the most concentrated and most acid of the day. The daily urinary volume was usually between 1,200 and 2,500 cc, the specific gravity of the urine specimens examined was generally from 1.006 to 1.016. Twelve patients who had had crystalluria in acid specimens no longer had crystals after sufficient sodium bicarbonate was administered to render the urine neutral or alkaline. In 2 patients showing crystals in acid urines, crystals were still present on the first morning the urines were rendered alkaline by alkali therapy but were absent subsequently during the maintenance of alkaline urines. These two are the only instances in which crystals were observed in alkaline urine (table 2). It is suggested that these crystals were formed when the urine was acid and were being washed out of the urinary tract subsequently. On the other hand, we have observed gross crystalluria disappear in the first urine voided a few hours after the ingestion of 6 Gm of sodium bicarbonate. It is significant that crystalluria was observed frequently in acid urines of low specific gravity (1.006 to 1.010) as well as in acid urines of higher specific gravity.

Although renal complications result from precipitation of sulfadiazine compounds, it is not implied that the presence of rare or even gross crystalluria necessarily indicates the presence of renal complications. In fact, the incidence of crystalluria (approximately 30 per cent) in patients not treated with adjuvant alkali therapy is much higher than the incidence of discernible renal irritation or urinary tract obstruction (48 per cent⁵) in patients similarly treated.

In a series of 350 patients treated to date in the various services of the hospital with 6 Gm orally of

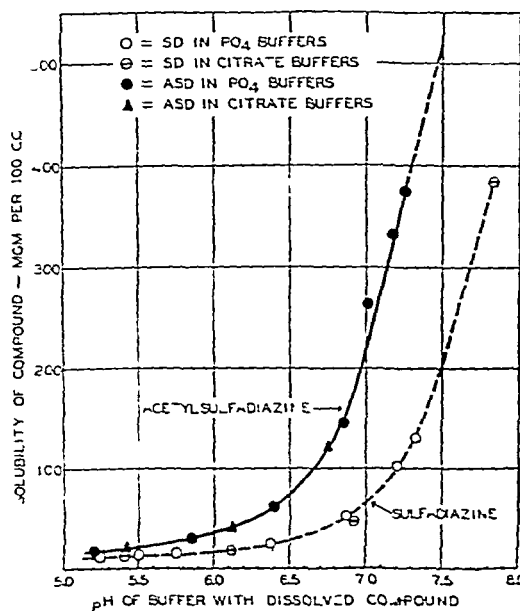


Chart 2—The curves of solubility of sulfadiazine and of acetylsulfadiazine in niteenth molar phosphate and in tenth molar citric plus sodium hydroxide buffer solutions of varying p_H values.

sulfadiazine per day and sufficient alkali to maintain the urine neutral or alkaline throughout the sulfadiazine therapy there have been no instances of crystalluria and no evidence of renal irritation or urinary tract

¹³ Ro E F L, Martin A R and Bevan H G L. Sulfamethazine (2-Amino-6-Dimethylpyrimidine-4-sulfonamide) a New Heterocyclic Derivative of Sulfanilamide. *J Pharmacol. & Exper. Therap* 77: 177 (Feb.) 1943.

¹⁴ Fox C L Jr, Jensen O J Jr and Mudge G H. Prevention of Renal Obstruction During Sulfadiazine Therapy. *J A M A* 121: 1147 (April 3) 1943. Jensen and Fox.¹⁵

¹⁵ Jensen O J Jr and Fox C L Jr. Hydrogen Ion Concentration and the Solubility of Sulfonamides in Urine: The Relation to Renal Precipitation. *J Urol* 49: 334 (Feb.) 1943.

¹⁶ The urinary p_H values in these studies were estimated with nitrazine 1-per and frequently checked by measurement with the Beckman glass electrode p_H meter. In particular instances when indicated the fresh urine specimens were immediately placed under toluene and the p_H determined shortly thereafter with the Beckman p_H meter.

obstruction attributable to the drug. The importance of these findings is obvious when compared with the incidence of approximately 30 per cent crystalluria (table 3) and 4.8 per cent of mild to more severe renal complications⁵ encountered in this hospital prior to the use of adjuvant alkali therapy.

Studies of Patients Receiving Large Oral Doses of Sulfadiazine—The effect of adjuvant alkali therapy has been studied in 9 patients¹⁷ receiving orally 12 to 15 Gm of sulfadiazine daily for periods of several weeks.

TABLE 2—Effect of Urinary pH on Incidence of Crystalluria from Sulfadiazine in 73 Patients Receiving 4 to 6 Gm of Sulfadiazine Orally per Day With or Without Varying Doses of Sodium Bicarbonate

	Acid Urines	Neutral or Alkaline Urines
Number of specimens	172	147*
Number of specimens with crystals	47	2
Percentage of specimens with crystals	27†	1.4

* 133 of these 147 urine specimens were from patients receiving alkali therapy.

† Some of these urines were from patients receiving small amounts of sodium bicarbonate, which accounts for the somewhat lower incidence of crystalluria in this analysis than in that of table 3 for patients receiving no alkali. The degree of crystalluria varied from rare crystals detected by microscopic study of several fields of the smeared, covered sediment to "gross" crystalluria.

to months. The blood sulfadiazine levels were from 12 to 25 mg per hundred cubic centimeters. The daily urinary volumes ranged from 1,000 to 3,000 cc. The total daily sulfadiazine excretion in the urine ranged from 9 to 14 Gm. Over 100 urine specimens from this group of patients were examined.

Although the incidence of renal complications in patients receiving such large dosages of sulfadiazine is very high when no adjuvant alkali therapy is given, none of these 9 patients showed crystalluria or any evidences of renal complications when the urines were maintained alkaline with 19.5 Gm of sodium bicarbonate daily in divided doses of 3.25 Gm (50 grains) every four hours. In 1 of these patients (L. C.) on two occasions during three months of therapy with 15 Gm of sulfadiazine and 19.5 Gm of sodium bicarbonate per day the alkali therapy was discontinued in order to ascertain with certainty its value. On both occasions crystalluria occurred when the urines became acid. On the first occasion there developed, shortly after the omission of alkali, pain in the loins with gross hematuria, which disappeared on resumption of alkali therapy, on the second occasion the alkali therapy was promptly resumed when acid urines with crystalluria and microscopic hematuria were voided. Similarly, in another of these patients (J. O.) receiving high dosages of sulfadiazine, gross crystalluria, microscopic hematuria and pain in the loins occurred on one occasion when the adjuvant alkali therapy was temporarily interrupted.

Studies of Patients Receiving 5 Gm Daily of Sodium Sulfadiazine Intravenously—In a study of 61 urine specimens from 23 patients receiving daily 5 Gm of sodium sulfadiazine intravenously in two doses of 2.5 Gm each and no adjuvant alkali therapy, most of the urines were found to be acid and the incidence of crystalluria was 43 per cent. These were surgical patients receiving intravenous sodium sulfadiazine therapy for approximately two to four days. All the urines containing crystals were acid. It is to be noted that the incidence of crystalluria in this group was appreciably higher than in patients receiving 6 Gm of sulfadiazine orally per day and no adjuvant alkali therapy (table 3). In 2 patients not included in the foregoing series, 1,000 cc of sixth molar sodium lactate solution per day was given intravenously in divided doses adjuvant to sodium sulfadiazine therapy. The urines of these patients were alkaline and there was no crystalluria.

The Appropriate Dosage of Adjuvant Alkali Therapy—The dosage of sodium bicarbonate necessary to maintain the urine neutral or slightly alkaline is variable, of course, in different patients. When alkalis are not administered, the urines of patients receiving sulfadiazine are almost always acid, usually from pH 5.0 to 6.0. This acidity is to be expected in part on the basis of the usual acidity of the urine in infection and in part because of the acidifying effect of the drug and its derivatives excreted in the urine. The acidifying effect of this sulfonamide is exemplified by our finding that the solution of 136 mg of sulfadiazine per hundred cubic centimeters decreased the pH of fifteenth molar phosphate buffer from 7.67 to 7.32. It is to be noted in this respect that the average concentrations in the urine of sulfadiazine and of acetylsulfadiazine are approximately 200 and 100 mg per hundred cubic centimeters respectively when the daily urine volume is 1,500 cc and the dosage of sulfadiazine 6 Gm per day.

The effects of 6 to 19.5 Gm of sodium bicarbonate daily on the urinary pH and incidence of crystalluria were studied in 40 patients and the findings compared with those in 23 patients receiving no adjuvant alkali therapy (table 3). An initial dose of 4 to 6 Gm of sodium bicarbonate was administered at the beginning of sulfadiazine therapy, and the daily doses were divided into six equal parts administered every four hours together with the sulfadiazine. Urine specimens known to contain urea splitting organisms were excluded from the analysis.

With doses of 6 to 12 Gm (average 8 Gm) daily of bicarbonate, the incidence of acid urines and of crystalluria was reduced only about one third (table 3).

TABLE 3—Study of Bicarbonate Dosage Required to Maintain Urine Neutral to Alkaline in Patients Receiving 4 to 6 Gm (Usually 6 Gm) of Sulfadiazine Orally per Day

Daily Dosage of Sodium Bicarbonate, Gm	Number of Patients	Number of Urines	Per Cent of Crystalluria*	Per Cent of Acid Urines
0	23	90	31	90
8†	13	71	18	59
13.7	10	39	0	15
19.5	17	51	0	0

* All the crystals were observed in acid urines.

† Average dosage in 13 patients receiving 6 to 12 Gm daily.

One patient in this group, who was receiving 12 Gm of alkali daily and who showed acid urines with crystalluria, developed gross hematuria. With 13.7 Gm of bicarbonate daily (six doses of 35 grains) the urines were usually neutral or alkaline, although 15 per cent were between pH 6.3 and 6.8. With 19.5 Gm daily (six doses of 50 grains) all the urines were alkaline. In both of these latter groups there was no crystalluria and no gross or microscopic hematuria. These doses of alkali were well tolerated, none of the patients had gastrointestinal symptoms and there were no clinical evidences of alkalosis. One patient who received 12 to 15 Gm of sulfadiazine daily for the treatment of sub-

17 Five of these patients were being treated for subacute bacterial endocarditis.

acute bacterial endocarditis also received 19.5 Gm of sodium bicarbonate daily for three months without showing intolerance to this medication.

COMMENT

Some other investigators have previously advocated adjuvant alkali therapy with sulfadiazine medication on the basis of their clinical findings.¹⁸ Schwartz and his collaborators¹⁹ reported a slight reduction in the incidence of crystalluria from oral sulfadiazine therapy in patients receiving sodium bicarbonate in amounts equal to the sulfadiazine.²⁰ The failure of the alkali therapy to produce a significant lowering of the incidence of crystalluria in this series¹⁹ can be attributed to the inadequate dosage of alkali as evidenced by our findings. Fox, Jensen and Mudge²¹ more recently have reported 2 cases of subacute bacterial endocarditis in which alkalis were used in conjunction with massive doses of intravenous sodium sulfadiazine. In these 2 cases complete anuria did not develop although renal reactions of less severity occurred; the authors²¹ point out that in these cases the amounts of alkali administered were insufficient to maintain the urines alkaline during the period of therapy and that precipitation occurred when the urines were acid. Schulte Shidler and Niebauer²² reported a case of acute urinary suppression following sulfadiazine therapy in which urinary flow was reestablished following oral alkali therapy and lavage of the kidney pelvis with 2 per cent sodium bicarbonate solution.

The present studies carried out on a large series of patients, showed that appropriate adjuvant alkali therapy prevented crystalluria, clinical evidences of renal damage and urinary tract obstruction from sulfadiazine therapy. This protection applied to patients receiving the usual therapeutic doses of sulfadiazine orally, large doses of sulfadiazine orally and the usual doses of sodium sulfadiazine intravenously. The clinical study of the effect of adjuvant alkali therapy was prompted by the chemical studies which demonstrated that the precipitate which caused the renal reactions was usually chiefly composed of acetylsulfadiazine²³ (table 1) or, under particular circumstances, free sulfadiazine (table 1) and that the solubility of these pure compounds (chart 2) and of the urinary crystals (chart 1) was definitely greater at p_H 7.0 and above than at the usual acidity of the urine of patients receiving sulfadiazine.

That fluids should be administered during sulfonamide therapy in quantities sufficient to maintain large daily urinary volumes is generally accepted and has

been widely advocated. It has further been shown repeatedly that severe renal reactions due to sulfonamide therapy are much more frequent in patients in whom the daily urinary volumes have been low during treatment with the drugs. The frequency with which mild or more severe renal reactions occur during treatment with sulfonamides in hospital patients on a regimen of carefully controlled therapy,¹ however, attests the fact that a feasible routine of fluid therapy is insufficient to prevent the occurrence of such reactions. That renal reactions occur during therapy with the usual daily doses of sulfadiazine or sodium sulfadiazine even when daily urinary volumes of approximately 1500 cc have been maintained, has been pointed out by Plummer and Wheeler.² In patients receiving larger doses of sulfadiazine without adjuvant alkali therapy the frequency of renal reactions is extremely high in spite of maximal fluid intake compatible with the comfort of the patient. It may also be pointed out that under certain circumstances, especially those incumbent on war operations today, sulfonamide therapy may be required under conditions in which amounts of fluid sufficient to afford more than a scanty urinary volume are not available. It is to be noted also that acidosis is often associated with dehydration. The remarkable effectiveness of an alkaline urine as a safeguard against renal reactions is a consequence of the fact that sulfadiazine is some twenty times, and acetylsulfadiazine some thirty times, more soluble at p_H 7.5 than at p_H 5.0 (chart 2).

From the results of studies with varying daily dosages of alkali it has been concluded that adjuvant therapy consisting of an initial 6 Gm dose of sodium bicarbonate followed by a daily amount of 15.6 Gm divided into 2.6 Gm (40 grain) doses administered every four hours is generally adequate to prevent crystalluria and renal reactions during oral therapy with 6 Gm of sulfadiazine. The dosage of alkali is increased or decreased in an individual patient when indicated by clinical or laboratory findings. The urinary p_H may be tested simply with litmus or nitrazine paper, both of which indicators are blue in neutral and alkaline urines. The prescribed amount of 15.6 Gm of bicarbonate daily is conservative and is based on studies of patients in the Isolation Service of the New York Hospital (table 3). Twenty-four Gm of sodium bicarbonate daily has been administered routinely for short periods to obstetric patients receiving 6 Gm daily of sulfadiazine with no apparent ill effects²³ and no increase above normal in the carbon dioxide combining power of the plasma. It is necessary that the alkali be given in divided doses every four hours in order to maintain the urinary p_H relatively constant throughout the day and night. Alkali therapy is continued for one day following cessation of sulfadiazine therapy. The same dosage of alkali should be used for patients receiving 4 Gm of sulfadiazine daily. Since microscopic hematuria and pain in the loins sometimes occurs in ambulatory patients receiving 3 Gm of sulfadiazine daily, adjuvant alkali therapy should probably also be employed even with these small doses of sulfadiazine. We have employed the daily dosage of 19.5 Gm of bicarbonate in patients receiving 12 to 15 Gm of sulfadiazine by mouth daily. It should be noted that in patients with urinary tract infections with urea-splitting organisms the voided urine may be strongly alkaline as

18. Flippin, Schwartz and Domm.²³ Schulte, Shidler and Niebauer.²² Fox, Jensen and Mudge.²¹ Schwartz, Flippin, Reinhold and Domm.¹⁹

19. Schwartz, Leon, Flippin, H. F., Reinhold, J. G. and Domm, A. H. The Effect of Alkali on Crystalluria from Sulfathiazole and Sulfadiazine. *J. A. M. A.* 117: 314 (Aug. 16) 1941.

20. Flippin, H. F., Schwartz, Leon and Domm, A. H. Modern Treatment of Pneumococcal Pneumonia. *J. A. M. A.* 121: 250 (Jan. 23) 1943.

21. Schwartz, Flippin, Reinhold and Domm.¹⁹

22. Schulte, J. W., Shidler, F. P. and Niebauer, J. J. A. Urinary Suppression Following Sulfadiazine Therapy. *J. A. M. A.* 119: 411 (May 30) 1942.

23. That urinary crystals from sulapyridine and sulfathiazole are chiefly the acetyl derivatives of the drugs agrees with the observation that these derivatives are less soluble than are the free drugs (table 4). It has not been appreciated by many investigators, however, that the urinary precipitates from oral sulfadiazine therapy are generally composed chiefly of acetylsulfadiazine. This finding appears at first paradoxical since the true solubility of acetylsulfadiazine in buffers and in normal urine is greater than that of sulfadiazine (chart 1) and since the concentration of this derivative in the urine of patients receiving the drug is usually less than half that of the free drug (Plummer, Norman and Ensworth, *J. Med.* 43: 734 (Nov. 1) 1940) and cannot be completely explained until further knowledge is available concerning the rate of solution of the urinary excretory products during sulfadiazine therapy. This problem is receiving study in this laboratory (Gilligan, Dorothy, Rourke and McDermott, Walsh. To be published). That free sulfadiazine would precipitate after intravenous injections of large amounts of sodium sulfate intravenously is understandable.

the result of ammonia production, nevertheless alkali therapy is still indicated in order to maintain the appropriate p_H in the urine in the tubules

Since intravenous therapy with sodium sulfadiazine in amounts of 5 Gm per day occasions a particularly high incidence of crystalluria and of renal complications,⁵ adjuvant alkali therapy is obviously indicated with such a regimen even though it should be necessary to administer the alkali by the intravenous route. The sodium sulfadiazine itself provides an insignificant amount of alkali, since 5 Gm of this drug has the sodium content (0.42 Gm) of only 1.5 Gm of sodium bicarbonate.

Loughlin and his collaborators²⁴ have recently shown that the blood level of sulfadiazine rises approximately twice as fast when 4 Gm of sodium bicarbonate is given orally together with a single 4 Gm dose of sulfadiazine as when the sulfadiazine is given alone. This advantage of increasing the blood level more rapidly would be especially when the initial dose of 6 Gm of bicarbonate is given, as prescribed at the onset of therapy.

TABLE 4—Solubilities of Various Sulfonamides and of Their Acetyl Derivatives at Different p_H Levels

Reference	Compound	Solubility p_H		
		5.5 Mg / 100 Cc	6.5 Mg / 100 Cc	7.5 Mg / 100 Cc
Macartney, Smith, Tu-ton, Ramsey and Goldman ²¹	Sulfapyridine*	61	61	62
	Acetyl-sulfapyridine*	33	34	37
Chimenko, Barlow and Wright Arch. Path. ²² 59 (Dec.) 1941	Sulfathiazole	98	168	235
	Acetyl-sulfathiazole	7	9	28
Chart 2	Sulfadiazine	13	28	200
	Acetyl-sulfadiazine	20	75	512
Gilligan and Plummer. Com- parative Solubilities of Sulfadiazine, Sulfamerizine and Sulfamethazine and Their Acetyl Derivatives at Varying p_H Levels. Proc. Soc. Exper. Biol. & Med. 53: 112 (June) 1943	Sulfamerizine	35	45	170
	Acetyl-sulfamerizine	38	57	272
	Sulfamethazine	69	76	140
	Acetyl-sulfamethazine	99	107	240

* Solubilities in water plus varying amounts of sodium hydroxide. All other solubilities measured in buffers.

with sulfadiazine. The data of these authors²¹ show a considerably higher percentage of acetylation of the sulfadiazine in the blood when bicarbonate was given with a single dose of sulfadiazine than when sulfadiazine was given alone. Daily blood and urine studies made by us on a group of patients receiving daily adjuvant alkali therapy showed no higher percentage of acetylation of the sulfadiazine than when sulfadiazine was given alone.

Alkalosis should not be encountered during the regimen of adjuvant alkali therapy that has been outlined, since it has been shown that only sufficient alkali need be administered to maintain the urine neutral to slightly alkaline, whereas the normal kidney has the capacity of excreting alkali sufficient to produce a urinary p_H of 8.2.²⁵ Bischoff²⁶ has demonstrated that

30 Gm of sodium citrate daily is the minimum dosage of alkali which produces a shift in the acid base equilibrium of the plasma outside the normal variation of the normal individual. In a series of patients studied here who received as much as 24 Gm of sodium bicarbonate together with 6 Gm of sulfadiazine daily, the plasma bicarbonate values were all within the limits of normal.

In some instances, such as in cardiac or renal insufficiency, adjuvant sodium bicarbonate therapy may be contraindicated. However, the incidence of severe renal reactions in such conditions during sulfadiazine treatment without appropriate fluid and alkali therapy is very high.²⁷ It would seem that the seriousness of a possible severe renal reaction from sulfadiazine would outweigh the danger of increasing edema by adjuvant therapy with fluid and alkali in a patient with cardiac decompensation during a short period of treatment for an acute infection. It may be that a potassium salt of an organic acid can be used in place of a sodium salt in cardiac patients, however, increased potassium in the blood has been shown experimentally to produce cardiac arrhythmias.²⁸ The same caution must be exercised in the administration of alkalis as in the administration of the sulfonamides for patients with renal insufficiency.

Sodium lactate or sodium citrate may be preferred to sodium bicarbonate for adjuvant alkali therapy. These former salts do not act as alkalis in the alimentary tract and therefore should be substituted for sodium bicarbonate for any patient in whom the latter salt causes gaseous eructations, nausea or a purgative effect. The dosage of sodium lactate is one third greater and that of sodium citrate ($Na_3C_6H_5O_7 \cdot 2H_2O$) approximately one fifth greater than that of sodium bicarbonate, i. e., 20.8 Gm of sodium lactate or 18.2 Gm of sodium citrate afford an equivalent alkali excess to that of 15.6 Gm of sodium bicarbonate. Sterile, isotonic (sixth molar) sodium lactate solution affords a means of giving alkalis intravenously. One hundred cc of this solution (sixth molar) is equivalent to 1.4 Gm of sodium bicarbonate.

That crystalluria is rarely²⁹ encountered during therapy with sulfanilamide is attributable to the greater solubilities of this drug and its acetyl derivative compared with sulfapyridine, sulfathiazole and sulfadiazine and their acetyl derivatives. Investigation of the value of adjuvant alkali therapy in preventing renal complications from sulfadiazine would perhaps have been made much earlier if it had not been common clinical experience that alkali therapy was of no value in preventing renal complications from sulfapyridine. The explanation for this failure is now known to reside in the solubility characteristics of sulfapyridine and its acetyl derivative, there is no increase in their solubility with increasing p_H within the physiologic range of urinary p_H (table 4), whereas sulfadiazine and acetylsulfadiazine are much more soluble in the alkaline than in the acid range of urinary p_H . Schwartz and his collaborators¹⁹ have reported a significantly lower incidence of crystalluria from sulfathiazole when sodium bicarbonate was administered in equal doses to those of the drug than when sulfathiazole was given without alkali. Further clinical studies on the prevention of renal complications from sulfathiazole with larger doses of alkali

24 Loughlin, E. H., Bennet, R. H., Flanagan, Mary E., and Spitz, S. H. Relative Absorption and Conjugation of Nine Compounds by Humans During a Three Hour Period (Free and Conjugated Blood Level Determinations During a Three Hour Period Following Peroral Administration of the Acid Salts Alone, the Acid Salts with Sodium Bicarbonate and the Sodium Salts of Sulfapyridine, Sulfathiazole and Sulfadiazine), *Am. J. M. Sc.* 205: 223 (Feb.) 1943.
25 Gamble, J. L. Carbonic Acid and Bicarbonate in Urine, *J. Biol. Chem.* 51: 295 (March) 1922.
26 Bischoff, Fritz. Sansum, W. D., Long, M. Louisa, and Dewar, Margaret M. The Effect of Acid Ash and Alkaline Ash Foodstuffs on the Acid-Base Equilibrium of Man, *J. Nutrition* 7: 51 (Jan.) 1934.

27 Jeck, H. S. and Orkin, Lazarus. Foxie Renal Reactions Following the Use of Sulfadiazine, *J. Urol.* 10: 290 (Feb.) 1943.
28 Nahum, L. H., and Hoff, H. E. Observations on Potassium Excretion, *J. Pharmacol. & Exper. Therap.* 65: 322 (March) 1939.
29 Stewart, J. D., Rourke, G. M. and Allen, J. G. Excretion of Sulfanilamide, *J. A. M. A.* 110: 1885 (June 4) 1933.

have not to our knowledge been published. The solubility in buffers of acetylsulfadiazine of which the urinary crystals are composed,⁵⁰ increases only from 7 mg per hundred cubic centimeters at pH 5.5 to 28 mg per hundred cubic centimeters at pH 7.5 whereas the solubility of acetylsulfadiazine increases from 20 mg per hundred cubic centimeters at pH 5.5 to 512 mg per hundred cubic centimeters at pH 7.5. Two substituted sulfadiazine compounds sulfamerazine and sulfamethazine are at present receiving clinical study in this country and abroad. These clinical studies have been prompted largely by the greater solubilities of these substituted sulfadiazine compounds and of their acetyl derivatives than of sulfadiazine and acetylsulfadiazine in the acid range of urinary pH (table 4).

CONCLUSIONS

1 The urinary precipitate which causes renal complications and obstruction to urinary flow during oral sulfadiazine therapy usually consists chiefly of acetylsulfadiazine. Free sulfadiazine sometimes precipitates in the urine after intravenous sodium sulfadiazine.

2 The urine is almost always acid (usually pH 5.0 to 6.0) in patients receiving sulfadiazine without adjuvant alkali therapy. With minor exceptions crystalluria from sulfadiazine is found only in acid urines.

3 The solubilities of sulfadiazine and of acetylsulfadiazine in buffers and in urine increase a great deal with increasing pH within the physiologic range of urinary pH . The amounts of sulfadiazine and of acetylsulfadiazine dissolved in a given volume of buffer solution or normal urine at pH 7.5 are approximately twenty and thirty times respectively the amounts dissolved at pH 5.0.

4 Crystalluria and evidences of renal damage or of urinary tract obstruction were not encountered in 350 patients in whom the urine was maintained neutral or alkaline by adjuvant alkali therapy during treatment with 6 Gm daily of sulfadiazine or in smaller groups of patients receiving twice this dosage of sulfadiazine orally or sodium sulfadiazine intravenously.

5 On the basis of clinical studies 15.6 Gm daily of sodium bicarbonate (or amounts of other organic sodium salts with equivalent available base excess), divided into six doses of 2.6 Gm (40 grains) administered every four hours is recommended as the dosage usually appropriate to maintain the urine neutral or slightly alkaline during sulfadiazine therapy in adults. Regimens of alkali therapy for patients receiving unusually large doses of sulfadiazine orally or sodium sulfadiazine intravenously have also been adopted. A sufficient volume of fluid should be given to provide a daily urinary output of 1500 cc or more.

6 The findings of these laboratory and clinical studies lead to the conclusion that renal damage and urinary tract obstruction consequent to precipitation of sulfadiazine and acetylsulfadiazine are preventable and that adjuvant alkali therapy sufficient to maintain the urine neutral or slightly alkaline should be prescribed whenever sulfadiazine is administered.

THE PRODUCTION OF DIABETES MELLITUS IN RABBITS WITH ALLOXAN

A PRELIMINARY REPORT

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In 1937 Jacobs¹ found that alloxan² (the ureide of mesoxalic acid) produced total hypoglycemia when injected intravenously into rabbits. No histologic observations were recorded. Similar experiments conducted by Dunn, Sheehan and McLetchie³ confirmed the hypoglycemic action of alloxan. On microscopic study these observers found necrosis of all the islets of Langerhans while the acinar tissue escaped injury. All but 1 of their animals died apparently in hypoglycemia.

If alloxan produces extensive necrosis of the islets of Langerhans without apparent damage to the acinar tissue and relatively minor changes in other organs, it seemed to us that the hypoglycemic phase might be transitory. Should this be true, animals kept alive by repeated injections of dextrose might survive this phase and finally develop diabetes mellitus. A series of experiments designed to test this hypothesis has shown that such is the case. Six 3 months old male Dutch rabbits were used. Each received intravenously 200 mg of alloxan per kilogram of body weight. The injection was made in three equal parts over a period of forty-five minutes. Blood sugars were determined every fifteen minutes for the first two or three hours and at hourly intervals thereafter. The rabbits were observed constantly for sixteen to twenty-four hours, and 50 per cent dextrose was given intravenously whenever hypoglycemic convulsions occurred. Frequent rectal temperatures were recorded and the clinical condition of the rabbits was constantly watched.

After the first twenty-four hours some of the animals were placed in metabolism cages where water intake and urine output and urinary sugar could be accurately followed. All of the animals have been under close observation and frequent blood sugars and nonprotein nitrogens⁴ have been determined.

Our results fully confirm the findings of Jacobs¹ and of Dunn, Sheehan and McLetchie³ in regard to the initial transitory hyperglycemia lasting approximately one hour immediately after injection of the material and followed by severe hypoglycemia with convulsions. In less than twenty-four hours the hypoglycemic stage had ended leaving the animals with severe diabetes mellitus which has persisted in 5 of the 6 animals during a period of two weeks observation. During this period blood sugar levels have ranged from 360 to 700 mg per

Mrs. Rachel Smith Leach supervised the chemical analyses and gave valuable technical help. Miss Virginia Kent assisted in the chemical determination.

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1. Jacobs, H. R. Hypoglycemic Action of Alloxan. *Proc. Soc. Exper. Biol. & Med.* 37:407 (Nov.) 1937.

2. Alloxan is a compound of the ureic acid molecule and can be obtained by the oxidation of uric acid with nitric acid. The material used in these experiments was kindly prepared and given us by the American Cyanamid Company.

3. Dunn, J. Shaw, Sheehan, H. L. and McLetchie, G. I. Necrosis of Islets of Langerhans Produced Experimentally in Rabbits. (April 17) 1935. *Experimental Diabetes Mellitus*, ed. by J. Shaw and G. I. McLetchie, editorial J. A. M. J. 100: 100 (Feb. 1935).
4. Folin, Otto. Micro Method for the Determination of Nitrogen in Laboratory Material. *Journal of Biological Chemistry*, New York, D. Appleton-Century Company, Inc., 1935.

50. Prien, E. L. and Frondel, Clifford. Crystallography of the Urinary Sediments with Clinical and Pathological Observations in Sulfonamide Drug Therapy. *J. Urol.* 46: 748 (Oct.) 1941.

51. Macartney, D. W., Smith, G. S., Luxton, R. W., Ram, C. W. A. and Goldman, Jacob. Sulfamethazine. Clinical Trial of a New Sulfonamide. *Lancet* 1: 639 (May 30) 1942. Jennings, P. A. and Patten, W. H. Sulfamethazine. Clinical Trials in Children. *ibid.* 2: 305 (Sept. 12) 1942. Goodwin, R. A., Jr., Peterson, O. L. and Finland, Maxwell. Absorption and Excretion of Sulfamethyldiazine (2-sulfanilamido-4-methylpyrimidine) in Human Subjects. *Proc. Soc. Exper. Biol. & Med.* 51: 194.

hundred cubic centimeters, glycosuria has been found up to 10 per cent. Rabbit 3, not given insulin, developed acetonuria and pronounced lipemia (total blood lipids 8,412 mg per hundred cubic centimeters). The blood acetone⁵ (total acetone bodies expressed as acetone) reached 144 mg per hundred cubic centimeters of blood at the time the animal was killed with air embolism. Rabbit 5 had a blood sugar of 360 mg per hundred cubic centimeters of blood twenty-four hours after injection. At the end of forty-eight hours the blood sugar returned to normal and has remained so for a period of one week's observation. Rabbits 1 and 6 have received 1 to 4 units of insulin daily to control their diabetes, which has persisted for the total period of observation. Rabbit 2 had been receiving 2 units of insulin daily when it developed severe diarrhea and died on the fourteenth day after injection. Apparently this death was not related to alloxan.

Rabbits 3 and 4 have thus far been killed. In each animal all the cells (both alpha and beta) of all the islets of Langerhans had disappeared completely. No polymorphonuclear leukocytic infiltration was seen. The blood vessels of the islets were preserved and appeared entirely normal. Some of the pancreatic ducts were moderately distended and contained eosinophilic material. Their epithelium, as well as all the acini, showed no changes detectable on microscopic examination. Studies on organs other than the pancreas have not yet been completed.

The following is a representative experiment in the series.

Rabbit 1, weighing 1520 Gm, was entirely normal during a seven day period of observation. Food was withheld for eighteen hours, at the end of which time two micro blood sugar determinations⁷ were 105 and 100 mg per hundred cubic centimeters. Three hundred and four mg of alloxan (200 mg per kilogram of body weight) was then injected intravenously in three divided doses at fifteen minute intervals. Fifteen minutes after the end of the last injection the blood sugar was 208 mg per hundred cubic centimeters. An hour later it was 105 mg per hundred cubic centimeters and two and one-half hours after the end of the injection it was 38 mg per hundred cubic centimeters. The first convulsion developed ten minutes later. Prompt recovery followed the administration of 2 cc of 50 per cent dextrose intravenously. In the next thirteen hours eleven more hypoglycemic convulsions occurred, each relieved promptly by dextrose intravenously. On the morning after the injection of alloxan the blood sugar was 190 mg per hundred cubic centimeters and rose to 640 mg per hundred cubic centimeters on the third day. The rabbit has been kept in good condition for sixteen days by the administration of 2 to 4 units of insulin daily. The amount of insulin required has constantly increased and the blood sugars have varied from 200 to 540 mg per hundred cubic centimeters. Persistent glycosuria has accompanied the hyperglycemia, the daily dextrose excretion varying between 10 and 22 Gm.⁸ Definite polydipsia and polyuria have been observed with water intake ranging between 350 and 700 cc and urinary excretion between 160 and 470 cc daily. The body temperature was 104 F before the experiment was begun and fell to 99 F at the end of eleven hours but subsequently returned to normal.

Repeated urinalyses have failed to show albuminuria or any abnormal sediments. Blood nonprotein nitrogens⁹ have varied

from 36.3 to 65.0 mg per hundred cubic centimeters, whereas normal controls taken prior to the experiments ranged from 42.6 to 60.0 mg per hundred cubic centimeters.

COMMENT

From these experiments it seems clear that the intravenous administration of alloxan in rabbits in doses of 200 mg per kilogram of body weight produces an immediate transitory rise in blood sugar followed by hypoglycemia of several hours' duration. If hypoglycemic death is prevented by repeated administration of dextrose an apparently permanent state of hyperglycemia develops within twenty-four hours. Our histologic observations confirm the work of Dunn, Sheehan and McLetchie³ that selective injury to the islets of Langerhans is produced by alloxan. This is probably the basis for the permanent hyperglycemia. In view of previous work done in this laboratory⁹ as well as in other laboratories¹⁰ the initial blood sugar rise, which lasts about one hour, may be similar to a transitory hyperglycemia easily produced in rabbits by the injection of a number of substances. The cause of the prolonged yet limited period (twelve to twenty-four hours) of hypoglycemia which follows is at the present time debatable. Dunn, Sheehan and McLetchie³ suggest that it may result from a primary stimulation of the islet cells. Another possible explanation may be that necrosis of the islets releases a large amount of insulin. In either case the destruction of the pancreatic islets probably explains the subsequent, apparently permanent, diabetes.

Whatever the mechanism involved, the use of alloxan provides a simple method for the production of diabetes mellitus in rabbits in the laboratory within twenty-four hours. The diabetes mellitus thus induced bears many resemblances to the human disease. There is definite and persistent hyperglycemia and glycosuria with polydipsia and polyuria, the response to insulin is prompt, when insulin is withheld acetonuria and hyperlipemia may develop. These animals offer acceptable subjects for investigation of many problems of diabetes mellitus as well as in carbohydrate metabolism.

This is a preliminary report, and further studies are being undertaken in regard to the effects of alloxan on various organs as well as the consequences of different dosages of this drug.

SUMMARY

Alloxan when given intravenously to rabbits produces necrosis of the islets of Langerhans. Brief hypoglycemia, if counteracted by repeated injections of dextrose, is followed by the development of symptoms seen in human diabetes, namely hyperglycemia, glycosuria, polydipsia, polyuria, acetonuria and lipemia.

⁹ Vartiainen Ilmari and Marble Alexander. The Effect of the Subcutaneous Administration of Protamine (Salmine) to Rabbits and Mice. *J. Lab. & Clin. Med.* 26: 1416 (June) 1941. Unpublished data.
¹⁰ Jensen Hans, Grittan J. F. and Hart G. W. A Study on the Specificity of the Anti Insulin Effect. *Endocrinology* 20: 293 (Feb.) 1941.

Origin and Nature of Allergy—The view is now generally accepted that the mechanism of allergic phenomena is based on an antigen-antibody reaction taking place in the cells or tissues. This reaction has also been called the allergen reaction. Furthermore, it has now been definitely established that neither the antigen (allergen) nor the antibody is in itself the noxious agent and that rather the union of the two initiates the clinical response. The proof of this consists of experiments that have shown that when an organism's supply of antibodies has been depleted removal of exposure to the antigen does not elicit any pathologic changes.—Urbach I. Rich and Gottlieb, Philip M. Allergy, New York, Grune & Stratton 1943.

⁵ Bloor, W. R. The Determination of Small Amounts of Lipid in Blood Plasma, *J. Biol. Chem.* 77: 53 (April) 1928.
⁶ Nanavutty, S. H. Van Slyke's Method of Determination of Acetone Bodies Applied to Small Volumes of Blood and Urine, *Biochem. J.* 26: 1391 (No. 5) 1932.

⁷ Lohm, Otto, and Malmros, H. An Improved Form of Folin's Micro Method for Blood Sugar Determinations, *J. Biol. Chem.* 83: 115 (July) 1929.
⁸ Smith, Millard. A Micromodification of the Method of Benedict for the Quantitative Determination of Reducing Sugar in Urine, *J. Lab. & Clin. Med.* 7: 364 (March) 1922.

XANTHOMATOSIS

A CAUSE OF CORONARY ARTERY DISEASE
IN YOUNG ADULTS

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Though xanthomatosis is but a single manifestation of a systemic pathologic condition only recently has this disturbance in cholesterol metabolism seriously occupied the attention of any one but the dermatologists. Lately the occurrence of cardiovascular involvement with cutaneous xanthomatosis has likewise been noted by the internists¹ but because of the meagerness of the literature on the subject the impression is prevalent that this association is rare. To emphasize the fact that this is not an infrequent occurrence we are presenting 6 cases of xanthomatosis and coronary artery disease that we have seen during the past two years, illustrating their diagnostic features.

REPORT OF CASES

CASE 1—L. W., a man aged 32, first seen in June 1941, complained of substernal pain on exertion and after heavy meals. The family history revealed that his father had died of a heart attack at 48 and his mother of heart disease at 62. Physical examination was negative except for a small pinhead size, yellowish papule of the left lower eyelid. The blood pressure was 120/70. The basal metabolic rate was 16 per cent. The Wassermann reaction was negative. An electrocardiogram (fig 1) was normal at rest but after exercise showed a temporary depression of the ST segment in leads 1, 2 and 4 F. With exercise a typical attack of his substernal pain developed. It was felt that he had coronary insufficiency and moderation of activity was advised. Four weeks later the patient mentioned that the yellow papule of the eyelid had increased to double its size. He also stated that his younger sister had similar lesions on both eyelids. The blood cholesterol at this time (July 21) was 430 mg per hundred cubic centimeters and the esters 238 mg per hundred cubic centimeters. The fasting blood sugar was within normal range. He was placed on a diet low in animal cholesterol. On September 11 the blood cholesterol was 373 mg per hundred cubic centimeters and the esters 273 mg per hundred cubic centimeters. During this interval he had symptomatically improved. In December after unusually severe exertion, he experienced sharp pain in the chest which persisted for several hours. After this the sedimentation rate became rapid and the abnormal electrocardiographic changes that had been observed only after exercise were now present at rest (fig 1C). A diagnosis of acute myocardial infarction was made. The patient was kept at bed rest for four weeks and then gradually resumed limited activity. He is now asymptomatic even with moderate exertion. The blood cholesterol in December was 290 mg and the esters 170 mg. Since the beginning of the diet low in animal cholesterol the xanthoma of the eyelid has not increased in size.

Significant Features—Familial tendency shown by early cardiac death of the father and xanthomas of the sister's eyelids; normal blood pressure, xanthoma of the skin; onset of angina pectoris at the age of 32, hypercholesteremia with moderate reduction with diet; simultaneous onset of cardiac symptoms and cutaneous lesions.

CASE 2—N. G., a man aged 48,² had an attack of acute coronary thrombosis at the age of 40. In the following five years there were many episodes of severe precordial pain, always initiated by exertion. Examination revealed large masses at each elbow and nodules along the tendons of the hands and feet. According to the patient's story these masses and small nodules along the tendons of the hands and feet had appeared soon after his first cardiac pain. Biopsy of the nodule at the elbow revealed typical xanthomatosis. His blood pressure was 140/90 and the patient definitely stated that on many previous examinations hypertension had never been found. The fasting blood sugar was normal, the blood cholesterol was 275 mg and the esters 190 mg per hundred cubic centimeters. Electrocardiograms over several years showed progressive changes with an advanced degree of myocardial damage (fig 2). One year before admission six years after the onset of heart disease, he suffered a cerebral accident with paraplegia. Recovery from this has been almost complete. A low cholesterol diet has been maintained for years without decrease in the blood cholesterol and esters.

Significant Features—Acute coronary thrombosis at 40 years, normal blood pressure, hypercholesteremia with no response on low cholesterol diet; tendon sheath xanthomas, which appeared shortly after the first symptoms of cardiac involvement.

CASE 3—L. A. W., a man aged 33 first seen in January 1941 complained of episodes of precordial pain on exertion occurring with increasing frequency. His father had died at the age of 40 of acute coronary thrombosis. Examination was

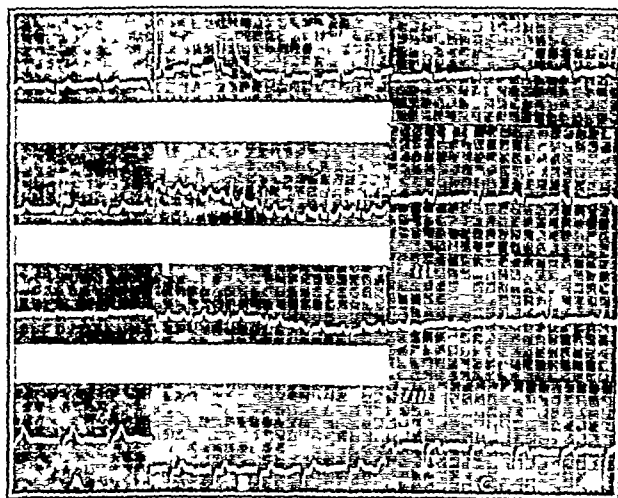


Fig. 1 (case 1)—Tracings made (A) at rest (B) immediately after exercise with pain present and (C) six days after severe precordial pain of several hours duration in December 1941.

completely negative. The blood pressure was 120/80, the urine was normal. One week after the onset of the first anginal episode he suffered a typical attack of acute coronary thrombosis (fig 3). Recovery was complete and he has been well ever since. In May 1941 as this paper was being written it was felt that in view of the familial story of heart disease at an early age xanthomatosis might have been the basic condition despite the absence of cutaneous lesions. A blood cholesterol determination done at this time was 305 mg per hundred cubic centimeters of plasma. The basal metabolic rate was -7 per cent; fasting blood sugar 93 mg.

Significant Features—Familial history of coronary thrombosis early in life; normal blood pressure; acute coronary thrombosis at the age of 33; hypercholesteremia with absence of cutaneous manifestations of xanthomatosis.

CASE 4—I. M., a woman aged 48 complained chiefly of attacks of precordial pain on exertion during the past year. Her father had died of heart disease and her mother died

Dr. M. H. Nathanson gave the authors the privilege of following 2 of the cases presented.

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1. Thannhauser S. J. and Magendanz Heinz. Ann. Int. Med. 11: 162-176 (March) 1938. Müller Carl. Angina Pectoris in Hereditary Xanthomatosis. Arch. Int. Med. 64: 675 (Oct.) 1939.

2. Newman B. A. Xanthomatosis with Disease of the Coronary Arteries. Arch. Derm. & Syph. 45: 178-179 (Jan.) 1941.

suddenly while doing housework. The patient volunteered the information that she had noticed the appearance of yellow plaques on both eyelids about the time that she had her first attack of pain. Examination was negative except for xanthomatous plaques on the inner portion of all eyelids. Blood pressure varied from 150/80 to 170/90. Fluoroscopy of the

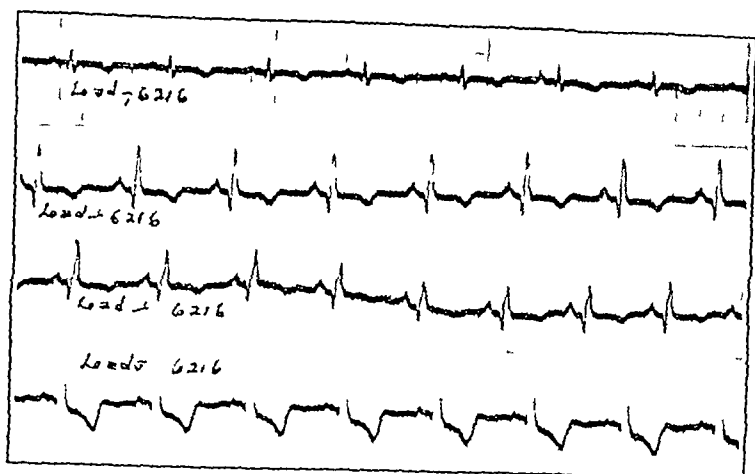


Fig. 2 (case 2)—Tracings showing changes indicative of advanced degree of myocardial damage.

heart in both oblique views revealed no chamber enlargement, which was evidence against any previous, persistent hypertension. The urine was normal, the fasting blood sugar was 129 mg per hundred cubic centimeters, the blood cholesterol was 333 mg per hundred cubic centimeters of plasma. The electrocardiogram did not reveal any abnormality. The patient gradually improved on a regimen consisting essentially of modified activity, a low cholesterol diet and xanthine vasodilating drugs.

Significant Features—Familial history of heart disease, coronary insufficiency in the absence of diabetes or persistent hypertension, hypercholesteremia, onset of cardiac symptoms and xanthoma of the skin at approximately the same time.

CASE 5—N. B. O., a married woman, aged 45, first entered the clinic in March 1941 complaining chiefly of pains in the knees and mild precordial pain following exertion. She stated that, twenty years before, nodules appeared on both achilles tendons and yellow plaques were noticed on both eyelids. Five

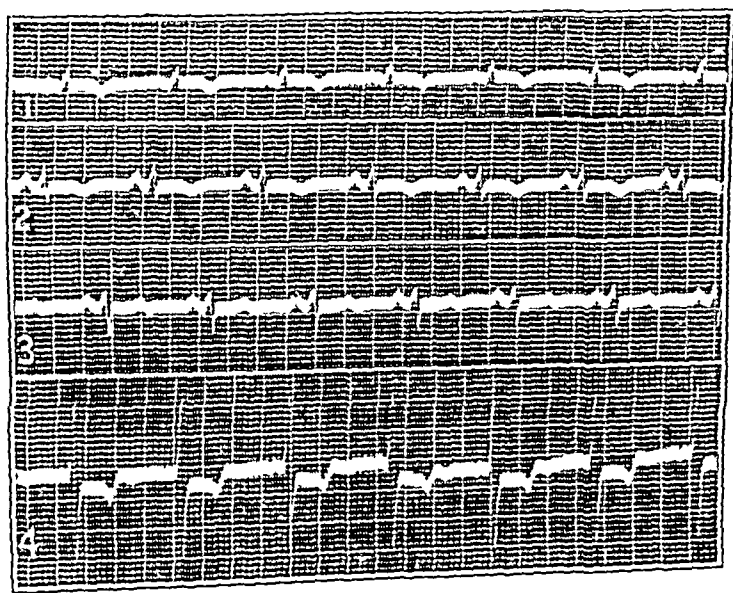


Fig. 3 (case 3)—Tracings made one week after attack of severe chest pain, revealing infarction of the anterior wall.

years after their appearance the tendon nodules were excised because their large size had caused discomfort. They promptly recurred. The family history revealed that two brothers had similar skin lesions and one brother had sustained an acute coronary thrombosis in his early forties. Examination revealed large, subcutaneous masses the size of a fist on each achilles tendon, with smaller nodules along the tendons of the dorsum

of the hands and feet. There were yellow nodules at the knees and elbows and yellowish plaques on the upper and lower eyelids. Blood pressure was 130/80, the basal metabolic rate was -15 per cent. The blood cholesterol was 465 mg per hundred cubic centimeters. The fasting blood sugar level was normal. An electrocardiogram was normal (fig. 4A). Immediately after exercise, however, there was epigastric distress and a depression of the ST segment in leads 1 and 2 and inversion of the T wave in lead 4F (fig. 4B). After one hour of rest the electrocardiogram was again normal (fig. 4C).

A diet free of animal fat was prescribed but follow-up was incomplete, as she did not return to the clinic and could not be traced.

Significant Features—Familial history of xanthomatosis and early heart disease, a twenty year interval between the appearance of the skin and tendon lesions and the heart symptoms, normal blood pressure, hypercholesteremia.

CASE 6—C. N., a married woman aged 31 entered the clinic in 1939 because she had noticed swellings on the achilles tendons. The family history was not significant. Examination was negative except for the hard, nodular swellings on both achilles tendons. The blood pressure was 116/74. Biopsy of the nodules revealed typical evidence of xanthomatosis. The blood cholesterol at this time (August 1939) was 333 mg per hundred cubic centimeters, the basal metabolic rate was -21 per cent, the urine was normal. The patient was put on a low cholesterol diet, and desiccated thyroid was prescribed but was not well tolerated. In January 1940, one year after



Fig. 4 (case 5)—Tracings made (A) at rest (B) with exercise showing depressed ST segment in leads 1 and 2 and inverted T₁ (C) after one hour of rest, electrocardiogram is again normal.

the appearance of the tendon lesions, she began to complain of precordial palpitation. Clinically, extrasystoles were noted. In June 1940 she began having precordial pain. An electrocardiogram at this time was not considered definitely significant but an electrocardiogram taken eight months later showed a flattening of T₁ and T₂ and an inversion of T₁ (fig. 5). During this time, despite the low cholesterol diet which she followed repeated determinations showed a blood cholesterol of between 430 and 450 mg per hundred cubic centimeters and cholesterol esters ranging between 290 and 320 mg per hundred cubic centimeters.

Significant Features—Xanthomatous nodules of tendons, hypercholesteremia, heart symptoms and electrocardiographic changes at the age of 32 in the absence of diabetes or hypertension, no response on low cholesterol diet.

COMMENT

The cases presented are quite typical of the syndrome of xanthomatosis associated with coronary disease and serve to illustrate the significant features of this condition.

1 Familial Tendency—This was present in 4 of our 6 cases. The available evidence in the literature in which xanthomatous families have been traced through four generations reveals that it is a dominant hereditary disease. Muller¹ presented 68 cases occurring in seven families. Recently a family was described in

which 4 children between the ages of 6 and 23 years died of xanthomatosis of the cardiovascular system. The authors⁴ discussed thoroughly the genetic aspects of the disease and stated that although it might be a dominant factor it could be explained also as simple recessiveness.

2 *Age at Onset of Heart Disease*—In 2 of our cases (1 and 3) acute coronary thrombosis occurred at the age of 32 and 33 respectively. In 5 the initial evidence of cardiac involvement was relatively early in life. Apparently this is a disease which may affect the cardiovascular system of all age groups. In the literature involvement of the coronary artery in the first decade of life has been reported. On the other hand the first manifestations may not occur until middle age or later in life.

3 *Sex*—Our patients were equally distributed between the two sexes in contradistinction to the usual predominance of coronary disease in males.

4 *Type of Cardiovascular Involvement*—Coronary insufficiency was present in all cases. In 1 the cerebral vessels were also sclerotic. Though coronary disease is the most frequent type of vascular involvement the heart valves are occasionally affected and cases have been reported in which the aorta and pulmonary arteries

Xanthoma tuberosum the most common variety, is characterized by lesions occurring predominantly on the extensor surfaces of the extremities. They may be single or multiple, small or large firm nodules more often on the elbows, knees or knuckles. The cutaneous



Fig. 6—Xanthoma of eyelid showing minimal lesion.

nodules are yellow or chamois colored and the tendon or tendon sheath xanthomas are subcutaneous without alteration in the color of the overlying skin. In this type there is generally a definite elevation of the blood cholesterol level and an increase in the content of total blood lipids.

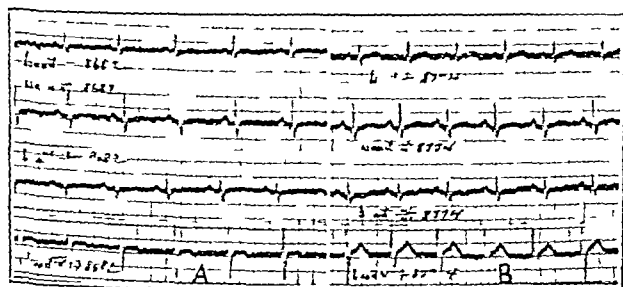


Fig. 5 (case 6)—A, June 1940. B, eight months later. T₁ and T are now flat. T₁ is inverted.

were greatly narrowed. Peripheral vessels are often sclerotic, and claudication may be the chief or primary symptom.

We have seen 2 cases of tendon sheath xanthomatosis in young adults with hypertension and coronary disease. We have not included them in this series because the coronary sclerosis may be secondary to the hypertension rather than xanthomatous in origin. It is our opinion that in these cases the hypertension is secondary to sclerosis of the renal vessels an aftermath of the disordered cholesterol metabolism. This interpretation is supported by the fact that the tendon sheath lesion had been present for several years prior to the onset of the hypertension.

5 *Types of Xanthomatosis of the Skin Associated with Cardiovascular Disease*—Basically two types of cutaneous xanthomatosis exist—xanthoma tuberosum and xanthoma disseminatum. The latter, a more rare disturbance, is characterized by multiple small yellowish papules scattered over the flexural surfaces of the body and the mucous membranes. In this type the blood lipids are within normal limits and diabetes insipidus is not infrequent. This disseminated variety is rarely associated with cardiovascular disease.



Fig. 7 (case 2)—Xanthoma of achilles tendon.

Xanthoma palpebrarum, often classified as a separate variety, may belong in the tuberosus group and is frequently found associated with other nodules or may precede their appearance. Even when present alone, there is frequently a moderate hyperlipemia and cardiovascular xanthomatosis.

6 *Variations in Blood Cholesterol*—Hypercholesteremia of varying degree was present in all 6 cases. The blood cholesterol is usually elevated in this syndrome, but not necessarily so. The three cardinal signs—hypercholesteremia, skin or tendon xanthoma and coronary insufficiency—frequently occur together, but any one or two of the triad may be absent or precede the other. In 2 of our patients the skin and heart involvement occurred simultaneously, and in 1 there was no skin or tendon sheath xanthomatosis.

7 *Diagnosis in the Absence of Skin Lesions*—When skin or tendon sheath xanthomas are present, attention is immediately directed to the correct diagnosis. However, there are certain features that should lead one to suspect the presence of xanthomatous coronary disease in the absence of the superficial lesions. Coronary insufficiency in women in the absence of diabetes or hypertension calls for a determination of the blood cholesterol. Likewise when coronary insufficiency is present in young adults particularly when there is a family history of early cardiac death or coronary disease, this syndrome should be considered.

8 *Cause*—Although our period of observation has been limited, there does not appear to be any difference between the course of xanthomatous coronary sclerosis and arteriosclerotic coronary disease. Acute coronary thrombosis may occur at any time. However, the possibility of modifying or arresting the progress of this type of coronary disease by therapy is more hopeful than in arteriosclerosis.

9 *Therapy and Prophylaxis*—Therapy is meager. A low cholesterol diet may reduce the hypercholesteremia. This occurred in only 1 of our 3 patients who followed the diet faithfully. Thannhauser¹ has shown that on such a diet the xanthomatous patient with a hypercholesteremia loses a large amount of cholesterol from the body. In the diet only animal sterols are omitted, as plant and vegetable sterols are not absorbed by human beings. Although the administration of thyroid is recommended, we have not observed any beneficial effect from its use. From the standpoint of prophylaxis it appears that when a member of a family manifests a disorder of cholesterol metabolism it may be wise for the rest of the family to follow a low cholesterol diet. When the diagnosis of xanthomatosis is made, the physician should investigate other members of the family.

SUMMARY

1 In the 6 cases of xanthomatosis with coronary artery disease in young adults that have been described there are three characteristic features: skin xanthomatosis, coronary insufficiency and hypercholesteremia.

2 A strong familial tendency is present and the disease often appears early in life.

3 Therapy consists of a diet low in animal cholesterol and other measures usually prescribed for patients with coronary artery disease. The familial occurrence affords an opportunity for the prophylactic institution of a low cholesterol diet in other members of the family as yet unaffected.

4 By recognizing and segregating this type of coronary artery disease we may anticipate a more hopeful therapeutic outlook than in patients with the usual coronary artery disease.

3875 Wilshire Boulevard

LEUKEMIA IN PREGNANCY

WITH REPORT OF A CASE

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Leukemia is a rare complication of pregnancy. Forkner,¹ reviewing the literature up to 1938, found 53 cases reported and of these the diagnosis was questionable in 5 instances. Presenting 1 of their own. Grier and Richter² in 1939 were able to collect a total of 75 cases, but 13 of these were mentioned only bibliographically. We discovered another reported by Bentivoglio³ in 1936 which was not included in this series. From 1939 to the present writing there have been 2 additional cases reported in the foreign literature.⁴ These, with the 1 described here, bring the present total reported up to 79.

In our case chronic myelogenous leukemia was discovered early in pregnancy and undoubtedly preceded gestation. The disease was also complicated by pre-eclamptic toxemia. The mother was successfully delivered of a living normal child by cesarean section.

REPORT OF CASE

Mrs. H. M., aged 32, white, was first seen by her physician, Dr. Homer Brayton of Dorchester, Mass., Feb. 24, 1942. Her last period, following a normal menstrual cycle, began on Jan. 1, 1942. Physical examination revealed that the patient was poorly nourished, with a pale and sallow skin, a pulse rate of 84 and blood pressure 110/70. The heart and lungs were found to be normal, but palpation of the abdomen revealed a firm smooth mass, in the left upper quadrant, which extended to the iliac crest. The patient had discovered the mass but associated it with the possibility of pregnancy. She complained of several recent episodes of epistaxis, profuse night sweats and moderate weakness for two to three months preceding her first visit but otherwise had been in excellent health.

Blood examination revealed white blood cells 140,000, red blood cells 1,700,000, hemoglobin 45 per cent (Sahli), polymorphonuclear leukocytes 6 per cent, eosinophilic myelocytes 25 per cent, basophilic myelocytes 5 per cent, myelocytes 40 per cent, metamyelocytes 21 per cent, lymphocytes 3 per cent, blast cells 2 per cent and nucleated red blood cells 2 per cent. The red blood cells showed some achromia and some slight variation in size and shape, the platelets were normal. The Wassermann test was reported negative. A diagnosis of chronic myelogenous leukemia was made at this time. The patient received two small doses of 100 roentgens to the spleen on March 12 and a second on April 16. In May a definite diagnosis of pregnancy was established.

The antepartum course progressed normally until the thirtieth second week, when signs of pre-eclamptic toxemia developed. The blood pressure rose to 140/90 and pitting edema of the ankles was noticed. She was placed on a salt free diet and advised to take additional rest, but by mid-September the blood pressure reached 150/90. She was confined to bed on a strict regimen, and two weeks later the pretibial edema had increased and the blood pressure had climbed to 180/110. A heavy trace of albumin was found in the urine. The patient was admitted to the Carney Hospital on September 16. The fundus was three

Read before the Boston Obstetrical Society, Jan. 19, 1943.
From the Obstetrical and Gynecological Service, Carney Hospital, Boston.
1. Forkner, C. E. *Leukemia and Allied Disorders*, New York: Macmillan Company, 1938, pp. 142-150.
2. Grier, R. W., and Richter, H. A. *Am. J. Obst. & Gynec.* 7: 412-425 (March) 1939.
3. Bentivoglio, F. *Folia gynaec. demograph. Genov.* 3: 194.
4. Tschopp, W. *Folia haemat.* 61: 319-333 (1932).
Hagen, Burchenal,¹⁰ Jarman.¹¹

fingerbreadths below the ensiform process with the vertex riding high. The fetal heart was heard in the left lower quadrant, rate 144. The spleen was palpable 12 cm below the costal margin in the left midclavicular line, smooth and slightly tender. The white blood count was 76,000. Two small hemorrhages were found in the left ocular fundus. These are commonly found in leukemia. A diagnostic roentgenogram of the

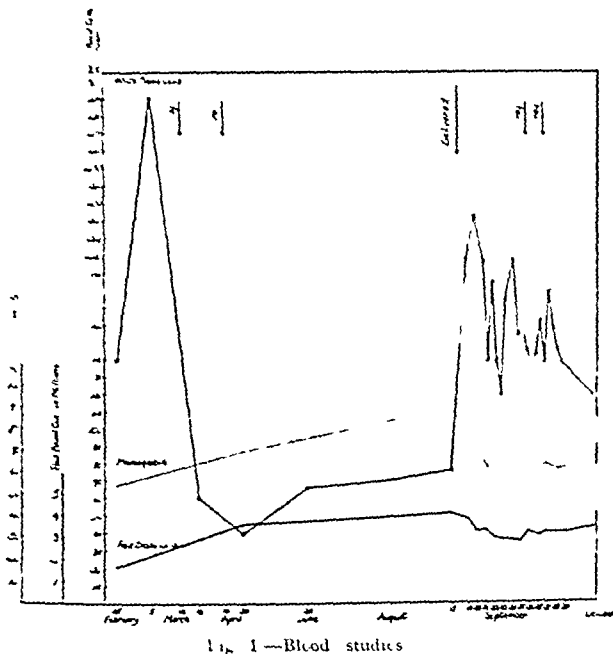


Fig. 1—Blood studies

fetus demonstrated no fetal skeletal anomalies. As the preeclamptic toxemia had not responded to conservative measures it seemed advisable to terminate the pregnancy. As the cervix was long and firm, delivery by cesarean section was selected. On September 18, under spinal anesthesia (15 mg of pontocaine hydrochloride with 15 cc of dextrose) a transverse low cervical cesarean section was performed (R. J. H.) and a normal premature female infant weighing 4 pounds 14 ounces (1928 Gm) was delivered. There was no difficulty with hemostasis, and the uterus responded excellently to intravenous ergonovine (0.0002 Gm) and hypodermic pitocin (10 cc). The immediate postpartum course (first twenty-four hours) was marked by a febrile response to 102.4 F, the pulse rose to 120 and massive drenching sweats occurred. Six hours after operation the patient passed approximately 300 cc of currant jelly clots vaginally, but otherwise the recovery was uneventful. The changes in the blood are recorded in the accompanying chart (fig. 1). Diethylstilbestrol in doses of 20 mg a day was used for suppression of lactation. It should be noted that the day after delivery the white blood count rose rapidly and the red blood count and hemoglobin fell. The spleen showed a relatively rapid increase in size during the first week post partum. Fifty roentgens over the spleen was administered on the eighth and tenth days and the blood picture improved definitely. The spleen decreased in size. Except for a small sterile collection of hemolyzed blood at the lower angle of the wound, which reabsorbed spontaneously, the incision healed normally. Examination of the placenta revealed an unusual number of immature white blood cells in the maternal lacunae, as shown in the photomicrographs (figs. 2 and 3). The infant's blood count at birth was as follows: 25,000 white blood cells, 5,850,000 red blood cells, 126 per cent hemoglobin (Sahli), 65 per cent polymorphonuclear leukocytes, 15 per cent lymphocytes, 5 per cent eosinophils, 6 per cent myelocytes, 4 per cent band forms and 5 per cent nucleated red blood cells. Five days later the blood count showed 11,000 white blood cells, 5,560,000 red blood cells, hemoglobin 125 per cent (Sahli), 63 per cent polymorphonuclear leukocytes, 3 per cent myelocytes, 2 per cent eosinophils, 30 per cent lymphocytes, 2 per cent monocytes and 2 per cent nucleated red blood cells. These blood findings are within normal limits for a newborn infant in good general condition.

The patient was discharged from the hospital Oct. 4, 1942 on the sixteenth day after delivery. The spleen was palpable 5 cm below the costal margin in the left midclavicular line. The blood count on discharge is reported in figure 1. The baby left the hospital on the sixteenth day in good condition weighing 5 pounds 5 ounces (2410 Gm).

The occurrence of amenorrhea is so common in the presence of leukemia that in this case the fact that conception had taken place was not known until the pregnancy was well advanced. Two small doses of x-ray therapy had the excellent effect of lowering the white blood cell count and elevating the hemoglobin and erythrocytes. Also the spleen was reduced in size so that no further x-ray therapy was deemed necessary after the fourth month of pregnancy.

The patient had a normal antepartum course until the seventh month, when signs of toxemia developed. This is apparently the only case of preeclamptic toxemia complicating leukemia in pregnancy reported thus far. Since the toxemia did not respond to conservative treatment and induction of labor through the pelvis was not considered feasible, cesarean section was elected.



Fig. 2.—Large leukemic cell in the maternal lacuna above the placental villus. Reduced from a photomicrograph with a magnification of $\times 100$ diameters.

In addition to our case three other leukemic mothers in the total series of 79 cases, were delivered by cesarean section.

1. Fleischmann* in 1923 did a cesarean section at the eighth month on a 30 year old tertiary. Her leukemia developed prior to gestation. The baby was stillborn and the mother died on the eleventh day post partum.

* Fleischmann, C. Zentr. f. Gyn. 47: 127, 1923.

2 Thamer⁶ in 1925 sectioned a 28 year old secundipara in the eighth month. Her leukemia antedated pregnancy by five months. The infant was stillborn and the mother died eleven days post partum.

3 Hussy⁷ in 1934 delivered abdominally a 35 year old tertipara who developed leukemia during pregnancy. The section was done at seven and one-half months and, although the infant survived, the mother died twenty-four hours after delivery.

The case described by us would seem, therefore, to be the first thus far reported in which a pregnancy complicated by leukemia was successfully terminated by cesarean section. In keeping with the experience of other authors, hemostasis was easily obtained during the operative procedure and postpartum hemorrhage did not occur.

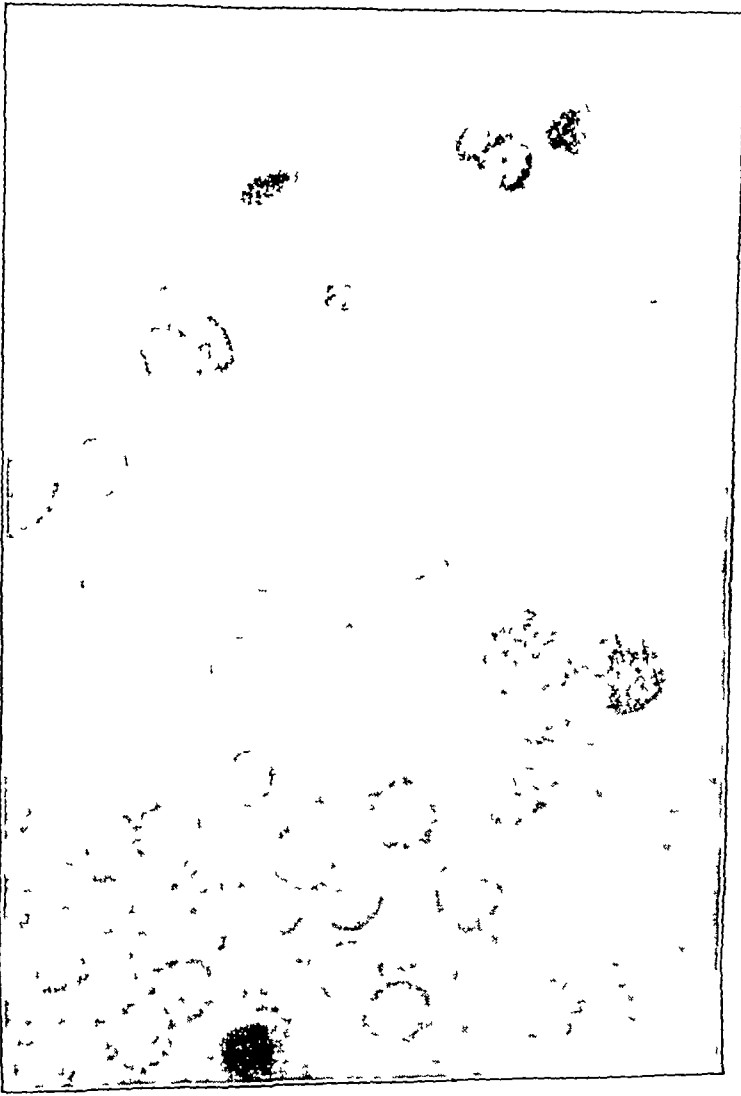


Fig. 3—Several large leukemic cells. The tip of a placental villus in the right lower corner. Reduced from a photomicrograph with a magnification of 2,100 diameters.

Contrary to the statement of Herrnberger,⁸ a rise rather than a fall in white blood count occurs immediately after delivery. Not only is this borne out in this case, but in Herrnberger's own reported case there occurred a sharp rise in the white blood cell count immediately following the termination of pregnancy. Chronic lymphatic leukemia has been reported only once in pregnancy. As Vignes⁹ pointed out, this probably is due to the tendency of the lymphatic cells to infiltrate the adnexa, precluding the possibility of conception. On the other hand, acute lymphogenous leukemia has been reported not infrequently.

COMMENT

The progress of this case substantiates the opinions of Grier and Richter² that a patient who becomes pregnant early in the course of chronic myelogenous leukemia will usually give birth to a living infant and that in 4 out of 5 instances she will survive the delivery. Folkner¹ also believes that pregnancy does not accelerate the course of chronic leukemia. In our case the leukemic process tended to regress during pregnancy.

The occurrence of leukemia in pregnancy tends to shed some light on the etiology of the morbid process. It is significant that a leukemic mother has never given birth to an infant with leukemia. It has been postulated that a chemical or hormonal factor may be responsible for leukemic stimulation of the hemopoietic tissue. However, it is evident that either such a substance does not exist or it is incapable of passing the placental barrier. Moreover, in experimental studies Burchenal¹⁰ has found it impossible to transmit leukemia of mice to the fetus by inoculation of the mother. Jarman¹¹ found it possible to inoculate chick embryos with a transmissible virus of chicken leukemia. This suggests that fundamentally, the development of leukemia must be dependent on a specific tissue susceptibility.

TREATMENT

It is our impression that pregnancy has apparently no effect on the progress of leukemia. The natural history of this disease is such that the outcome is relatively uninfluenced by treatment although the patient may be symptomatically improved. At present there is no effective treatment for the individual with acute leukemia, pregnant or otherwise. Since leukemia in pregnancy is such a rare disorder, no one has had sufficient personal experience to outline specifically the management of this complication of pregnancy. It seems obvious, however, that sterilization of the leukemic woman or interruption of pregnancy is not advisable. The palliative use of x-ray therapy for chronic myelogenous leukemia in pregnancy should not be withheld. It is possible to irradiate the long bones, the thorax and with due care even the spleen with no deleterious effect to the fetus in utero. The intravenous or oral use of radioactive phosphorus would seem contraindicated because of the direct action on the uterus and its contents. Solution of potassium arsenite, although its value is questioned by some clinicians, can be used without endangering the fetus. Whole blood transfusions are indicated when anemia and thrombocytopenia with attending hemorrhagic tendencies manifest themselves. In the management of the pregnancy the presence of strictly obstetric complications such as cephalopelvic disproportion, toxemia and placenta previa can be controlled on their obstetric indications. In the case reported the preeclamptic toxemia was treated as it would have been without the presence of leukemia.

SUMMARY AND CONCLUSIONS

1 Leukemia complicating pregnancy is a rare entity, a total of 79 cases have been reported.

2 The natural course of leukemia is apparently uninfluenced by gestation. Leukemia per se is therefore not an indication for the interruption of pregnancy.

3 Chronic leukemia in pregnancy is a problem which can be intelligently handled in the majority of cases only by the combined efforts of the hematologist and the obstetrician.

1101 Beacon Street

6 Thamer, H. Marburg, 1925.
7 Hussy, P. Schweiz. med. Wchnschr. 64: 629, 1934.
8 Herrnberger, K. Zentralbl. f. Gynak. 63: 2309-2317, 1939.
9 Vignes, H. Presse med. 47: 1460-1461, 1939.

10 Burchenal, J. H. Am. J. Cancer 39: 309-314 (July), 1940.
11 Jarman, K. Deutsche Literatur Wchnschr. 11: 415, 1933.

POSTOPERATIVE FOCAL, NONSEPTIC NECROSIS OF VERTEBRAL AND CEREBELLAR ARTERIES

WITH RUPTURE AND SUBARACHNOID
HEMORRHAGE

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Subarachnoid hemorrhage caused by focal nonseptic necrosis of the vertebral artery or of its branch, the posterior inferior cerebellar artery is an unusual occurrence. We here record our observations made on 4 elderly, generally slightly hypertensive patients who showed no evidence of endocarditis or of a general or local infectious process who died of this condition within a few days of uncomplicated abdominal operations. Only the apparently relevant features of the histories and examinations are given.

There is a voluminous literature on the subject of subarachnoid hemorrhage however much of this is in reference to ruptured congenital aneurysms. Sands¹ in a recent study of subarachnoid hemorrhage reported 120 cases and pointed out that it is caused by (1) trauma, (2) arteriosclerotic degeneration of vessel walls, (3) septic or infectious emboli (4) ruptured intracranial aneurysms (5) massive cerebral hemorrhage invading the subarachnoid space (6) intraventricular hemorrhage (7) blood dyscrasias and (8) ruptured vascular neoplasm. In addition to the foregoing there is a relatively large group which Sands listed as of "unknown or undetermined cause."

Necrosis of the arteries of the brain is a well known phenomenon in large infarcts and we have also seen extensive necrosis of meningeal blood vessels in many cases of tuberculous meningitis or septic meningitis as well as in cases of "periarteritis nodosa," septic endocarditis and other conditions but we have not seen any of these that had vessels ruptured and produced extensive subarachnoid hemorrhage. As a rule in such cases the entire wall of a small artery becomes necrotic and not a small segment of the circumference leaving the remaining portion of the wall normal. Winternitz and LeCompte² produced varying degrees of inflammation and proliferation of the walls of arteries by injecting organisms of different degrees of virulence into the walls of arteries but did not produce areas of focal necrosis. We have been unable to find any record in the available literature of a case of subarachnoid hemorrhage due to rupture of a noninflammatory necrotic focus in the wall of a cerebral artery.

REPORT OF CASES

CASE 1—An educator aged 62 was registered at the Mayo Clinic on Feb. 2, 1942 for a general examination and consideration of a right inguinal hernia. Examination disclosed a systolic blood pressure of 160 mm. of mercury and a diastolic pressure of 100 mm. There were slight hypertensive sclerosis of the retinal arterioles and slight sclerosis of the choroidal vessels. An apparently old retinal detachment was noted in the lower temporal sector on the right. Bilateral direct inguinal hernias

were present. Numerous leukocytes were noted in the prostatic secretion. An occasional erythrocyte was found in the urine. Cystoscopic examination gave negative results.

On February 24, with the patient under spinal anesthesia, both inguinal hernias were repaired. On February 28 he complained of an occipital headache, vomited, became confused, had a convulsion and died.

At necropsy the recent operative incision had the usual appearance of a wound four days old. The heart was hypertrophied and weighed 505 Gm., in contrast to an estimated normal weight of 370 Gm. The arteriosclerosis of the aorta was estimated as grade 1+ (on a basis of 1 to 4, in which 1 designates the least and 4 the greatest degree of arteriosclerosis) and the other large systemic arteries were graded similarly. The prostate was slightly enlarged, but there were no other findings of any significance aside from those of the central nervous system.

There was extensive subarachnoid hemorrhage. We estimated the extravasated blood at about 200 cc., it had completely filled the subarachnoid space and some had extended into the ventricles. After removing much of the blood we found that there was arteriosclerosis of the cerebral vessels.

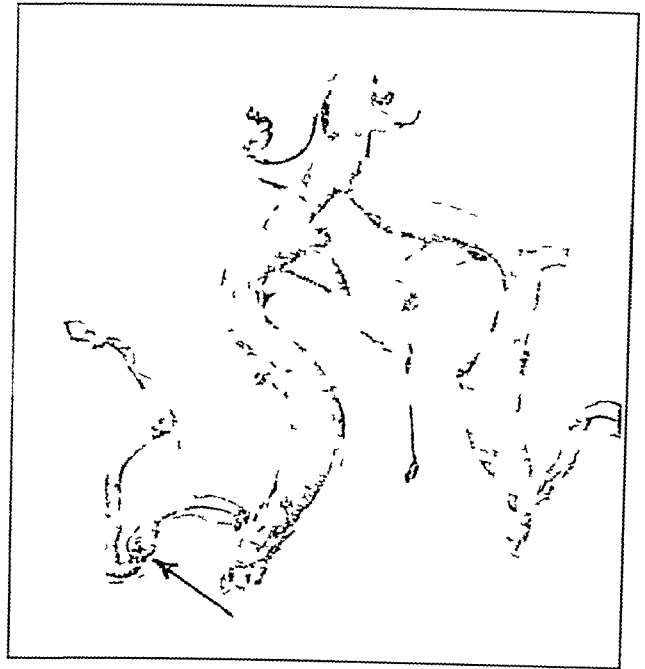


FIG. 1—Basilar, vertebral and posterior inferior cerebellar arteries. The arrow indicates the point of rupture in the left posterior inferior cerebellar artery. The defect was in the anterior aspect of the vessel wall.

graded 2+ that there was no aneurysm of the vessels arising from the carotid arteries and that the circle of Willis did not show any abnormalities. There were symmetrical fusiform dilatations of the vertebral arteries about 0.5 cm. above their entrance into the cranial cavity; these dilatations were each 1 cm. long. The vertebral arteries had become normal about 3 cm. before fusing to form the basilar artery. After removing more blood we found a small hole about 1 mm. in diameter in the left posterior inferior cerebellar artery 1.5 cm. from its origin at the left vertebral artery (fig. 1). There was no branch of the artery at the site of perforation and the artery seemed normal proximal and distal to the defect (there was no dilatation or aneurysm). The other arteries in the posterior fossa were normal.

Microscopic sections were prepared from many of the cerebral and cerebellar vessels as well as from many vessels of other organs. These sections were stained with hematoxylin and eosin, van Gieson, Weigert elastin and elastin H stains as well as Giemsa, Brown Gram, mucicarmine and cresyl violet. Except for some arteriosclerotic changes of a minor degree all vessels were normal. However, sections of the left posterior

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¹ Sands, I. J., "Diagnosis and Management of Subarachnoid Hemorrhage," *Arch. Neurol. & Psychiat.* 46: 973-1005 (Dec.) 1941.

² Winternitz, M. C., and LeCompte, P. M., "Experimental Infectious Angitis," *Am. J. Path.* 16: 112 (Jan.) 1940.

inferior cerebellar artery at the site of the rupture showed a small region of complete necrosis of the vessel wall. This region of necrosis included only a quarter of its circumference. The necrotic focus was wider at the adventitia than in the media, while the internal elastic lamina had curved outward, lining the inner third of the side of the defect (fig 2). There was no inflammatory reaction in the media or intima (fig 3),



Fig. 2—The edge of the defect in the arterial wall showing the inflammatory reaction in the adventitia and the absence of inflammation in the media and intima (chromic H stain, $\times 160$)

but where the necrosis had involved the adventitia beyond the defect in the wall were many polymorphonuclear leukocytes. In figures 2 and 3 can be seen the extent of necrosis along the adventitia of the vessel. There was no evidence of any inflammatory or infectious material in the lumen, intima or media of the artery. Bacteriologic stains did not show any organisms anywhere in or around the wall or in the necrotic portion of the adventitia of this blood vessel.

CASE 2—A housewife aged 62 was registered on May 22, 1941 as a patient at the Mayo Clinic with the complaint of epigastric distress of several years' duration. Roentgenograms disclosed a duodenal ulcer. The blood pressure was 172 mm of mercury systolic and 110 mm diastolic. The retinal arterioles were slightly narrowed and sclerotic, chronic hypertensive type, and the choroidal vessels were slightly sclerosed. Urea in the blood was reported as 32 mg per hundred cubic centimeters.

On May 30, 1941, with the patient under inhalation anesthesia with ethylene, oxygen, carbon dioxide and ether, posterior gastroenterostomy was performed because of two subacute ulcers on the posterior wall of the duodenum.

Two days after operation the patient complained of pain in her head and became stuporous. The pupils were pinpoint, the neck was not rigid and Babinski's sign was positive on the left. The patient died thirty minutes after the onset of the headache.

At necropsy the recent operative site showed signs of healing, and there was a chronic duodenal ulcer with evidences of many healed ulcers (scars) and partial obstruction of the lumen of the duodenum. There was some pancreatitis but no fat necrosis. The remainder of the general examination gave essentially negative results except for hypertrophy of the heart, which weighed 365 Gm in contrast to an estimated normal of 275 Gm. There was arteriosclerosis of the aorta and larger arteries graded 2 on a basis of 1 to 4.

Examination of the brain revealed the subarachnoid space to be filled with blood and blood clots. The arteriosclerosis of the main arteries at the base of the brain was graded 1 on a basis of 1 to 4. There were no anomalies or aneurysms of

the circle of Willis or of the basilar or vertebral arteries. In searching for a source of the subarachnoid hemorrhage a hole 1.5 mm in diameter was found in the left posterior inferior cerebellar artery less than 1 cm from its origin from the left vertebral artery.

The results of microscopic examination of the rupture in the artery were identical with those in the previous case. The necrosis extended beyond the defect in the adventitia, the media was free from inflammation or edema and the elastic tissue of the intima followed the defects outward partly across the media. There was no inflammatory reaction anywhere, except some polymorphonuclear leukocytes in the necrotic tissue of the adventitia. No organisms were found after the use of the Brown Gram stain. The other arteries of the brain were normal. Examination of many sections of the pancreas did not show any necrosis of the pancreatic arteries as a possible explanation of the interstitial pancreatitis, which was both acute and chronic.

CASE 3—A fruit pedler aged 54 came to the Mayo Clinic on June 25, 1941 because of bilateral inguinal and umbilical hernias. The left inguinal hernia had been operated on three times previously. The patient had recovered from rhinitis a few weeks previously. In addition to the hernias, examination disclosed a systolic blood pressure of 176 mm of mercury and a diastolic pressure of 108 mm. There were minimal narrowing and sclerosis of the retinal arterioles. The tonsils were regarded as a possible focus. The left testicle was atrophied. The leukocytes numbered 15,000 per cubic millimeter of blood. There was a trace of albumin in the urine.

On July 1, with the patient under spinal anesthesia, the left testicle was removed and a hernial opening the size of the hand was closed. Hemorrhaphy was also performed for recurrent umbilical and epigastric hernias.

On the day following the operation, the patient suddenly gasped for breath and died.

The general examination did not reveal anything of significance, the operative wounds were such as one would expect one day after operation. The heart was slightly hypertrophied, weighing 348 Gm in contrast to an estimated normal of

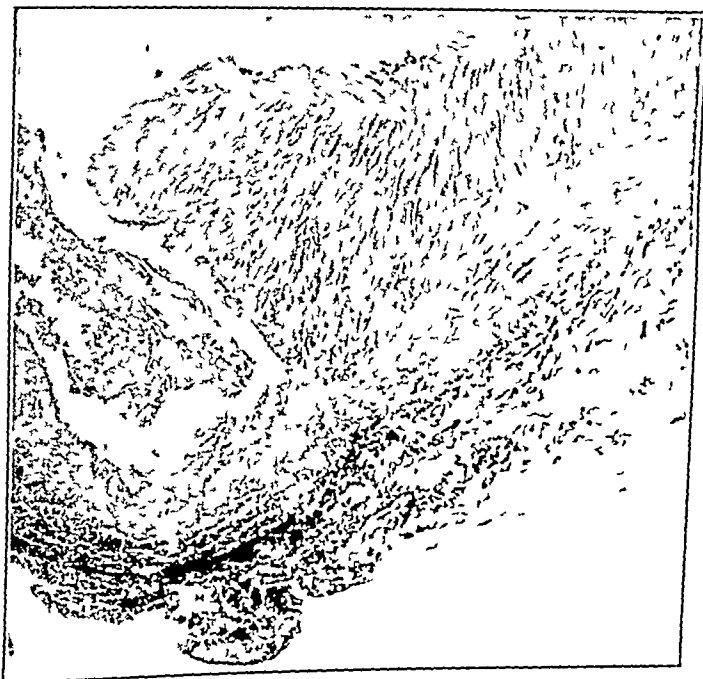


Fig. 3—The inflammatory reaction to the necrosis in the adventitia. Note the necrosis extending into the adventitia beyond the edge of the hole. Also note the absence of other inflammatory reaction (hematoxylin and eosin stain $\times 85$)

300 Gm. There was also arteriosclerosis of the aorta, coronary and other arteries, graded 2 on a basis of 1 to 4.

Examination of the brain showed a massive subarachnoid hemorrhage which had extended into the ventricles. The circle of Willis and the vessels derived from it were normal except for arteriosclerosis graded 1. There were small symmetrical dilatations of both vertebral arteries 1.5 cm proximal to the

union to form the basilar artery. There was a small hole about 1 mm in diameter at the lower margin of the small dilatation of the left vertebral artery. Microscopic examination of the right vertebral artery showed that it was normal even the dilatation represented a slight thinning of the wall, but it was not on the basis of arteriosclerosis. The defect in the left vertebral artery was identical with the defects described

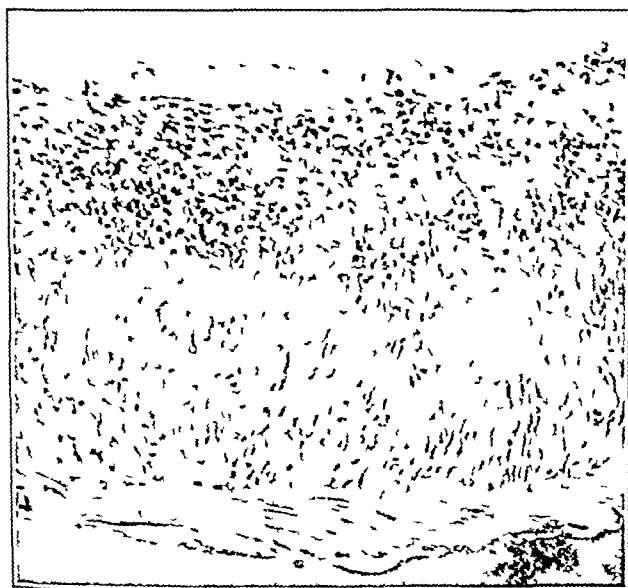


Fig. 4.—A small necrotic focus in the wall of the artery involving the adventitia and outer fourth of the media. No vasa vasorum are present and there is no inflammation in the inner three-fourths of the media or the intima (hematoxylin and eosin stain $\times 160$).

in the posterior inferior cerebellar arteries in cases 1 and 2. In addition, several millimeters below and opposite the defect we found a region of necrosis which included the adventitia and the outer quarter of the media. The inner three-fourths of the media and the intima beneath this small region of necrosis were normal. This necrotic focus was partly infiltrated with polymorphonuclear leukocytes (fig. 4). There was no inflammation or thrombus in or beneath the intima opposite this focus. This was the only lesion which we found on any blood vessel—cerebral or systemic, and the posterior inferior cerebellar arteries were normal. We were unable to identify the vasa vasorum in this region of acute degeneration, although in the adventitia of the vertebral artery around it we identified the vasa vasorum as normal. Examination by means of the Brown Gram stains failed to reveal any organisms.

CASE 4—A truck driver aged 55 was registered first on Aug. 13, 1928 because of attacks of abdominal pain which had been present for a year and a half and which were suggestive of cholecystitis. The blood pressure was 130 mm systolic and 80 mm diastolic. Analysis of gastric contents showed a value for total acids of 18 and for free hydrochloric acid of 0. A diagnosis was made of cholecystitis probably associated with stones. On August 20 exploration revealed chronic catarrhal cholecystitis with cholelithiasis, and cholecystectomy and appendectomy were performed.

The patient returned on March 21, 1932 because of flatulence. Fractional analysis of gastric contents after a test meal showed a value for total acids of 4 and for free hydrochloric acid of 0. Roentgenograms of the stomach were negative. The systolic blood pressure was 120 mm of mercury and the diastolic pressure 80 mm.

The patient was registered the third time on June 1, 1942. He reported that he had been quite well until a year previously but that since then he had had occasional pain in the right hypochondriac region similar to the pains he had experienced before the operation, and that he was troubled with gas and constipation and had lost 30 pounds (13.6 Kg). The systolic blood pressure was 132 mm of mercury and the diastolic pressure 80. Fractional analysis after a test meal showed a

value for total acids of 8 and for free hydrochloric acid of 0. Roentgenograms of the stomach showed a carcinoma of the pyloric half of the stomach.

On June 4, with the patient under nitrous oxide, carbon dioxide, oxygen and ether anesthesia, exploration was performed and carcinoma of the stomach with perforation into the transverse mesocolon was found. Partial gastrectomy, of the anterior Baltour Polva type, with enteroanastomosis, partial duodenectomy and exteriorization of a devitalized segment of the transverse colon was done. Microscopic studies of the posterior wall of the lesser curvature disclosed a grade 4 flat ulcerating carcinoma 8 cm in diameter by 1 cm in depth with extension into the serosa and beginning infiltration of the mesentery and involvement of one lymph node.

Following the operation the patient spoke of having a mild headache. On June 7 at 5:20 p.m., while talking to his wife, he suddenly lost consciousness, and the eyes turned upward and toward the right. Within ten minutes it was observed that the left arm and leg remained motionless. The neck was somewhat rigid and both plantar responses were slightly extensor. The systolic blood pressure was 210 mm of mercury and the diastolic pressure 100. Two hours later the patient was more responsive. The temperature had risen to 105 F. On June 8 and 9 he improved considerably and his headache was less severe but he remained somewhat confused. On June 10 at 2:40 p.m. the patient again complained of severe pain in his head, lost consciousness and at 3 p.m. died.

Necropsy showed healing of the operative wounds and there was no residual carcinoma or evidence of inflammation. The heart was hypertrophied and weighed 383 Gm. in contrast to an estimated normal of 300 Gm. There was arteriosclerosis of the aorta graded 1 and of the coronary arteries graded 2, on a basis of 1 to 4. There were no other findings of any significance in the general necropsy.

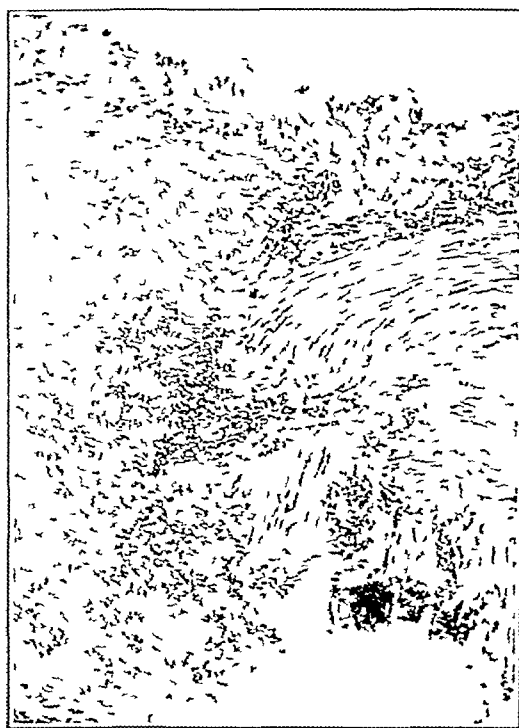


Fig. 5.—The edge of a necrotic but nonruptured tear. Except for the fact that it has not ruptured it is similar to the lesions in the foregoing cases (hematoxylin and eosin $\times 100$).

Examination of the brain revealed a massive subarachnoid hemorrhage but none was present in the ventricles. There was arteriosclerosis of the larger cerebral arteries graded 1 on a basis of 1 to 4. There were no aneurysms or aneurysms of the blood vessels composing or derived from the circle of Willis. There was a small hole about 15 mm in diameter in the right vertebral artery 5 mm above the origin of the

right posterior inferior cerebellar artery, this ruptured vessel was evidently the source of the subarachnoid hemorrhage. There was no hemorrhage in the substance of the brain in this case or in any of the preceding ones. The other arteries of the posterior fossa were normal.

Microscopic examination of many of the cerebral arteries showed that all were normal except the right vertebral artery. Sections through the site of rupture revealed the fact that it was identical with the defects in the ruptured arteries of the other three cases—namely, necrosis with localized inflammatory reaction of the adventitia, a truncated defect in the media with no evidence of necrosis at the edge of the hole and the internal elastic lamina curving outward, through the inner half of the defect. As in previous cases there was no inflammation in media or intima even at the edge of the rupture. In the arterial wall opposite the rupture was a truncated region of necrosis with the broader base at the adventitia and the narrower apex at the intima (fig 5). The internal elastic lamina was not ruptured but was swollen and appeared to be undergoing early necrosis or degeneration (fig 6). There were a few polymorphonuclear leukocytes present between the elastic and the endothelium of the intima. The endothelium was intact beneath this focus of necrosis except at one place, where it had disappeared, and blood was escaping from the lumen of the

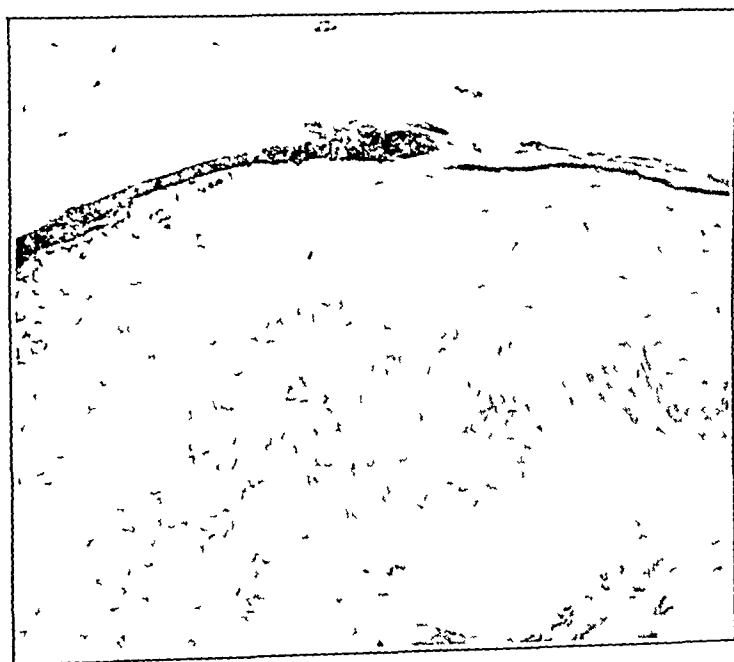


Fig 6—The swollen degenerating intimal elastic lamina opposite the focus of necrosis in the arterial wall (elastin H, $\times 105$)

artery into the wall of the vessel and was burrowing between the outer portion of the media and the adventitia, which was almost completely necrotic. This blood between the media and the adventitia had the appearance of an early dissecting aneurysm. The endothelium of the intima was otherwise intact and so there was no mural thrombus.

There were several smaller foci of necrosis which varied much in size and depth, some included only the adventitia and others extended varying depths into the media, but there was only one focus which extended to the intima. These smaller foci, if deep, were wedge shaped but, if superficial, were elliptic with their base in the adventitia, and the concave portion extended deepest into the media. Most of these foci were quite recent, since there was no cell reaction in the media. In most foci the only reaction was in the adventitia, and there it was represented by some polymorphonuclear leukocytes, there were no lymphocytes in or around these small necrotic regions. In two places erythrocytes had replaced the media of the arterial wall, only the intima and the adventitia remaining intact, but there was no necrosis or cell reaction at these intramural hemorrhages, which simulated early dissecting aneurysms. The source of the blood could not be found and the intima was intact. Bacteriologic stains failed to reveal any organisms in any of these foci of necrosis.

There was no obvious explanation of the foci of necrosis and the small intramural hemorrhages. The vasa vasorum were normal in the adventitia of the artery except at the foci of necrosis, where we could not see any vasa vasorum. They were obliterated, but whether this obliteration was the cause or the result of the necrosis was impossible to determine—the necrosis had destroyed the evidence. It was possible that the regions of necrosis were small infarcts, the result of an occlusion of the vasa vasorum. It was also possible that the initial lesion was a small intramural hemorrhage followed by necrosis of the wall, or a third possibility was necrosis as the result of occluded vasa vasorum followed by hemorrhages. Either one alone, or the combination of two, could have been responsible, and since there was no blood pigment in any necrotic region we think that hemorrhage was not the primary factor. Arteriosclerosis was present only to a minor degree in this as in the other 3 cases, so we think that the necrosis was not on the basis of arteriosclerosis.

COMMENT

We were at a loss to find some common denominator to explain the focal necrosis in the walls of a cerebellar artery as the source of the subarachnoid hemorrhage in the foregoing 4 cases. In all 4 cases there was some evidence of elevation of blood pressure with slight cardiac hypertrophy and, in all, uncomplicated surgical operations had been performed. These are common findings and the foregoing complication is rare. There was no other finding common to all 4 cases. We have been unable to find a previously reported case, but it is possible that similar cases have been included in the past in the group of cases of spontaneous subarachnoid hemorrhage designated by Sands as of "unknown or undetermined cause." It seemed strange to us that we should encounter four such postoperative complications in one year. We examined anew our previously collected cases of unexplained subarachnoid hemorrhage but failed to find any lesion or rupture of any vertebral or posterior inferior cerebellar artery. The cause of the necrosis is undetermined and we have been unable to relate it to the surgical procedures, anesthetic or medication before or after operation.

General arteriosclerosis was not advanced in any of the cases in spite of the age and evidence of hypertension in all 4 patients, while the arteriosclerosis of the cerebral arteries was even less severe than of the systemic arteries. The arteriosclerosis was minimal in the vertebral and posterior inferior cerebellar arteries, and this was confirmed by microscopic examination. There was no evidence of a mycotic aneurysm at the sites of the ruptures, moreover, there was no source from which an infected embolus could arise and the ruptures were not at the origin of a branch in any of the arteries. There was no elevation of temperature before or after the operations. Bacteriologic studies of histologic preparations of the lesions gave negative results. There was no evidence of an infectious process in the organs in general, except in the second case, in which there was interstitial pancreatitis, however, there was no hemorrhage into the pancreas and we were unable to find acute degenerative changes in its blood vessels. The lesions in the walls of the arteries in these cases did not simulate the changes seen in periarteritis nodosa, since the necrosis seemed to start in the adventitia rather than in the media, they were limited to one artery in each case and there was little periarterial inflammation and no intimal reaction. The points of rupture were unlike those of an atheromatous plaque, there was acute degeneration and not a chronic degenerative process such as is seen in atheromatous lesions. In 1 case there

were slight bulgings of the vertebral arteries, but these were not the result of atherosclerotic weakening of the wall of the arteries and such bulging of the vertebral arteries is seen fairly commonly at necropsy of elderly patients.

Little information could be obtained as to the nature of the process in the first 2 cases but in case 3 and particularly in case 4 we found in the wall adjacent to the rupture early and unruptured foci of necrosis. These foci seemed to have their origin in the adventitia of the artery and in some the necrosis had extended into the media while in one rather large focus of necrosis it extended down to the intima and even the internal elastic lamina showed evidence of early degeneration. This was a truncated region of necrosis with the base in the adventitia. These smaller foci of necrosis—shallow and deep—suggested to us regions of infarction. In recent years there have been some excellent studies of the blood vessels of the central nervous system and changes with age by Baker,³ Cobb and Blam,⁴ Hackel,⁵ Thomas, Runkle,⁶ and others but there was no mention of necrosis or of the blood supply of the walls of these vessels. Even Wintermiz, Thomas and LeCompte⁷ did not describe vasa vasorum in the cerebral arteries. Our own studies showed us that vasa vasorum are normally present in the walls of vertebral arteries but what would be the result of occlusion of one or more of these is simply conjecture. It is possible that an infarct of the wall of the artery would follow and the foregoing lesions simulate infarcts. We do not have any direct evidence that there was an occlusion of any of these vasa vasorum prior to the degeneration of the wall but these small vessels were not patent in the regions of necrosis at the time of our examination. Occlusion of the vasa vasorum of any vessel is probably a rare occurrence, however it is possible for this to occur as the result of rapid lowering of blood pressure.

SUMMARY

In 4 cases focal necrosis occurred in either the posterior inferior cerebellar arteries (2 cases) or in one vertebral artery (right 1 case left 1 case) following comparatively simple uncomplicated abdominal operations. The foci of necrosis had ruptured and led to massive subarachnoid hemorrhage. We have been unable to find records of similar cases in the available literature but suggest that in some cases subarachnoid hemorrhage of undetermined origin might possibly have had its origin in a manner similar to that of the foregoing cases. We have considered various possible causes for the foci of necrosis starting in the walls of these vertebral vessels and have suggested that they might represent focal infarcts of the walls of the arteries. Some future work on the blood supply of the walls of the vertebral arteries and the vasa vasorum of these vessels remains to be done before an answer to such a hypothesis is obtained.

THE TREATMENT OF PNEUMOCOCCIC PYARTHROSIS

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Our purpose in writing this paper is to present in summary the records of an unusual number of patients with pneumococcic pyarthrosis treated conservatively rather than by conventional surgical methods. The patients 11 in number, were all seen in the Cincinnati General Hospital and studied in the pneumonia laboratory of the department of medicine.

INCIDENCE

Purulent arthritis is generally regarded as 'a rare and grave complication of pneumonia'.¹ It was found by Fabry² in 1910 once among 195 cases of lobar pneumonia at autopsy. Bulkley³ in 1914 collected from the foreign and American literature records of incidence of about 0.1 per cent in pneumonia. Cecil⁴ at Bellevue Hospital recorded from 1926 to 1932 an incidence of 0.6 per cent among typed pneumonia cases. Schiff⁵ reported from the Cincinnati General Hospital an incidence of 0.5 per cent in the years 1924 to 1929 among 629 cases.

Our present series from 1935 to 1942 inclusive shows an incidence of 0.4 per cent, or 9 cases among 2,322 of typed pneumonia in adults.

Pneumococcic pyarthrosis may occur independent of pneumonia especially among children. Two such cases are reported here by courtesy of the department of pediatrics but the bacteriologic study was done in the pneumonia laboratory of the department of medicine.

One must relate pyarthrosis of pneumonia to the bacteremic state, therefore any hospital service receiving late cases or cases of unusual illness will find an increased incidence of septic complications. We are unable to relate the rather high incidence to any other factor especially specific treatment or exceptional accuracy of diagnosis.

This report is written mainly to record the effects of specific treatment in this 'grave' complication of pneumonia.

DIAGNOSIS

In every case of the 11 here reported the pneumococcus was recovered from the blood or from the joint. In 7 instances the organism was recovered from the blood and the joint simultaneously. In 2 instances (cases 7 and 9) we discovered pyarthrosis by aspirating the affected joint of a patient ill with lobar pneumonia and pneumococcemia but cultures of material taken from the joints were negative. We think that this circumstance of negative cultures is not against our diagnosis because drug treatment was well under way when joint cultures were made and in 1 instance para-aminobenzoic acid was not used in the culture mediums.

This work was aided by a grant from the Lederle Laboratories, Inc. From the Department of Internal Medicine of the University of Cincinnati and the Cincinnati General Hospital.

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The diagnosis was usually made at once by finding all the signs and symptoms of acute painful involvement of one or two large joints. In 1 instance (case 10) pneumonia was not even suspected, while in another (case 8) pneumonia was suspected but not proved. When pneumonia is not apparent, the disease must be differentiated from gonorrheal arthritis, to which it is very similar. The differentiation should be made easily if cultures are well managed before the sulfonamides are given. In the main, the pneumococcus is usually grown without much difficulty and the identification made easy by the technic of "typing." Migrating polyarthritis such as that of rheumatic fever was not seen in our experience, nor have we found it described with laboratory proof. Pneumonia due to pneumococci is not rare as a complication of rheumatic polyarthritis. The polyarthritis of serum sickness is well known and easily differentiated from pneumococcal pyarthrosis; it generally resembles rheumatic fever. X-ray studies in our series were of value mainly to exclude osteomyelitis or periostitis. The cases reported here were all so examined and nothing was shown other than slight demineralization of bone and swelling of soft parts. Destruction of cartilage did not occur or else was not shown by x-ray examination or by the functional results at discharge.

In 8 instances there was a single joint involved and in 3 there were two, but there were never more than two. The knee and ankle were most commonly involved. The disease as described in this short series is not different in any way from the usual textbook description except that it has been treated with specifics and therefore has become mild and of short duration. In case 1 pericarditis accompanied pyarthrosis, and meningitis also in case 2. No other suppurating lesion was noted as coincidental. Pneumococcal endocarditis has been found at the Cincinnati General Hospital at autopsy in 39 cases from 1935 to 1942 among typed cases of pneumonia, but only once was there associated pyarthrosis.

TREATMENT

Our treatment has been altogether conservative in that we have relied on specific drugs or serum or the two together with repeated aspirations and the use of splints.

We would not suggest abandoning well established principles of surgical treatment on so little evidence as these few cases present. We have done with pyarthrosis what we are doing with pneumococcal hydrothorax, namely, to depend on specifics and on early tapping for drainage while watching the patient as a whole, i. e. taking daily blood cultures and making frequent examinations for new foci of suppuration and for intoxication by the drug employed. With specific treatment there is little danger of a recurrence of pneumococcemia if the purulent focus is improving. This is consistent with the present concept of the action of the sulfonamides. Such management provides a maximum of the drug that is bacteriostatic and drains the local area where inhibiting substances may develop from tissue necrosis or abscess.

In case 4 incision and drainage were employed together with serum, this being in 1937 before the sulfonamides were used. Our series is arranged chronologically from 1936 to 1942 to represent the progressive change from the usual surgical incision and drainage to the use of serum and sulfonamides as they became available.

Patient 2 received no treatment because she was considered, at the age of 90, too old to be given serum, this being in 1936. Patient 3 was untreated because he came too late for specific treatment as given in 1937.

The decisions about drainage or tapping were easily made by following the principle of tapping for diagnosis as soon as the disease was suspected and continuing to tap to provide drainage as often as any fluid reaccumulated. Splints were used to immobilize the joints as long as there was fever.

Sulfathiazole was used oftener than other sulfonamides. Serum alone was used five times. In only 2 cases did we use combined drug and serum therapy. In but 1 instance did we use agglutination tests or skin tests to decide matters of dosage. We were guided by temperature and local signs mainly. Theoretically, serum and a sulfonamide compound should be used together as in the treatment of influenzal meningitis, but our series does not suggest such a method to be superior. We think that serum should be given to any patient who is not doing well with the drug alone or who has a positive blood culture late in the course of pneumonia.

The complication of pyarthrosis seemed to prolong the fever of pneumonia in several instances but usually it did not. We have one example of delayed resolution but not beyond such delay as might occur in uncomplicated pneumonia. Pyarthrosis unassociated with pneumonia when treated with drugs responds in about the same manner as does gonococcal arthritis.

RESULTS

Three of the 11 patients died, 2 were given no treatment for the reasons stated and 1 must be regarded as having had too little serum (80,000 units of horse serum in case 1) and no drug because there was none.

In the usual sense of assessing specific treatment, there was no treatment failure. Thus we think noteworthy because the usual prognosis has been "always grave."

Bulkley in 1914 found from the collected literature a fatality rate of 24 per cent for single joint involvement and 72 per cent for multiple. We think the fatality rate should be that of uncomplicated pneumonia.

During the acute stage of the disease all the cases were seen by consultants from orthopedic or surgical services, who concurred in our form of treatment except in case 4, which was treated by surgeons. Physical therapy was not needed to bring the joints back to normal function except in one instance (case 4).

A follow-up study of these cases shows perfect functional results except in case 4 treated with incision and drainage. This knee seventeen months later showed good function for ordinary work but with some limitation of motion.

Cases are reported briefly herewith.

REPORT OF CASES

CASE 1—L. B., a Negro aged 35, was admitted on the fifth day of his disease with bilateral lobular pneumonia due to pneumococcus type II. The white blood cell count was above 34,000 and blood culture was sterile. On the second hospital day and the fifth day of arthritis 5 cc. of purulent fluid which yielded pneumococcus type II was aspirated from his elbow. An insufficient amount (80,000 units) of horse serum was administered the fourth hospital day with a subsequent temperature drop to 99 F., but death occurred four days later. Permission for autopsy was not granted, but acute pericarditis seemed quite likely. Blood cultures remained negative.

CASE 2—A. B., a Negro woman aged 90, was admitted with bacteremia and with arthritis of fourteen days' duration and

lobar pneumonia of three days' duration both due to pneumococcus type XI. The white blood cell count was 11,000. Aspiration from her knee yielded 30 cc of purulent fluid containing pneumococcus type XI on the second hospital day. She received no specific therapy because of her age and died on the third hospital day with bacteremia, meningitis and endocarditis, confirmed by autopsy.

CASE 3—D W, a white man aged 41 with pneumonia of the left lower lobe due to pneumococcus type V, was admitted with bacteremia and signs of endocarditis on the fifth day of his disease. On seven occasions his blood culture was positive for pneumococcus type V. The knee and acromioclavicular joints were aspirated on the tenth day yielding 70 cc and 5 cc respectively of fluid which was purulent and yielded pneumococcus type V on culture. No specific was used for treatment because of the advanced stage of his disease. The temperature remained above 102 F, the white blood cell count was above 12,000 and he died probably of endocarditis on the eleventh hospital day. Permission for autopsy was not obtained.

CASE 4—H I, a white man aged 39 with pneumonia of the right upper lobe due to pneumococcus type I was admitted with pneumococcal bacteremia on the fourth day of the disease. Eighty cc of purulent fluid was removed from the knee on the second hospital day and 70 cc was removed on the third hospital day. Cultures yielded pneumococcus type I. He received a total of 120,000 units of horse serum and on the fifth day the joint was drained of 250 cc of thick creamy pus and then irrigated. Culture of this pus again revealed pneumococcus type I. The white blood cell count up to the tenth day remained above 23,000 but his temperature gradually fell from that of 105 F on admission to normal when discharged as entirely recovered on the eighteenth day.

CASE 5—J J, a Negro girl aged 16 months, entered with pneumonia of the right upper lobe due to pneumococcus type VI. On the fourth hospital day (the sixth day of disease) 15 cc of purulent fluid obtained from her ankle contained pneumococcus type VI. A subsequent tap was also positive. She had two positive blood cultures subsequent to her initial joint aspiration. Treatment consisted of 1,250 units of pneumococcus type VI serum and irrigation and drainage with a cast applied on the fifth day. Blood culture was negative when taken three days later. The white blood cell count of 23,100 and the elevated temperature gradually fell to normal whereupon she was discharged as recovered on her twentieth hospital day.

CASE 6—R T, a white boy aged 4 years, was admitted with bronchopneumonia of two weeks' duration and arthritis of four days' duration due to pneumococcus type VI. This followed an attack of pertussis. His white blood cell count was 38,500, temperature was 104 F and blood culture was positive for pneumococcus type VI. Four cc of purulent exudate was aspirated from the ankle on the second hospital day, 2 cc of thin, bloody fluid on the sixth day and 2 cc of yellow pus on the eighth day. Cultures of each grew pneumococcus type VI. He received a total of 92,500 units of serum on the third and fourth days. He responded to the serum so that his temperature gradually fell to normal. After a few days of serum sickness he was discharged as recovered.

CASE 7—J W, a Negro aged 37, entered with pneumonia of the left lower lobe of one day's duration due to pneumococcus type VIII. Only the admission blood culture was positive. The knee was aspirated of 20 cc of yellow-green fluid twice but cultures were sterile. Twelve Gm of sulfamethylthiazole was administered each day for six days. The drug level in the blood ranged above 4 mg per hundred cubic centimeters and the white blood cell count between 5,000 and 16,000. Gradually his temperature fell to normal, and he was discharged on the twentieth day.

CASE 8—T R, a white man aged 66, entered with a gastric complaint due to a malignant growth and hematemesis. After several transfusions he was found on the eighteenth day to have arthritis of the knee. His blood stream was sterile but 2 cc of amber colored fluid obtained from the knee yielded pneumococcus type III. Subsequent taps yielded 60 cc and 30 cc of cloudy yellow fluid, which was sterile. A total of 26 Gm of sulfapyridine was given over a period of seven days with a subsequent fall in temperature and recovery of the knee.

CASE 9—O S, a Negro aged 37, was admitted with pneumonia of the right lower lobe of seven days' duration and bacteremia due to pneumococcus type V. The bacteremia, present on admission, cleared promptly, but on the fourth day arthritis developed. Cultures of 30 cc of moderately thick yellow fluid aspirated from the knee and 2 cc of thick pyosanguineous exudate from a sternoclavicular joint were sterile. He received 200,000 units of pneumococcus type V serum on the second hospital day, he first received sulfapyrazine and then sulfathiazole in doses of 6 Gm a day until two days before discharge. He maintained an average blood level of 2 mg per hundred cubic centimeters. The white blood cell count remained elevated around 18,000 until the twelfth day. The temperature gradually fell from 104 F, then rose to 103 F again and subsequently dropped to normal. He was discharged on the twenty-seventh day as fully recovered.

CASE 10—S H, a Negro aged 71, entered the hospital complaining only of a sore knee of one week's duration. On admission a diagnostic tap revealed 60 cc of purulent fluid containing pneumococcus type VII, 50 cc of purulent fluid aspirated on the seventh day was again positive. In eight days he received a total of 9 Gm of sulfadiazine and later 26 Gm of sulfathiazole with drug levels as high as 9.1 mg per hundred cubic centimeters. The temperature was 100 F on admission, rose to 102 F and gradually fell to normal in fourteen days. The white blood count rose to 17,100 at the time of the temperature spike. He left the hospital on his eighteenth day with some limitation in flexion.

CASE 11—E B, a Negro woman aged 39 entered the hospital with pneumonia of the right lower lobe and bacteremia due to pneumococcus type VIII. Subsequent blood cultures were sterile but a diagnostic aspiration of 1 cc of gelatinous material from the ankle on the second hospital day revealed pneumococcus type VIII. The joint fluid was again positive on the eighth day when 6 cc was removed, but became sterile, as shown by subsequent taps—one of 30 cc of serous bloody fluid, another of 4 cc of bloody watery fluid. In twenty-one days she received a total of 58 Gm of sulfathiazole followed by 60 Gm of sulfadiazine. Sulfadiazine was substituted because of apparent sulfathiazole intoxication. On the fifth day she received 75,000 on the seventh 100,000 and on the ninth 80,000 units of specific serum. A total of 255,000 units because she was not fever free and joint cultures were still positive. With this treatment and with blood levels over 4 mg per hundred cubic centimeters her white blood cell count dropped from 41,000 to 10,300 and her joint became better. She signed out of the hospital as fully recovered or her joint difficulty but with her pneumonia still not completely resolved. She was seen a month later and was entirely well.

SUMMARY

The 11 cases of pneumococcal pyarthrosis presented show the results of conservative specific treatment.

Three patients died, 2 receiving no specific treatment and the third receiving serum in insufficient amounts. Eight patients recovered completely.

With specific sulfonamide or serum treatment, repeated aspiration is recommended. Surgical drainage was found unnecessary.

Emotional Thinking—At the basis of most immature attitudes will be found emotional thinking, which consists primarily of jumping to conclusions because of the undue influence of wishes or fears, or because of lack of training in the proper way of thinking.

Emotion is an integral part of the bodily process and the expression of the basic drives and energy of the organism.

Just as emotion without the direct control of the intellect degenerates into blind excess, so the intellect without the driving force of emotion remains sterile, incapable of accomplishment.

Logical thought or reason is direct clear influenced only by facts and based on premises arrived at objectively and understandingly.—Kranz, Samuel H. *The Therapy of the Neuroses and Psychoses*. Philadelphia: Lea & Febiger 1943.

Clinical Notes, Suggestions and New Instruments

MONOCULAR MYASTHENIA GRAVIS

SIGMUND S. WINTON, PH.D., M.D., CHICAGO

A recent report by Moore¹ has directed attention to the fact that occasional cases of myasthenia gravis exhibit no symptoms or signs other than those referable to the ocular apparatus. Coincidentally, he raises considerable speculation as to the frequency with which this monosymptomatic form of myasthenia is erroneously diagnosed as neurosyphilis, organic oculomotor palsy or some similar neurologic condition. Although ocular signs and symptoms are numbered among the common clinical features of myasthenia, their correct etiologic basis is often overlooked until other unmistakable and more widespread concomitants have made their appearance. Two cases illustrative of this condition, i.e. monocular myasthenia gravis, are described. In 1 of these neurosyphilis had been suspected as the etiologic factor. In the other, in which diplopia was complained of, the clinical picture, in addition to ptosis, suggested the diagnosis of oculomotor nerve paralysis. Moore also cites 1 case seen several years earlier in conjunction with Winkelman. Diagnosis of neurosyphilis and a post-traumatic state had been made and both antisyphilitic treatment and operative procedures were carried out before the correct nature of the condition was brought to light. These instances further serve to illustrate the difficulties of accurate diagnosis by observation alone. Electromyographic and electroergographic methods and other tests such as the Jolly reaction can be used to ascertain the state of skeletal muscle function. However, as Moore points out, all these methods are either unsuitable for testing ptosis or require cumbersome or elaborate apparatus. Under such circumstances, practicability dictates the use of a simpler and more reliable test. That prostigmine is valuable as a diagnostic agent as well as in treatment is illustrated in the case reported here.



Fig. 1—Appearance of patient before treatment with prostigmine methylsulfate

REPORT OF CASE

History—M. T., a girl aged 16 years, complained of drooping of the left upper eyelid of sudden onset. She stated that three weeks prior to this event she had been suffering from a moderately severe head and chest cold, which cleared up with

Hoffmann-La Roche, Inc., made generous contributions of prostigmine in the treatment of this case.
1. Moore, M. T. Monocular Myasthenia Gravis. *Prostigmine Methylsulfate as a Differential Diagnostic Agent*, Arch. Ophthalmol. 26: 619 (Oct.) 1941.
2. Winkelman, N. W., and Moore, M. T. Prostigmine in the Treatment of Myasthenia Gravis and Muscular Dystrophy, Arch. Neurol. & Psychiat. 37: 237 (Feb.) 1937.

medication and rest. For about ten days she had felt her usual self, then one morning awoke to find the upper left eyelid drooping and almost covering the pupil. She experienced no unusual general fatigue but noticed that she was unable to raise the eyelid even on extreme effort. On the advice of a physician she applied hot fomentations to the left side of the face and continued this treatment for about two weeks without



Fig. 2—Same patient one month later while under treatment with prostigmine methylsulfate

any sign of improvement. The patient had no difficulty in chewing her food, in swallowing or in phonation, nor was there any history of hysteria, temperamentality or emotional upset. Her appetite was good and her diet well balanced. Her weight, which had varied little in the past year, was 103 pounds (47 Kg). She did not complain of discomfort in her neck or chest or of chronic cough or sputum. Exercise caused no unusual fatigue of the muscles of the extremities.

Physical Examination—On examination two weeks after the onset of this condition, the patient appeared well nourished and well developed. There was a pronounced ptosis of the left upper eyelid, which could not be raised even with the utmost effort (fig. 1). The lower border of the lid crossed the center of the pupil. There were no ophthalmoplegia and no impairment of visual acuity. The pupils were round and equal on both sides and reacted to light and in accommodation. There was no abnormal facial expression, she was able to laugh, frown and wrinkle her forehead with ease. The gag reflex was present and there was no evidence of impairment of either chewing or swallowing. There was no cervical adenopathy nor any evidence of thymic enlargement. The chest was well developed and the heart and lungs were normal. The abdomen was scaphoid in contour. Careful examination of the extremities revealed no superficial abnormalities, atrophy, hypertrophy or fibrillary twitchings. The power of the muscles was good and the deep reflexes active and equal on the two sides.

Laboratory Examination—Hemoglobin was 90 per cent, red blood cells numbered 5,000,000 and white blood cells 7,300 with lymphocytes 40 per cent, polymorphonuclears 59 per cent, eosinophils 1 per cent and basophils 0. Urinalysis showed absence of albumin and sugar. Microscopic examination was negative. The blood Wassermann reaction also was negative. Ergographic tests were omitted as there was no evidence of general muscular weakness. When 1 cc of prostigmine methylsulfate (-2,000) was injected subcutaneously as a therapeutic test a definite response was obtained within fifteen minutes. The eyelid began to fibrillate slightly and then gradually began to rise until the lower border reached the upper edge of the pupil.

Treatment—At the beginning of treatment the patient was given one injection of prostigmine methylsulfate 1/2 (00) twice weekly. Following each injection the ptosis disappeared and

the eyelid regained its normal tone and power (fig 2), which effects lasted for only a few hours. In order to increase the concentration of prostigmine in the blood prostigmine bromide tablets were given in 15 mg doses three times daily in addition to the weekly hypodermic injection. The lid remained constantly elevated and had good tone and power but occasionally fibrillated and appeared overcompensated. When the total daily dose of the bromide was dissolved in water and taken in smaller but more frequent quantities throughout the day fibrillation was less often seen. On several occasions the patient complained of headaches and abdominal cramps. After several months on this management the patient developed a tolerance to prostigmine and at various occasions noticed slight drooping of the lid. Guandine hydrochloride in the dose of 0.1 Gm three times daily was then substituted for prostigmine but the results were not satisfactory. Ephedrine sulfate and potassium chloride also failed to produce any improvement in the ptosis. The best results were obtained with a combination of 15 mg of prostigmine bromide and 0.1 Gm of guandine hydrochloride taken three times daily with meals. Under this regimen the patient remained comfortable, active and free from ptosis. After four months the guandine was omitted and the dose of prostigmine gradually reduced, until the patient was taking one tablet (15 mg) every third day. Her condition appeared to progress favorably for about one month, after which the lid gradually began to show signs of weakness and slight ptosis. After combined therapy with prostigmine and guandine was reinstituted however all symptoms remained in abeyance. For the past eighteen months she has been enjoying excellent health.

COMMENT

This case affords an illuminating example of strict localization of myasthenic signs. Whether or not lacking specific therapy, more widespread involvement would have occurred is problematic. A review of the literature shows, however, that ocular abnormalities are often but the forerunners of the full fledged disease. The implications with respect to early diagnosis and treatment seem obvious.

The use of prostigmine for diagnostic purposes has been extensively studied by Viets, Schwab and Mitchell.³ The test consists simply in the intramuscular injection of 15 mg of prostigmine methylsulfate (plus $\frac{1}{100}$ gram [0.00065 Gm] of atropine sulfate) and the observation of the objective and subjective improvement at ten minute intervals for one hour. No apparatus is needed other than an ordinary hypodermic needle and syringe. The treatment of myasthenia by prostigmine methylsulfate and prostigmine bromide is a topic too well known to justify discussion here.

AN IMPROVEMENT IN CATHETER TECHNIC FOR CONTINUOUS CAUDAL ANESTHESIA

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Recently Adams and Lundy¹ described the catheter technic for continuous caudal anesthesia. The method they described involved the use of a 13 gage Love-Barker spinal needle and a number 5 ureteral catheter. We² have used this method in over 250 obstetric cases without any serious complications. There are, however, some objections. 1. The caliber of the needle is such that it is difficult to insert it into the caudal canal. 2. If there is difficulty in locating the caudal foramen and it becomes necessary to reinsert the needle, considerable trauma ensues. As a result patients complain of soreness at the site of insertion during the first few days post partum.

Recently we have overcome this difficulty and simplified the technic considerably by employing a 15 gage needle with obtu-

rator and a number 4 ureteral catheter. It is much easier to insert a small caliber needle into the caudal canal. The 15 gage 3 inch needle is considerably smaller than the 13 gage. This difference in size stands out when the needles are placed side by side.

For obese persons or for patients with a small sacral foramen we use a special 18 gage needle $5\frac{1}{2}$ inches long. This needle is hubless and was devised through the cooperation of Mr. Oscar Schwidetzky, manager of the research department of Becton Dickinson & Co. We employ this needle in the difficult cases. After it is inserted, the 15 gage needle without the obturator is passed over it as a sleeve. The 18 gage needle is then removed. The number 4 ureteral catheter is inserted into the caudal canal through the 15 gage needle, which is withdrawn leaving the catheter in place. A 25 gage hypodermic needle is inserted into the external end of the catheter which is connected by an adaptor to an injection system similar to that described by Hingson and Edwards. The 15 gage needle can be used direct in over 75 per cent of cases; the hubless 18 gage needle being reserved for the difficult patient. We have employed this method in over 100 cases. It is notable that there are less complaints from patients with regard to soreness and irritation at the site of puncture.

The use of a number 4 ureteral catheter was reported by Manalan³ but he employed a 14 gage needle.

The catheter method obviates the danger of a broken needle, which can be a major complication.⁴ Patients can move about freely and are more comfortable. We believe it will be the method of choice in obstetric cases in which continuous caudal anesthesia is employed.

The number 4 ureteral catheters can be obtained from the American Cystoscopic Company or the Bard Company, 79 Madison Avenue, New York City. They are boilable and can be used many times.

Special Article

TYPHOID IN THE LARGE CITIES OF THE UNITED STATES IN 1942

THIRTY-FIRST ANNUAL REPORT

A communication was addressed to the health officer of each of the cities, requesting the number of deaths from typhoid, excluding paratyphoid, both among residents and among nonresidents as recorded for 1942. In addition to the tendency for many cities to keep no data on reallocations for residents there was observed a distinct carelessness on the part of some health officials to submit accurate and complete figures. In many instances the number of cases was given and only the challenge of the reviewer brought forth the data requested. For other cities multiple inquiries brought forth irreconcilable replies. Too frequently the answer was left to a subordinate employee, although there is evidence that in the largest cities the health officer has established a routine whereby he gives final approval to statistical data released by his department. It is recommended that the smaller cities follow this excellent example. A few health officers seem to have no knowledge of how many typhoid deaths have occurred in their community and this information can be secured

3. Manalan, S. A. Caudal Block Anesthesia in Obstetrics. *J. Indiana M. A.* 35: 36-36 (Oct.) 1942.

4. Block, Nathan and Kotstein, Morris. Continuous Drip Caudal Anesthesia in Obstetrics. *J. A. M. A.* 122: 3-2 (June 26) 1943.

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3. Viets, H. R. and Schwab, R. S. Prostigmine in the Diagnosis of Myasthenia Gravis. *New England J. Med.* 213: 1280 (Dec. 26) 1935.
Viets, H. R. and Mitchell, R. S. The Prostigmine Test in Myasthenia Gravis. *Ibid.* 215: 1064 (Dec. 3) 1936.
Schwab, R. S. and Viets, H. R. The Prostigmine Test in Myasthenia Gravis. Third Report. *Ibid.* 219: 226 (Aug. 18) 1938.
From the Department of Obstetrics, Syracuse University College of Medicine.
1. Adams, R. C., Lundy, J. S. and Seldon, T. H. Continuous Caudal Anesthesia or Analgesia: A Consideration of Technic. *J. A. M. A.* 122: 152-158 (May 15) 1943.
2. Irving, F. R., Lippincott, C. A. and Meyer, Frank. Continuous Caudal Anesthesia in Obstetrics. *New York State J. Med.* 43: 1025-1029 (June 1) 1943.

only from the state health department. The possession of basic data seems paramount to the establishment and maintenance of adequate local health services.

Each health officer was asked to record an estimate of population for 1942. Many are continuing to use the 1940 census figures, others have prepared local

TABLE 1—Death Rates of Fourteen Cities in New England States from Typhoid per Hundred Thousand of Population

	1912	1911	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Cambridge	00	00	02*	08	21	43	25	40	98
Fall River	00	00	02	02	22	23	85	134	135
Lynn	00	00	02	02	15	10	30	72	141
Springfield	00	00	03*	11†	04	20	44	170	190
New Bedford	00	00	04	11	15	17	60	150	161
Lowell	00	00	04	12	26	21	52	102	139
Hartford	00	00	05	10†	13	25	60	150	190
Somerville	00	00	06	04	13	10	28	79	121
Worcester	00	05	02*	05*	10	23	35	50	113
New Haven	00	06	10	07†	06	44	68	182	308
Bridgeport	00	07	01	01	05	22	48	50	103
Boston	01	01	03†	06	12	22	35	90	160
Providence	01	04*	06	11†	13	18	28	87	210
Waterbury	10	10	02	04	12	10	80	188	

* All typhoid deaths were stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

TABLE 2—Death Rates of Eighteen Cities in Middle Atlantic States from Typhoid per Hundred Thousand of Population

	1912	1911	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Yonkers	00	00	03	07	05	17	48	50	103
Newark	00	00	03	04	09	23	33	68	140
Scranton	00	00	03	14	18	24	38	93	315
Lie	00	00	07†	12	09	23	69	490	466
Albany	00	00	12†	12	18	56	80	186	174
Trenton	00	00	14†	11	21	82	80	223	281
Rochester	00	02	03†	04	17	21	29	96	128
Paterson	00	07*	07†	09	10	33	41	91	193
Camden	00	08	14†	27	44	59	49	45	40
Rendling	00	09	05	04	16	60	100	319	420
Elizabeth	00	09	05	09	16	24	33	80	106
Pittsburgh	01*	04	07	09	24	39	77	159	650
New York	01	02	03	08	13	20	32	80	135
Philadelphia	04	04	08	09	11	22	49	112	417
Buffalo	05†	00	01	06	27	39	81	154	228
Syracuse	05	05*	03*	08	08	23	77	123	156
Jersey City	07†	00	06	03	09	27	45	72	126
Utica	10*	10	02*	02	11	39#			

* All typhoid deaths were stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

Incomplete data.

estimates using ration book data or adjustments which are questionable. Except for Washington, the Bureau of Census has prepared no population estimates for cities since the 1940 census. Registration data for War Ration Book One was reported only on a county basis and similar estimates for cities are not available. Since no official figures are available for any date subsequent to that of the federal census, it has again been deemed advisable to employ the populations determined by this uniform tabulation. It is recognized that in areas of concentration of military and industrial activities a slight error will result, and some city and group rates may be a little too high and even too low.

Paratyphoid has again been excluded. Special note has been made of cities in which all deaths occur among nonresidents. In addition to the fifty-three cities enumerated on the honor roll in table 10, ten cities (Birmingham, Dallas, Indianapolis, Jacksonville, Knoxville, Nashville, Pittsburgh, San Diego, St. Louis, Utica) are qualified for such acclaim but have been charged with typhoid deaths among nonresidents cared for in these cities. In nine other cities (Atlanta, Baltimore, Buffalo, Cincinnati, Jersey City, Kansas City, Kan., Louisville, New Orleans, Washington) more than one third of the reported deaths were stated to have

been among nonresidents. One city with more than one million inhabitants (Detroit) records no death from typhoid.

The number of cities with no typhoid death during the past two or more years has increased from twenty-five in 1941 to thirty-one in 1942 (table 9). Fort Wayne continues to head the list with no death in eight years. South Bend has maintained its excellent record and has been without a death for seven years. Fall River, Lynn and New Bedford report no death in six years, Cambridge and Lowell, no death in five years.

The New England cities (table 1) (population 2,579,152) have the lowest group rate (0.12) but are closely followed by the East North Central cities (0.14) and the Middle Atlantic cities (0.15). The West North Central cities (0.18) are not far behind. Eleven of the New England cities (there were eight in 1941, ten in 1940, eleven in 1939) report no death from typhoid in 1942 (table 1). Cambridge, Fall River, Hartford, Lowell, Lynn, New Bedford, Somerville and Springfield have maintained their ranking of 1941, while Bridgeport, New Haven and Worcester have been added to the honor roll. Springfield reports no death

TABLE 3—Death Rates of Ten Cities in South Atlantic States from Typhoid per Hundred Thousand of Population

	1912	1911	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Wilmington	00	00	05	15	31	47	258#	232#	330
Norfolk	00	07	11†	33	22	28	88	217	421
Charlottesville	00	10	16†	25					
Baltimore	03†	07†	09†	14	32	40	118	237	351
Washington	03†	07†	11	22	28	54	95	172	367
Miami	06	12	24	20	35				
Jacksonville	06*	29	23	16	44				
Atlanta	10†	07*	21†	73	111	145	142	314	534
Richmond	20†	10†	25†	24	19	57	97	157	310
Tampa	46†	09*	06†	34	38	191	439#		

* All typhoid deaths were stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

Incomplete data.

TABLE 4—Death Rates of Nineteen Cities in East North Central States from Typhoid per Hundred Thousand of Population

	1912	1911	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
South Bend	00	00	00	08					
Fort Wayne	00	00	00	21	42	120	73		
Grand Rapids	00	00	03†	02	10	19	91	250	297
Canton	00	00	04†	08	14	33	89		
Akron	00	00	06†	09	15	24	106	210	277#
Gary	00	00	11	08					
Evansville	00	00	12†	18	62	50	175	320	500
Milwaukee	00	02	01	02	08	10	65	110	270
Detroit	00	02	04	07	13	41	81	154	228
Youngstown	00	06*	07	12	11	72	192	295	501
Peoria	00	00	13†	09	02	37	57	161	117#
Dayton	00	09*	14	08	19	33	93	148	221
Chicago	01	01	03	04	06	11	24	82	158
Cleveland	02	02†	06	11	10	20	40	100	157
Indianapolis	03*	03*	12†	13	27	46	103	205	304
Columbus	03	03*	14†	19	21	35	71	158	400
Cincinnati	04†	03	11†	14	25	32	31	78	201
Toledo	04	04*	10†	12	30	58	100	314	375
Flint	26	07	13†	08	16	16	227	188	161

* All typhoid deaths were stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

Incomplete data.

among residents during the past nine years, Hartford none for five years. While in 1940 one half of the eighteen cities recording no deaths from typhoid during a two year period were to be found among the New England cities and in 1941 one third (eight among twenty-five) were from these cities, in 1942 one fourth (eight among thirty-one) were from this group. This in no manner subtracts from the outstanding record of the New England cities but rather does it show the

tendency for other cities to attain the high standards set by this group. Worcester, with the first death in 1941 among residents for eleven years, now returns to the honor roll, Bridgeport and New Haven, each with one resident death in 1941, also return to the honor roll. Bridgeport reported no deaths during the

TABLE 5—Death Rates of Six Cities in East South Central States from Typhoid per Hundred Thousand of Population

	1942	1941	1940	1935	1930	1925	1920	1915	1910
Memphis	0.0	0.3*	4.0†	7.5	9.5	15.9	27.7	4.5	2.3
Chattanooga	0.0	0.5	0.9	5.5	8.0	13.6	27.2	7.5	4.7
Louisville	0.0†	0.0†	0.0	2.8	3.7	4.0	9.7	12.7	5.7
Nashville	0.6*	1.5*	3.4†	5.7	15.2	17.5	20.7	40.2	61.7
Birmingham	0.7	0.4	2.4†	4.1	8.0	10.5	31.5	41.5	41.7
Knoxville	1.5	0.9	3.5	6.0	10.7	20.5	5.5		

* All typhoid deaths were stated to be in nonresidents.
† One third or more of the reported typhoid deaths were stated to be in nonresidents.
‡ Incomplete data.

TABLE 6—Death Rates of Nine Cities in West North Central States from Typhoid per Hundred Thousand of Population

	1942	1941	1940	1935	1930	1925	1920	1915	1910
Duluth	0.0	0.0	0.2	1.0	1.1	1.7	4.4	10.8	4.5
Des Moines	0.0	0.0	1.3	2.5	2.4	2.6	6.4	15.9	7.7
Omaha	0.0	0.0	0.0	0.9	1.3	3.3	5.7	14.9	4.0
Minneapolis	0.0	0.0	0.0	0.5	0.5	1.9	5.0	10.6	2.1
Kansas City, Mo.	0.0	0.3	0.9†	1.6	2.5	5.7	10.6	16.2	3.6
St. Louis	0.1*	0.0†	0.7	1.0	2.1	3.9	6.5	12.1	1.4
St. Paul	0.3	0.0	0.3	0.7	1.4	3.4	3.1	9.2	12.8
Wichita	0.9	0.0	0.4	1.1	1.2	6.3			
Kansas City, Kan.	1.6†	1.6*	1.0	1.0	1.7	5.0	9.4	31.1	7.4

* All typhoid deaths were stated to be in nonresidents.
† One third or more of the reported typhoid deaths were stated to be in nonresidents.
‡ Incomplete data.

five year period 1935-1939. Boston reports one death among residents (the same as for 1941). For the fourteen New England cities there were but three deaths, all among residents, one each for Boston, Providence and Waterbury. The rate (0.12) is the lowest thus far attained by any group of cities (table 13). The New England cities regain first place, which position they held during the quinquennium 1936-1940.

Eleven of the large Middle Atlantic cities (there were eight in 1941, nine in 1940) report no death from typhoid in 1942 (table 2). Albany, Erie, Newark, Scranton, Trenton and Yonkers have maintained their ranking of 1941, while Camden, Elizabeth, Paterson, Reading and Rochester have been added to the honor roll. The Middle Atlantic cities have a group rate (0.15) which is but slightly higher than that of the New England and East North Central cities. It is much lower than the rates for 1941 (0.24), 1940 (0.27) and 1939 (0.37). Six cities (Albany, Erie, Newark, Scranton, Trenton, Yonkers) report no typhoid death during 1941 and 1942 (table 9), Yonkers none for four years, Erie, Newark and Scranton none for three years. After the passage of five years with but one death among residents in Buffalo it is stated that in 1942 there occurred three deaths, two among residents. Utica reports only one death among residents during the past eleven years, Erie one such death for eight years. For the first time Pittsburgh records no death among residents (there were three in 1941) and only one among nonresidents (there was but one resident death in 1933 and again in 1939). After a period of six years with no death among residents Syracuse records one such death in 1942. Rochester reports but one death during the past three years. New York records a significant decrease in the number of deaths

(five in 1942, all among residents, fourteen in 1941, thirteen among residents). It is stated that in Philadelphia there occurred seven deaths, all among residents. There were seven deaths in 1941 (five among residents) and twelve in 1940 (eleven among residents). Jersey City reports two deaths, one among residents. In the group as a whole (population 13,129,185) there were twenty deaths in 1942 compared with thirty-one in 1941, thirty-six in 1940 and forty-eight in 1939.

The rate (0.70) for the South Atlantic cities (table 3) (population 2,727,985) is lower than the rate of 1941 (0.88) and that of 1940 (0.73). In these cities there occurred nineteen deaths in 1942, twenty-four in 1941 and twenty in 1940. The number of deaths among residents has decreased from thirteen in 1941 to ten in 1942. Three cities (Charlotte, Norfolk, Wilmington) are on the honor roll, and it is stated that the one death in Jacksonville occurred among nonresidents. Five cities (Atlanta, Baltimore, Richmond, Tampa, Washington) report that one third or more of deaths were among nonresidents (one of three in Atlanta, two of three in Baltimore, two of four in Richmond, two of five in Tampa, one of two in Washington). Charlotte (no death in 1942) has been included in the group for the third time, however, for purposes of adequate comparison the figures for this city have been omitted in calculating rates for the group as a whole.

TABLE 7—Death Rates of Eight Cities in West South Central States from Typhoid per Hundred Thousand of Population

	1942	1941	1940	1935	1930	1925	1920	1915	1910
Tulsa	0.0	0.0	0.4	1.1	5.3	16.5			
Oklahoma City	0.0	0.0	2.6	4.3	7.4†				
Dallas	0.3*	2.4†	2.7†	5.1	7.9	11.2	17.2		
Houston	0.0	1.3	2.1	3.2	4.8	7.0	14.2	38.1	49.7
Fort Worth	0.0	0.6*	2.1	4.5	5.9	6.1	16.2	11.9	27.8
San Antonio	0.0	0.0	2.9	4.3	4.6	9.3	23.3	29.5	35.9
New Orleans	0.5†	2.2*	5.0†	9.6	9.9	11.6	17.5	20.9	35.6
El Paso	5.1†	4.1†	4.5	5.2	9.1	10.5	20.7	42.8	

* All typhoid deaths were stated to be in nonresidents.
† One third or more of the reported typhoid deaths were stated to be in nonresidents.
‡ Incomplete data.

TABLE 8—Death Rates of Twelve Cities in Mountain and Pacific States from Typhoid per Hundred Thousand of Population

	1942	1941	1940	1935	1930	1925	1920	1915	1910
Seattle	0.0	0.0	0.2	0.7	2.2	2.6	2.9	5.7	25.2
Portland	0.0	0.0	0.3	0.5	2.3	3.5	4.5	10.8	23.2
Oakland	0.0	0.0	0.5†	1.2	1.2	2.0	3.8	8.7	21.5
Long Beach	0.0	0.0	0.5	0.5	1.1	2.1†			
Salt Lake City	0.0	0.7*	0.3*	0.7	1.9	6.0	9.3	13.2	41.1
Sacramento	0.0	0.9*	1.5*	6.3					
Tacoma	0.0	0.9	0.5	0.9	1.8	3.7	2.9	10.4	19.0
San Francisco	0.2	0.2†	0.4	0.5	2.0	2.8	4.6	13.6	26.3
San Diego	0.3*	0.5	0.8	1.3	1.0	1.6	7.9	17.0	10.5
Los Angeles	0.2	0.7†	0.7†	0.8	1.5	3.0	3.6	10.7	17.0
Spokane	0.5	0.0	1.2	1.0	2.2	4.4	4.9	17.1	30.3
Denver	0.4†	0.3*	1.4	1.7	2.6	5.1	5.5	12.0	37.5

* All typhoid deaths were stated to be in nonresidents.
† One third or more of the reported typhoid deaths were stated to be in nonresidents.
‡ Incomplete data.

The East North Central cities (population 9,386,378) have lost first place, which rank they held in 1941 and back in 1938. Twelve (eleven exclusive of Gary) of the cities in this group (Akron, Canton, Dayton, Detroit, Evansville, Fort Wayne, Gary, Grand Rapids, Milwaukee, Peoria, South Bend, Youngstown) report no death from typhoid in 1942 (table 4). Gary was added to this group in 1940 but figures for this city have been omitted in determining rates for the group as a whole. The number of typhoid deaths decreased from nineteen

(thirty-three in 1940) to thirteen (the rate from 0.35 in 1940 and 0.20 in 1941 to 0.14). Six cities (Akron, Canton, Evansville, Fort Wayne, Grand Rapids, South Bend) record no typhoid death during 1941 and 1942 (table 9), Fort Wayne none for eight years, South

The six cities (table 5) in the East South Central group (population 1,286,747) again show a continuing decrease in the death rate (0.54 in 1942, 0.70 in 1941, 2.09 in 1940, 2.58 in 1939). Especially impressive is the fact that there was but one death among residents, the total of seven deaths includes six among nonresidents. The effect of hospitalizing cases from surrounding rural areas remains evident. Two cities (Chattanooga and Memphis) report no deaths among either residents or nonresidents and appear on the honor roll. The two deaths each in Birmingham and Knoxville as well as the one death in Nashville were stated to be among nonresidents. The single resident death occurred in Louisville, which city reports two deaths in 1942 (three in 1941, two among residents). Especially noteworthy is the decrease in Memphis from fifty-eight deaths (twenty-seven among residents) during the five year period 1936-1940 (an average of nearly twelve deaths a year) to no death in 1942. Knoxville reports no death among residents during the past two years.

The West North Central cities (population 2,716,484) show a decrease in the number of deaths

TABLE 9—Thirty-One Cities with No Typhoid Deaths in 1941 and 1942*

Akron	Grand Rapids †	Portland †
Albany	Hartford †	Scranton †
Cambridge **	Long Beach	Seattle †
Canton †	Lowell **	Somerville
Des Moines †	Lynn *	South Bend †
Duluth †	Newark †	Springfield †
Lia †	New Bedford *	Trenton
Evansville	Oakland	Tulsa †
Full River *	Oklahoma City	Wilmington †
Fort Wayne †	Omaha	Yonkers †
Gary		

† No typhoid deaths in eight years
‡ No typhoid deaths in seven years
* No typhoid deaths in six years
** No typhoid deaths in five years
† No typhoid deaths in four years
‡ No typhoid deaths in three years
Fifty without Gary

Bend none for seven years. Canton and Grand Rapids none for three years. Detroit seems thus far to be the largest city to pass through a year without a typhoid death, either among residents or among nonresidents. In 1941 there were four deaths in Detroit, three among residents. Indianapolis reports one death among nonresidents, Cincinnati records two deaths, one among

TABLE 10—Death Rates from Typhoid in 1942

Honor Roll No Typhoid Deaths (Fifty Three Cities) #			
Akron	Grand Rapids	Portland	
Albany	Hartford	Reading	
Bridgeport	Kansas City, Mo	Rochester	
Cambridge	Long Beach	Sacramento	
Camden	Lowell	Salt Lake City	
Canton	Lynn	Scranton	
Charlotte	Memphis	Seattle	
Chattanooga	Milwaukee	Somerville	
Dayton	Minneapolis	South Bend	
Des Moines	Newark	Springfield	
Detroit	New Bedford	Tacoma	
Duluth	New Haven	Trenton	
Elizabeth	Norfolk	Tulsa	
Lia	Oakland	Wilmington	
Evansville	Oklahoma City	Worcester	
Full River	Omaha	Yonkers	
Fort Wayne	Paterson	Youngstown	
Gary	Peoria		

First Rank From 0.1 to 1.9 Deaths per Hundred Thousand (Thirty Nine Cities)			
Boston	0.1	Cincinnati	0.4†
Chicago	0.1	Philadelphia	0.4
New York	0.1	Providence	0.4
Pittsburgh	0.1*	Toledo	0.5†
St. Louis	0.1*	Buffalo	0.5
Cleveland	0.2	Houston	0.5
San Francisco	0.2	Los Angeles	0.5*
Baltimore	0.3†	San Diego	0.5
Columbus	0.3	Syracuse	0.6
Dallas	0.3*	Fort Worth	0.6*
Indianapolis	0.3	Jacksonville	0.6†
St. Paul	0.3	Louisville	0.6
Washington	0.3†	Miami	0.6

Second Rank From 2.0 to 5.1 (Four Cities)			
Richmond	2.0†	Tampa	4.6†
Flint	2.6	El Paso	5.1†

* All typhoid deaths are stated to be in nonresidents
† One third or more of the reported typhoid deaths were stated to be in nonresidents
Fifty without Charlotte, Gary and Sacramento

residents. Grand Rapids extends her record to but two deaths among residents for more than twelve years. No death among residents of Canton is recorded during the past six years. Chicago reports two deaths (three in 1941) among residents. Cleveland also records two deaths among residents, Columbus one such death. It is stated that four deaths among residents occurred in Flint and one such death in Toledo.

TABLE 11—Number of Cities with Various Typhoid Death Rates

	No of Cities	10.0 and Over	5.0 to 9.9	2.0 to 4.9	1.0 to 1.9	0.1 to 0.9	0.0
1906-1910	77	75	2	0	0	0	0
1911-1915	79	58	19	2	0	0	0
1916-1920	84	22	32	30	0	0	0
1921-1925	89	12	17	48	12	0	0
1926-1930	92	3	10	30	37	12	0
1931-1935	93	0	6	17	28	42	0
1936	93	2	6	30	23	22	10
1937	93	2	6	23	28	22	12
1938	93	1	7	13	20	29	14
1939	93	0	7	18	19	33	16
1940	93	0	9	11	27	23	23
1941	93	0	7	15	18	29	24
1942	93	0	3	15	21	36	18
1943	93	0	1	13	26	26	27
1944	93	0	1	13	14	34	29
1945	93	0	3	13	17	32	31
1946	93	0	3	7	17	30	29
1947	93	0	0	12	12	30	30
1948	93	0	0	4	7	46	36
1949	93	0	1	3	5	34	30

* Charlotte, Gary and Sacramento omitted

from eight to five, three of the five were among residents. The death rate declined from 0.29 in 1941 (0.41 in 1940) to 0.18 in 1942. Five cities (Des Moines, Duluth, Kansas City, Mo., Minneapolis, Omaha) record no death and St. Louis reports one death among nonresidents. Wichita after no death for five years now reports one among residents, St. Paul also records such a death. Three cities (Des Moines, Duluth, Omaha) report no typhoid death during 1941 and 1942 (table 9), Duluth none for four years, Des Moines none for three years. Kansas City, Kan., records two deaths, one among nonresidents. St. Louis establishes a new record with no death among residents (there were two such deaths in 1941 in addition to two among nonresidents).

The eight cities of the West South Central group (table 7) (population 2,048,692) again report a decided reduction in the death rate (2.00 in 1940, 1.37 in 1941, 0.73 in 1942). The actual number of deaths decreased from twenty-eight (forty-one in 1940) to fifteen. Of the fifteen deaths in this group of cities, six were among nonresidents (seventeen of twenty-eight in 1941). Two cities (Oklahoma City, Tulsa) record no death and Dallas reports one death among nonresidents. Tulsa reports no death for three years. Two cities (El Paso, New Orleans) record one third or more deaths among

nonresidents. Of five deaths in El Paso, two were among nonresidents, three out of four in New Orleans, Houston and San Antonio each report two deaths among residents, Fort Worth one such death. This group of cities continues to have the highest group rate.

TABLE 12—Total Typhoid Rate for Seventy-Eight Cities
1910-1942*

	Population	Typhoid Deaths	Typhoid Death Rate per 100,000
1910	2,774,400	4,177	20.34
1911	2,771,411	3,560	17.0
1912	2,788,000	1,000	13.14
1913	2,787,000	1,000	13.45
1914	2,831,111	1,781	11.05
1915	2,713,100	44	1.47
1916	2,657,200	191	8.34
1917	2,687,408	2,016	7.50
1918	2,687,408	1,844	6.73
1919	2,770,187	1,111	4.15
1920	2,744,000	1,088	3.97
1921	2,787,000	1,141	3.95
1922	2,747,400	663	3.0
1923	2,687,400	1,000	1.10
1924	2,701,614	91	0.0
1925	2,710,000	1,079	3.14
1926	2,710,000	407	1.4
1927	2,713,400	148	1.0
1928	2,718,100	100	1.00
1929	2,777,000	107	1.00
1930	2,741,000	334	1.61
1931	2,708,700	263	1.63
1932	2,707,000	442	1.5
1933	2,708,400	43	1.02
1934	2,708,400	413	1.11
1935	2,708,201	418	0.0
1936	2,708,201	27	0.0
1937	2,708,201	29	0.02
1938	2,708,201	257	0.7
1939	2,708,201	252	0.65
1940	2,708,201	172	0.45
1941	2,708,201	173	0.44
1942	2,708,201	83	0.3

Rates for Ninety-Three Cities			
1933	2,702,179	280	1.04
1934	2,711,414	266	0.95
1935	2,710,300	374	0.86
1936	2,710,100	295	0.79
1937	2,700,304	200	0.65
1940	2,700,000	190	0.60
1941	2,700,000	141	0.37
1942	2,700,000	90	0.35

The following fifteen cities are omitted from this table because data for the full period are not available: Canton, Chattanooga, Dallas, Fort Wayne, Jacksonville, Knoxville, Long Beach, Miami, Oklahoma City, South Bend, Tampa, Tulsa, Utica, Wichita, Wilmington.
* Data for Fort Worth lacking.
† 1940 census figures used.

(0.73), but this compares most favorably with the New England rate of ten years ago (0.70 for 1931-1935) and is quite a contrast to the group's own rate for the same quinquennial period (5.36).

TABLE 13—Total Typhoid Death Rate per Hundred Thousand of Population for Ninety-Three Cities According to Geographic Divisions

	Popula- tion *	Typhoid Deaths		Typhoid Death Rates				
		1942	1941	1942	1941*	1936- 1940	1931 1935	1926- 1930
New England	2,009,152	3	6	0.12	0.23	0.39	0.70	1.31
Middle Atlantic	13,129,180	20	31	0.15	0.24	0.43	0.80	1.40
South Atlantic	2,727,900	19	24	0.70	0.83	1.14	2.70	4.50
East North Central	9,280,378	13	19	0.14	0.20	0.33	0.70	1.29
East South Central	1,280,747	7	9	0.54	0.70	2.04	4.51	8.31
West North Central	2,716,484	5	8	0.15	0.29	0.60	1.24	1.83
West South Central	2,918,003	15	23	0.73	1.37	3.09	5.30	7.30
Mountain & Pacific	4,180,039	13	10	0.31	0.55	0.60	0.83	1.60

* Data for South Bend for 1926-1929 are not available.
* Lacks data for Oklahoma City in 1936.
* 1940 census figures used.

The eleven cities (excluding Sacramento) in the Mountain and Pacific states (table 8) (population 4,186,039) report a decrease from sixteen deaths in 1941 to thirteen in 1942 (there were but thirteen deaths in 1940). The rate has decreased from 0.38 to 0.31. Sacramento has again been omitted in calculating the total number of deaths and the rates. This city reports

no death. Seven of the Mountain and Pacific cities (Long Beach, Oakland, Portland, Sacramento, Salt Lake City, Seattle, Tacoma) report no death from typhoid in 1942. Long Beach, Oakland, Portland and Seattle have maintained their ranking of 1941. Portland and Seattle report no death during the past three years. It is stated that the one death in San Diego was among nonresidents. Of three deaths in Denver, one was among nonresidents. Los Angeles reports seven deaths six among residents (there were ten in 1941, six among nonresidents). San Francisco records one death among residents (there were two in 1941, one among residents). With no death in 1940 and 1941, Spokane reports one among residents in 1942.

THE HONOR ROLL

The number of cities with no death from typhoid has increased from thirty-six to fifty. The three cities (Charlotte, Gary, Sacramento) not included in the ninety-three (table 11) also report no death. While this is by far the best showing, there remain four cities with rates of 20 or more. The charge of nonresident deaths accounts in part for these high rates. The number of cities with rates of less than 1.0 has increased by two (eighty-four in 1942, eighty-two in 1941). Thirty cities (thirty-one with Gary) record no typhoid death in 1941 and 1942 (table 9). There were only twenty-five cities a year ago that reported no death for a period of two years or longer. It is again emphasized that several other cities in the first rank would appear in the honor roll were they not charged with deaths among nonresidents.

For the seventy-eight cities (table 12) for which data are available since 1910 there occurred eighty-three deaths from typhoid, which is by far (less than one half that of 1940) the lowest of record. Deaths were recorded at the rate of 0.23 per hundred thousand of population. For the ninety-three cities the number of deaths in 1942 is ninety-five (141 in 1941). The rate has decreased from 0.50 in 1940 to 0.37 in 1941 and to 0.25 in 1942 (a 50 per cent reduction in two years). Of the ninety-five deaths in the ninety-three cities, thirty-two deaths (one third) were among nonresidents. The health officers report no special outbreaks of typhoid. Improvement has been general throughout the country but especially in the West South Central cities, where the highest rates have been reported during the past many years. War travel does not appear to have contributed to the typhoid problem in our large cities.

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SATURDAY, AUGUST 21, 1943

PROBLEMS OF INFECTIOUS JAUNDICE

A full understanding of the disease or diseases called infectious or epidemic jaundice or hepatitis has not been reached, as the confusion of the nomenclature bears witness. Whether "catarrhal jaundice" in the old sense of jaundice ascribed by Virchow in 1864 and others before him¹ to closure of the common duct in the course of a duodenal "catarrh" occurs as a distinct disease is still questionable. Does the term possibly cover two morbid conditions, one due to biliary obstruction and the other to hepatic changes without obstruction? The present general view is indicated by the increasing use, particularly by European writers, of the term "infective or epidemic hepatitis." The nature of the hepatitis and of other changes has not been exhaustively studied, the mechanism of the jaundice has not yet been explained, and the cause or causes are not known, significant progress is being made, however, in the study of these problems.

By aspiration biopsy of the liver in 26 cases of sporadic jaundice of the catarrhal type Roholm and Iversen² confirmed previous reports of diffuse changes in the liver in such cases. A cannula was inserted in the posterior axillary line of the ninth right interspace through which were aspirated, by means of a record syringe, columns of liver tissue 1 to 2 cm long and 2 mm in diameter. The procedure was employed in various stages of the disease, but mainly one week or so after the appearance of jaundice and three or four weeks later. The liver presented a general disarrangement of its cells with necrobiotic changes, infiltration with mononuclear cells and increase of connective tissue in the portal spaces around the central veins and also in the lobules. Although pronounced in the first week, the changes subsided within a month after the appearance of the jaundice. The interlobular biliary ducts were normal. The jaundice may have been due to

failure of the biliary pigment to reach the ducts on account of the changes in the liver cells. The occurrence of fatal subacute atrophy of the liver in one of the cases suggests again that fundamentally acute yellow atrophy may be of the same nature as the acute diffuse hepatitis. Findlay and Dunlop³ found that in the literature "the association between epidemic catarrhal jaundice and acute necrosis of the liver has been extremely striking." The Danish investigators conclude that the diffuse hepatitis probably is hemogenous. Similar studies should be made in the course of epidemics of infectious jaundice and of jaundice following the injection of human plasma or serum.

Clinically this type of jaundice clearly concerns an infectious disease or diseases naturally communicable, mainly, so it seems, by contact, and produced artificially by the injection of human serum or plasma containing infectious icterogenic agents the exact nature of which is as yet unknown. Research may determine whether what is now termed infectious jaundice or hepatitis is a single disease and also settle the question whether the spontaneous and the artificial forms are identical. On request of the Ministry of Health, the Medical Research Council⁴ in England has undertaken a comprehensive investigation of the incidence, causes and diagnosis of different forms of jaundice. This investigation is in competent hands, and valuable results will no doubt be forthcoming. Significant too is the growing concern about infectious jaundice, as shown by the fact that it has been made recently a reportable disease in Illinois and perhaps also in other states.

There are no specific diagnostic tests for infectious jaundice. In doubtful cases of fever with jaundice, leptospirosis (Weil's disease) or even yellow fever might be suspected. In leptospirosis the serum of the patient usually agglutinates *Leptospira icterohemorrhagica*, and the urine may transmit the infection to guinea pigs. In yellow fever microscopic examination of the liver will yield information of diagnostic value, and in recovered patients not previously inoculated against yellow fever search for protective bodies against the fever in the blood may be of help. In epidemics of infectious jaundice or hepatitis it is believed that the disease may be spread at least to some extent by patients whose symptoms suggest the disease but in whom jaundice does not appear. In such cases examination of the urine and the blood for biliary products may be of value.

Advances in the diagnostic, experimental and other aspects of infectious jaundice await the determination of its cause. In a previous editorial⁵ reference was made to the transmission of the disease to volunteers.

1 Klempeier, Paul, Killian, J. A., and Heyd, C. G. The Pathology of "Icterus Catarrhalis," *Arch. Path.* 2: 631 (Nov) 1926.
2 Roholm, K., and Iversen, P. Changes in the Liver in Acute Epidemic Hepatitis (Catarrhal Jaundice) Based on 38 Aspiration Biopsies, *Acta path. et microbiol. Scand.* 16: 427, 1939.

3 Findlay, G. M. and Dunlop, J. I. A Fatal Case of Acute Necrosis of the Liver Associated with Epidemic Catarrhal Jaundice, *Brit. M. J.* 1: 652 (April 9) 1932.

4 Further Investigation of Hepatitis, editorial *Lancet* 1: 623 (1943).

5 Catarrhal and Human Serum Jaundice editorial *J. A. M. A.* 122: 746 (July 10) 1943.

by nasal washings in salt solution from patients with jaundice following the injection of yellow fever vaccine, and by the oral ingestion of duodenal washings as well as the injection of serum and blood from patients with spontaneous jaundice. Animal experiments with such materials do not seem thus far to have yielded any conclusively positive results. The failure to find any bacterial cause for infectious jaundice strengthens the suspicion current for some time that it may be a virus disease or diseases. A report⁶ has come to the effect that a virus has been cultivated from the duodenal fluid of patients with 'hepatitis epidemica' on the developing hen's egg. Further reports on work along this and other lines will be awaited with special interest.

HOUSING AND HEALTH

The exact effects of substandard housing on the health of the inhabitants are difficult to estimate, generally it is accepted that illness may be directly fostered by bad housing conditions. The concept of bad housing includes overcrowding, overcrowding alone facilitates the spread of certain infectious diseases particularly tuberculosis, other contagious diseases of the respiratory system, and such diseases as diphtheria, scarlet fever and meningitis. Insanitary dwellings are usually overrun with rats, which also spread some diseases such as typhus. Insanitary conditions for disposal of excreta and improper central water supply food and milk are more frequent in both urban and rural substandard housing areas. Typhoid and the dysenteries flourish in these regions. In some places mosquito breeding pools and unscreened dwellings are conducive to excessive malaria among the residents. The venereal diseases also are excessive in substandard and overcrowded housing regions. Diseases due to deficient vitamins or food and lack of sunshine are similarly frequent out of all proportion in areas where housing is deficient. The effect on the mental and emotional health of these residents, although more difficult to determine, must be considerable.

Improvement in housing is usually opposed by those who fear an adverse financial effect by removal of rental income and those who hesitate because of the cost. The medical profession is deeply interested in this as in all other factors which influence the health of the people. The elimination of bad housing along lines of sound practice together with the institution of suitable safeguards against the mere transfer of people from one area of bad housing to another is a program which the medical profession can urge as a contribution to the health of the community.

Such programs may be expected to improve the health records and general well being of the communities in which these steps can be taken. Good housing is not

however, a panacea for disease. Solution of the problem of substandard housing for example, could not be expected to eradicate disease, it could not be expected to eliminate ignorance or poverty. It would not solve the problem of the supply and demand for medical care among the poor, it would not insure high standards of medical practice, nor would it furnish any guaranty that those removed from the slums—whether urban or rural—would become at once self-respecting, cleanly, hard working or economically successful citizens.

One of the most pressing health problems facing this country immediately after the end of the war will be the elimination of substandard housing conditions and the building of new facilities. The programs adopted to accomplish this end should be in process of planning now. In considering a housing program one must take into account its place in the general economic situation. If the cost of housing forces deficient nutrition, the housing may well be postponed. If transportation from a new housing area increases loss of time or absenteeism in work, it may not be a desirable benefit. If a housing project leads to racial warfare the result is not wholly a social gain. These considerations indicate again how many factors are involved in every move toward improved security and the necessity for taking every possibility into account in making final decisions.

BIOLOGIC PECULIARITIES OF INTRACRANIAL NEOPLASMS

Most intracranial tumors are characterized by several interesting biologic differences from tumors elsewhere in the body. Regardless of their rate of growth, degree of aggressiveness ability to infiltrate and other characteristics usually associated with cancers, they do not metastasize to distant parts of the body. Cancers which arise elsewhere can metastasize freely into the central nervous system indicating that the incompatibility of protoplasms is not absolute. When intracranial tumors metastasize they do so by implantation.

Using medulloblastomas as an example, Abbott and Kernohan¹ recently considered some additional special problems in the behavior of these tumors. They accept the statements that tumor cells are often free in the cerebrospinal fluid and that they spread by circulation of the fluid and by gravity. Such free cells from medulloblastoma, they point out, frequently become implanted, whereas in other tumors which are equally cellular they usually fail to grow. Thus this system appears to be unequally susceptible to the growth of neoplastic cells arising from the same system. Perhaps this problem is related to the general biologic problem of selective susceptibility and resistance of certain tissues to tumor growth such as is illustrated by the

1 Abbott, Kenneth H. and Kernohan, James W. Metastases Concerning the Problems of Spinal Metastases and Meningeal Metastases—A Review of Six Cases and Discussion of the Problems Involved. *Bull. Los Angeles Neurol. Soc.* 5:1 (March) 1943.

6 Siede and Luz. *Klin. Wchnschr.*, Jan 23, 1943; quoted in *Bull. H&S* 15:361 (May) 1943.

susceptibility of the spleen to the growth of malignant melanoma cells and its resistance to most other neoplastic cells

The origin of medulloblastoma is believed to be from persistent fetal cells. Most of these tumors are found in childhood, but the time of beginning of their growth remains uncertain because the duration of the clinical course after the onset of symptoms shows wide variation. The implantation metastases may grow to large size and yet produce few symptoms. The authors consider the possibility that the multiple growths do not represent metastases but instead tumors of independent origin. As an explanation for the differences in behavior they suggest that the neoplasms now classified as medulloblastoma might really be several different kinds of tumors.

To the old unsolved problem of the failure to form distant metastases are added those of varying ability to metastasize locally by implantation, of multiple tumors versus metastases, of causes for the differences in rate of growth, and of the failure of many tumors to produce symptoms. Some of these problems may be solved by careful studies of the natural history of the tumors. For others fundamental chemical studies may be necessary.

Current Comment

SEMINAL FIBRINOLYSIS

Discovery of a proteolytic enzyme in human semen practically identical with the fibrinolysin secreted by virulent strains of hemolytic streptococci has been reported by Huggins¹ of the Department of Surgery, University of Chicago. Human, guinea pig and canine semens are delivered in a liquid state, after which human and guinea pig semens coagulate to form an elastic solid, while canine semen remains fluid. Coagulated guinea pig semen remains in a solid state in the vagina for several days. Solidified human semen is spontaneously liquefied in a few minutes. Seminal coagulation is believed to be due to fibrinogen and thromboplastin² derived from a special region of the prostate³. Liquefaction of the resulting coagulum is apparently due to the combined action of two enzymes, a fibrinolysin and a "fibrinogenase." "Fibrinogenase" is dominant in canine semen, thus preventing coagulation, while fibrinolysin is dominant in human semen, lysis taking place only after the formation of the seminal clot. This fibrinolysin is present in full titer in normal human prostatic secretion but is absent from hydrocele and spermatocele fluids and from all other human body fluids thus far tested. Many points of similarity occur between the human prostatic fibrinolysin and the streptofibrinolysin of Tillett and Garner⁴. Both liquefy normal human

blood or plasma clot but are inactive against rabbit clots. Under certain pathologic conditions human blood becomes immune to streptolysin, presumably because of the presence of a specific antistreptococcus antibody. The same antibody neutralizes human seminal fibrinolysin. A theory is not as yet suggested as to the purposeful function of the newly discovered fibrin liquefying prostatic factor, which may well prove to be of practical clinical interest.

COURSE IN HEALTH EDUCATION

On page 1194 in this issue of THE JOURNAL appears an announcement of the lecture-observation-demonstration course in the health education and related work of the American Medical Association recently given to twenty-nine graduate students in health education studying under fellowships granted by the W. K. Kellogg Foundation and supervised by the United States Public Health Service. The visit of these students to the American Medical Association was arranged under authorization by the Board of Trustees¹ permitting the Bureau of Health Education to arrange such opportunities for qualified students. At the end of the week's work, officers of the United States Public Health Service who accompanied the group and members of the group expressed amazement at the scope and character of the work of the several departments of the American Medical Association, of which they had previously had only the vaguest idea. It was the consensus of the group and of the headquarters staff who participated in the demonstrations that the benefits of such a visit are mutual. The students learn much about the medical profession, and the medical profession in turn will benefit by better understanding and cooperation on the part of these students when they make their contacts with physicians in their life work as health educators attached to local (city and county) health departments.

DRUGS AND ESSENTIAL HYPERTENSION

THE JOURNAL¹ recently commented on the extreme fluctuations of the blood pressure which may occur without drug intervention. J. S. Kapernick² has reported a study of several drugs which permitted him to conclude that these drugs, "when administered continuously in optimal dosage for periods of four weeks, do not possess any significant hypotensive effect on the blood pressure of hypertensive patients." The agents used in the study were those which are in current use and which are claimed to be of value in the management of essential hypertension. The study was thorough and the results are of practical clinical value. The value is emphasized in a discussion of the presentation by E. A. Hines, who stated in part: "In a review of the many articles in the medical literature concerned with the treatment of hypertension it will be observed that

1 Abstract of Minutes of Meetings of Board of Trustees Held Feb. 18-20, 1942, J. A. M. A. 118:906 (March 14) 1942.
2 Fluctuations in Hypertension. Current Comment J. A. M. A. 121:519 (Feb. 13) 1943.
3 Kapernick J. S. The Blood Pressure in Essential Hypertension. Effect of Several Reputedly Hypotensive Drugs. Proc. Staff Meet. Clin. 18:187 (June 16) 1941.

1 Huggins, Charles, and Neal, William. J. Exper. Med. 76:527 (Dec.) 1942.
2 Goldblatt, M. W. Biochem. J. 29:1346 (June) 1935.
3 Walker, G. Bull. Johns Hopkins Hosp. 21:182, 1910.
4 Tillett, W. S., and Garner, R. L. J. Exper. Med. 58:485 (Oct.) 1933.

in general the results obtained are in inverse proportion to the care with which the study was carried out, in other words, the more adequately controlled the study, the less likely are the results to have been favorable. It is not probable that the false conclusions which were drawn from these studies were the result of wilful misrepresentation or misinterpretation or even of wishful thinking. What then accounts for such a state of affairs? Essentially the confusion is due to attempts to devise a cure without adequately studying the fundamental nature of the disease. More specifically, the false conclusions are due to two things which Dr. Kapernek has largely avoided in this study: (1) the tendency to consider symptomatic relief as the chief criterion or the effectiveness of a drug in the treatment of hypertension and (2) the failure to recognize the importance of the inherent variability of the blood pressure in estimating the effects of various drugs on the blood pressure. This is not to say that symptomatic relief is not desirable in treating hypertensive disease, but it has become apparent that the symptoms associated with hypertension are seldom directly related to the actual height of the blood pressure nor is symptomatic relief necessarily related to survival.

COLLATERAL IMMUNITY IN TUBERCULOSIS

Experimental evidence in support of the belief that an active tuberculous nodule is associated with an increased resistance to numerous other infectious diseases has been recently reported by Ascoli¹ of Middlesex Veterinary School, Waltham, Mass. Twelve years ago it was demonstrated by Bareggi² and other Italian investigators that calves previously vaccinated subcutaneously (not intravenously) with BCG recovered from *Pasteurella vituliseptica* infections which proved fatal to nonvaccinated control calves and that guinea pigs with subcutaneous tuberculous nodules are insusceptible to experimental foot and mouth disease³ and to *Brucella abortus* infections⁴. Extirpation of the tuberculous nodules in these guinea pigs was followed by a loss of the nonspecific acquired resistance. Transplantation of the extirpated nodule into normal guinea pigs increased their collateral nonspecific resistance immediately without the delay which occurs following routine methods of vaccination. The role of a local tuberculous nodule to increase nonspecific resistance has been amply confirmed on calves¹. Thus far no acceptable theory has been proposed to account for this collateral panimmunity. It is conceivable that the local tuberculous nodule gives off nonspecific hormones or other growth promoting chemical products, which activate or stimulate nonspecific cytologic defenses in other

parts of the body. According to Brown and Pearce⁶ a similar "anachoretic" panimmunity is caused by a local syphilitic lesion. Ascoli believes that the "anachoretic" phenomenon is also shown by numerous other local proliferative or inflammatory tissues. If so, his "anachoretic" collateral panimmunity would be of wide clinical application.

MARKLE FOUNDATION SUPPORTS STUDY IN TROPICAL MEDICINE

The usual activities of the John and Mary R. Markle Foundation consist of grants in aid of specific research projects in the field of medical sciences. This policy has remained unchanged by the war. The foundation in 1942 was particularly helpful to work in tropical medicine¹. The first grant in this field was an appropriation of \$40,000 to the National Research Council to establish a number of lectureships in tropical medicine in medical schools. The foundation also appropriated \$25,000 to the Association of American Medical Colleges to finance the emergency training of teachers of tropical medicine. Under this arrangement each medical school in the United States and Canada which did not have on its staff at least two men qualified to teach tropical medicine was invited to send a member of its teaching staff for a two months course in tropical medicine at the Army Medical School in Washington and another member of its staff to the Department of Tropical Medicine at Tulane University for a similar course. Aid has also been given to collecting laboratory specimens and slide materials to assist in the teaching of tropical medicine in medical schools. Other grants of the foundation in 1942 covered a wide range of medical subjects including the fields of infections and immunity, ophthalmology, nutrition, chemotherapy, pharmacology, anatomy and physiology, neurology and psychiatry, biochemistry and blood and the cardiovascular system.

THE POLIOMYELITIS SITUATION

The incidence of poliomyelitis in some parts of the United States has reached almost epidemic proportions. Indications are that this will be the worst year for this disease since 1940, when 9,770 cases were recorded. Through August 7 nearly 3,000 cases have been reported, or more than twice as many as appeared during the similar period last year. Elsewhere (p. 1198) appears a tabulation of the latest available figures of reported cases for the areas where this disease is particularly excessive. California, Texas, Oklahoma and Connecticut appear to be the states that are the most seriously affected. Most other parts of the country are relatively unaffected, with no more cases of poliomyelitis than would be expected at this time of year.

¹ Ascoli, Alberto. *J. Immunol.* 45: 141 (Oct.) 1942.
² Bareggi, G. *Biochim. e terap. sper.* 17: 161 (April 30) 1930.
³ Vaghi, L. *Biochim. e terap. sper.* 17: 295 (July 31) 1930.
⁴ Ascoli, Alberto, Bassi, A. and Massironi, G. *Pat. compar. d. tuberc.* 4: No. 2 1938.
⁵ Ascoli, Alberto. *Proc. 3d Internat. Cong. Microbiol.* 1940 p. 122.

⁶ Brown, W. H. and Pearce, Louise. *The Resistance (or Immunity) Developed by the Reaction to Syphilitic Infection*. *Arch. Dermatol. & Syph.* 2: 675 (Dec.) 1923.
¹ The John and Mary R. Markle Foundation. Annual Report 1942. 14 Wall Street, New York.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

THE COMMISSIONING OF INTERNS AND RESIDENTS

The Officer Procurement Service, Washington, D C, issued a memorandum (FT-108) on August 7 to commanding generals of service commands, explaining the action to be taken in procuring physician interns and residents for appointment in the Medical Corps of the Army and requiring immediate action by each district office. The physicians to whom this memorandum applies are (1) interns graduated from medical schools during March-June 1943 who have not yet been commissioned in the Army and Navy and (2) residents who graduated in June 1942 or before who have not yet been commissioned in the Army and Navy. All such interns and residents are eligible for commissioning except those previously physically disqualified by the Surgeon General or otherwise ineligible for commissions under army regulations. Interns and residents qualified by Selective Service as IV-F because of physical disability and female interns and residents are potential candidates.

The source of such candidates for medical commissions are the public and private hospitals with 50 or more beds. Immediate contact with the superintendent of all such hospitals must be made requesting the names of all potential intern and resident candidates and permission to get in touch with them at times convenient to all.

District offices will use every effort to sell potential candidates on their patriotic duty to take steps to qualify for commissions. Deferment from induction will not be available to potential candidates on completion of their current internships and residencies. No such candidate who is commissioned will be called to active duty until the completion of his internship or residency. The Army has no intention to deprive hospitals of the services of necessary physicians, interns and residents until completion of their internships and residencies, it has every intention, the memorandum states, to commission in the Medical Corps all such interns and residents at the earliest possible moment, postponing their call to active duty until the completion of their respective terms of their internships and residencies. A list of the names of all potential candidates in these groups who refuse or willfully neglect to be processed for commission will be maintained.

All potential candidates covered by this memorandum are deemed to be "cleared" by the Procurement and Assignment Service and to have been "determined as available," in accordance with a letter from the Procurement and Assignment Service dated August 7 addressed to all superintendents of hospitals having interns and residents and to corps area and state chairmen. On the same day on which the interns and residents fill out their applications, the hospitals which these physicians are serving should apply to the state chairman of the Procurement and Assignment Service for their deferment until the terms of their internships and residencies have expired. All interns are deferred for the term of one year internship, but if a resident is deemed by the Procurement and Assignment Service as not essential to the hospital he should accept a commission and expect to go on active duty immediately.

THE NAVY WANTS SIX HUNDRED WOMEN DOCTORS

Reserve commissions in the Medical Corps of the Navy are now open to qualified women physicians in the ranks of lieutenant commander, lieutenant and lieutenant (junior grade). The Bureau of Medicine and Surgery has announced an initial request for six hundred women doctors, two hundred of them to be commissioned in each of the available ranks.

Under the terms of Public Law 38, passed by Congress last spring, women doctors are being accepted in the Medical Corps with the same status as men doctors. They will be assigned to duty at various types of shore medical establishments within the continental limits of the United States.

In applying for commissions in the Medical Corps, women doctors must meet the same professional requirements as men and must be approved for military duty by the Procurement and Assignment Service for Physicians in order to prevent undue depletion of medical services in civilian communities. The policy has also been established that women doctors will not be accepted if they are married to Navy men or if they have children under 18 years of age.

The general requirements for women physicians are these: For general medical officers the age limits are 21 to 35, for specialist medical officers the age limits are 27 to 50. Applicants must be graduates of an accredited medical school and have had at least one year's internship in an approved hospital. They must be duly licensed to practice medicine and be a member of a state or local medical society.

An exception to these requirements is made for women who apply for commissions as general medical officers immediately on completion of medical school. In this case the internship, license and membership stipulations may be waived.

In addition, applicants for specialist commissions must have had at least three years' recent practical experience in a particular specialty.

The eight women doctors at present holding commissions as lieutenants (junior grade) with the W-V(S) classification of the Women's Reserve, U S Naval Reserve, are eligible for transfer to the Medical Corps with an MC-V(S) or MC-V(G) classification.

Applications should be submitted to the nearest office of Naval Officer Procurement.

APPOINTMENT OF OFFICERS FROM CIVIL LIFE

The Acting Secretary of War, Robert P. Patterson, on July 13 issued a memorandum to the Secretary of War's Personnel Board, Officer Procurement Service, commanding generals of the Army Ground Forces, the Army Service Forces and the Army Air Forces, and Divisions of War Department General Staff, pointing out that, during the period of very rapid expansion of the Army last year and of the critical shortage of commissioned officers, civilians were appointed in larger numbers to commissioned grades. Now the Army is rapidly approaching

its maximum planned strength and officer shortages, except in certain very critical categories, namely officers of the medical department, service pilots and chaplains, have been largely overcome. The Acting Secretary of War, therefore, directed that hereafter the Secretary of War's Personnel Board closely scrutinize all recommendations for appointment of civilians other than the exceptions noted and withhold approval in all cases in which it is not clearly indicated that the individual concerned possesses outstanding special qualifications of a technical or professional nature urgently required by the army and not obtainable from any other source, also that more effective methods be adopted, under direction of the General Staff to

classify properly and assign personnel now in the service, to the end that requirements for commissioned officers with professional or technical qualifications other than those indicated be obtained through the reassignment of qualified officers or through the selection and appointment of qualified enlisted men, that the Assistant Chief of Staff take action to reduce to the minimum the number of special categories that may be appointed from civil life and that the commanding generals of the three major commands and their subordinates refrain from requesting the appointment of civilians as commissioned officers except in cases in which the need is so urgent and the qualifications of the individual so unusual that no other solution is possible

ARMY

HOSPITALIZATION IN THE FINAL BATTLE IN TUNISIA

Lieut. Gen Omar Bradley, commander of the U S Army Second Corps in the final battle in Tunisia, in his report to Gen. George C Marshall, chief of staff covering operations between April 23 and May 9, made the following comments concerning hospitalization

'The medical plan was drawn up so as to provide quick evacuation. Initial locations placed the evacuation hospitals within sound of artillery fire and almost within sight of some of the enemy's bombing operations. Locating these units well forward, however, in no way affected the efficiency of the doctors and nurses, who displayed an admirable coolness and accomplished results which, under normal hospital conditions, would have been considered excellent. Their forward locations reduced the time interval necessary for a wounded man to receive adequate care.

The ambulance hauls to the base hospital at Bone varied from 85 to 110 miles over rough and tortuous roads. This distance was too great for evacuation of seriously wounded patients, particularly chest and abdominal cases. As a result the evacuation hospital which had initially been set up to take care of patients who would remain in the area until they could return to duty was given the mission of attending to the more seriously wounded.

'When the enemy surrendered in northern Tunisia he was operating a total of five hospitals a total of 600 beds. By May 12 there were 745 enemy patients in our hospitals.

'Blood donors in the hospitals became a problem and additional personnel from depot companies and clearing companies or medical battalions were utilized for this purpose. One hospital unit formed its own blood bank by cross matching these individuals, withdrawing the blood and placing it in refrigerators where it was easily accessible. It was found that this blood could be kept for several days and then given cold."

SITES FOR MORE ARMY HOSPITALS

Brig Gen Joseph B Sweet, commanding general of the Communications Zone is reported to have announced that a site has been selected near Beaumont, Calif., for an army hospital of about 750 beds, which it is expected will be completed in October. According to the Banning Calif. Record of July 22 another army hospital of 1000 beds is to be constructed at the city limits of Banning. An evacuation hospital has already been established on this site to take care of soldiers from the desert area.

PRISONERS OF THE JAPANESE

According to the Pratt Kan, Tribune of May 21 Capt William E Wilson of the U S Army Medical Corps is being held prisoner of the Japanese in the Philippine Islands. Captain Wilson graduated from the University of Colorado School of Medicine in 1928 and entered military service on Dec 12 1940.

Dr Nelson Kauffman formerly of Indianapolis and recently with the thirty-first infantry of the U S Army which was stationed in the Philippines, is reported to be a prisoner of the Japanese in a Yokohama prison camp.

CAPTAIN SANDERSON—MEDAL FOR BRAVERY

According to the La Porte, Ind., Herald-Argus of June 17, Capt Richard J Sanderson, formerly practicing physician in Westville and Wanatah, Ind., has been awarded a medal for bravery beyond the call of duty while serving as a flight surgeon with a bomber squadron in New Guinea. Captain Sanderson was assigned to a bomber squadron at Shreveport, La., and later went to Greenville, N C., and Ann Arbor, Mich., in midsummer 1942 the squadron left San Francisco for Hawaii, Australia and New Guinea. Captain Sanderson's heroic deed was recently described as follows in the Chicago Daily News.

Somewhere in New Guinea. Today the soldier's medal was awarded to Capt Richard J Sanderson of Westville, Ind. The night after Christmas a B-24, taking off from a darkened runway, cracked up and fell burning in the trees, carrying a full load of 500 pound bombs. As the wreckage burned, with explosion imminent, Sanderson crawled forward to try to save Sgt. Chalmers Yielding of Birmingham, La., who had been thrown out. He reached Yielding and began dragging him back as the wreck exploded. Both escaped, but Yielding later succumbed.

Captain Sanderson graduated from the University of Cincinnati College of Medicine in 1936.

TWENTIETH CLASS OF MEDICAL ADMINISTRATIVE CORPS OFFICERS

The twentieth class of Medical Administrative Corps Officers at the Officer Candidate School, Camp Barkeley, Texas, graduated on July 21 as second lieutenants. The graduating class comprising two companies, will report to their new stations after ten day leaves and will assume the duties of supply, personnel, training and evacuation in the Army Medical Department. Brig Gen Roy C Heflebower, commandant of the school, delivered the graduating address and presented the new officers their letters of commission and their diplomas. Col George E Armstrong, assistant commandant directed the ceremonies and Major Miles G Bell, executive officer administered the oath of office.

BURIAL EXPENSES OF MILITARY PERSONNEL

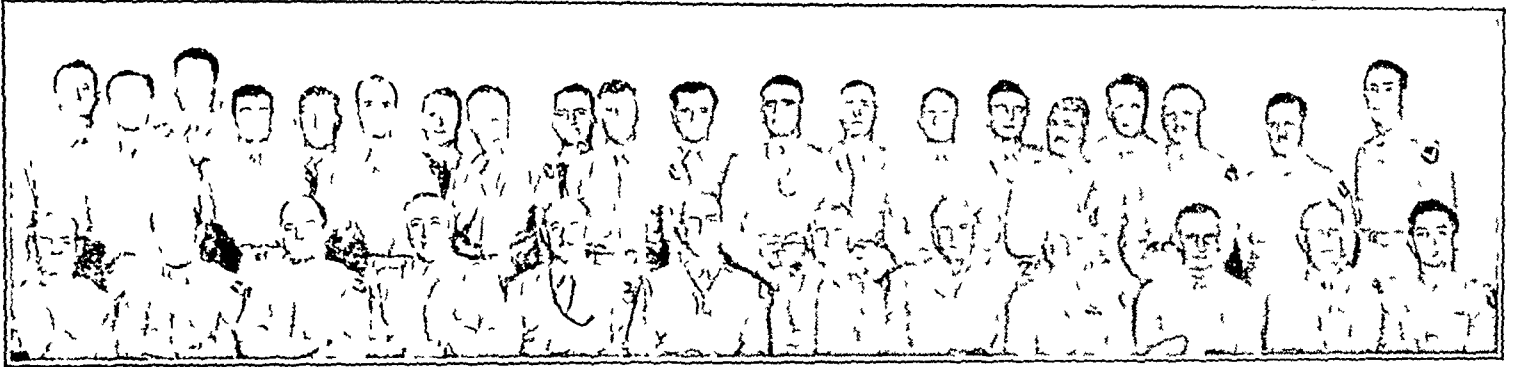
Headquarters of the Sixth Service Command Chicago issued instructions on August 3 to commanding officers of all camps and posts in that service command calling attention to War Department Circular No 149 dated June 30 which prescribes that burial expenses of military personnel of the United Nations who may die in continental United States are payable from the regular army appropriation. The Sixth Service Command directed that in each case in which expenses of disposition of remains of such personnel are paid a certified copy of the invoice to be used in the substantiation of settlement or a certified copy of the purchase order in lieu of the invoice be furnished.

CONFERENCE ON AVIATION MEDICINE

Rapid strides made by aviation medicine, both in research and in practice, were discussed by the senior surgeons of all commands and the four continental air forces at a three day meeting at Army Air Forces headquarters in Washington, D C. The meeting was called by Brig Gen David N W Grant, Air Surgeon.

Those who attended are, front row, left to right, Col Wood S Woolford, chief of operations, Air Surgeon's Office, Col Charles R Glenn, surgeon, Training Command, Col Robert

Fla, Col Mel Pazdral, surgeon, Southeastern Training Command, Lieut Col Howard A Rusk, professional division, Air Surgeon's Office, Col Wilfred F Hall, surgeon, Miami Training Center, Col Clyde L Brothers, surgeon, Third Air Force, Col E L Gann, chief of personnel section, Air Surgeon's Office, Col Harold H Twitchell, surgeon, Second Air Force, Col Walter S Jensen, executive officer, Air Surgeon's Office, Major Hugh Mullan, Air Service Command, Col Robert M Allott, surgeon, Sioux Falls Army Air Base Station Hospital, Col William F De Witt, surgeon, Station Hospital, Col



Those who attended the conference on aviation medicine

K Simpson, surgeon, Gulf Coast Training Center, Col Cadmus J Baker, surgeon, First Air Force, Brig Gen Eugen G Reinartz, commandant, School of Aviation Medicine, Brigadier General Grant, Col Fabian L Pratt, surgeon, Fourth Air Force, Col Ernest F Harrison, surgeon, Materiel Command, Col Irwin B March, surgeon, Eastern Technical Training Command, Col Duran H Summeis, surgeon, Antisubmarine Command, Col Henry C Chennault, chief of profession services, and Col William H Powell Jr, surgeon, Atlantic City, N J.

Those in the back row, left to right, are Col Dan C Ogle, surgeon, Army Air Forces Regional Station, Coral Gables,

Michael G Healy, surgeon, West Coast Flying Training Command, Lieut Col Austin Lowrey Jr, surgeon, Proving Ground Command, Col Otis B Schreuder, surgeon, Air Forces School of Applied Tactics, Col William P Holbrook, chief of professional placement branch, Air Surgeon's Office, Col Gustave E Ledfors, chief of supply, Air Surgeon's Office, Col Ehrling L Bergquits, surgeon, Technical Training Command, Lieut Col Sheldon S Brownton, surgeon, Training Command, Col Paul W Gilliland, surgeon, Air Transport Command, Col Loyd Eugene Griffis, chief of research division, Air Surgeon's Office.

NAVY**THE WAVES DO EXCELLENT WORK**

The Bureau of Medicine and Surgery has received many favorable comments concerning the excellent work being done by the Hospital Corps Waves on duty at naval hospitals throughout the country. Among the 600 selected monthly, more than 10 per cent are qualified technicians in the allied fields of medical work, about 10 per cent are college graduates, and about 25 per cent have one year or more years of college. The Waves being accepted for the Hospital Corps of the Navy are a true cross section of young womanhood in America and represent rural communities, large cities, factories, farms and schools. Their work is vitally important in that it releases male hospital corpsmen for sea or foreign service.

ADDITIONAL FACILITIES FOR CONVALESCENTS

The assistant chief of the Bureau of Medicine and Surgery, Rear Admiral Luther Sheldon Jr (MC), USN, it was announced on August 9, will inspect naval convalescent hospital facilities and equipment in the eighth, eleventh, twelfth and thirteenth naval districts and will examine various sites for their possible use as additional convalescent hospital expansion. Commander Francis I Braceland (MC), USNR, of the neuropsychiatry section, division of physical qualifications and records, who will accompany Admiral Sheldon, will examine the facilities available for navy neurologic cases in the inspection area.

CLASS IN DEEP DIVING

The Bureau of Medicine and Surgery announces that a class in deep diving for medical officers will be assembled at the Diving School, Navy Yard, Washington, D C, on September 13, and that twelve medical officers have been assigned to this instruction.

LIEUTENANT McCAMPBELL CITED

The commander of the South Pacific Area and South Pacific Force has commended Lieut (jg) Bruce R McCampbell, MC, USN, for service set forth in the following citation: "For skilful and effective performance of duty while serving on board a destroyer which participated in the engagement with Japanese forces off Guadalcanal, British Solomon Islands, on Aug 7, 1942. As medical officer of the vessel he rendered skilful aid to members of the crew who were wounded by enemy bombs. When his ship picked up four hundred survivors, more than half of them were in need of medical aid. By untiring efforts he rendered emergency treatment to two hundred and fifty persons in forty-five hours. His zealous conduct was in keeping with the highest traditions of the Naval Service."

Lieutenant McCampbell graduated from the University of Tennessee College of Medicine in 1941, was a student intern for two years at the U S Marine Hospital in Memphis, Tenn, and was an intern at the Naval Hospital, San Diego, Calif. He was promoted to the rank of lieutenant in March 1943.

PRISONERS OF THE JAPANESE

Lieut Mack L Gottlieb, MC, USN, formerly of New York, was captured by the Japanese while serving at the naval hospital in Guam and is now a prisoner of war at Zentsuji War Prison Camp at Shikoku, Japan. Dr Gottlieb graduated from New York University College of Medicine in 1930, is a member of the American College of Physicians and the American Medical Association, and has been granted a certificate by the American Board of Internal Medicine.

According to *Vorthwest Midum*, Lieut Comdr Clyde I Welsh of Seattle, reported missing since July 1942, is declared a prisoner of the Japanese, probably in the Philippines. When action began in the Philippines he was stationed at Cavite Hospital, near Cavite.

MISCELLANEOUS

RECOMMENDED STANDARD FOR HOSPITAL SHEETING

The National Bureau of Standards, Washington, D. C., has circulated to the industry for written acceptance a recommended commercial standard for hospital sheeting for mattress protection (nonrubber), TS-3551, adopted at a meeting of a committee representing the American Hospital Association with a committee of manufacturers. This recommended commercial standard is being circulated to producers, distributors and users of hospital sheeting for written acceptance as a basis for publication by the National Bureau of Standards. This recommended commercial standard as adopted by the committee goes into such general requirements as fabric, material and workmanship, resistance to mineral oil resistance to disinfectants and sterilization, water permeability, resistance to cracking burning rate, thickness, width and length and tearing strength and also briefly outlines the methods of testing for these requirements.

CINCHONA BARK IMPORTS RISE SHARPLY

According to the Office of the Coordinator of Inter-American Affairs, expansion of cinchona bark production in South and Central America is helping replace the loss of quinine supplies in the Far East. Cinchona bark production from Latin America is increasing steadily. In June cinchona imports from the other Americas were more than twice the average of the previous five months.

Development projects include preparation for distributing 3,000,000 cinchona seedlings from the El Porvenir plantation in Guatemala, the largest in the Western Hemisphere. This is part of the program to supplement collection of bark from wild trees. The large June imports of cinchona came from Bolivia, Peru, Ecuador and Colombia and from other scattered sources. The El Porvenir plantation with about 1,000 acres of cinchona, could supply a substantial portion of the entire United States quinine needs for a considerable period if all the trees were cut down. A number of trees are being weeded out under scientific forestry methods. The bark of these trees will be shipped immediately. Meanwhile the 300,000,000 seeds will be put in beds. Seedlings will be set out in Guatemala.

Use is being made of 2,000,000 cinchona seeds brought out of the Philippines by Col. Arthur F. Fischer. Of these 200,000 have been planted and have developed into seedlings at the Beltsville, Md., station or the U. S. Department of Agriculture. It is planned to put the rest into seed beds and then into nurseries in Costa Rica.

In Peru, bark from the wild trees is being collected on a large scale, and work is progressing on a plantation near Tingo Maria, Peru, east of the Andes. The United States is aiding this plantation with financial and technical aid.

MEDICAL SUPPLIES ON U. S. SHIPS

Ships sailing under the control of the War Shipping Administration which do not have ship's doctors aboard henceforth will be stocked with a revised minimum standard supply of drugs and medical supplies prescribed by the United States Public Health Service. It was announced on August 7. The revised edition of 'Ship's Medicine Chest and First Aid at Sea' published by the United States Public Health Service lists ninety-nine standard articles and how to use them. The list includes a variety of recognized medical supplies. Forty-six of the prescribed items, such as phenobarbital, sulfanilamide and sulfathiazole, are listed as drugs. Although War Shipping Administration operated ships almost always travel in convoy, which always affords doctors the administration is now in the midst of a training program which will eventually provide pharmacist's mates aboard all merchant ships. In addition, all officers are required to pass an extensive first aid course. The administration states that the items it listed as standard were considered minimum for the protection of the crew. Agents will be permitted to add additional items which they consider advisable.

PUBLIC HEALTH UNDER HITLER

According to APD, Germany, June 1, a new typhus institute under the direction of Prof. Dr. Hoffmann and equipped with the most modern appliances has been opened in Berlin.

It is reported from the commune of Garany, Zemplen County, according to *Régióli Magyarorszag*, Hungary, on April 21 that plague has broken out among the half-year old pigs which have not yet been inoculated.

APD Germany June 5, reports that during the past year seven new children's hospitals have been established in East Prussia alone besides these, six new nurses' training schools have been opened.

APD of May 29 reports from Minsk that the German civil administration of White Ruthenia announces that a medical university (Hochschule für Medizin) will be founded in Moghilev for the training of medical students there. To begin with, German professors will be at the head of this university. The medical installations for the institute have already arrived from Germany.

According to *Hr.atski Narod* April 29, last year 1,101,037 inspections and 317,436 detailed examinations were carried out in Croatia. Spotted typhus was proved in 10,509 cases, 712 of which proved fatal stomach typhus in 5,099 cases with 453 deaths. Eighteen new health centers, organized to combat this disease, dissected 231,134 persons as well as 134,260 railway carriages. Quarantine institutions were organized in Besanski-Brod, Siskak and Dugoselo, and twenty-two provisional hospitals have been erected for infectious diseases. The cost of these undertakings amounted to 143 million kuna, of which 35 was spent on personnel and 108 on materials.

ADZ June 25 reports that the health of expectant mothers may be endangered if because of the great distance of their home from their work, they have to use means of transport which involve a great deal of vibration. In such cases the reich minister of labor has decreed that an inquiry be made whether the expectant mother should not be directed to a suitable job at a more favorably situated place of work. The inquiry will be carried out by the Labor Office which will arrange a transfer if the circumstances warrant it. In order that the expectant mother's first job may be kept for her she may be given leave or absence for the period of her transfer.

DNB June 28 reports that the reich minister of labor has directed that expectant mothers and women in childbed who have lost their job through the closing down of the establishment or through enemy action are to be granted the increased confinement benefits (confinement allowance, nursing allowance and so on) in accordance with the Law for the Protection of Mothers if they could have claimed confinement benefit had the job not come to an end. The amount of the confinement allowance depends on the amount of the last wages earned by the expectant mother. The order was to come into force on July 1. The increased benefits will be granted retrospectively from the beginning of the period for which the expectant mother can claim benefit.

Brüsseler Zeitung June 5 in its report of Reeder's speech, reproduces the following statement on the general health situation of the Belgian population: England who cuts off Belgium from her food supplies feels obliged to complain about the bad state of health, the increased tuberculosis among Belgian children and adults and that at a time when explosive toys are being dropped from British airplanes on Germany and Italy.

All possible care and precautions are taken against diseases migrating westward such as scarlet fever and diphtheria. On January 1 it was stated that tuberculosis is only 10 per cent higher than it was before the war. This increase is easily attributable to war circumstances.

The *Neues Wiener Tagblatt* June 24 states that according to the Vienna *Rathesamtliche* the number of cases of scarlet fever has recently considerably increased in Vienna as in the rest of Europe. In order to ward off this danger Stadtrat Professor Gundel of the central health office of Vienna has ordered the closing of all Volkshochschulen, Hauptschulen, Mittelschulen and höhere Schulen. All children between the ages of 2 and 18 will be vaccinated against fever and diphtheria.

ORGANIZATION SECTION

OFFICIAL NOTES

LECTURE-OBSERVATION-DEMONSTRATION COURSE IN HEALTH EDUCATION

From August 2 through August 6 twenty-nine graduate students under fellowships from the W K Kellogg Foundation and the supervision of the United States Public Health Service spent a week of observation, study and demonstration of the health education and related work of the American Medical Association at the Association headquarters building in Chicago.

The following features were covered in the program

Monday, August 2 Announcement of week's plans, division into groups, distribution of reference packets, history of the American Medical Association, organization and work of the American Medical Association, tour of the Association building, health education in industry

Tuesday, August 3 Radio and health education, including demonstrations by transcription of radio interviews and dramatizations, tour of NBC and Blue Network studios

Wednesday, August 4 The work of the following departments of the American Medical Association, presented in each instance by its director: Bureau of Investigation, Council on Pharmacy and Chemistry, Press Relations and Medical News, *Hygeia*, the Health Magazine, *Hygeia* reprints and pamphlet publications, health meetings and speakers

Thursday, August 5 Journal publications and library services of the American Medical Association, group demonstrations of the organization and work of the Bureau of Health Education, guided tour of Chicago Museum of Science and Industry

Friday, August 6 Traveling exhibits for the public, scientific exhibits, motion pictures, answering health questions by correspondence, summary and conferences

Each student was furnished with an extensive collection of reference materials and each was given opportunity for personal consultation with the head of that Association department whose work most interested the student

MEDICAL ECONOMIC ABSTRACTS

THE HEALTH PROGRAM OF THE U S BUREAU OF CENSUS

The United States Bureau of Census is located in a Maryland suburb 6 miles from Capitol Hill, Washington, D C. Owing to the fact that the census is collected only every ten years, there is a great fluctuation in employment. During the census period there may be as high as 10,000 employees, but at present only 700 are classified as permanent. Eighty per cent are females and about 65 per cent white persons.

On Sept 1, 1942 Dr Leon Schwartz of the United States Public Health Service was assigned to the Bureau of Census to organize and conduct a health program. The program involves accurate absenteeism records, checked not only by the medical staff but by home visiting of all ill employees, for the preventive side the medical officer is readily available for medical advice, a program on medical education is conducted, necessary inoculations are given and sanitation of all work places is to be maintained at a high standard.

A laboratory and technical service will provide a minimum diagnostic service, the results of which will be made available for the use of the employees' private physician. Disability occurring during the work day will usually be treated within the emergency room with opportunities for rest available. Disabilities outside the building are generally referred for treatment to an outside physician. Because of the isolated location of the building it is probable that some therapy will be given at the place of employment. Office hours will be for consultation from 9 a m to 5 30 p m daily except Sundays.

CARE OF MEDICALLY INDIGENT IN NEW YORK CITY

A report of the Committee on Medical Economics of the Medical Society of the County of New York, adopted by the Committee Minora, offers a plan for the care of the medically indigent containing some new features.¹ A nonprofit agency is to be set up with the membership of the board of directors divided equally among city officials, physicians of the five county medical societies of Greater New York and prominent citizens acceptable to the first two classes represented. Physicians are to receive \$2 per house visit and \$1 per office visit. A central municipal registration bureau is to be established and the city districted with a medical panel for each district to which all licensed doctors of medicine are eligible. Arrangements are made for a specialist's care. Diagnostic tests are to be provided in clinics without charge.

Medical indigence is defined to include single persons who have an annual income of \$1,000 or less, \$1,450 for man and wife and \$250 for each dependent, not to exceed \$1,950 per family.

The chief executive is to be a paid physician.

Panel calls except for emergency are to be received between 8 a m and 8 p m. Patients treated after those hours will be charged an additional fee.

¹ Recommendations for the Care of the Medically Indigent. *Surgeon* 98:56 (July 16) 1943.

WOMAN'S AUXILIARY

California

For some time women of the Los Angeles County Medical Auxiliary have been coming together to do Red Cross work. Now they have their own Red Cross unit. Another project of this auxiliary was the furnishing of four day rooms at Camp Santa Anita. Dr William R Molony Sr, president of the California Medical Association, and Mr Manuel Aguilar were guests of honor at the January meeting.

The San Benito County auxiliary, with a membership of only 6, sponsored a dancing party in San Juan which netted them \$495.60. This money was used to furnish a room in the

Hazel Hawkins Hospital, Hollister, to be used by the Red Cross.

Oklahoma

The Oklahoma County medical auxiliary met in the Ventron Room of the Y W C A in Oklahoma City and sewed on layettes, which were placed at the disposal of the city hospitals. The special project of the auxiliary this year is the making of troop trains and serving the boys gum, candy and cigarettes. Of 32 members interviewed, it was found that they have averaged more than one hundred hours each in war service. Mrs R O Early tops the list with eight hundred hours.

Medical News

(THIS UNIT WILL CO-OP. A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITY NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Licenses Revoked—The California State Board of Medical Examiners at its meeting in San Francisco, June 28 July 1, revoked the licenses to practice medicine of Drs. Lillie L. Koerber and William E. Glaeser both of San Francisco, for allegedly performing illegal abortions.

Nasopharyngeal Cultures Discontinued — Nasopharyngeal cultures as a routine procedure before the discharge of a meningococcal meningitis patient have been abandoned at the San Francisco Hospital following a study in which it was observed that of 88 nasopharyngeal cultures on 44 patients since January 1 no positive cultures had been reported to June 7. An announcement stated that, as nearly all the patients have been given sulfonamide therapy, the question arises that perhaps the use of sulfonamides precludes the possibility of a convalescent carrier state.

Professor Ogden Goes to Texas—Dr Eric Ogden, associate professor of physiology at the University of California Medical School, Berkeley, has been appointed professor of physiology at the University of Texas Medical Branch Galveston and clinical physiologist at the John Sealy Hospital. A native of England, Dr Ogden, who is a member of the Royal College of Surgeons and a licentiate of the Royal College of Physicians, graduated at the University College Medical School, London, where he was Sharpey Scholar and later a demonstrator in physiology. He joined the California faculty as instructor in physiology in 1929.

Dinner in Honor of Dr Rosencrantz—Friends and associates of Dr Esther Rosencrantz, associate professor of medicine, University of California Medical School San Francisco gave a dinner at the Palace Hotel, San Francisco July 9 to mark her retirement from the university where she had been a member of the staff since 1913 Dr Rosencrantz was also lecturer in medical history and bibliography in the medical school A collector of the works of Sir William Osler, whose pupil she was at Johns Hopkins University School of Medicine Baltimore, Dr Rosencrantz was presented at the dinner with six rare Osler items She has given her entire collection to the medical school

DISTRICT OF COLUMBIA

Dr Nichols Receives Certificate of Award—The annual certificate of award for meritorious service to the Medical Society of the District of Columbia was recently presented to Dr John Benjamin Nichols who for more than forty years has rendered noteworthy service to the society. In 1912 he served as president.

FLORIDA

FLORIDA

Personal—Dr Turner E Cato has been appointed director of the Dade County Health Unit, Miami following the recent resignation of Dr Thomas H D Griffiths. Dr Frank L Quillman is in charge of the venereal disease division and Dr Maryland E B Byrne is director of maternal and child health of the division.—Dr Harrison A Walker, Miami Beach, was recently named regional medical officer for the Office of Civilian Defense, Fourth Civilian Defense Region, Atlanta, Ga, succeeding Dr Burt A Dyar.

MASSACHUSETTS

Harvard Again Offers Course in Legal Medicine—A seminar in legal medicine will be held in Harvard Medical School, Boston, October 4-9. Designed for medical examiners and coroners physicians it will be open to any other suitable and graduate of an approved medical school. The course will consist of necropsy demonstrations technic and interpretation of laboratory tests, study of the day by day cases of a medical examiner, round table conferences and the many subjects now included in the field of legal medicine. The enrollment has been limited to fifteen and the fee is \$25. Applications should be made on or before October 1 to Harvard Medical School. Courses for Graduates, 25 Shattuck Street Boston. The Massachusetts Medico-Legal Society in conjunction with the department of legal medicine of Harvard Medical School will

hold an all day conference at the Mallory Institute of Pathology, Boston City Hospital, October 6. The conference will be open to any registered physician, lawyer, police official, criminal investigator, senior medical student or other person whose duties are associated with medicolegal topics. It will include lectures, demonstrations and informal discussions concerning many subjects in legal medicine, particularly stressing results of some more recent methods. No limit has been made for the number of conference attendants, there is no fee and advance application is not essential, although it would be helpful. Address Dr William H. Watters, Department of Legal Medicine, Harvard Medical School.

MICHIGAN

Honorarium for the Biddle Orator—A physician who wishes to remain anonymous has set up an honorarium in the Michigan State Medical Society to be awarded each year to the person who delivers the annual Biddle Oration. Dr. Edward A. Schumann, Philadelphia, the 1943 lecturer, will deliver the oration at the annual session of the state medical society in September.

Dr Ralph Smith Joins Louisiana Faculty—Dr Ralph G Smith, associate professor of pharmacology, University of Michigan Medical School Ann Arbor has been appointed professor of pharmacology and head of the department at Tulane University of Louisiana School of Medicine New Orleans. He succeeds Dr Erwin Nelson who recently resigned to become research director of the Burroughs Wellcome & Company (United States) experimental research laboratories at Tuckahoe, N. Y. (THE JOURNAL July 31 p 958). Dr Smith graduated at the University of Toronto Faculty of Medicine in 1925.

Rejectees Examined for Tuberculosis—Physicians qualified to interpret chest x-ray films have been named in each of fourteen districts into which the state has been divided to study chest films of rejected candidates or the armed services. The bureau of tuberculosis control at the state health department is furnished reports of local examining boards and supervises follow-up activities which secure treatment for rejectees when its need is indicated. A release from the state department of health indicates that occasionally these further studies result in reexamination and induction of men previously rejected. More often it was stated, selectees who are turned down for induction by medical examining boards because chest films show evidence of tuberculosis are brought to the attention of health officers in their home districts who arrange for treatment.

MINNESOTA

Kenny Institute Established—The mayor of Minneapolis Marvin L. Kline announced to the press on August 5 that the Elizabeth Kenny Institute Inc. had been created with a board of directors of ten members. The institute has been operating in Minneapolis with the assistance of the city board of public welfare. The institute is housed in a building once known as the Lymanhurst Health Center and more recently as the Public Health Center (THE JOURNAL, Dec. 5 1942 p 1148)

Annual Medical Meetings—The annual meeting of the Northern Minnesota Medical Association will be held at St. Mary's Hospital in Duluth August 28. Among the speakers will be Drs John S Lundy Rochester, on 'Modifications in Methods of Intravenous Anesthesia' Walter E Hatch Duluth 'Status of Retrograde and Intravenous Pyelography', Alfred W Adson Rochester, 'Current Economic Problems and Lieut. Col Robert B Radl M. R. C. St. Paul 'Medical Problems of Selective Service and the Army'. At the annual session of the Southern Minnesota Medical Association in the Austin Central High School Austin, August 23 the speakers will include Drs Karl H Puetze Cannon Falls on 'Intrapleural Pneumolysis' Dewey E Morehead Owatonna 'Dührssen's Incisions' and Nelson W Barker Rochester, 'Use of Anticoagulant Drugs Heparin and Dicumarol in Medicine and Surgery'. There will also be a round table discussion on weakness.

NEW YORK

Orchestra Founded by Physician.—For thirty nine years members of an orchestra started by Dr Leonard G Stanley Albany have been meeting every Thursday night except during June July and August The orchestra has never given a public performance At one time the orchestra included with Dr Stanley three physicians one of whom was the late Dr Howard E Lomax of the Albany Medical College Dr John H Gutmman Albany retired because of ill health Dr Stanley was 73 years of age is the conductor of the group

Hospital News—Construction started, June 15, on a new \$40,000 addition to the Margaretville Hospital, Margaretville. The addition will increase the bed capacity from twelve to twenty-five single rooms and will also include two 6 bed wards, two new nurseries, a new operating room suite and a new delivery suite as well as a modernized laboratory and diagnostic facilities. The addition will bring to the top bed capacity to 62 beds in case of emergency with a normal quota of 37. Funds for the new addition are being raised through popular subscription and it is expected that the construction will be completed about December 1. Dr Gilbert M. Palen has been appointed chief of the medical and surgical staffs and Dr Gilbert J. Palen superintendent.—The Sister Elizabeth Memorial, first maternity hospital in Bay Ridge, was dedicated on July 11, the hospital is a division of the Norwegian Lutheran Deaconesses Home and Hospital, Brooklyn, and was named in honor of the first head deaconess of the hospital, the late Sister Elizabeth. It has 40 beds and eight nurseries and was equipped at a cost of about \$110,000.

New York City

Nutrition Center Opened—A food and nutrition center, to be the headquarters of the New York City Food and Nutrition Program, was formally opened on July 28 at 45 Lafayette Street, Manhattan. The center primarily will be an information bureau where persons may receive free nutrition advice keyed to the latest wartime market conditions. It will also serve as a center where the contributions of the participating agencies can be made available to the public. Dr Ernest L. Stebbins, city health commissioner, presided at the opening and speakers included Mayor Fiorello H. LaGuardia and Grace MacLeod, Ph.D., professor of nutrition at Teachers College.

Grant to Aid Neuropsychiatric Rejectees—The State Charities Aid Association has received a grant of \$19,000 from the Commonwealth Fund to enable its city mental hygiene commission to prepare a plan for aiding men rejected or discharged by the armed forces because of neuropsychiatric conditions. The money became available on July 1. In a statement to the press, as reported in the *New York Times*, July 10, Homer Folks, secretary of the State Charities Aid Association, suggested that the problem of providing psychiatric and other needed help for rejected and discharged men was of too great magnitude for any voluntary organization or organizations to solve. At the same time the State Charities Aid Association "might perform a very useful service in defining much more clearly the extent and character of the need of these two groups of men, determining what sorts of help are needed, how such help could be provided by some public authority, and what the cost would be."

NORTH CAROLINA

Special Society Election—Dr Romulus L. Carlton, Winston-Salem, was elected president of the North Carolina Tuberculosis Association at its meeting in Raleigh recently. According to the state medical journal, other officers include Dr David T. Smith, Durham, vice president, Dr Joseph J. Combs, Raleigh, treasurer, Mrs Marie B. Noell, Raleigh, secretary, and Frank W. Webster, Raleigh, executive secretary.

Personal—Sterling Brackett, Ph.D., assistant professor of public health in the School of Public Health of the University of North Carolina, Chapel Hill, has been appointed malariologist in the Stamford Research Laboratories of the American Cyanamid Company, Stamford, Conn.—Dr Charles W. Banner, Greensboro, was honored recently when a large portrait of him was presented to the L. Richardson Memorial Hospital, Greensboro. Dr Banner is chairman of the board of trustees of the hospital.

OHIO

Opposition to Medical Program for Families of Service Men—At a meeting, July 11, the council of the Ohio State Medical Association adopted a statement of policy, recommending methods of assisting needy wives and infants of enlisted men in the armed forces to obtain financial assistance for medical and nursing services and hospitalization, if the need for such financial assistance arises, and opposing a plan proposed by the U. S. Children's Bureau for the establishment of a federally financed and supervised medical program in Ohio. Before the use of public funds or the maintenance of a government controlled medical program to furnish this type of service is made necessary, the association recommends cooperation with the army emergency relief and similar agencies in other services which already have funds available for immediate need. In offering its recommendations the Ohio State Medical Association urges its members to see "that all persons regardless of financial status shall be provided with an opportunity to utilize the advantages of modern scientific medicine" at this time.

PENNSYLVANIA

Protest Appointment of Layman in Health Job—Physicians have been protesting to their local societies against the appointment by Governor Martin of Carl C. Tinstman, Forty Fort, as deputy secretary of health. The Dauphin County and Perry County medical societies have adopted resolutions protesting to the state medical society the selection of a layman for this position, which has been filled by a "medical man" since the creation of the state health department in 1905.

Philadelphia

Osler Medal Goes to Pennsylvania Student—The American Association of the History of Medicine has awarded the William Osler Medal to Dr George E. Murphy, Kansas City, Kan., 1943 graduate of the University of Pennsylvania School of Medicine, in recognition of his essay "The Evolution of Our Knowledge of Rheumatic Fever." The essay is to be published in the *Bulletin of the History of Medicine*. The Osler Medal was established in 1941 to be awarded for the best student essay submitted to the association (*THE JOURNAL*, Oct 25, 1941, p. 1482).

Dean Sturmer Retires—Julius W. Sturmer, Ph.D., has retired as dean at the Philadelphia College of Pharmacy and Science after serving in this capacity since 1916. After Dr Sturmer graduated at Purdue in 1891 he served for a number of years as a member of the faculty. In 1912 he became professor of pharmacy and dean of pharmacy at the Medico-Chirurgical College of Philadelphia. In 1916, after the merger of this college with the University of Pennsylvania and following an agreement with the Philadelphia College of Pharmacy involving the transfer of pharmacy students of the Medico-Chirurgical College to the Philadelphia College of Pharmacy, Dr Sturmer became professor of pharmaceutical chemistry and a dean in the latter institution. With the establishment of the curriculum in chemistry, bacteriology and biology in 1921 the college changed its title to the Philadelphia College of Pharmacy and Science and Dr Sturmer became its dean of science.

RHODE ISLAND

Medical News to Merge with State Journal—The *Providence Medical News* suspended publication with its July issue to merge with the *Rhode Island Medical Journal*. The Providence Medical Association published its first journal in January 1900 as a quarterly, relinquishing its ownership in 1917 in order that the journal might become a monthly publication under the auspices of the state medical society. In May 1939 the association created the *Providence Medical News*, and it is this publication that is now being combined with the state medical journal.

No Award of Fiske Fund—The *Rhode Island Medical Journal* has announced that the income of the funds making up the Fiske Award is not enough to offer any premium this year or to carry on any of the former activities of the fund. The money was left by Dr Caleb Fiske to encourage original work on the part of the members of the society. Amounting to \$12,000, these funds are invested by court order in such a way that the income, under present conditions, is almost negligible. The trustees are attempting to have the investments changed to bring about a reasonable return, assuring the continuance of the fund's work next year.

State Medical Election—Dr Elihu S. Wing, Providence, is the president-elect of the Rhode Island Medical Society and Dr Michael H. Sullivan, Newport, chosen vice president, was elevated to the presidency, filling the vacancy that occurred with the death of Dr Murray S. Danforth, Providence, three days after his installation as president of the society. Dr James L. Wheaton, Pawtucket, was named vice president. Dr William P. Buffum, Providence, is the secretary, Dr Albert L. Potter, Providence, assistant secretary and Dr Jesse E. Mowry, Providence, treasurer. Mr James E. Farrell is the new executive secretary. Dr Edwin H. Place, professor of clinical pediatrics, Tufts College Medical School, Boston, delivered the annual Charles V. Chapin Oration during the meeting on "Changing Views of the Contagious Diseases." Other speakers on the program included

Dr Anthony V. Migliaccio, Providence, Report of Six Cases of Meckel's Diverticulum
Lieut. Col. Marshall A. Fulton, M.C., U.S., The Problems of an Army General Hospital
Major Clarence E. Bird, M.C., U.S., The McBurney Incision
Dr Alexander T. Martin, New York, Rheumatic Fever in Childhood Its Recognition and Management

TENNESSEE

Dr Christie Succeeds Dr Casparis—Dr Amos Christie, assistant medical director of the American Red Cross, Washington D C, has been appointed professor of pediatrics at Vanderbilt University School of Medicine, Nashville, succeeding the late Dr Horton R Casparis. Newspapers report that Dr Christie will begin his new work on October 1. Prior to his appointment with the Red Cross, Dr Christie had been connected with the University of California Medical School, San Francisco, since Sept 1, 1930 and most recently as associate professor of pediatrics. He had also been a member of the California State Board of Health and once served as specialist in pediatrics with the U S Children's Bureau.

TEXAS

Dr Thompson Made Member Emeritus—At the recent annual meeting of the State Medical Association of Texas, Dr William R Thompson of Fort Worth, was elected a member emeritus of the association. Dr Thompson is the only living member of the original board of trustees of the association having been a member since 1904. He had been secretary of the board of the association from 1905 to 1942.

Memorial Library Funds—Dr Hudson L Taylor, Houston immediate past president of the State Medical Association of Texas, jointly with Mrs Taylor has set up two memorial funds for the support of the Texas Memorial Medical Library Association. One fund commemorates the medical service of Dr Taylor's brother, Dr Martin Junius Taylor now living in Houston, and the other is in memory of Mr and Mrs William Thomas Carter, the parents of Mrs Taylor.

Construction on Cancer Project—The clinic buildings for the M D Anderson Cancer Research Hospital are being erected at 2310 Baldwin Avenue, Houston, where the old Baker Home has been in use for quarters or experimentation for the last three months. The *Texas State Journal of Medicine* reported in July. There will be three buildings: a reception center, an animal house and a biochemistry building, all of which are expected to be available within the next three months.

Lectureship in Ophthalmology to Honor Dr McReynolds—Mrs F W Wozencraft, Washington D C, has presented a fund to establish a lectureship in ophthalmology at the University of Texas Medical Branch, Galveston, in honor of her father, Dr John O McReynolds, who died on July 7, 1942. Dr McReynolds, who entered private practice in Dallas in 1892, was Vice President of the American Medical Association in 1926-1927 and chairman of the Section on Ophthalmology, 1922-1923.

Storm Forces Cancellation of Graduation Exercises—The fifty-third graduation exercises of the University of Texas Medical Branch, Galveston, scheduled for Saturday, July 31, were canceled because of the damage caused by a tropical storm, according to an announcement from Chauncey D Leake, Ph D, dean. Degrees were conferred on August 2 just prior to the beginning of the state board examinations and diplomas were presented August 4 at an informal meeting at which Dr Witten B Russ, San Antonio, spoke on 'The Doctor and the Postwar World.'

UTAH

State Medical Meeting—At the annual session of the Utah State Medical Association at the University of Utah, Salt Lake City, August 27-28, speakers will include:

Dr Emil G Holmstrom, Salt Lake City: Treatment of Carcinoma of the Cervix Uteri.
Dr Adelbert Louis Dippel, Minneapolis: Some Aspects of a State-wide Maternal Mortality Study.
Lieut Col James S Sweeney, Paris, Texas: M C A U S The Peptic Ulcer Syndrome in Patients Without Radiographic Evidence of Ulcer.
Major Rudolph A Kocher, Carmel, Calif: M C A U S Malaria in Soldiers Returned from the Southwest Pacific.
Lieut Col Henry G Hollenberg, Little Rock, M C A U S: Treatment of Wounds: Consideration of General Nutritional Disturbances and New Therapeutic Agents Such as Penicillin.
Dr John Z Brown, Salt Lake City: Report of Delegate to the American Medical Association.
Dr Lynne A Fullerton, Denver: Senior Surgeon U S P H S Some Public Health Problems in Utah.
Lieut Col Harold R Hennessy, Salt Lake City: M R C U S Army: The Industrial Medical Program of the United States Army.
Dr Philip B Price, Baltimore: Hand Disinfection.
Lieut Col John B Flick, Bryn Mawr, Pa: M C A U S Treatment of Burns.
Lieut Col Verne R Mason, Los Angeles: M C A U S and Major William J Mitchell, Los Angeles: M R C U S Army: Therapeutics in Army Hospitals.
Lieut Woodrow W Scher, Manhasset, N Y: M C A U S Aviation Medicine—Problems of High Altitude Flights.
Dr Fuller B Bailey, Salt Lake City: Diarrhea.
Lieut Col Olin B Chamberlain, Charleston, S C: M C A U S The Concept of Psychosomatic Medicine.

WISCONSIN

State Medical Meeting—The one hundred and second annual meeting of the State Medical Society of Wisconsin will be held in Milwaukee, September 13-15, under the presidency of Dr Russell M Kurten, Racine, with sessions in the Milwaukee Auditorium and Hotel Schroeder. The program will include the following out of state speakers:

Dr Frank C Mann, Rochester, Minn: Physiology of the Liver.
Dr Cecil J Watson, Minneapolis: Studies of Liver Disease with Correlation of Clinical Features and Liver Function Tests.
Dr Marion A Blankenhorn, Cincinnati: Differential Diagnosis of Jaundice.
Dr Warren H Cole, Chicago: Surgical Advances from the War.
Rear Admiral Ross T McIntire, surgeon general of the U S Navy: The Navy's Demand on the Scientific Training of the Medical Officer.
Dr George B Eusterman, Rochester: The Relation of Peptic Ulcer to Cancer of the Stomach.
Dr Donald C Baltour, Rochester: When Is Peptic Ulcer a Medical and When Is It a Surgical Problem?
Dr Frederick A Collier, Ann Arbor, Mich: Transfusions and Fluid Balance.
Dr John Romano, Cincinnati: Psychiatric Problems Arising from Military Service.
Dr Claude F Dixon, Rochester: Diagnosis and Treatment of Cancer of the Bowel.
Dr John S Coulter, Chicago: Medical Aspects of Chemical Warfare.
Dr William A O'Brien, Minneapolis: Problems Concerning Graduate Education and Employment of Nurses, Interns and Residents.
Mr J W Holloway, Jr, director, Bureau of Legal Medicine and Legislation, American Medical Association, Chicago: Hospitals in the Selection of Medical Staffs.
Father Alphons M Schwitala, S J, Ph D, St. Louis: Future Joint Problems of Medicine and the Hospitals.
Dr Chauncey C Maher, Chicago: Recognition of Early Myocardial Failure.
Dr Paul S Rhoads, Evanston, Ill: Rheumatic Fever: Diagnosis and Treatment.
Dr Ralph A Reis, Chicago: Sterility.
Dr Sanford R Gifford, Chicago: The Eye in General Diagnosis.
Dr Hart E Van Riper, Washington D C: Better Health for Children: Physicians and the Social Security Program.
Dr Paul H Holinger, Chicago: The Infant Larynx.
Dr Edgar J Huenekeas, Minneapolis: Immunization in Pediatrics Practice.
Dr Leo M Zimmerman, Chicago: Improved Surgical Treatment of Hernias.
Dr James B Brown, St. Louis: Plastic Surgery.
Dr Dean M Lierle, Iowa City, Iowa: Acute Upper Respiratory Infections and Their Control.
Dr John L Emmett, Rochester: Treatment of Urinary Stones.
Dr Charles D Creevy, Minneapolis: Urinary Diagnosis.
Capt William E Eaton (MC), U S Navy: Ulcer Problem in the Armed Forces.

GENERAL

Infantile Paralysis Fund Collections—A total of \$5,527,590.99 was collected in the annual appeal for infantile paralysis funds, exceeding by more than 30 per cent all previous collections. The total was \$1,500,000 higher than any previous year. Expenses were \$147,871.41, or only 2.6 per cent of the collections less than half the cost in any other year in the decade that President Roosevelt's birthday has been dedicated to the fight against poliomyelitis according to the National Foundation for Infantile Paralysis.

Fourth of July Deaths Reduced—Reports assembled by the Associated Press indicated that the traffic deaths throughout the nation over the Fourth of July weekend dropped by more than half as compared to last year while railroad travel reached record proportions according to the New York *Times*. The tally of highway fatalities was 131 as against 320 last year and 500 in 1941, which was before the institution of gasoline rationing. Deaths due to fireworks were reduced to zero. The total of deaths from all causes was listed as 307, 89 of the remainder being drownings and the rest miscellaneous.

Prize for Paper on Glaucoma—The National Society for the Prevention of Blindness announces that a prize of \$250 will be awarded for the most original paper adding to the present knowledge about medical treatment of noncongestive glaucoma. This prize is being offered in addition to one that was previously announced for the most valuable original paper concerning the early diagnosis (THE JOURNAL, Dec 12, 1942, p 1238). Papers may be presented by any practicing ophthalmologist in the Western Hemisphere and may be written in English, French, German, Italian, Spanish and Portuguese but any of those written in the last four languages should be accompanied by an English translation. The award will be made by the society with the guidance of an ophthalmologic committee. Papers should be in the office of the society, 1790 Broadway, New York, by September 1944.

National Research Council Fellowships—Recent fellowships announced by the medical fellowship board of the National Research Council, Washington D C, include the Welch fellowships in internal medicine to Dr Sinclair Howard Armstrong, Jr, Harvard Medical School, Boston, and Dr Joseph F Ross, Robert Dawson Evans Memorial Hospital, Boston. A fellowship in the medical sciences was renewed for Dr Lester

J Talbot at the New York University College of Medicine, and one for orthopedic surgery for Dr Maxwell F Kepl at Tulane University of Louisiana, New Orleans. Fellowships in filtrable viruses were awarded to Edward H Anderson, Ph D, Vanderbilt University, II Chandler Elliott, Ph D (renewal), University of Toronto, Dr I William McLean Jr, Duke University School of Medicine, Dr Alison H Price, University of Michigan (declined appointment), Dr Hugh Tatlock, Yale University School of Medicine, New Haven, Conn, and the Acute Respiratory Diseases Commission Laboratory, Fort Bragg, N C, and Dr Herbert A Wanner, Yale University School of Medicine and Johns Hopkins University.

Distribution of Excessive Poliomyelitis—The following tabulation presents the available figures for areas in which poliomyelitis is known to have reached excessive proportions

	Cases Reported 1943 up to Aug 7	Cases Reported Week Ended Aug 7
1 Alabama	46	6 (July 31)
2 California	952	111
Kern County (week ended July 31)	103	46
Los Angeles County (week ended July 31)	231	28
3 Connecticut	41	24
New Haven County	34	20
4 Kentucky	51	8
5 Oklahoma	292	62
6 Texas	757	62
Dallas County (week ended July 31)	60	10
Harris County (week ended July 31)	81	10
Tarrant County (week ended July 31)	80	12

There is reason to believe that the incidence of poliomyelitis may be considerably above normal in some other areas, notably Kansas, but figures for Kansas were not available.

Other areas under suspicion are

	1943 to July 24	Week Ended July 24
Washington	22	2
	1943 to Aug 16	Aug 1 to Aug 17
Illinois	131	124
Cook County		113

Congress of Physical Therapy—The American Congress of Physical Therapy will hold its twenty-second annual session at the Palmer House, Chicago, September 8-11. At the formal opening the speakers will include Drs Kristian G Hansson, New York, on "Physical Therapy in Wartimes" and Eben J. Carey, Milwaukee, "Physical Therapy in Medical Education." Among the other speakers on the program will be

Capt Sidney H Licht and Capt Vernon S Dick, M C, A U S, Sulfadiazine and Fever Therapy in Resistant Gonorrhea.
Lieut Comdr Kenneth Phillips (MC), U S Naval Reserve, and Ensign Alice B Mundorff (NC), U S Naval Reserve, The Reduction of Man Power Loss from Gonorrheal Urethritis by the Early Application of Chemo Fever Therapy.
Lieut Arthur Price, M C, A U S, Renal Complications in Combined Sulfathiazole Fever Therapy.
William Firth Wells, B Sc, Philadelphia, Radiant Disinfection.
Drs George P Miles, Jens Allen Christensen and Raymond Edwin Seidel, Philadelphia, A Preliminary Report of Results Observed in Eighty Cases of Intractable Bronchial Asthma.
Dr Robert Talbot McElvenny, Chicago, Refrigeration.
Dr Bayard T Horton, Rochester, Minn, Peripheral Vascular Disease.
Dr Hans J A Behrend, New York, Modern Hydrotherapy.
Dr Robert Talbot McElvenny, Chicago, Rehabilitation of Arthro Review of Recent Developments.
Dr Carl E Badgley, Ann Arbor, Mich, Rehabilitation of Arthro Review of Recent Developments.
Dr Edward L Compere, Chicago, Management and Care of Infantile Paralysis Patients.
Dr Midge C L McGuinness, New York, Rehabilitation, Prehabilitation and Placing the Recovered Workman.
Dr Alfred P Solomon, Chicago, Psychiatric Orders for Rehabilitation Physical Therapists.
Dr Edward C Holmblad, Chicago, Rehabilitation of Injured Workers in Small Plants.
Dr Geza de Takats, Chicago, Sudeck's Atrophy—A Chronic Vasodilator Mechanism.
Dr Jessie Wright, Pittsburgh, Mechanics in Relation to Derangement of the Facet Joints in the Spine.
Dr Clarence A Neymann, Chicago, Some Thoughts About Shock Therapy.
Dr John A Aita, Rochester, Electric Shock Therapy, Its Indications and Use.
Dr Edgar V Allen, Charles Sheard, Ph D, and Grace M Roth, Ph D, Rochester, The Interpretation and Clinical Significance of Calorimetric and Skin Temperature Measurements of the Extremities.
Brig Gen Frank T Hines, Washington, D C, Rehabilitation in the Veterans Administration.
Major Ora L Huddleston, M C, A U S, Use of the Convalescent Ward in the Rehabilitation and Disposition of Disabled Soldiers.
Lieut Comdr Jacob L Rudd (MC), U S Naval Reserve, Rehabilitation of War Wounded in a Physical Therapy Department of a Navy Hospital.
Dr Frank H Krusen, Rochester, Physical Rehabilitation and the War.
Lieut Comdr Louis B Newman (MC), U S Naval Reserve, Organization and Management of a Navy Physical Therapy Department.
Dr Warren H Cole, Chicago, The Treatment of Shock, With Special Reference to Heat and Cold.
Dr Harry E Mock, Chicago, Rehabilitation in Head and Back Injuries.

There will also be a symposium on "Rehabilitation of the Child," an instruction seminar, and demonstration. Additional information may be obtained from the executive director, American Congress of Physical Therapy, 30 North Michigan, Chicago.

LATIN AMERICA

The Brazilian Book of Honor—The name of Dr Vital Brasil, at one time inspector of public health in São Paulo and founder of the Vital Brasil Institute of Niteroi, Rio de Janeiro, for the preparation of serum and vaccines and for research work, has been added to the Brazilian "Book of Honor," established recently by Dr Getulio Vargas, president of Brazil, to preserve the names of great Brazilians for posterity.

Latin American Congresses—The seventh Argentine Congress of Medicine will meet in La Plata City, November 14-21. The headquarters of the congress are Calle 50 numero 374 La Plata, Argentina, S A.—The first Inter-American Congress of Radiology will meet in Buenos Aires during the last two weeks of October. Dr Jose F Merlo Gomez, the president of the Sociedad Argentina de Radiologia, and Dr Oscar F Noguera will be the president and general secretary, respectively. Drs Sabina di Rienzo of Cordoba, Luis Opazo and Leonardo Guzman C of Chile, Nelson de Carvalho of Brazil, Pedro A Maissa of Buenos Aires, Gonzalo Esguerra Gomez of Bogota and Oscar Soto of Lima will be official speakers. The headquarters of the congress are as follows: Secretaria General del Primer Congreso Interamericano de Radiologia, calle Alsina, 3317, Buenos Aires, Argentina, South America.

Establish Laboratory in Dominican Republic—Dr Enrique W Lithgow, who has for two years been associated with the pathology department of Mount Sinai Hospital, left New York on August 2 to establish a pathologic laboratory and postgraduate educational program in pathology in the Dominican Republic. Dr Lithgow's study at Mount Sinai has been financed by the Dazian Foundation. Recently Dr Fernando A Batlle, director of the Padre Billini hospital and president of the Cancer Institute in Trujillo City, invited Dr Lithgow to return to his native land to make available there the benefits of current advances in pathology. This invitation was supported by the Dominican government. He will take up research and educational activities at the Padre Billini Hospital and later at the Cancer Institute, which is to open in the near future. The fellowship under which Dr Lithgow is working is one of several granted annually by the Dazian Foundation under the presidency of Dr Emanuel Libman, consulting physician to the hospital, which are awarded to selected younger physicians of Central and South American countries for postgraduate study and research in the United States.

FOREIGN

Distribution of Medical Journals to Chinese Institutions—A case containing six sets of medical journals sent by the American Bureau for Medical Aid to China, recently received in Chungking, was distributed by Surgeon General Loo Chi-teh so that it will serve about eighteen separate institutions. One set went to the Emergency Medical Service Training Schools. Another was sent to Koloshan, where it will be available to the Shanghai Medical School, the National Institute of Health, the Central Hospital and the Nursing School. The set at Kweiyang will serve Hsiang Ya and Kweiyang Medical Schools, the Provincial Health Department and the Training Institute. To Chengtu went one set for the use of National Central Medical School, West China University, the Branch Training School, Provincial Health Department and the editors of the *China Medical Journal*. The Army Medical College at Anshun received a set while the remaining one went to the northwest for the training schools, Epidemic Prevention Bureau, Northwest Hospital and Kinus National Medical College. In this way the medical literature sent by the American Bureau for Medical Aid to China benefits the greatest possible number of people, according to an announcement.

Deaths in Other Countries

Sir Harold Beckwith Whitehouse, president of the British Medical Association, professor of midwifery and diseases of women, University of Birmingham, died in London on July 26, aged 60. According to the *New York Times*, Sir Harold collapsed on the street just after leaving the British Medical Association meeting, at which he had been nominated for the presidency for the second successive year. He died one hour later. In 1933 he was a visitor to the United States as the guest of the American College of Surgeons.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 15 (delayed)

The Army Blood Transfusion Service

The British army has a highly developed blood transfusion service. Its headquarters were established in England six months before the war and its plasma drying plant was erected in 1941. In England the service operates in 850 centers with a staff of 350, of whom more than three fourths are women. The original technical staff was drawn largely from the technical staffs of the Royal College of Surgeons and the Middlesex Hospital. The Army Blood Supply Depot has a panel of over 200,000 donors and collects 3000 pints of blood a week. The blood is issued to all theaters of war either as stabilized fluid plasma or as the dried product which keeps indefinitely. Whole blood of group O is supplied only to units which have a refrigerator. Before issue it is tested to make sure of the grouping and also to exclude syphilis. Blood banks consisting of blood dispatched from the central depot to a peripheral point need close attention to avoid undesirable reactions. Bank blood must never be allowed to warm until just before administration for a high proportion has been found to contain a few non-pathogenic organisms. Though insignificant as long as the blood is kept cool, they multiply rapidly on warming. The ideal temperature for the refrigerator is 4 to 6 C. Too low temperatures tend to cause rapid hemolysis.

The arrangements in the field are described in the Army Medical Department Bulletin. Where lines of communication exist, field transfusion units are supplied from the base. In addition all medical units carry a 'field medical box' containing transfusion fluids ready for immediate use. When lines of communication are interrupted, units which have exhausted their stocks of transfusion fluids and cannot get fresh supplies must collect blood from volunteers. The field transfusion box contains equipment for bleeding donors and for ascertaining their blood groups, but when it is anticipated that medical units will be working in isolation the whole personnel may be grouped in advance, so that any one can serve as a donor without further test. Similarly, certain combatant formations such as commando and air borne troops are grouped so as to minimize delay in finding donors suitable to each patient. When temporary isolation is expected, medical units can carry specially prepared large stocks of prepared fluids and further supplies may be dropped by parachute.

The European Association of Clinical Pathologists

One result of the war is much increased personal contact of our physicians with those of the allied countries who are refugees here. This has resulted in the formation of a new body the European Association of Clinical Pathologists which is to function permanently after the war. At a meeting held in London the following officers were elected: president Dr S. C. Dyke, England; vice president Prof E. J. Bigwood, Belgium; secretary, Dr F. Pick, Czechoslovakia; treasurer Dr B. L. Della Vida, Italy; council, Dr A. Benau, Yugoslavia; Dr D. C. Canne, Netherlands; Dr F. Duran, Spain; Prof F. Silberstein, Austria; Dr G. Ungar, France; and Dr J. Ungar, Czechoslovakia. The annual subscription including the entrance fee, is \$2. Rules were adopted for the association while its members are mainly in this country, and the council was instructed to consider the procedure to be adopted after the liberation of Europe. A resolution was passed to the effect that free interchange of workers in clinical pathology between the nations of Europe would be an important factor both in

the advancement of scientific medicine and in the development of a common European mentality, these being the main objects of the association. An invitation was received from the British Association of Clinical Pathologists inviting members of the European association to participate in its meetings. Membership is open to physicians of all European nationalities engaged in any form of medical laboratory work. Those interested are invited to communicate with the secretary, Dr Pick, Department of Clinical Pathology, General Hospital, Walsall, Staffs, England.

A British Hospital for Stalingrad

The archbishop of Canterbury, Lord Horder, Sir Gowland Hopkins and other well known persons have published an appeal for funds to build a new hospital at Stalingrad as "a permanent expression of the British people's gratitude to the defenders of Stalingrad, who have made such a great contribution to the final victory of the united nations." The Joint Committee for Soviet Aid is appealing for \$375,000 by June 22. The *British Medical Journal* suggests that if every one on the Medical Register should contribute \$4 this aim could be achieved without further contributions. But much more than the sum mentioned will be required to complete a hospital which will be a fitting memorial to the defenders of Stalingrad and at the same time play a large part in supplying the needs of that historic city.

Constantine Lambrinudi, A Great Orthopedic Surgeon

The death at the age of 53 of Constantine Lambrinudi has cut short the career of a leader in orthopedics much esteemed for his personal qualities. The son of a Greek stockbroker settled in London, he was educated at Cambridge and Guy's Hospital. His studies were interrupted by service in a Red Cross unit in the Greco-Bulgar campaign and then as an unqualified doctor in the Greek army. After qualifying in 1914 he joined the army of Venzelos. Toward the end of the first great war he became a medical officer in the British air force. In 1928 he was appointed assistant orthopedic surgeon to Guy's Hospital and in 1934 on the death of Mr. Trethowan, orthopedic surgeon in charge of the department. An original thinker on the lines of function he worked out the cause and correction of deformities. Present day views on the mechanism of the foot are due to his teaching. He is remembered for his operation for drop foot, his treatment of claw toes by arthrodesis, his operation for elevated first metatarsal with hallux rigidus and the use of Kirschner wires for fixing certain fractures. A keen advocate of correct posture, he was the first to show the connection between short hamstrings and adolescent kyphosis. As a teacher of orthopedics he was supreme. His originality and quick insight impressed those who had the good fortune to be his pupils. In a tribute published in the *Guy's Hospital Gazette* he is described as possessed of the power to see things anew with a vision entirely unprejudiced by established beliefs. He always laid stress on function and therefore instituted the employment of a visiting masseuse in hospital practice.

Faculty of Medicine of the University of Poland Within Edinburgh University

The Faculty of Medicine of the University of Poland was established within the University of Edinburgh for the exiled Poles so as to keep together professors, physicians and other medical workers to give them an opportunity for research and teaching and generally to promote the academic spirit so that after the war Poland would have at least one active medical school. All those in Poland were destroyed by the Germans. The project has been successful and a Polish hospital is attached to the school for clinical work. The course of study and the examinations are arranged in accordance with the

requirements of Polish law and at the same time to approximate as much as possible Edinburgh standards. A ceremony has taken place in which representatives of the University of Edinburgh and the Polish Faculty of Medicine attended. The president of the republic of Poland conferred the Order of Polonia Restituta on Sir Thomas Holland, vice chancellor and principal of the University of Edinburgh, Prof Sidney Smith, dean of the Faculty of Medicine, and Prof F A E Crew, who holds the chair of genetics. This was done in recognition of the great service rendered to Poland by the university in giving an invitation to found a technical school within its walls.

AUSTRALIA

(From Our Regular Correspondent)

June 30, 1943

Social Trends in Australian Medical Practice

THE NEW ZEALAND SCHLME

Medical benefits as incorporated in the National Health and Pensions Act of 1938 and the report of the Federal Council of the British Medical Association in Australia have been discussed in previous letters. The third scheme for an Australian Medical Service under consideration is that now operating in New Zealand. The New Zealand Social Security Bill was passed in 1938. It was intended to provide a system of monetary and of medical, hospital and related benefits on a contributory basis. The scheme was financed by a new social security tax, which has been in operation since April 1939. Maternity, hospital, pharmaceutical, radiologic and medical benefits were instituted in this order during the period dated from April 1939 to December 1941. The general practitioner service originally promulgated in March 1941 was based on a capitation system. The medical profession refused to cooperate, and in December 1941 the government was forced to introduce an alternative 'fee for service' scheme.

The benefits now in operation include the following:

(a) **Maternity Benefits** Doctors receive £5-5-0 from a social security fund for each confinement with extra for anaesthetics. Recognized specialists are allowed to charge their usual fee and collect the difference from the patient. All practitioners except those who do not ordinarily practice midwifery are considered to be working under the scheme. The maternity hospitals normally receive £11 11s for each confinement, but some hospitals, by special permission of the government, are allowed to charge more.

(b) **Hospital Benefits** Public hospital services, including accommodation, maintenance and medical attendance, are free to all sections of the community. Public and private hospitals receive 6 shillings a day per occupied bed from the social security fund.

(c) **Pharmaceutical and Roentgenologic Benefits** Drugs and preparations appearing in the British pharmacopeia are free. Roentgenologic services at public hospitals are free, private radiologists charge a stipulated fee, of which the government and the patient each pay half.

(d) **General Practitioner Service** There are two schemes in operation. (1) Doctors may take at a capitation of 15 shillings a head per year up to 4,000 on a panel or (2) they may charge as much as 10/6 per service, of which 7/6 is paid from the social security fund. An extra charge is made for mileage in country districts. Only a very few medical practitioners work under the capitation system.

(e) **Specialist Services** These are free at public hospitals, private patients may claim 7/6 out of the usual specialist fee of £1 1s.

The New Zealand scheme is a socially valuable one in that it has ensured medical attendance for every member of the community. But, by stabilizing the economic aspect of medical

practice for both patient and professional, it has tended to establish medical efficiency generally at the level which existed prior to its introduction. In the latter respect the scheme is static, in that it offers no constructive policy for maintaining or improving the standard of medical practice, and retrogressive, in that it has done little to abolish pre-existing evils of medical organization and administration. Under the scheme no help is given toward the cooperation of doctors in groups for mutual relief and better service. No provision is made for postgraduate training or large scale research operations and there is no comprehensive scheme for including the newer tendencies of modern preventive medicine in the general medical service. The deficiencies of the scheme are well exemplified by a consideration of hospital services. Many public hospitals, especially those in large cities, are out of date, ill equipped and not necessarily staffed by the best medical talent of the district. Owing to the shortage of hospital accommodation the provision of free hospital service is often an illusory one, patients may have to wait months before being admitted. The scheme has led to a greater use of private hospitals and nursing homes, and the position of many small inefficient hospitals has been confirmed. Private hospital fees have risen in consequence.

Up to the present the scheme has shown too many defects to be regarded as an ideal basis for a general medical practice for the community, but it is possible that in time a more progressive and constructive scheme may be evolved out of that at present in operation.

Exemption for Students

In order to ensure a steady flow of trained professional men to meet the requirements of the services and the increased demands of the postwar period, action has been taken by the manpower authorities to exempt certain classes of students from call ups for compulsory military service. The director general of manpower has announced that all full time students accepted by a university in the faculties of medicine, science (including pharmacy), engineering, dentistry, agricultural science and veterinary science are totally reserved. As far as the medical profession is concerned, it is of paramount importance that there should be sufficient numbers of trained personnel to meet the increased demands which the proposed national health services must necessarily place on the profession. There must, however, be a limitation and control of the number of admissions to the reserved faculties to guard against an unwarranted influx of students seeking to avoid military service. A workable plan must be devised for securing the best material and allocating it to the best advantage.

Marriages

THOMAS MICHAEL HUGHES, Columbus, Ohio, to Miss Doris Ramona Abegglen of Tekoa, Wash., in San Diego, Calif., June 15.

WILLIAM EDWARD BALDWIN JR., Dunn, N. C., to Miss Martha Virginia Dixon of Pisgah Forest, July 2.

HENRY B. DIVERTY, Woodbury, N. J., to Miss Jeanette Lee Livingston of Middletown, N. Y., July 9.

ROBERT WILSON KING to Miss Dorothy Williamson Sisk, both of Fayetteville, N. C., July 13.

THOMAS P. WARING JR., Savannah, Ga., to Dr. Ruth Moyer of Baraga, Mich., July 11.

CHARLES M. HARRIS JR. to Miss Margaret Ann Holland, both of Atlanta, Ga., July 3.

JOHN SHEDD SCHWEPPE, Lake Forest, Ill., to Miss Lydia H. Elliott of Winnetka, July 17.

IRWIN M. MARCUS to Miss Phyllis Harriet Pincus, both of Chicago, June 23.

JOHN R. U. CAMIBELI, Gilroy, Calif., to Mrs. Ka, Christ recently.

Deaths

Arthur Thomas McCormack * widely known as secretary of the Kentucky State Board of Health and president of the American Public Health Association in 1937, died in Louisville August 7, aged 70, of coronary sclerosis. His death brought to an end a career of more than forty-five years in public medical service. Dr McCormack was born in Nelson County, Ky., Aug 21, 1872. He was the son of Dr Joseph Nathaniel McCormack, renowned as one of the most important leaders in the reorganization and building of the American Medical Association. Following graduation from Ogden College at Bowling Green, Ky., where he received the B A degree in 1892, he attended the College of Physicians and Surgeons of Columbia University and received his M D degree in 1896. He then returned to Kentucky, opened an office in Bowling Green in 1897 and soon thereafter was named health officer of Warren County. He became assistant state health officer in 1898 and held that position until 1912 when he became state health commissioner.

In 1900 Dr McCormack became surgeon general of the Kentucky National Guard and held that position until 1908. In 1911 he accepted a commission as lieutenant in the Medical Reserve Corps. With the beginning of World War I in 1917 he was appointed major and organized Base Hospital No 59. He was about to proceed overseas with the base hospital when he was ordered to the Panama Canal Zone by General Gorgas succeeding General Gorgas as chief health officer and completing the building of the Ancon Hospital. In this position he held the rank of lieutenant colonel. An interesting feature of that service was his control of an epidemic of cerebrospinal meningitis on the Japanese S S *Amo Maru*. For this he received the special thanks of the mikado. He was a member of the Association of Military Surgeons and secretary and president of the Medical Veterans of the World War.

In all work in the field of public health in America Dr McCormack was prominent. His death concluded more than thirty years as secretary of the Kentucky State Board of Health. He had been president of the American Public Health Association in 1937, special consultant of the U S Public Health Service and organizer and dean of the School of Public Health of Kentucky. He had been president of the Conference of State and Provincial Health Authorities of North America and he was a member of the National Tuberculosis Association, Gorgas Memorial Institute and the National Health Council. His most important recent activity was the presentation of a report on the establishment of full time county health departments, published in *THE JOURNAL*. In his public life Dr McCormack had been president of the Kentucky Conference on Social Work and he was state flood director for the flood which menaced Kentucky in 1937.

In the field of organized medicine Dr McCormack was prominent as secretary of the Kentucky State Medical Association for many years. He founded the *Kentucky Medical Journal* in 1901 and was subsequently director and editor. He was a fellow of the American College of Surgeons and of the American Medical Association. He served in the House of Delegates from 1908 to 1914, 1916-1917, 1919 to 1931 and again from 1937 to 1943 inclusive. During these years he gave of his time and thought on many occasions to the many reference committees to which he was assigned and in which he was especially efficient because of his many years of service. He was president elect of the Southern Medical Association in 1939 and president in 1940. During recent years he had spent much time in Washington acting in an advisory capacity to

several government agencies. For his work in the field of public health and education he was honored with the M A from Bethel College at Russellville, Ky., in 1900, the degree of Dr P H from Detroit College of Medicine and Surgery in 1925, the degree of D Sc from Berea (Ky.) College in 1926, and LL D from Transylvania University in 1930. The literary contributions of Dr McCormack included many editorials and articles for the journal which he edited. He wrote also a book entitled "Course in Physical Education for the Common Schools of Kentucky," published in 1920. His heredity, statesmanship, idealism and devotion to the public good and to public service made Dr McCormack a notable figure in American medicine.

Charles Macfie Campbell * noted psychiatrist, died at Wyman House, Cambridge, Mass., August 7 of heart disease, aged 66.

Born in Edinburgh, Scotland, Sept 8, 1876, Dr Campbell studied at George Watson's College receiving the M A at Edinburgh University in 1897, the M B and Ch B in 1902 and the degree of doctor of medicine in 1911. He came to the United States in 1904 and became a citizen in 1918. For a time he was assistant physician at the Psychiatric Institute at Ward's

Island, New York, and at Bloomingdale Hospital, White Plains. In 1913, following several years as instructor in psychopathology at Cornell University Medical College, Dr Campbell went to Johns Hopkins University School of Medicine to become associate professor of psychiatry and associate psychiatrist at the Johns Hopkins Hospital and to serve under the direction of Adolf Meyer in the newly opened Plummer Psychiatric Institute. In 1920 he joined the Harvard Medical School as professor of psychiatry, later assuming the position of medical director of the Boston Psychopathic Hospital.

Dr Campbell was a sponsor of the early movement to establish an organized program of mental hygiene in this country. Long identified with the National Committee for Mental Hygiene, he was in 1931 named one of a group to serve as an advisory board to its new division of psychiatric education. In 1932 he returned to his native land to participate in the one hundredth anniversary of the British Medical Association.

Dr Campbell served as president and vice president of the American Board of Psychiatry and Neurology, Inc and president of the American Psychiatric Association, Massachusetts Society for Mental Hygiene and Massachusetts Psychiatric Society.

He was a member of the Association for Research in Nervous and Mental Disease, once serving as vice president, the American Neurological Association, New England Society of Psychiatry, American Psychopathological Association, American School Hygiene Association, British Medical Association, Royal Medico Psychological Association of Great Britain and Ireland and the Royal Society of Medicine of England. He delivered such notable lectures as the Thomas W Salmon Memorial Gehrman Pasture and Lowell lectures. In addition to numerous articles Dr Campbell was the author of *Destiny and Disease in Mental Disorders*, *Delusion and Belief*, *Focal Symptoms in General Paralysis*, *Human Personality and the Environment*, *A Present-Day Conception of Mental Disorders* and *Towards Mental Health*. The Schizophrenic Problem.

William Henry Humiston Vero Beach, Fla. Long Island College Hospital, Brooklyn 1879 member of the House of Delegates of the American Medical Association in 1902 member and past president of the Ohio State Medical Association, past president of the Cleveland Medical Society and the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, clinical professor emeritus of gynecology at the Western Reserve University School of Medicine for six years, a member of the board of health of Cleveland, a member of the original Troop A 107th Cavalry of the Ohio National



ARTHUR THOMAS MCCORMACK, M D, 1872-1943

Guard, during World War I served as a member of the district board of appeals, formerly a director of the Cleveland Chamber of Commerce, formerly gynecologist on the staff of the City Hospital, Cleveland, for many years on the staff of St. Vincent Charity Hospital, Cleveland, where he died June 15, of myocarditis, aged 87.

Bert Raymond Hoobler, Detroit, Cornell University Medical College, New York, 1905, member of the Michigan State Medical Society and the American Pediatric Society, emeritus professor of pediatrics at the Wayne University College of Medicine, where he had been professor and head of the department from 1914 to 1936, at one time on the staff of the Bellevue Hospital, New York, organizer and medical superintendent of the Hoobler Convalescent Hospital and Rest Home, served as chief of the medical staff of the Children's Hospital, a member of the staffs of the Woman's Hospital, Harper Hospital, Florence Crittenton Hospital, William Booth Memorial Hospital, Receiving Hospital and the Harper Hospital, where he died, June 11, of coronary thrombosis, aged 71.

Walter Douglas Bishop, Kansas City, Kan., Atlanta Medical College, 1915, member of the Kansas Medical Society, for five years Wyandotte county physician, served during World War I, member of the staffs of the Providence, Bethany and St. Margaret's hospitals, aged 56, died, May 21, of coronary occlusion.

Wilbur Howard Bliss, Northboro, Mass., Long Island College Hospital, Brooklyn, 1889, aged 84, died, April 25, of carcinoma of the prostate.

Otis J. Bryan @ Pecos, Texas, Memphis (Tenn.) Hospital Medical College, 1902, past president and secretary of the Reeves-Ward-Winkler-Pecos Counties Medical Society, chairman of the Selective Service Board for Reeves County during World War I and recently, for fifteen years served as health officer of Reeves County, member of the school board, aged 63, died, April 28.

Louis Leonard Corcoran @ Rock Rapids, Iowa, Northwestern University Medical School, Chicago, 1907, aged 66, died, May 18.

Frank Eastman, Atlanta, Ga., Hahnemann Medical College of Philadelphia, 1877, aged 87, died, June 8, in St. Joseph's Infirmary of chronic myocarditis.

Hans Edward Eiel @ Buffalo Center, Iowa, Keokuk (Iowa) Medical College, 1899, past president and secretary of the Hancock-Winnebagos Counties Medical Society, formerly health officer, postmaster of Buffalo Center, aged 67, died, May 29, in the Dolmage Hospital of coronary thrombosis.

Erle D. Forrest, Cranston, R. I., Tufts College Medical School, Boston, 1912, aged 54, died, May 25, in the Jane Brown Memorial Hospital, Providence, of hypertensive cardiovascular disease.

William H. Gohlman, Van Nuys, Calif., Medical Department of Tulane University of Louisiana, New Orleans, 1896, aged 69, died, May 17, of cerebral hemorrhage and hypertension.

John C. Gourley @ Windber, Pa., Western Pennsylvania Medical College, Pittsburgh, 1904, a member of the board of education of Windber from 1924 to 1930, roentgenologist and obstetrician to the Windber Hospital, aged 68, died, May 16, of cerebral arteriosclerosis.

Edward Benjamin Gray, Cincinnati, Howard University College of Medicine, Washington, D. C., 1913, served during World War I, aged 55, died, May 27, in the Jewish Hospital.

John Louis Gray @ Anderson, S. C., Bellevue Hospital Medical College, New York, 1895, served on the staff of the Anderson County Hospital, aged 74, died, May 19, of heart disease.

Ernest Nelson Greenman @ Kankakee, Ill., Jefferson Medical College of Philadelphia, 1912, served during World War I, aged 56, died May 31, of heart disease.

Ezra Clarence Grim @ Kirksville, Mo., Washington University School of Medicine, St. Louis, 1901, an Affiliate Fellow of the American Medical Association, the founder and formerly superintendent of the Grim-Smith Hospital and Clinic, aged 69, died, May 26, of uremia.

Augustus G. Haerther, Chicago, Chicago Medical College, 1883, aged 88, died, May 30, of intestinal obstruction and carcinoma of the hepatic flexure of the colon.

George P. Hale, Memphis, Mich., the Hahnemann Medical College and Hospital, Chicago, 1887, for many years health officer, aged 86, died, May 21, of heart disease.

William Wilson Hale, Cheyenne, Wyo., College of Physicians and Surgeons, Keokuk, Iowa, 1877, at one time

professor of therapeutics at the Drake University College of Medicine, Des Moines, aged 91, died, May 24, in the Memorial Hospital of Laramie County of chronic glomerulonephritis.

John Mead Hall @ New York, Cornell University Medical College, New York, 1904, formerly deputy health officer of the Port of New York, served in the medical corps of the U. S. Army during World War I, on the staff of the New York Eye and Ear Infirmary as senior assistant surgeon until February 1943, when he retired as an honorary surgeon, aged 62, died, June 7, in the New York Hospital of heart block.

Guido B. Hammond, English, Ind., Kentucky School of Medicine, Louisville, 1903, member of the Indiana State Medical Association, for many years president of the school board, president of the English State Bank and the Crawford County Security Company, aged 67, died, June 7, in the Kentucky Baptist Hospital, Louisville, of hemorrhage following a gastroenterostomy.

Robert Thomas Hawks, Carson, Va., Medical College of Virginia, Richmond, 1907, chairman of the school board and coroner of Prince George County for many years, medical examiner for the Prince George Selective Service Board, a director of the Bank of Southside Virginia, aged 60, died, June 8, of angina pectoris.

William F. Hilger, Milwaukee, Milwaukee Medical College, 1903, also a pharmacist, aged 69, died, May 22, in St. Anthony Hospital of coronary occlusion.

Emma Linton Hill @ Oswego, Kan., Kansas Medical College, Topeka, 1895, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902, aged 84, died, May 14, in the Mercy Hospital, Parsons, of injuries received in an automobile accident.

L. L. Hines, Richland Center, Wis., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1909, on the staff of the Richland Hospital, aged 71, died, May 21, of nephritis.

Francis Victor Hoehn @ Buffalo, University of Buffalo School of Medicine, 1910, served as a captain in the medical corps of the U. S. Army in France during World War I, a member and vice president of the medical staff of the Charity Eye, Ear and Throat Hospital of Erie County, consulting rhinolaryngologist to the Edward J. Meyer Memorial Hospital, member of the staffs of St. Mary's Infant Asylum and Maternity Hospital and the Emergency Hospital of the Sisters of Charity, where he died, June 1, of ischio-rectal abscess, aged 64.

Jacob J. Hood @ Cicero, Ill., Jenner Medical College, Chicago, 1902, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903, for seven years health commissioner of Cicero, one of the founders and directors of the Cicero State Bank, on the staff of the Garfield Hospital, Chicago, aged 73, died, May 27, of intestinal obstruction.

Frank Ignatius Horn, Los Angeles, Magyar Kiralyi Pazmany Petrus Tudomanyegyetem Orvosi Fakultasa, Budapest, Hungary, 1894, member of the California Medical Association, aged 73, on the visiting staff of the Cedars of Lebanon Hospital, where he died in May of hypertrophy of the prostate and septicemia.

Edward Hougén @ Wisconsin Rapids, Wis., Northwestern University Medical School, Chicago, 1897, aged 72, died, June 21, in the Memorial Hospital, Sheboygan, of epithelioma of the tongue.

John Blanch Howell @ Canton, Miss., Vanderbilt University School of Medicine, Nashville, Tenn., 1905, president of the Central Medical Society in 1933, member of the Mississippi State Board of Health from 1936 to 1942, chief surgeon on the staff of the Kings Daughters Hospital, surgeon for the Illinois Central Railroad, formerly a captain of the Mississippi National Guard, physician-surgeon for the Pearl River Lumber Company, past president of the Rotary Club, aged 62, died, May 24, of coronary occlusion.

Francis Eugene Hubbard, Eau Claire, Mich., Michigan College of Medicine and Surgery, Detroit, 1902, for many years a druggist, served several terms on the school board, aged 77, died, June 17, of carcinoma.

Percy Hudson, Utica, Miss., Louisville (Ky.) Medical College, 1906, member of the Mississippi State Medical Association, aged 60, died, May 27, of heart disease.

Julius Kershaw Huff, Hodges, S. C., Jefferson Medical College of Philadelphia, 1894, aged 70, died, June 6, of malignant tumor of the esophagus.

Alonzo Homer Kunnubrew, Springfield, Ill., Meharry Medical College, Nashville, Tenn., 1897, aged 68, died, May 20, in St. John's Hospital of hypertensive heart disease and bronchopneumonia

Allan Napier Kerr, Pacific Palisades, Calif., Wisconsin College of Physicians and Surgeons, Milwaukee, 1903, member of the Washington State Medical Association, for many years on the staffs of various Veterans Administration facilities, aged 68, died, May 6, in the Veterans Administration Facility, West Los Angeles, of granuloma of the septum and pulmonary edema

Edward R. Layne, Whittier, Calif., Arkansas Industrial University Medical Department, Little Rock, 1888, aged 80, died, May 25, of coronary thrombosis and arteriosclerosis

Arthur Jack Leader, Poughkeepsie, N. Y., Syracuse University College of Medicine, 1930, member of the Medical Society of the State of New York and the American Psychiatric Association, senior assistant physician to the Hudson River State Hospital, aged 55, died, May 31, of carcinomatous and mediastinal chondromyxosarcoma

Max David Mayer of New York, Columbia University College of Physicians and Surgeons, New York 1915, specialist certified by the American Board of Obstetrics and Gynecology, Inc., member of the American Psychoanalytic Association, fellow of the American College of Surgeons on the staffs of Mount Sinai and Sydenham hospitals and New York Home for Aged and Infirm Hebrews, aged 50, died, May 28, of leukemia

William C. McCammon, Knoxville, Tenn., Tennessee Medical College, Knoxville, 1899, aged 71, died, June 3, of carcinoma of the stomach

Henry C. McQuillin, Madison, Wis., Physio-Medical College of Indiana, Indianapolis, 1897, aged 70, died, May 25, of hypertensive cardiovascular renal disease

Nelson Merrill of Marshalltown, Iowa, State University of Iowa College of Medicine, Iowa City, 1893, served one term as a member of the Marshalltown independent school district, on the staffs of the Evangelical Deaconess Home and Hospital and St. Thomas Mercy Hospital, aged 80, died, May 21, of angina pectoris

Charles S. Newlon of Kansas City, Mo., College of Physicians and Surgeons, Keokuk, Iowa, 1881, an Affiliate Fellow of the American Medical Association, at one time superintendent of the School for Feeble-Minded Youth, Winfield, Kan., aged 85, died, June 4, of carcinoma of the liver

William Boyd Nicholl, Oakland, Calif., Colorado School of Medicine, Boulder, 1901, aged 69, died, April 8, of coronary thrombosis and hypertension

Sofie Amalia Nordhoff-Jung of Washington, D. C., Columbian University Medical Department Washington 1893, professor of gynecology emeritus at the Georgetown University School of Medicine, in 1923 established the Sofie A. Nordhoff-Jung Cancer Research Prize to encourage researches in the etiology, prevention and treatment of cancer, in 1927 received a medal from the German government for distinguished services in Red Cross work rendered in Germany before the United States entered World War I, aged 76, died, June 6

John Eugene Osborne, Rawlins, Wyo., University of Vermont College of Medicine, Burlington, 1880, formerly governor of the state of Wyoming and mayor of Rawlins, in 1896 elected representative to Congress, at one time first assistant secretary of state, chairman of the board of directors and for many years president of the Rawlins National Bank, aged 89, died, April 24, of chronic myocarditis

Eleanor Parry of Huntington, N. Y., Woman's Medical College of the New York Infirmary for Women and Children, New York 1894, aged 82, died, May 22, in the New York Infirmary for Women and Children, New York

Felix Peebles, Jefferson, Texas, Gate City Medical College, Texarkana, Ark., 1905, St. Louis College of Physicians and Surgeons 1913, member of the State Medical Association of Texas, past president and secretary of the Cross Marion

Counties Medical Society, examiner for the Selective Service of Marion County, aged 63, died, April 5, of cerebral hemorrhage and myocarditis

Robert Sheild Perkins, Norfolk, Va., Hahnemann Medical College of Philadelphia, 1872, aged 95, died, June 4, of heart disease

Henry Lincoln Plummer, Boston, Harvard Medical School, Boston, 1890, aged 75, died, May 25, in the Boston City Hospital

Jacob H. Polozker, Detroit, Detroit College of Medicine, 1910, served on the staff of the Children's Hospital, aged 55, died, May 15, of coronary thrombosis

William Fletcher Priestley, Oakland, Calif., Cooper Medical College, San Francisco, 1912, member of the California Medical Association, served during World War I, at one time health officer of San Joaquin County, aged 58, died, May 29, of coronary thrombosis

James Pullman of Brooklyn, Yale University School of Medicine, New Haven, Conn., 1899, formerly clinical professor of medicine at the Long Island College of Medicine, served on the staffs of the Kings County, Lutheran and Swedish hospitals, aged 68, died, May 28, of arteriosclerotic heart disease

Samuel Henry Watters, Iowa City, Iowa, University of the City of New York Medical Department, 1884, aged 91, died, May 30, of senility

William R. Wellborn, Elkin, N. C., North Carolina Medical College, Davidson, 1905, a member of the staff of Hugh Chatham Memorial Hospital, aged 60, died suddenly, May 24, of coronary occlusion

Edward Hayward Wells of New York, Bellevue Hospital Medical College, New York, 1895, aged 77, died, May 18, of angina pectoris

James S. Wheeler, Greer, S. C., University of Nashville (Tenn.) Medical Department 1902, formerly a member of the U. S. Public Health Service Reserve, veteran of the Spanish-American War and World War I, aged 70, died, May 28, in the Greenville (S. C.) General Hospital

Warren Everett White, Spokane, Wash., Kansas City (Mo.) Medical College 1902, aged 69, died, May 25, of cardiovascular renal disease

Samuel Sherman Widener, Ponderick, Okla., Chattanooga (Tenn.) Medical College 1903, veteran of the Spanish-American War, aged 68, died, May 8, of cerebral hemorrhage

James Griffin Wilbanks, Amarillo, Texas, Birmingham (Ala.) Medical College, 1912, member of the State Medical Association of Texas, on the staffs of the Northwest Texas Hospital and St. Anthony's Hospital, aged 60, died, May 27, of coronary thrombosis

Thomas Robert Waters Wilson of Greenville, S. C., Baltimore Medical College 1897, past president and secretary of the Greenville County Medical Society, served in the medical corps of the U. S. Army during World War I, aged 68, for twenty-eight years pathologist at the Greenville General Hospital, where he died, May 3, of cerebral arteriosclerosis and left hemiplegia

Isaac Henry Wineberg of Quincy, Ill., Chicago Medical School 1927, served on the staffs of St. Mary and Blessing hospitals, aged 54, died, May 12, of coronary occlusion

Abraham Samuel Wingersky, Boston (licensed in Massachusetts in 1898), aged 67, died in May



LIEUT. COL. SIMON WARMEHOVEN
1910-1943, M. C., U. S. ARMY

KILLED IN ACTION

Simon Warmenhoven, Grand Rapids, Mich., Marquette University School of Medicine, Milwaukee 1939, began active duty in October 1940 as a captain in the medical corps of the U. S. Army (National Guard) attached to the 120th Infantry Medical Detachment at Camp Livingston, La., and later became a major and lieutenant colonel, aged 33, was killed in action in the Southwest Pacific, May 5

Correspondence

SALT REQUIREMENTS IN HOT CLIMATES

To the Editor—I was attracted by the letter in *THE JOURNAL*, July 24, from the London correspondent in regard to "Salt and Water Requirements in Hot Climates." Take the figures quoted from the Army Medical Department bulletin that in hot countries a man on exercise excretes from 5 to 8 liters of sweat and needs not over 25 Gm salt unless the sweat exceeds 2 gallons (Imperial measure, I presume) or a little over 95 liters. Sweat is hypotonic. Consequently when a liter is excreted there would be but for the kidney a hypertonic condition in the intracellular fluids. The kidney, however, guards the salt concentration zealously and excretes sufficient salt to keep the fluids isotonic. The net result of losing a liter of sweat is that of losing a liter of isotonic solution containing 85 Gm of salt. If a man is to lose but 5 liters of sweat it means he has lost 425 Gm of salt. If this keeps up a man is bound to get out of balance and get miners' cramps. The article states that for hard work more than 9 liters is required, to be supplemented by salt tablets to be taken during meals or rest periods. The tablets are of 10 Gm, taken with a pint of water. It would be more rational to take these at more frequent intervals.

RODGER J. B. HIRSHARD, M.D., State Sanatorium, Ark.

CHEMOSURGERY AND RADIATION THERAPY IN EXTERNAL CANCER

To the Editor—I do not wish to let go unchallenged the partial misconception held by your editorial writers regarding the relative efficiency of chemosurgery and radiation therapy in the treatment of external cancer. Those of us who have had the opportunity of seeing hundreds of cancers respond to chemosurgery after previous unsuccessful x-ray or radium treatment know that, despite the modern physical perfection of these agents, they can never approach the effectiveness of chemosurgery.

Tumors vary greatly in radiosensitivity, and for this reason a great many do not respond even to the most expert radiation therapy. Moreover, the radiotherapist has no way of knowing the exact extent of a carcinoma except perhaps in its earliest stages. Our reconstructions of carcinomas frequently show small caliber outgrowths which had been completely unsuspected from clinical examination, these can be accurately followed out and eradicated by the chemosurgeon, but the radiotherapist would never know they were there, though he might suspect it when recurrences appeared months or years later.

It is natural that some of those particularly interested in radiation therapy will be loath to admit the value of competing methods, thus Ackerman and Eberhard apparently were not convinced of the superiority of chemosurgery except in certain cancers no longer amenable to radiation or surgery. It is my contention that the microscopic control afforded by chemosurgery is also very advantageous in the treatment of early cancer. Dr. Ackerman visited me after clinic hours for a hurried fifteen minute talk, and it is probable that he did not get a complete insight into all the applications of chemosurgery. I gave him my complete approval in his fight against irregular cancer practice practitioners as long as he didn't confuse the University of Wisconsin's chemosurgery with them. Incidentally, he has since asked me to treat a patient whose cancer did not respond to radiation therapy in his institution.

I only ask that the profession keep an open mind on the subject until I am able to muster the data which will eventually prove the worth of chemosurgery. Unfortunately time is required, so, although the series now amounts to 1,200 cases, those treated three and five years ago are only now reaching satisfactory numbers.

FREDERIC E. MOHS, M.D., Madison, Wis.
Assistant Professor of Chemosurgery, State
of Wisconsin General Hospital

USE OF POWDERED SULFATHIAZOLE IN NOSE AND THROAT

To the Editor—In *THE JOURNAL* of May 15 under Current Comment, page 180, I read of the use of sulfathiazole locally in the nasopharynx and larynx, using a finely powdered spray blown into the nostrils, pharynx and larynx, or using a solution in $\frac{1}{4}$ cup of hot water of a $7\frac{7}{10}$ grain (0.5 Gm) tablet of sulfathiazole as a gargle, as reported by Fenton and Freeman.

For the past two years I have used $7\frac{7}{10}$ grains to 15 grains of sulfathiazole in $\frac{1}{4}$ cup of hot water as a gargle, but, better yet, have both my patients and myself chew a stick of chewing gum and then wrap a $7\frac{7}{10}$ grain tablet of sulfathiazole in the gum mass and chew the mixture and keep it in the mouth as long as possible. The taste is slightly bitter at first but then rapidly becomes sweet. Immediate relief of pain and discomfort in the throat invariably follows.

I have thought of incorporating a tablet of sulfathiazole in flavored hard candy to be used as a lozenge and believe this could be beneficial in throat infections, especially for children.

By means of the chewing gum method, I believe the concentration of sulfathiazole can be maintained in the mouth and pharynx for some time, since the solubility of the drug is constant. It is well known that gargles do not reach the nasopharynx, while swallowed saliva does. I have used this method during the day as frequently as I believed necessary.

It has been interesting and enjoyable to me to be able to read of procedures used by individuals who thought along similar lines at almost the same time as others.

JOSEPH GERTNER, Lieutenant, M.C., A.U.S.

SWELLING OF POPLITEAL BURSÆ IN BRUCELLOSIS

To the Editor—The article by Meyerding and Van Demark on "Posterior Hernia of the Knee" in the July 24 issue of *THE JOURNAL* impels me to call attention to the fact that swelling of popliteal bursae may also be associated with such systemic illnesses as chronic brucellosis.

In this infection, about which too little is known, I have observed six instances of popliteal bursitis of varying size and accompanied by from little to rather considerable discomfort. In all cases but 1 there was either pronounced improvement or disappearance of the bursal involvement when these patients responded clinically and serologically to *Brucella abortus* vaccine treatment. Since none were treated surgically it is impossible to say whether any cases represented true hernia of the synovial lining of the knee joint or whether they were all noncommunicating bursae.

There is no reference in the literature to popliteal bursitis in brucellosis as far as I have been able to determine. I briefly mentioned it in my monograph "Brucellosis (Undulant Fever) Clinical and Subclinical."

HAROLD J. HARRIS, Lieutenant Commander (MC),
U.S.N.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Aug. 14, page 112.

BOARDS OF MEDICAL EXAMINERS

- ALABAMA Montgomery June 20-22 Sec. Dr. B. F. Austin 519 Dexter Ave. Montgomery
- ARKANSAS * *Written* Nov. 3-4 Sec. Dr. D. I. Owens Harrison Ecl. Bldg. Little Rock Nov. 4 Sec. C. H. Young 1415 Main St. Little Rock
- CALIFORNIA *Written* Sacramento Oct. 18-21 Sec. Dr. Frederick A. Scatena 1020 N. Street Sacramento
- DISTRICT OF COLUMBIA * Washington Nov. 8-9 Sec. Commission on Licensure Dr. G. C. Ruhland 6150 E. Municipal Bldg. Washington
- FLORIDA * Jacksonville, Nov. 22-23 Sec. Dr. William M. Rowlett Box 786 Tampa
- ILLINOIS Chicago Oct. 12-14 Superintendent of Registration Department of Registration and Education Mr. Philip M. Harman Springfield
- INDIANA Indianapolis Sept. 14-16 Sec. Board of Medical Registration & Examination Dr. W. C. Moore 301 State House Indianapolis
- IOWA * Iowa City Dec. 27-29 Dir. Division of Licensure and Registration Mr. H. W. Grefe Capitol Bldg. Des Moines
- KANSAS Topeka Dec. 14-15 Sec. Dr. J. F. Hassig 903 N. Seventh St. Kansas City
- KENTUCKY Louisville Dec. 6-8 Sec. Dr. A. T. McCormack 620 S. Third St. Louisville
- MARYLAND Medical Baltimore Dec. 14-17 Sec. Dr. J. T. O'Mara 1213 Cathedral St. Baltimore *Homeopathic* Baltimore Dec. 14-15 Sec. Dr. J. A. Evans 612 W. 40th St. Baltimore
- MICHIGAN * Ann Arbor Oct. 13-15 Sec. Board of Registration in Medicine Dr. J. Earl McIntyre 100 W. Allegan St. Lansing
- MINNESOTA * Minneapolis Oct. 19-21 Sec. Dr. J. F. DuBois 230 Lowry Medical Arts Bldg. St. Paul
- MISSISSIPPI Jackson September Asst. Sec. State Board of Health Dr. R. A. Whitfield Jackson
- MONTANA Helena Oct. 5-6 Sec. Dr. O. G. Klein First Nat'l Bank Bldg. Helena
- NEW HAMPSHIRE Concord Sept. 9-10 Sec. Board of Registration in Medicine Dr. D. G. Smith State House Concord
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- NEW YORK Albany Buffalo New York and Syracuse Sept. 20-23 Sec. Dr. R. R. Hannon Education Bldg. Albany
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- VIRGINIA Richmond Dec. 14-17 Sec. Dr. J. W. Preston 301 1/2 Franklin Road Roanoke
- WYOMING Oct. 4-5 Sec. Dr. M. C. Keith Capitol Bldg. Cheyenne

* Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

- ARIZONA Tucson Sept. 21 Sec. Dr. Robert L. Nugent Science Hall University of Arizona Tucson
- COLORADO Denver Sept. 8-9 Sec. Dr. E. B. Starks 1459 Ogden St. Denver
- CONNECTICUT Oct. 9 Address State Board of Healing Arts 250 Church St. New Haven
- DISTRICT OF COLUMBIA Washington Oct. 18-19 Sec. Dr. G. C. Ruhland 6150 E. Municipal Bldg. Washington
- FLORIDA DeLand Nov. 6 Sec. Dr. John F. Conn John B. Stetson University DeLand
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- SOUTH DAKOTA Vermillion December Sec. Dr. G. M. Evans Bankton
- WISCONSIN Madison Sept. 18 Sec. Prof. R. A. Bauer 132 W. Wisconsin Ave., Milwaukee

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Osteopathic Practice Acts (California) Power of Legislature to Impose Educational Standards in Addition to Those Imposed in the Osteopathic Initiative Act of 1922—Under the applicable California law between 1913 and 1922 all persons, whether they were nonsectarian practitioners, homeopaths, eclectics or osteopaths, desiring licenses to practice the healing art without restriction and possessing the qualifications prescribed by law, were examined and licensed by the board of medical examiners. A separate osteopathic practice act in the form of an initiative measure was adopted by the California electorate in 1922, which created an independent board of osteopathic examiners and gave 'it jurisdiction, formerly residing in the Board of Medical Examiners, over graduates of osteopathic schools.' The initiative measure 'was intended to effect administrative changes only and made no substantive changes in the standards of education and examination for the physician and surgeon certificate' [the license to practice without restriction] required under the existing medical practice act. In the words of the court, the initiative made the Medical Practice Act [presumably the educational requirements therein] applicable to graduates of osteopathic schools. Subsequently a so-called business and professions code (a codification of the then existing statutory provisions relating to the licensing of businesses, professions and vocations) was adopted by the legislature and by an amendment to that code enacted in 1941 it was provided that before a previously licensed osteopath could effect an annual registration, which would give him the legal right to practice during the ensuing year, he must, in addition to paying the required annual license fee, present evidence that in the preceding year he had completed a minimum of thirty hours of professional educational work approved by the osteopathic board.

The petitioner a graduate of an osteopathic school, who was issued a physician and surgeon certificate (the license issued permitting the practice of medicine and surgery without restriction) by the osteopathic board in 1934, refused to tender for the issuance of an annual registration certificate for 1943 'evidence of the performance of thirty hours of professional educational work' during 1942. When the osteopathic board refused to issue to him the certificate desired he brought mandamus to the Supreme Court of California to compel the board to do so.

The osteopath contended first that since the osteopathic initiative act adopted in 1922 made the Medical Practice Act [presumably the education requirements contained therein] applicable to graduates of osteopathic schools such rights and duties remain invariable. Apparently the gist of this contention was that since the osteopathic initiative act was adopted by the electorate it could be amended in no particular by the legislature and that since the initiative adopted the educational standards imposed by the then existing medical practice act the provision adopted by the legislature in amending the business and professions code in 1941 requiring osteopaths annually to complete a minimum of thirty hours of professional educational work was an invalid attempt to amend the initiative act of 1922. There is no provision in the osteopathic initiative act answered the Supreme Court limiting the power of the legislature to change the standards for receiving or holding a physician and surgeon certificate. The argument submitted to the voters in 1922 in support of the initiative act set forth that that act left the legislature free to change the standards of education and examination. The initiative act itself demonstrates the care with which its framers guarded that freedom and made the act exclusively administrative in character clearly leaving it to future legislatures as they saw fit to impose additional educational requirements on osteopaths.

The osteopath next contended that the 1941 amendment to the business and professions code violates article I, section 21

of the constitution of California in that, since osteopaths must meet the same educational requirements as other practitioners who are legally entitled to practice medicine and surgery without restriction, they cannot be subjected to requirements in addition to those imposed on the others and that no practitioners other than osteopaths are required to complete thirty hours of professional educational work during any one year. It is generally recognized, however, said the Supreme Court, that the power to regulate the treatment of disease is an elastic one and that regulations may vary according to the schools or methods of practice as long as they entail no unreasonable discrimination, citing *In re Rust*, 181 Cal 73, 183 P 548, which held the California optometry act of 1913, forbidding osteopaths but not nonsectarian physicians from practicing optometry without a license from the state board of optometry, did not violate article I, section 21 of the state constitution. The opinion in that case, continued the court, set forth a history of the distinctions that the legislature has made at various times between practitioners of osteopathy and other practitioners. Thus for many years different licenses were issued to osteopaths than to physicians and surgeons with different rights and duties attached to the respective licenses. Although the certificates as well as the educational requirements for osteopaths and physicians and surgeons may now be the same, the legislature is as free to return to different certificates and educational requirements as it was to abandon them. The petition for writ of mandate was denied—*Gauble v Board of Osteopathic Examiners of California*, 130 P (2d) 382 (Caln, 1942).

Charitable Hospitals Liability for Failure to Furnish Proper Equipment—Mrs Canney was received about 9 30 p m, Nov 7, 1940, as a pry patient in the Providence hospital, a charitable institution, to be delivered of child. A cesarean section was performed on her about an hour later, after which she was given a blood transfusion and taken to her room about 11 50 p m. She was placed in a bed previously heated with an electric pad which had been removed. The patient was left in charge of a special nurse, obtained for the patient by the hospital at her husband's request, and this nurse was alone with the patient from 1 to 7 a m. About 5 or 6 a m when the nurse bathed the patient it was discovered that both heels were burned. What heating appliances, if any, had been placed in the bed by the special nurse between midnight and that time are not shown, since the nurse was not called as a witness in the litigation that subsequently ensued. Later the patient and her husband brought suit against the hospital, alleging that the patient's injuries

were the sole, direct and proximate result of the administrative negligence of the defendants, which consisted solely of the failure of defendants to furnish proper equipment for the purpose of warming the feet of plaintiff under a regulated heat so that the said application of the said instrument would not result in injury.

From a judgment in favor of the plaintiffs, rendered on a verdict of the jury, the hospital appealed to the Supreme Court of Washington.

The defendant hospital, said the Supreme Court, being a charitable hospital, is not liable for the negligent act of an employee, unless it is established that the hospital failed to exercise ordinary care in the selection or retention of the negligent employee. The fact that compensation is exacted for services rendered does not, of itself, deprive an institution of its charitable status. It is generally held that, since a special nurse is the agent of the patient and is not an employee of the hospital and not subject to its control, the acts of the special nurse do not create liability on the part of the hospital. The plaintiffs invoke the rule enunciated in *Miller v Sisters of St Francis*, 5 Wash (2d) 204, 105 P (2d) 32, that a hospital, even if it is a charitable institution, will be required to respond in damages for injuries proximately resulting from failure to furnish proper equipment, which failure apparently would constitute "what is called administrative negligence as distinct from failure to exercise due care in the selection of proper physicians and nurses." That rule, however, continued the court, is subject to the quali-

fication that if the article which it is the duty of the hospital to supply is obviously unfit for the use for which it was intended, and a special nurse in charge of a patient uses it in violation of the standards of care of nursing practice, the hospital cannot be chargeable with any injurious effects therefrom but the rule is otherwise if the defect is not patent. See *Payne v Santa Barbara Cottage Hospital*, 2 Cal App (2d) 270, 37 P (2d) 1061 and *Ratliffe v Wesley Hospital*, 135 Kan 306, 10 P (2d) 859. If we apply the law to the facts of this case, it is clear that the trial court was not warranted in submitting the cause to the jury for its determination as to the negligence of the hospital. From midnight, when she was returned from the operating room to her private room, until 7 a m, the patient was in charge of a special nurse who had been employed at the request of her husband. The special nurse was not called as a witness. What heating appliances, if any, she placed in the patient's bed during the period she was in charge of the patient are not known. There is an absence of evidence of any lack of care on the part of the hospital in providing competent servants. There is no evidence that the hospital failed to furnish proper appliances. The mother of the patient testified that between 9 30 and 10 a m, about five hours subsequent to the time it was discovered that the patient had burns on her feet, she called to see the patient and saw an ordinary rubber hot water bottle which, although it was not hot then, was at the patient's feet. She testified that she could not tell whether there was any cover on the hot water bottle. On the other hand, evidence was adduced on behalf of the hospital that the hot water bottles supplied by it are standard equipment used in all hospitals, that covers are supplied for the hot water bottles, which are never used without a cover, and that a hot water bottle is always placed between the blankets and never next to the patient. If, said the court, the special nurse placed an uncovered hot water bottle to the feet of the patient, that failure of the special nurse in not having the bottle covered or in protecting it by blankets is not administrative negligence on the part of the hospital. If the hot water bottle supplied by the hospital was obviously unfit for the use for which it was intended—and there is no showing to that effect in the record—and if the special nurse who was employed by and was the agent of the patient and her husband used it in violation of the usual standards of nursing practice, the hospital cannot be charged with the resultant injurious effects on the patient.

The judgment in favor of the patient and her husband was accordingly reversed and the cause remanded with direction to dismiss the action—*Canney v Sisters of Charity of House of Providence*, 130 P (2d) 899 (Wash, 1942).

Society Proceedings

COMING MEETINGS

- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept 9-11. Dr James R. Bloss 414 Eleventh St., Huntington, W. Va., Secretary.
- American Congress of Physical Therapy, Chicago, Sept 8-11. Dr Richard Kovacs, 2 East 88th St., New York, Secretary.
- District of Columbia, Medical Society of the, Washington, Sept 30-Oct 2. Mr Theodore Wiprud, 1718 M St. N.W., Washington, Secretary.
- Indiana State Medical Association, Indianapolis, Sept 28-30. Mr F. A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Kansas City Southwest Clinical Society, Kansas City, Mo., Oct 4-6. Dr William M. Korth, 1115 Grand Ave., Kansas City, Mo., Secretary.
- Kentucky State Medical Association, Louisville, Oct 4-6. Dr P. E. Blackerby, 620 South Third St., Louisville, Acting Secretary.
- Michigan State Medical Society, Detroit, Sept 22-24. Dr I. E. Fernald Foster, 2020 Olds Tower, Lansing, Secretary.
- Northern Minnesota Medical Association, Duluth, Aug 23. Dr R. N. Jones, 8 Sixth Avenue N., St. Cloud, Secretary.
- Oregon State Medical Society, Portland, Sept 4-5. Dr Thomas D. Robertson, St. Vincent's Hospital, Portland, Secretary.
- Pennsylvania, Medical Society of the State of Philadelphia, Oct 5-7. Dr Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Utah State Medical Association, Salt Lake City, Aug. 27-29. Dr D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Wisconsin, State Medical Society of Milwaukee, Sept 13-15. Mr Charles H. Crownhart, 110 East Main St., Madison, Secretary.

Current Medical Literature

AMERICAN

The American Library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1922 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

65 681-826 (May) 1943

- *Familial Blood Studies in Cases of Mediterranean (Cooley's) Anemia. Diagnosis of Trait or Mild Form of Disease. C. H. Smith—p. 651
- *Sulfadiazine. Review of Its Use in Treatment of Children. R. J. Winters and F. R. Janney—p. 702
- Studies on Vitamin A, Vitamin A and Total Lipid of Serum in Pneumonia. H. W. Josephs—p. 712
- Treatment of Gonorrheal Vulvovaginitis with Silver Picrate Suppositories. Report of Results in 57 Cases. F. R. Fitch—p. 725
- Studies in Immunity to Pertussis. II. Effect of Stimulating Dose of Hemophilus Pertussis Vaccine. A. C. Rambar, Katharine M. Howell, E. J. Denenholz, Martha Janota and Roberta Starnard—p. 730
- Cardiac Muscle in Poliomyelitis. A. R. Peale and P. F. Lucchesi—p. 733
- Erysipelas in Infancy. J. W. Bruce and T. S. Chalkley—p. 739
- Nutrition as Conditioning Factor in Rheumatic State. A. F. Coburn and Lucile A. Moore—p. 744
- Second Attacks of Anterior Poliomyelitis. Report of 4 Cases. A. B. Nelson and W. T. Green—p. 757
- Pseudoreactions to Tuberculin. H. Vollmer and M. L. Ripps—p. 763
- Total and Fractional Blood Lipid Levels in Nephrotic Syndrome. Elaine M. Thomas—p. 770
- Agnesia of Lung in Infant. C. T. Olcott and S. W. Deoley—p. 776
- *Omphalocele with Congenital Obstruction. Report of Case with Meckel's Diverticulum. H. J. Morrison and R. L. Neville—p. 781
- Hemangioma of Elbow Successfully Treated with Radium at Early Age. I. I. Kaplan—p. 785
- Pediatric Aspects of Salem Witchcraft Tragedy. Lesson in Mental Health. E. Caulfield—p. 788

Familial Blood Studies in Mediterranean Anemia.—In sixteen families with Mediterranean anemia 63 persons were examined by Smith and 54 showed abnormalities of the blood. Twelve, all children, were severely anemic and 42, including parents and siblings, had the mild type of this condition. In every one of the sixteen families definite blood changes occurred in at least one parent, and in one family changes were noted in three generations. While all siblings and parents of patients with Mediterranean anemia were examined clinically, hematologically and roentgenographically the recognition of the mild type depended solely on a careful study of the blood. These changes consisted of varying degrees of hypochromic anemia, occasionally polycythemia, an elevated icteric index, the presence of target cells, reticulocytes, macrocytes and stippled red cells and increased resistance of the red cells to hemolysis. The most common findings were anisocytosis and poikilocytosis, basophilic stippling and increased resistance to hypotonic sodium chloride solution. Hypochromic and polychromatophilic macrocytes constituted an important diagnostic feature and were frequently found in predominantly microcytic blood smears. Target cells were not a constant accompaniment in all cases, and they appeared in only half of the patients with mild forms of the disease. Thinness and flatness of the cells may represent the fundamental structural defect of the erythrocytes in Mediterranean anemia. Persons with the mild form of the disease were without symptoms and appeared in perfect health, and the condition could have escaped detection without careful scrutiny of the blood. The degree of skeletal change was usually correlated with the severity of the anemia. The later in childhood the disease became manifest, the less severe was the osteoporosis. In every family with a severely anemic child both parents showed abnormalities of the blood but this cannot be regarded as a universal rule. The children of a parent with the trait run the risk of inheriting the disease in any of its clinical forms from the mildest to the most severe. Since the

disease appears to be transmitted directly from parent to child, the implications of the existence of mild forms of Mediterranean anemia are obvious in communities with large Italian and Greek populations. The pedigrees included in this study suggest that Mediterranean anemia is transmitted as a dominant characteristic. Certain features of the blood in Mediterranean anemia resemble those of sickle cell anemia and to a more limited degree those of hemolytic jaundice.

Sulfadiazine in Treatment of Children.—Winters and Janney reviewed hospital records of 90 patients treated with sulfadiazine. The patients varied in age from 3 weeks to 14 years. Conditions treated included infections of the throat, empyema, septicemia, chronic recurrent pyelitis, peritonal abscess, osteomyelitis and meningitis. High blood levels apparently are easily reached and maintained with sulfadiazine because of relatively slow excretion, because of this sulfadiazine may be given at greater intervals or in smaller doses. The drug given to children in doses of $\frac{1}{4}$ to 1 gram per pound in twenty-four hours will produce an average blood level of 7 to 10 mg per hundred cubic centimeters, which is adequate for usual infections. Sulfadiazine is effective against most of the common bacteria producing specific infections, especially against hemolytic streptococci, pneumococci, Staphylococcus aureus, hemolyticus, meningococci and Hemophilus influenzae. Sulfadiazine passes readily into the spinal fluid. Spinal fluid levels can usually be expected to be two thirds or more of the blood level. With high blood levels or poor intake of fluids, the most common reactions are crystals in the urine, red blood cells in the urine, leukopenia and neutropenia. These signs clear up when the administration of the drug is stopped. Sulfadiazine spray for burns produces a satisfactory eschar and is effective in preventing secondary infection. Patients receiving sulfadiazine should be observed with the same care that is advisable after administration of any other sulfonamide compound and the urine and the blood count should be checked regularly.

Omphalocele with Congenital Obstruction.—Omphalocele, or exocoelom, is a true congenital umbilical hernia containing intestine or abdominal organs. This condition is said to occur once in 5,000 to 6,000 newborn infants. The presence of Meckel's diverticulum in an omphalocele has been reported only twice in the English literature. Neville reports a case in which the intestines could not be reduced until the infant was anesthetized. The size of the omphalocele increased from that of a lemon (approximately 6 cm in diameter) to that of a medium sized grapefruit (approximately 12 cm in diameter) within five minutes after birth. This occurred through the swallowing of air when the infant began to cry. The intestines became distended, and this hindered reduction. The infant was operated on when 80 minutes of age. Convalescence was uneventful and at the age of 14 weeks she weighed 12 pounds 11 ounces (5,755 Gm) and appeared perfectly normal. Roentgen examination at the age of 5 months failed to reveal the presence of Meckel's diverticulum. This is probably due to the fact that the diverticulum atrophied after the operation.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.
49 573-718 (May) 1943

- Critical Analysis of Roentgen Signs of Infantile Scurvy. R. S. Bremer—p. 575
- Calcification of Renal Tumors. G. Austen Jr.—p. 580
- Roentgenologic Examination of Pharynx. S. W. Westing—p. 587
- Post-Traumatic Necrosis of Bone. R. W. Lewis—p. 593
- Extraordinary Calcification in Breast. B. W. Anthony and H. C. Pollack—p. 600
- Osteopetrosis. Case Report. R. H. Thompson, R. Horer and H. F. Fulton—p. 603
- Roentgen Treatment of Cancer of Esophagus. D. W. Smithers, J. R. Clarkson and J. A. Strong—p. 606
- Roentgen Therapy of Virus Pneumonia. A. O. Penheimer—p. 613
- Radiation Hazards During Roentgenology. T. A. White, D. B. Cowie and A. A. De Lormier—p. 619
- Protective Features Provided with United States Army Field Roentgenoscopic Equipment. A. A. De Lormier, D. B. Cowie and T. A. White—p. 623
- Studies on Indirect Effect of Roentgen Rays in Single and Double Exposures. W. A. Barnes and O. B. Furth—p. 627
- Investigation into Some Practical Aspects of Roentgen Ray Sterilization. Part I. Failure in Current Practice. Sterilization of Glassware. Part II. Single Film Stereoscopic Technique. Part III. Double Film Stereoscopic Technique. Part IV. Single Film Stereoscopic Technique. W. A. Barnes and A. T. Newman—p. 631

Archives of Dermatology and Syphilology, Chicago
47 613-762 (May) 1943

- Dermatitis Vaccinica (Kaposi's Varicelliform Eruption) F Ronchese—p 613
 Action of Sulfonamide Compounds on Blastomycosis Dermatitis in Vitro R O Noojin and J L Callaway—p 620
 Superficial Papulonecrotic Tubercle in Negro S Irving—p 627
 Properties of Human Skin Revealed by Fluorescence Microscopy III Parashmon I Cornblatt and H L Popper—p 637
 *Combined Vaccine and Toxoid Therapy of Staphylococcal Infections of Skin M H Goodman—p 640
 Impediment to Bullosa A G Franks and M I J Davis—p 647
 Vitamin B₆ (Pyridoxine) in Dermatology C S Wright, M H Samitz and H Brown—p 651
 Cutaneous Eruptions Due to Codine M Schumann—p 654
 Actin Factor in Roentgen Irradiation G M Mackee, A Mutscheller and A C Cipollaro—p 657
 Mepharsen and Nearspharmine Administered by Continuous Intravenous Drip Method Toxicity for Rabbits J A Kolmer and Anna M Ruk—p 665
 Use of Diethylstilbestrol in Treatment of Kraurosis Vulvae Preliminary Report Sidie H Zuckers—p 671
 Bronchial Asthma Following Inhalation of Powdered Nearspharmine: Attempted Oral Hyposensitization J W Thomas—p 675
 Dermatitis Herpetiformis Immunologic and Therapeutic Considerations I H Swartz and W I Lever—p 680

Staphylococcal Infections of Skin—According to Goodman, 105 patients with various types of staphylococcal (including 46 with pustular acne) were treated with a combined toxoid-vaccine antigen. Injections were given in increasing doses every fourth day until the tenth dose, of 1 cc. In the usually refractory types of infection, such as pustular acne, treatments were continued in 1 cc doses with the object of achieving desensitization. By means of this desensitizing regimen it appeared that most of the patients were benefited and a great number obtained what may be justifiably considered a clinical cure. The results of this study are promising and warrant the trial of combined staphylococcus toxoid and vaccine as an adjunct in the treatment of some of the ordinarily stubborn staphylococcal dermatoses.

Archives of Surgery, Chicago

46 589-792 (May) 1943 Partial Index

- Surgical Approaches to Epiphyseal Cartilages of Knee and Ankle Joints L C Abbott and G G Gill—p 591
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 Pain in Shoulder Girdle Arm and Precordium Due to Foraminal Compression of Nerve Roots S S Hanflig—p 652
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 Wire Fixation of Fractures of Proximal Third of Humerus J A Key—p 678
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 Fracture of Shafts of Both Bones of Lower Half of Leg J R Lincoln and H Gordiner—p 697
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Arkansas Medical Society Journal, Fort Smith

39 257-270 (May) 1943

- Etiology and Treatment of Traumatic or Secondary Shock C M Wilhelmj—p 257

Bulletin of Johns Hopkins Hospital, Baltimore

72 255-308 (May) 1943

- Effect of Desoxycorticosterone Acetate Administration on Plasma Volume and Electrolyte Balance of Normal Human Subjects M Clinton Jr and G W Thorn—p 255
 Behavior of Bipedal Rats L W Pratt—p 265
 Studies in Experimental Hypertension II Effect of Dietary Protein on Urea Clearance and Arterial Blood Pressure in Chronic Hypertension L K Alpert and Caroline B Thomas—p 274
 Id III Effect of Dietary Protein on Clearances of Diodrast and Insulin by Kidney in Chronic Hypertension L K Alpert and J L Lilienthal Jr—p 286
 Endocardial Fibroelastosis (So Called Fetal Endocarditis) Report of 2 Cases Occurring in Siblings T Weinberg and A J Himefarb—p 299

Canadian Medical Association Journal, Montreal
48 383-476 (May) 1943

- Personnel Selection in Army W Line and J D M Griffin—p 394
 Psychiatric Problems in Army D G McKerracher—p 399
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 Wire Suturing in Treatment of Facial Fractures S D Gordon—p 406
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 Some Aspects of Industrial Medicine R A Kennedy—p 421
 Accessory Sinus Disease in General Practice P G Goldsmith—p 426
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 Sensitivity to Pain (with an Analysis of 450 Cases) E D Sherman—p 437

Cancer Research, Baltimore

3 281-352 (May) 1943 Partial Index

- Neoplasm Studies IX Effects in Tissue Culture of N,N Dimethyl p Phenylenediamine on Rat Liver Tumors Induced by p Dimethyl aminoazobenzene Gladys Cameron, M J Kopac and R Chambers—p 281
 Effect of Pyridoxine and Other B Vitamins on Production of Liver Cancer with p Dimethylaminoazobenzene D L Miner, J A Miller, C A Baumann and H P Rusch—p 296
 Biocatalysts in Cancer Tissue II Inhibition of Succinoxidase System by Tumor Extracts H G Albrum and V R Potter—p 303
 Experimental Fibroids in Hypophysectomized Female Guinea Pigs L Vargas Jr—p 309
 Inheritance of Susceptibility to Tumors Induced in Mice II Tumors Induced by Methylcholanthrene in Progeny of C3H and JK Mice. W J Burdette—p 318
 Studies on Spontaneous Tumors in Guinea Pigs III Chondrosarcoma of Iliac Bone with Metastasis to Mammary Region C T Olcott and G N Papanicolaou—p 321
 Intradermal Immunization of C3H Mice Against Sarcoma That Originated in Animal of Same Line L Gross—p 326
 Distribution of Doses of Radioactive Phosphorus in Leukemic Patients. S Warren—p 334

Florida Medical Association Journal, Jacksonville

29 455-494 (May) 1943

- Changing Trends in Management of Menopause J R Cogan—p 465
 Local Use of Sulfonamides in Open Wounds Review of Present Status L J Netto—p 470
 Diagnosis and Treatment of Injury to Spine H G Cole—p 473
 Intravenous Anesthesia B Lancaster—p 477

Iowa State Medical Society Journal, Des Moines

33 209-248 (May) 1943

- Allergy Principles of Diagnosis and Treatment F K Hansel—p 211
 Analysis of the Rh Factor H A Schwartz—p 217
 Diabetes Mellitus Complicated by Urinary Tract Infections H Margulies and E B Winnett—p 219
 Torsion of Appendices Epiploicae Report of Case S D Porter—p 223
 Bronchogenic Carcinoma F P McNamara—p 225

33 249-294 (June) 1943

- Medicine in War Effort C H Grahl—p 249
 *Massive Arsenotherapy in Early Syphilis by Continuous Intravenous Drip Method Preliminary Study in Iowa H L Harris and R M Sorensen—p 254
 Psychopathic Hospital Outpatient Clinic P L Huston—p 261
 Multiple Primary Malignant Tumors F P McNamara—p 261

Massive Arsenotherapy in Early Syphilis—The intensive five day intravenous drip method was used by Harris and Sorensen in 41 cases of early syphilis between July 1940 and July 1942. There were 8 cases of seronegative primary syphilis, 8 of seropositive primary syphilis, 23 of secondary syphilis and 2 of early, latent syphilis. Darkfield examinations were positive in 27. Treatment was started as early as possible. The patients received treatment for five days and were observed for two to three additional days before being discharged from the hospital. Each patient was given 240 mg of mepharsen in 2,000 cc of 5 per cent dextrose in isotonic solution of sodium chloride over an eight to twelve hour period daily for five consecutive days. There were no severe reactions such as generalized exfoliative dermatitis or hemorrhagic encephalitis. Twenty-one patients had a primary fever, 10 a secondary fever, and 2 a toxicodermic rash. There were no blood dyscrasias, and no instances of renal or liver damage and no fatalities. Thirty-six patients experienced arm pain and 24 had nausea and

veniting at some time during treatment. In order to evaluate this treatment properly the patients must be followed for at least five years. Of the 41 patients reviewed here 32 have been followed from six to eighteen months with 75 per cent satisfactory results, 18.8 per cent pending and 6.3 per cent failures. The patients with seronegative primary syphilis reached a negative status rapidly. Those with seropositive primary syphilis showed more rapid serologic reversals than did those with secondary syphilis. Only 2 of the 41 patients treated had a proved serologic relapse and were retreated by the same method. One of these patients also had an infectious relapse. One patient with probable reinfection was retreated. One patient out of 33 had a positive spinal fluid after completion of treatment. Two weeks later the spinal fluid was normal. Two women were treated during pregnancy without adverse results. This method of treatment has a public health value.

Journal of Allergy, St. Louis

14 273-354 (May) 1943

- Studies on Blooming Anticell in Serum of Known Treated Patients I Search for Inhibiting Substances in Other Types of Immune Serum D. E. Frank and H. H. Cohn—p. 27
- Comparison of Sodium and Potassium Metabolism in Asthmatic and Nonallergic Children P. B. Donovan and G. F. Harsh—p. 281
- Observations on Weltmann Reaction in Hay Fever and Asthma I. F. Fuhs and S. Scherlis—p. 285
- Repeated Benign Relapse in Treatment of Intractable Asthma A. L. Barach—p. 290
- Röntgen Observations on Children with Gastrointestinal Allergy to Foods J. H. Fries and M. Megill—p. 310
- Statistical Studies in Allergy I Correlation Analysis T. G. Andrews—p. 322
- Sensitivity to *Acanthamoeba* Pollen with Report of 2 Clinically Sensitive Patients G. I. Blumstein—p. 329
- Allergy to Food Odors Its Relation to Management of Infantile Eczema A. J. Horeh—p. 335

Journal-Lancet, Minneapolis

63 87-120 (April) 1943

- Tubeerculosis—Po-twar K. Emerson—p. 87
- Importance of Preventive Measures in Tuberculosis Program S. L. Cox—p. 88
- Tuberculin Test in Tuberculosis Control L. L. Collins—p. 90
- The Doctor of Medicine and His Responsibility A. W. Adson—p. 92
- Echinococcus Cyst of Lung F. E. Torres—p. 95
- Don't Give Up the Tuberculin Test O. Lotz—p. 96
- Tuberculosis Among College Students H. D. Lees—p. 98
- Tuberculin Reaction in Medical and Nursing Students Five Year Study L. A. Todd—p. 102
- Examination or Rejection H. R. Edwards—p. 104
- Tuberculosis on Typical College Campus C. E. Lyght—p. 108
- Analysis of 149 Tuberculosis Deaths During 1940-41 H. A. Burns—p. 113

Medicine, Baltimore

22 87-204 (May) 1943

- Immunity in Malaria L. T. Coggeshall—p. 87
- Studies of Calcium and Phosphorus Metabolism with Special Reference to Pathogenesis and Effects of Dihydroxycholesterol (A. T. 10) and Iron S. H. Liu and H. I. Chu—p. 103
- Anthropometry and Arthritis I Differences Between Rheumatoid and Degenerative Joint Disease Males C. C. Seltzer—p. 163
- Id II Differences Between Rheumatoid and Degenerative Joint Disease Females C. C. Seltzer—p. 189

Calcium and Phosphorus Metabolism and Effects of Dihydroxycholesterol in Renal Osteodystrophy—Liu and Chu report metabolic observations on 5 Chinese patients with various grades of skeletal decalcification with or without other osseous changes occurring in association with moderate to advanced renal insufficiency. The authors apply to this condition the term renal osteodystrophy pointing out that the term "renal rickets" though used extensively is objectionable because it identifies the disease of the skeleton with rickets which it is not in many cases although the radiologic appearance and the gross deformities of the bones resemble those seen in rickets. The term renal dwarfism emphasizes only one feature of the disease which is not present in many cases. Objection to the term "renal infantilism" may be made on the same basis. The term "renal osteodystrophy" seems to be a suitable generic name to include cases of osseous disorder associated with renal insufficiency, while the exact nature of the pathologic process in the skeleton is still undetermined. The bone lesions of the 5 patients varied from slight or moderate osteoporosis with no

deformities to pronounced rickets with gross deformities. In 2 cases rickets-like changes were present in the epiphyses. The renal insufficiency was moderate in 1 case and far advanced in the rest. In advanced renal insufficiency difficulty in renal excretion of phosphate was evidenced by a small percentage of urinary phosphorus and by hyperphosphatemia. Such evidence could be brought out more clearly by increasing the phosphorus intake. Calcium balance was negative on low or moderate calcium intake and slightly positive on high calcium intake. High fecal excretion of phosphorus after increased phosphorus intake was usually followed by calcium loss even on high calcium intake. Chronic acidosis was present in all the cases. Alkali administration alleviated the acidosis with improvement of renal function and favorable effect on the calcium metabolism. There was no response to ordinary therapeutic doses of vitamin D and it was meager even to massive doses. In contrast to vitamin D, dihydroxycholesterol was remarkably effective in promoting calcium and phosphorus absorption and their deposition in the skeletal store. Iron was efficacious in relieving hyperphosphatemia and in sparing calcium in the intestinal elimination of phosphorus. The lack of response to vitamin D was thought to suggest the possibility of inactivation of vitamin D as a result of functional impairment of the kidney. This was considered to be of primary importance in the genesis of bone disease. A shift of phosphate excretion from the kidneys to the intestine and definite acidosis, present only in advanced renal insufficiency were important aggravating factors. For treatment a low phosphorus, low protein and high calcium diet alkali dihydroxycholesterol and iron were indicated. The results with dihydroxycholesterol were particularly favorable.

Oklahoma State Medical Assn Jour, Oklahoma City

36 139-184 (April) 1943

- Treatment of War Gas R. E. Greer—p. 139
- Hypertension in Young Athlete Due to Coarctation of Aorta Report of Case J. A. Blue—p. 143
- Haverhill Fever Case Report W. K. Imlae—p. 146

36 185-230 (May) 1943

- *Study of Trachoma with Report of 318 Cases 233 Treated with Sulfanilamide C. Gallaher—p. 185
- Lithohelophedion (Lithopedion with Calcined Membranes) Case Report With Some Remarks on Ectopic Pregnancy in General G. Penick—p. 192
- Early Diagnosis of Tuberculosis T. C. Black—p. 195
- Intestinal Decompression Review of Methods A. S. Risser—p. 197

Trachoma Treated with Sulfanilamide—Gallaher submits a statistical analysis of 318 cases of trachoma most of which were treated by him in the course of the last four years. One hundred and eighty-eight of the patients were males and 130 were females, 209 were white, 108 were Indians and 1 was a Negro. Trachoma is rare among the colored population. All except 3 of the patients received ambulatory treatment. The adults numbered 134, the children 184. The author abandoned the use of copper sulfate sticks because of the pain associated with their use. If a treatment is too painful the patients refuse to return. Silver nitrate was used only in case of complication with gonorrheal infections. It was not usually repeated. One or more of the following therapeutic methods were used in all cases. Sulfanilamide by mouth was used in 199 cases, grating in 26, brosse in 2, zinc sulfate in 58, copper sulfate solution in 46, sulfanilamide (1 per cent in isotonic solution or three chlorides) in 40, sulthiazole in a 3 per cent ointment in 9 cases, vitamin A (25,000 units or more daily) in 4 cases. The results of sulfanilamide therapy were such that the drug must be included in the treatment of trachoma. No treatment with or without sulfanilamide produces beneficial changes in every case. Well over 90 per cent of cases can be assured of some improvement. Sulfanilamide therapy in combination with other drugs affords a method which may be used with reasonable activity without hospitalization and without the necessity of prolonged daily treatment and observation. One or more courses of sulfanilamide alone are apt to produce disappointing results. The specific remedy for trachoma is not yet found. The essential nature of the disease and its cause and its treatment remain a problem to be solved.

Psychosomatic Medicine, Baltimore

5 117-202 (April) 1943

- Eating Inhibitions in Children in Relation to Anorexia Nervosa J A Rose—p 117
- Studies in Psychosomatics I Influence of Hypnotic Stimulation on Gastric Hunger Contractions J H Lewis and T R Sarbin—p 125
- Relation Between Electromyographic Measurements and Subjective Reports of Muscular Relaxation J Ruesch and J E Finesinger—p 132
- Electroencephalogram in Psychopathic Personality J R Knott and J S Gottlieb—p 139
- Changes in Electroencephalogram During Cycle of Morphine Addiction H L Andrews—p 143
- Further Note on Measurement of Autonomic Balance M A Wenger—p 148
- Symposium on Fatigue H Davis and others—p 152

Surgery, Gynecology and Obstetrics, Chicago

76 641-758 (June) 1943

- *Surgical Management of Some of the More Complicated Problems of Peptic Ulcer F H Lahey and S T Marshall—p 641
- One Stage Combined Abdominoperineal Resection for Malignant Tumors of Rectum, Rectosigmoid and Lower Part of Sigmoid C W Mayo—p 649
- Effect of Heparin on Wound Healing H Laufman and R E Heller—p 655
- Use of Venograms for Localization and Study of Arteriovenous Fistula J R Watson J M Lichty J M Hill and R B Miller—p 659
- Rate of Absorption and Cillus Stimulating Properties of Cow Horn, Ivory, Beef Bone and Autogenous Bone C W Hughes—p 665
- Congenital Atresia of Esophagus with Tracheoesophageal Fistula Extra pleural Ligation of Fistula and End to End Anastomosis of Esophageal Segments C Haight and H A Towsley—p 672
- *Traumatic Peritonitis Choice of Routes for Administration of Sulfonamides R K Gilchrist, F H Straus, R Hanselman, C C Draa, S E Lawton and M Freeland—p 689
- Distribution of Nerves in Adult Human Myometrium E F Hirsch and Mary E Martin—p 697
- Anterior Sacral Meningocele F A Collier and R G Jackson—p 703
- Amputations in Children F vom Saal—p 709
- Primary Carcinoma of Appendix Resembling Carcinoma of Colon A Uihlein and J R McDonald—p 711
- Infiltration Therapy of Acute Tendinitis with Calcification P W Lapidus—p 715
- Inhibitory Effect of Procaine on Bacteriostatic Activity of Sulfathiazole D Casten, J J Fried and F A Hallman—p 726
- Evaluation of Dysmenorrhea by Basal Body Temperature R A Lyon—p 729
- Immediate Active Motion Treatment of Fractures of Head and Neck of Radius J A Mason and N M Shutkin—p 731
- Rate and Nature of Epithelization in Wounds with Loss of Substance E L Howes—p 738
- Construction of an Artificial Vagina W M Adams—p 746

Surgical Management of Peptic Ulcer—Lahey and Marshall state that, of the 7,000 hospitalized patients with ulcer, 181 per cent were subjected to operation for gastric ulcer and 659 per cent for a duodenal ulcer. The mortality rate was 27 per cent for all gastric, duodenal and gastrojejunal ulcers, exclusive of the gastrojejunal fistula, it was 32 per cent for 251 subtotal resections of all types—gastric, duodenal, gastrojejunal and gastrojejunal fistula, it was 44 per cent in 46 consecutive subtotal gastric resections performed solely for a gastrojejunal ulcer. The authors discuss the surgical management of some of the more complicated peptic ulcers in the last 251 consecutive operative cases. The ulcer states which have been complicated and difficult to manage are the low duodenal ulcer involving the common bile duct in its indurated scar, the ulcer located at or below the entrance of the common duct in the duodenum, the gastrojejunal ulcer, the gastrojejunal fistula and the recurrent ulcer in the gastric stump after a high subtotal gastrectomy. All the deaths among the 251 patients subjected to total or subtotal gastrectomy for ulcer, with the exception of 1 patient who died of embolus, were of patients having ulcers of these complicated types. The authors stress that conservative operative methods are occasionally imperative to avoid high operative mortality in certain densely adherent duodenal ulcers or ulcers arising low in the duodenum and involving the common duct. Radical subtotal gastrectomy is necessary for relief of the surgical gastrojejunal ulcer. Temporizing operative procedures in view of the possibility of recurrent ulcer serve only to increase further the operative risk.

Sulfanilamides in Traumatic Peritonitis—Gilchrist and his associates produced peritonitis in dogs to ascertain the time necessary to establish adequate blood and intraperitoneal con-

centration of various sulfonamides after administration by mouth or vein, by implantation into the abdomen, and by intraperitoneal injection. They made 716 determinations of sulfonamide concentrations on the heart blood and peritoneal fluid in experiments on 75 dogs. The authors present observations on human material which correspond to the results in the animal experiments. Sulfanilamide given by mouth after injury to the peritoneum will not produce adequate early concentrations in blood and peritoneal exudate. A 10 per cent solution of sodium sulfathiazole may be injected intravenously without producing a phlebitis. Fifteen minutes after such an injection the effective sulfathiazole level in the peritoneum will approach that found in the blood. Therapeutic concentration in the peritoneal fluid will be maintained for four to six hours. If sodium sulfathiazole solution is injected into the abdominal cavity after the injury and before closure of the perforation, an immediate high concentration is obtained. When sodium sulfathiazole or sulfanilamide crystals are placed in the abdomen at operation there is a rapid high concentration of drug in the peritoneal exudate. The blood concentration rises to therapeutic levels rapidly and falls below such a level after six hours. When relatively insoluble sulfathiazole crystals are placed in the abdomen, effective concentrations are reached in the peritoneal exudate in twenty minutes and are maintained for many hours. The concentration in the blood rises slowly and usually remains below therapeutic levels. The following program for retarding the development of peritonitis after bowel perforation is suggested: 1. Five-tenths Gm of sodium sulfathiazole per 10 pounds of body weight should be injected intravenously (5 or 10 per cent solution) in from two to four minutes. Intravenous fluid, plasma, or blood should follow. As an alternate procedure a soluble drug or a suspension of sulfathiazole microcrystals may be injected directly through the abdominal wall or through the entry wound. Laparotomy should be performed as soon as possible. At that time a relatively insoluble sulfonamide, such as sulfathiazole, should be placed in the abdomen. When soluble sulfonamides are used in the abdomen, additional drugs must be administered after eight hours. When slowly soluble sulfathiazole is used in the abdomen, additional drugs need not be administered for twenty-four hours.

Western J Surg, Obst & Gynecology, Portland, Ore

51 177-224 (May) 1943

- Problem of Antagonistic (Antigonadotropic?) Substances to Equine Gonadotropin in Clinical Therapy With Reference to Management of Amenorrhea J H Leatham and A R Abarbanel—p 177
- Use of Vitamins in Surgery Resume E F Gooel—p 180
- *Gas Gangrene Analysis of 416 Collected Cases Treated by Roentgen Therapy with 13 New Cases K D McMillan—p 187
- Diseased Tibial Sesamoid of Big Toe Joint A Gottlieb—p 193
- Fibromyoma of Cervix Uteri Obstructing Labor R Torpin—p 196
- Influence of Hormones on Varicose Veins in Pregnancy A M McCausland—p 199
- Vaginal Antisepsis During Labor Eleven Thousand Vaginal Deliveries Without Death from Puerperal Infection H W Mayes—p 201

Roentgen Therapy in Gas Gangrene—McMillan collected from the literature 416 cases of gas gangrene in which roentgen therapy was used and reports 13 new cases in which this treatment was employed. Roentgenograms should be taken of the involved area every four to six hours in injuries where gas gangrene is liable to develop. This will lead to early diagnosis. The development of clinical signs and symptoms need not be awaited. Prophylactic treatment of wounds liable to develop gas gangrene should consist of immediate debridement, use of sulfanilamide in the wound and adequate doses of tetanus gas gangrene antitoxin. X-rays may also be useful as a prophylactic measure. Active treatment should consist of 100 roentgens over involved areas as soon as diagnosis is made or strongly suspected, repeated twice daily for three days or until the infection is brought under control, local debridement and therapeutic amounts of the antiserum if the infection is more than twelve hours old or if the patient does not respond clinically to the foregoing treatment. Amputation should not be resorted to for gas gangrene per se. Of the 416 patients given x-ray treatment 62 died, giving a mortality of 149 per cent. Millar's review of 607 cases before the era of roentgen treatment revealed a mortality of 497 per cent. Of the 13 new reported cases 3 had a fatal outcome.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Heart Journal, London

5 73-120 (April) 1943

- Chest Lead CRr in Cardiac Infarction W Evans and A Hunter —p 73
Potassium Effects on T Wave Inversion in Myocardial Infarction and Preponderance of Ventricle E P Sharpey Schafer —p 80
Potassium Effects on Electrocardiogram of Thyroid Deficiency E P Sharpey Schafer —p 85
Anginal Pain in Myxedema A A F Peel —p 89
Common Aortopulmonary Trunk Rare Congenital Defect C W C Bain and J Parkinson —p 97
Fatal Coronary Thrombosis in Man Aged 22 W S Miller and W W Woods —p 101
Syphilitic Angina Pectoris E. Jones and D E Bedford —p 107

British Medical Journal, London

1 623-654 (May 22) 1943

- Investigations During an Outbreak of Bullous Impetigo Neonatorum T H C Benians, with technical assistance of J Webster and A G Newman —p 623
Blood Transfusion in Nocturnal Hemoglobinuria J A Dacie and D Firth —p 626
Treatment of Psychiatric Patients in General Hospitals Social Experiment D E Sands —p 628
Atropine Glaucoma J E Martin —p 631
Specifications for Dark Adaptation Tests K. J W Craik —p 632
Critique of Bishop Harman Test for Night Vision J Yudkin in collaboration with A Ferguson —p 633

Journal Obst & Gynaec of Brit Empire, Manchester

50 83-160 (April) 1943

- Present Position of Antenatal Care in Obstetrics J D Green —p 83
Investigation of Effect of Ergot Alkaloids in Promoting Involution of Postpartum Uterus C Moir and C S Russell —p 94
Further Bacteriologic Studies of Severe Clostridium Welchii Infections Following Abortion Hildred M Butler —p 105
Anesthesia and Analgesia in Obstetrics from Viewpoint of General Practitioner J Elam —p 120
Tuberculosis of Female Genital Tract O Browne —p 128
Clinical Significance of Degree of Calcification of Placenta as Demonstrated by X Ray Photography Amy M Fleming —p 135
Traction on Groin in Breech Presentation M Wassermann —p 140
Hemangioma of Arm Causing Delay in Delivery and Neonatal Death Mildred I Ealing —p 144
Uterus Didelphys Nora L Keevil —p 146

Clostridium Welchii Infection Following Abortion—

At the Woman's hospital in Melbourne as many as twelve deaths in one year have resulted from fulminating infections due to *Clostridium welchii*. It is often present in the vagina, the uterine contents, the urine and even in the blood without causing symptoms of a severe infection. Thus mere isolation of *Cl welchii* from the tissues or body fluids is of little diagnostic significance. Butler showed that the strains of *Cl welchii* causing the severe infections differed from most of the strains obtained from patients who did not develop symptoms both in regard to growth characteristics and to the amount of capsular material produced in broth. The examination of smears from the cervical canal solved the problem of rapid bacteriologic diagnosis. In severe infection cervical smears showed heavily capsulated bacilli and considerable destruction of the leukocytes. This combination was not seen in the smears from patients who although infected with *Cl welchii*, did not show symptoms of a severe infection. This suggested that severe *Cl welchii* infections associated with abortion were caused by only certain variants of this organism. She studied more than 600 strains of *Cl welchii* isolated from abortifacient cases with regard to one or more of the following characteristics: capsulation in broth cultures, production of alpha toxin, phagocytosis by human leukocytes and pathogenicity of washed cultures for guinea pigs. Smears from the cervical canal were examined in 80 cases in which there was a proved *Cl welchii* infection. All the strains of *Cl welchii* causing the severe generalized infection possessed the properties of highly invasive variants and differed from both the strains causing localized infections and those cultivated from the blood of patients without symptoms of a severe *Cl welchii* infection. In the severe infections the patient's symptoms were correlated with the properties of the infecting strain. The comparative rarity of the severe infections was explained by the finding that the highly invasive

variants of *Cl welchii* formed only a small minority of the strains cultivated from the genital tract. All the strains causing the severe infections and also some of the control strains produced a fatal infection in guinea pigs when washed cultures from agar were injected intramuscularly. This property was sometimes lost comparatively rapidly under artificial cultivation. It is suggested that a somewhat similar correlation to that observed in abortifacient cases may exist between severity of infection and the characteristics of the infecting strain in gas gangrene following wounding.

Lancet, London

1 637-668 (May 22) 1943

- Blood Volume in Chronic Anemia by Concentrated Corpuscle Hemoglobin Method J McMichael and E P Sharpey Schafer —p 637
Vitamin C Subnutrition in Gingivostomatitis F Stuhl —p 640
Necrotic Gingivitis B S Kent —p 642
Iron Media for Cultivation of Anaerobic Bacteria in Air Nancy J Hayward and A A Miles —p 643
Sulfapyridine Anuria A L Kerr —p 646
Anuria from Tubular and Ureteric Obstruction Following Sulfapyridine Therapy W Thompson —p 647
Sulfapyridine Anuria and Its Treatment W A Flynn —p 648
Pneumococcal Meningitis Recovery with Sulfamethazine R Pakenham Walsh —p 649

Iron Media for Cultivation of Anaerobic Bacteria in Air—Hayward and Miles found that strips of sheet iron (which is a heat resistant, moderately pliable type of rolled mild steel) have a remarkably stimulating effect on the growth promoting properties of simple solutions of peptone for anaerobic bacteria. The mode of action of the iron is probably complex. The maintenance of a stock of dry strips of sheet iron is a simple matter, and broths or peptone waters from which air has been expelled by heating are converted by the strips into excellent "aerobic" mediums for biochemical tests or anaerobic bacilli, both sporing and nonsporing, and of anaerobic streptococci.

Medical Journal of Australia, Sydney

1 341-358 (April 17) 1943

- *Bacillary Dysentery Caused by Bacterium Dysenteriae P274 L E Rothstadt F Fenner and B A Baker —p 341
*Bacillary Dysentery Some Results and Conclusions from Series of Patients Treated with Sulfaguanidine R F West —p 344

Bacillary Dysentery Caused by Bacterium Dysenteriae P274—Rothstadt and his collaborators provide further evidence for the acceptance of P274 as a true dysentery organism. They review cases of dysentery treated at an Australian general hospital. Stools from 228 patients suspected of having bacillary dysentery were examined, and dysentery organisms were isolated from 85, as follows: *Bacterium dysenteriae* Flexner 39, *Bacterium dysenteriae* P274, 42, *Bacterium dysenteriae* Boyd I 1, *Bacterium dysenteriae* Sonne, 2, *Bacterium dysenteriae* Schmitz, 1. *Bacterium dysenteriae* P274 was not isolated from any patient not suffering from clinical dysentery and has not been reported to occur in normal stools in numerous examinations. The clinical picture of the disease caused by P274 is indistinguishable from that of acute bacillary dysentery due to *Bacterium dysenteriae* Flexner. The authors conclude that the organism P274 of previously unproved pathogenicity has satisfied the criteria necessary to secure its acceptance as a true dysentery bacillus. It is suggested that the organism should be named *Bacterium dysenteriae* Boyd IV.

Bacillary Dysentery Treated with Sulfaguanidine—West made a survey of 279 patients with diarrhea admitted to a hospital over a period of three months. Early diagnosis is important and in most cases it can be made from the history and from macroscopic examination of the stools. Laboratory methods are a help but are not necessary for diagnosis. Sigmoidoscopic examination is essential in all doubtful cases. Among the 279 cases there were 167 of acute bacillary dysentery, 12 of amebic dysentery and 100 of nonspecific enteritis. Limitation of bed space permitted complete treatment of only 97 of the patients with bacillary dysentery. Attempts at culture with 1 specimen of feces from each of the 97 patients yielded results in 46 (48 per cent). The types of organisms isolated were Flexner I, Flexner II, Shiga, Schmitz and Sonne. A control series of 23 patients were treated with sodium sulfate, the other 74 being treated with sulfaguanidine. Patients treated

with sulfaguandine showed a pronounced improvement in their general condition after twenty-four hours, and on the third day their feeling of well-being was remarkable, this is in sharp contrast to those receiving saline therapy, who even at the end of seven days, and sometimes well into the second week, experienced abdominal discomfort, anorexia and malaise. The authors conclude that sulfaguandine therapy should be used in all cases, mild or severe.

Schweizerische medizinische Wochenschrift, Basel

72 1289-1312 (Nov 21) 1942 Partial Index

- Estimation of Operability of Patients with Diabetes Mellitus Their Preoperative and Postoperative Treatment G R Constam —p 1289
Practical Suggestions for Treatment of Caries F Oesch —p 1292
Calcium Metabolism G Schonholzer —p 1295
Osteoid of Cortical Part of Bone Differential Diagnosis of Bone Changes A Fehr —p 1298
*Studies on Problem of Goiter Goitrogenic Substances in Plants and Sensitivity of Animals F Blum —p 1301
*Ergotamine Tartrate in Herpes Zoster A Stokly —p 1305
Spontaneous Cure of Gastric Perforation M Roch —p 1307

72 1313-1340 (Nov 28) 1942 Partial Index

- Thrombosis and Pulmonary Embolism in Relation to Meteorologic Changes at Altitude of Davos (1,550 Meters Above Sea Level) W Stahl —p 1321
Cases of Epidemic Cerebrospinal Meningitis with Encephalitic Complication E Kovacs and I Farago —p 1326
Influence of Vitamin B₁ on Carbohydrate Metabolism O Osman Saka —p 1327
*Studies on Problem of Goiter Goitrogenic Substances in Plants and Sensitivity of Animals F Blum —p 1329
Treatment of Insomnia F Grote —p 1333

Goitrogenic Substances in Plants—Blum states that practically all members of the cabbage (Brassica) family except kale contain goitrogenic substances. Soy beans have a strumigenic effect as do also various beans which are members of the Phaseolus family, and peas and lentils, members of the Vicia family. There are indications that peanuts (Arachis) contain a strumigenic factor. He found that not only small animals like rats, guinea pigs and rabbits are likely to develop goiter in response to feeding with the aforementioned vegetables but also goats, sheep and hogs. Typical goitrous degeneration of the thyroid could be developed in dogs provided the feeding with cabbage was begun early enough and was sufficiently prolonged. Geese likewise developed characteristic thyroid changes.

Ergotamine Tartrate for Herpes Zoster—Frus-Møller found ergotamine tartrate highly effective in herpes zoster. Stokly administered 0.5 cc of ergotamine tartrate subcutaneously for six successive days in the treatment of 6 patients with herpes zoster. The results obtained corroborated those of the Danish author. With the exception of nausea and vomiting in 2 cases there were no untoward effects. Five of the 6 patients showed considerable improvement after the second injection. The peripheral circulation must be carefully controlled in the course of the treatment. Ergotamine tartrate is contraindicated in severe cardiac insufficiency and in Raynaud's disease. Stokly modified the dosage in 6 new cases by giving 0.5 cc on the first day and 1 cc daily after that until an effect could be noticed and then resumed the 0.5 cc dose. The total dose varied between 4.5 and 6 cc. The treatment was successful in all 12 cases.

Prensa Médica Argentina, Buenos Aires

30 549-596 (March 31) 1943 Partial Index

- Bronchopulmonary Cancer Without Clinical Symptoms or X Ray Signs M R Castex and E S Mazzei —p 553
*Cervical Rib in Pulmonary Tuberculosis H Butori —p 558

Cervical Ribs and Pulmonary Tuberculosis—Butori observed 3 cases of cervical rib simulating pulmonary apical tuberculosis. He reviewed roentgenograms of 3,500 patients with pulmonary tuberculosis and found either a cervical rib or hypertrophy of the transverse process of the seventh cervical vertebra in the roentgenograms of 32 out of 1,100 women and of 12 out of 2,400 men, an incidence of 2.9 and 0.5 per cent for women and men respectively. The ribs were bilateral in 27 and unilateral in 12. The right bilateral rib was longer than the left in the majority of the cases. A right unilateral rib was more frequent than the left (7 to 5). The first rib

of either side showed abnormalities in 9 cases. These consisted of asymmetrical atrophy of the arch and of the presence of insertions of supernumerary muscles between the first rib and the cervical rib. Heredity and syphilis were not involved as causal factors. The Kahn serum test was negative in all but 2. There was no relationship between the type of pulmonary tuberculosis and the presence of a cervical rib. The existence of a cervical rib does not predispose to pulmonary tuberculosis. A cervical rib may simulate tuberculosis because of an area of dullness to percussion over the supraclavicular fossa, because of diminished respiratory excursions and because of certain subjective symptoms such as pain and nervous symptoms common to the two conditions.

Revista Clínica Española, Madrid

7 301-362 (Dec 15) 1942 Partial Index

- Wounds of Large Intestine Caused by Firearms Observations on 212 Cases A G Baron —p 301
Studies on Fat Metabolism Existence of Fat Mobilizing Substance in Animals with Ligated Choledochus C Jimenez Diaz and H Castro Mendoza —p 318
*Existence of Substances Inhibiting Reaction of Carr-Price in Some Vitamin Products M A Catalan and F Grande Covian —p 321
Macrogenitosomia (Pubertas Precox) of Cerebral Origin "Diencephalic" or "Hypothalamic" Forms (Berblinger) M Schachter —p 324
*Vitamin E and Neuromuscular Syndromes P Puig Muset —p 328
Application of Beer's Law on Color Development in Carr-Price Reaction of Vitamin A M A Catalan and F Grande Covian —p 340
Aplastic Anemia Caused by Benzene Myeloblastic Leukemia G Paniagua —p 341

Substances Inhibiting Carr-Price Reaction in Vitamin A Products—Catalan and Grande Covian state that cod liver oil and vitamin A preparations contain substances which inhibit the color reaction of the antimony trichloride color test of Carr-Price. They tried to obtain quantitative information regarding the inhibiting factors. They determined the inhibiting effect exerted by various quantities of chloroform dilutions of cod liver oil. The presence of substances inhibiting the Carr-Price reaction are of importance in the chemical evaluation of vitamin A, because of them the vitamin A content of some preparations may be underestimated and of others overestimated. If the vitamin A content of an oil is to be determined, it should be ascertained first whether it contains inhibiting factors detectable by saponification. A systematic study should be made of the distribution of inhibiting substances in various natural oils, which would establish the method to be employed in the evaluation of each particular oil. Commercial products of vitamin A often consist of vitamin A concentrates diluted in various types of oils. These oils may contain substances that inhibit the color reaction. Thus a change in the diluting oil may result in a noticeable change in Carr-Price color reaction although the vitamin A content is the same.

Vitamin E for Neuromuscular Syndromes—Puig Muset reviews observations reported by histopathologists on neuromuscular lesions resulting from diets deficient in vitamin E, as well as experimental investigations carried out by himself. He believes that vitamin E acts on the muscular system by fixing the phosphatides which form myelin. He deduces from this that, in order to be effective, vitamin E requires the presence of phosphatide reserves in the organism or the external administration of these substances. He regards lathyrism as a disease which exemplifies a deficiency in phospholipoids.

Revista Paulista de Medicina, São Paulo

21 153-250 (Sept) 1942 Partial Index

- *Meta-Amino-Parahydroxyphenyl Arsine Hydrochloride Hemialcoholate in Therapy of Syphilis J de Alcantara Madeira —p 153
Female Hormones in Therapy of Hemophilia T Niemeyer —p 237

Meta-Amino-Parahydroxyphenylarsine Hydrochloride Hemialcoholate in Syphilis—Alcantara Madeira administered this substance to 150 adult patients with primary, secondary and tertiary syphilis. The drug was given intravenously in 0.04 Gm doses. The injections were given once a week for twelve injections. Two courses of injections were given one month apart. The treatment produced a rapid healing of primary, secondary and tertiary lesions and a rapid conversion of serologic tests. The drug was well tolerated.

Book Notices

New and Nonofficial Remedies 1943 Containing Descriptions of the Articles Which Stand Accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1943. Issued Under the Direction and Supervision of the Council on Pharmacy and Chemistry of the American Medical Association. Cloth Price \$1.00. Pp. 72. Chicago: American Medical Association, 1943.

New and Nonofficial Remedies for 1943 continues with minor improvements, the convenient and informative system of classification adopted for the 1942 volume. The terminology of the official drugs has been revised to conform to the U. S. P. XII and the N. F. VII. The valuable bibliographic index now appears on white instead of India tint paper, a wartime necessity. This index appears before the general index, which is now more properly placed at the end of the book. The new arrangement may appear at first somewhat awkward, but with a little use the wisdom and convenience of the changes become more and more apparent.

The chapter on digitalis and digitalis-like principles and preparations has been extensively and somewhat radically revised to keep pace with the changing attitude toward this drug. In this revision the Council had the aid of the foremost authorities on digitalis, including pharmacologists and clinicians. It is interesting to contrast the following sentence in the 1942 general article on Chaulmoogra Derivatives: "The therapeutic properties of chaulmoogra oil appear to be due to these optically active unsaturated fatty acids of the chaulmoogric series, which in the 1943 edition reads: "Any therapeutic properties chaulmoogra oil may possess would appear to be due to these optically active unsaturated fatty acids of the chaulmoogric series."

Among the more noteworthy of the new editions are nikethamide, the central nervous system stimulant which was first introduced as coramine, diethylstilbestrol, the synthetic estrogen trichinella extract for the diagnosis of trichinosis and zephiran chloride, a mixture of alkyl dimethyl benzyl ammonium chlorides, an interesting new anti-infective agent.

The successive volumes of New and Nonofficial Remedies increase the profound respect everywhere tendered to the faithful and unselfish work of the Council on Pharmacy and Chemistry in the cause of rational therapeutics. Each volume represents a progressive milestone on the road of medical science.

Final Report, White House Conference on Children in a Democracy Washington, D. C., January 18-20, 1940. United States Department of Labor, Children's Bureau Publication No. 272. Paper. Price 65 cents. Pp. 392 with illustrations. Washington, D. C.: U. S. Govt. Printing Office, 1942.

This is the final report of the conference which met in Washington Jan. 18-20, 1940. Since its adjournment follow-up committees have been organized in twenty-six states and in Puerto Rico. The report outlines the point of view and perspectives of the conference and presents studies relating to child health and welfare in the American democracy. First there is a report on the numbers and distribution of children followed by a discussion of the American setting, rural and urban economic and cultural. The situation faced by children of minority groups is discussed with special reference to inequalities and discriminations. A chapter is devoted to the common needs of all children—parents' family life, dwelling, health protection, education and training and preparation for later life. A chapter devoted to economic problems results in the interesting conclusion among others that "one of the principal objectives of sound economic life in a democracy is that people shall be able to earn and administer their own incomes but over against this on the same page and part of the same set of conclusions, appears "In pursuance of this function it would seem unavoidable for the government to assume a far larger and more responsible share in the direction of the national economy than has been the case in the past. The provision of services to the people so as to achieve a more equitable distribution of the wealth produced is only one way—although a very important one—of achieving that end. Education, leisure time activities and employment receive attention in lengthy chapters and so do social services for children.

The considerable space devoted to health will be of special interest to the doctor. The general tenor of the attitude of the conference seems fairly represented by the following:

It is coming to be recognized that a very large part of the population in addition to the indigent cannot from their own resources meet the expense of proper medical care and that in the long run it will pay the public to supply hospital accommodations, laboratory facilities and other diagnostic aids, use of therapeutic appliances, medical and nursing service and convalescent care for all the medically needy.

On this point the recommendations of this conference include the following specific statement:

The health and well being of children depend to a large extent upon the health of all the members of their families. Preventive and curative health service and medical care should be made available to the entire population, rural and urban in all parts of the country. A considerable portion of the population is able to obtain from its own resources all or part of the necessary medical service. Another large section of the population, however, consists of families whose incomes are below the level at which they can reasonably be expected to budget all the varying costs of illness without interfering with the provision of other items essential to the family's health and welfare. For these there should be available adequately supervised medical and dental care through a program financed by general tax funds, social insurance systems or such combination of methods as may be best suited to local conditions.

To achieve these ends will require expansion of full time local public health services organized on a city, county or district basis, construction and adequate support of health centers and hospitals, as needed especially in rural areas and more effective use of existing medical services and facilities, more effective coordination of community public health and medical services conducted by various agencies, public and private.

More money will have to be spent by government at all levels—local, state and federal. The responsibilities of each—administrative as well as financial—will have to be defined. The confusing array of agencies, public and voluntary, will have to be brought into a comprehensible system.

Nutrition. An Introductory Text. By Fern Silver, Supervisor of Home Economics, Lincoln High School, Albuquerque. Cloth. Price \$1.35. Pp. 168 with illustrations. New York: D. Appleton Century Company, 1942.

This is a brief outline of nutrition intended for home use. It has chapters on foods in relation to energy and growth—composition, fuel value, fuel requirements, protein and its uses, and digestion and absorption—minerals in relation to body nutrition, vitamins, planning an adequate diet, adequate diets for children and relation of adequate diet to health. There is a general knowledge test on nutrition, an appendix containing tables of food values, and an index. In general the material is useful and well selected. The section on vitamins could have been improved by reducing emphasis on the results of extreme vitamin deficiencies amounting to virtual absence. Xerophthalmia and beriberi are not seen often in this country, the speculation as to whether sciatic rheumatism may be due to vitamin B₁ deficiency is out of place in such a book. More emphasis on subclinical deficiencies and less on extreme deprivation would be more serviceable in a book intended for lay readers. The table of food values on pages 140-143 is exceptionally good, bringing together all the contributions of ordinary servings of common foodstuffs. The tables of food composition beginning on page 151 are less serviceable—calories per pound are seldom of interest, protein, carbohydrate and fat in percentages require too much mathematics for the average—or even the above average—home. The material in this book is excellent for nutritionists and advanced students, its presentation is not as practical as it could have been for the ordinary American home.

Synopsis of Pathology. By W. A. D. Anderson, M.A., M.D., Assistant Professor of Pathology, St. Louis University School of Medicine, St. Louis. Cloth. Price \$6. Pp. 661 with 311 illustrations. St. Louis: C. V. Mosby Company, 1942.

From the author's preface: This volume is intended to fill a gap which has existed between the very elementary manuals of pathology and the abundant excellent larger textbooks and reference works. By the presentation of pathology in a compact and condensed form it is designed to be useful to the medical student to the dental student studying general pathology and to the clinicians who must maintain familiarity with the foundation sciences or medical practice. In the first edition of a textbook such as this one expects to find a certain number of errors and instances of disproportion. This book is singularly free from such defects. It is remarkably well balanced and admirably reflects the author's purpose. Approximately 23 per cent of the text is devoted to general pathology (of which 60 per cent deals with infectious disease), 5 per cent to oncology and 72 per cent to special pathology. Illustrations

are quite adequate and, for the most part, excellent. Seventeen tables are to be found throughout the text, e. g. on differential features of venereal lesions, vitamin deficiencies in man, inflammations and ulcerations of the intestinal tract and grading of carcinoma of the cervix, which present in schematic fashion and correlate various related pathologic entities. It is fortunate that, in spite of space limitations, the author has seen fit to include in the chapters devoted to special pathology a brief concise summary of pertinent anatomic and physiologic data and thus prepare for a more complete understanding of the abnormal. The selection of references which may be found at the end of each chapter is especially to be commended in that the majority of them date from 1940. In the opinion of the reviewer this textbook is excellent in all respects and accomplishes what the author intended.

Holt's Care and Feeding of Children Revised and Enlarged by L. Emmett Holt II, M.D., Associate Professor of Pediatrics, Johns Hopkins University, Baltimore. [Sixteenth edition.] Cloth. Price \$2. Pp. 321 with 5 illustrations. New York & London: D. Appleton Century Company, Inc. 1943.

This book has been standard ever since the first edition appeared half a century ago. Since that time many things have happened, and the Holts, father and son, and their manual have had a part in them. Infant lives have been saved, health and feeding problems have been conquered, until the problem is not so much keeping children alive as teaching them to live and learning to live with them. The latest edition of Holt's manual takes cognizance of behavior problems, and deals with them in the same simple practical way as with directions about how to wash diapers and how to feed the baby artificial formulas as ordered by the doctor. The manual is a question and answer book, and it covers literally everything that a young mother would want or need to know. This edition can be recommended as whole heartedly as previous ones have been.

Human Neuroanatomy By Oliver S. Strong and Adolph Elwyn, Associate Professor of Neuroanatomy, College of Physicians and Surgeons, Columbia University, New York. Cloth. Price \$6. Pp. 417 with 320 illustrations. Baltimore: William Wood & Company 1943.

This excellent book is a real contribution for the undergraduate as well as the graduate student. It is written on the premise that neurology is dependent on an accurate knowledge of anatomy as a basis for the intelligent diagnosis and localization of neural disturbances. With this premise the reviewer entirely agrees. There are twenty chapters. The first eight describe in detail the organization of the central nervous system with regard to embryology, histology, segmental distribution of the peripheral nerve elements and their significance. The next twelve chapters are devoted to the study of the architectonics of the central nervous system. Here one finds excellent gross and microscopic photographs of anatomic detail with a clearcut discussion of the relationship of the structures in the light of clinical experience. There are three hundred and twenty such photographs. There is a large bibliography. This is a good book and is highly recommended.

Vitamins and Hormones: Advances in Research and Applications Edited by Robert S. Harris, Associate Professor of Nutritional Biochemistry, Massachusetts Institute of Technology, Cambridge, Mass., and Kenneth V. Thimann, Associate Professor of Plant Physiology, Harvard University, Cambridge. Volume I. With a foreword by E. V. McCollum. Cloth. Price, \$6.50. Pp. 452 with illustrations. New York: Academic Press, Inc. 1943.

The contents of this book are not as general and all inclusive as the title may suggest, they are devoted to special considerations which give the volume added value. The chapter titles include choline—chemistry and significance as a dietary factor, the appraisal of nutritional states, physical methods for the identification and assay of vitamins and hormones, the chemical and physiologic relationship between vitamins and amino acids, the photoreceptor function of the carotenoids and vitamin A, the significance of the vitamin content of tissues, growth factors for protozoa, physiology of anti-pernicious anemia material, the intermediate metabolism of the sex hormones, the hormones of the adrenal cortex. All sections are prepared by investigators prominent in the respective fields. Some of the information is presented in unique fashion, some as a redigestion of previously known or suspected facts, all offers a worthwhile reference source for those interested in vitamins and hormones.

Sometimes a suspicion of the contributor's inclination in controversial subjects is apparent, but this does not detract from the usefulness of the book, for the critical reader it should do no more than stimulate further thought.

Doctors of the Mind: The Story of Psychiatry By Marie Bevnor Ray. Cloth. Price, \$3. Pp. 335, with illustrations by Ruth Ray. Boston: Little Brown and Company, 1942.

The book gives popular and vivid but withal reliable accounts of some phases of scientific and practical psychiatry in recent times. Certain noteworthy achievements in psychiatry are described, largely on the basis of personal observations and interviews with leaders in the field, coupled with results of research of past records of the literature. No effort is made to review systematically the basic history of psychiatry and neurology. That mental illnesses long regarded as incurable are now in some cases curable is emphasized hopefully and effectively.

Atlas of Obstetric Technic By Paul Titus, M.D., Obstetrician and Gynecologist to the St. Margaret Memorial Hospital, Pittsburgh. Cloth. Price \$7. Pp. 180, with 193 illustrations by E. M. Shackelford, Medical Illustrator, John C. Oliver Memorial Research Foundation, St. Margaret Memorial Hospital, St. Louis. C. V. Mosby Company, 1943.

Titus presents the subject of obstetric technic in pictorial form. In addition there are sections on sterility and minor postpartum complications treated in the same manner. The illustrations were prepared from sketches made in the delivery and operating rooms, hence they are accurate. The author claims that the book has a function entirely its own, namely the teaching of both normal and operative obstetrics by visual means through the medium of carefully prepared illustrations. However, there are few illustrations which cannot be found in the standard textbooks on obstetrics. Nevertheless some of the intermediary steps shown in this book are not in the standard textbooks and they may prove helpful to many physicians and medical students. A few additional illustrations should have been included. These are illustrations showing the knee-chest and Trendelenburg positions for the immediate treatment of prolapse of the cord, local anesthesia for vaginal deliveries and cesarean section, and the use of a tracheal catheter or some other apparatus for the resuscitation of the newborn. The illustrations are magnificent and unsurpassable for purposes of instruction. Each step is clearly shown, and the person looking at them should have a perfect visual image of every operative obstetric procedure. Titus deserves great credit for preparing such a fine atlas because, when used in conjunction with one of the standard textbooks of obstetrics, it should prove to be most valuable.

Children Can Help Themselves: The Normal Child's Health Behavior By Marlon Olive Lerrigo, Ph.D. Cloth. Price, \$2.25. Pp. 219. New York: Macmillan Company 1943.

This book was written for parents. In a narrative form the author introduces a sensible pair of young parents and shows by concrete examples how they reared their son. In respective chapters the reader sees David at 1, 4, 8, 12 and 18 months, then at 2, 3, 4, 5, 8 and 11 years. The customary health behavior of the child at these stages of development is portrayed in each chapter. In each are included the diet, sleep, training, exercise and mental development at these various stages. As David gets older his behavior is checked against that of his two favorite playmates. The aim of the book is to aid parents as they impart responsibility and self reliance to the offspring. The fascinating style of each chapter should hold the young parents' attention through the years.

Peresadka rogovitsy svezhim konservirovannym i aksirovannym materialom eksperimentalnie i klinicheskie nablyudeniya [By] O. I. Shershevskaya. [Corneal Transplantation of Fresh Preserved and Fixed Tissues: Experimental and Clinical Observations.] Boards. Pp. 201 with 80 illustrations. Novosibirsk 1940.

The monograph by O. T. Shershevskaya, submitted for the degree of master of science, deals with the subject of transplantation of the sclera. The author has reviewed the literature on the subject very well. She reports her own experiments with transplantation of the sclera in rabbits, utilizing fresh and conserved as well as tissue fixed in solution or formaldehyde. Much credit is given to the pioneer work in this field by Filatov.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

SUDDEN DEATH AND ANESTHESIA—FUNDAMENTALS OF ANESTHESIA

To the Editor—A white woman aged 21, whose weight was 110 pounds (50 Kg) requested a tonsillectomy. Her past history was negative except that she had always been nervous. Preoperatively her heart, lungs, blood pressure and urinalysis were normal. The patient was given morphine sulfate $\frac{1}{4}$ grain (0.003 Gm) and atropine sulfate $\frac{1}{50}$ grain (0.00032 Gm) one-half hour before operation. Induction of anesthesia was begun with approximately 50 drops of chloroform and was continued with ether. No further chloroform was used. The operation was slightly prolonged. The anesthesia was rather light, the pupils being moderately constricted and there being some motion of the eyeballs most of the time. In fact I found it difficult to maintain sufficient depth with ether vapor administered through an ether tube attached to a suction machine and had to supplement this because of movement of the patient's limbs, with drop ether on three different occasions. Ether was omitted entirely during the last fifteen minutes because of faulty respirations and pallor. The pupils did not dilate. During the last fifteen minutes of the operation the patient stopped breathing momentarily and respirations were easily started by the simple procedure of pressure on the sternum. Immediately on removal of the mouth gag and completion of the operation the respirations were Cheyne-Stokes in type. They persisted thus until death by respiratory failure one and one-quarter hours after completion of the operation. The pupils were dilated between 2.5 and 3 mm. They dilated widely with the apneic phase and contracted with the hyperpneic phase. The heart action was good until the last. Nikethamide, caffeine and epinephrine were given with temporary benefit but without interrupting the periodic character of the respirations. Is it likely that I am right in assuming that death was due to morphine idiosyncrasy? Could death under similar circumstances be caused by apnea resulting from partial and intermittent anesthesia and holding the breath during induction? Could the chloroform have influenced the result? In this case would atropine in the dose given decrease or augment the respiratory depression? Can any reliance be placed on pupil signs with the use of morphine and atropine or either drug alone? Should morphine be condemned as preoperative medication? I do not consider this an ether death because the respirations did not stop but became periodic; the patient lived one and one-quarter hours after stoppage of ether and the narcosis instead of becoming lighter with elimination of the ether became deeper and more profound. Does the literature record many deaths during ether induction from apnea? Can ether narcosis produce Cheyne-Stokes respirations? Have any similar accidents been recorded? Is it likely that the use of carbon dioxide-oxygen mixture (not available at the time) would have made any difference in the outcome? Is lobeline a more powerful respiratory stimulant than nikethamide? Sollmann states in his textbook of pharmacology that it is dangerous to give an anesthetic to a crying child because of the possibility of producing apnea. Has clinical experience borne this out? Is it advisable to give preoperative medication before tonsillectomy to infants and small children? Which is the safest sedative for preoperative use, morphine or one of the barbiturates? Is carbon dioxide administration effective in overcoming apnea?

M.D. New York

ANSWER—Explanation of the sudden death of a healthy person is not always possible. The excitement attendant on such an occurrence often prevents accurate recording of events and their sequence. The fact that thorough postmortem examination has failed on many occasions to furnish proof of the cause of death is well recognized. Before attempting to answer the fourteen questions included in this communication it may be profitable to offer some general comment on anesthetic problems.

Incidental interference with the normal physiologic functions accompanying the state of anesthesia are the usual causes of morbidity and mortality rather than specific effects of particular drugs. In other words failure adequately to protect the functions of respiration and circulation during anesthetic depression is of vastly greater importance than is the choice of the drugs used or the doses administered. In this case no mention is made as to whether the anesthetist was able to maintain completely free and unobstructed breathing throughout the operation. Not infrequently respiratory obstruction is present during a tonsillectomy under general anesthesia unless an artificial airway is placed in the trachea. Even with minimal bleeding during such an operation, blood and mucus may pass through the trachea into the lungs and interfere seriously with the exchange of oxygen and carbon dioxide between the alveoli and the blood. On the basis of the information given the most likely explanation of this accident would seem to be respiratory obstruction. In some patients the anatomic relation of the structures of the pharynx when the mouth is held wide open results in partial obstruction of the larynx. Inadequate depression of the reflexes in the throat may result in partial adduction of the vocal cords, thus contributing a considerable degree of obstruction to breathing. Clotted blood or pharyngeal

secretion in the air passages in the lungs may prevent either partly or completely the exchange of atmosphere in a lobule, a lobe or even a whole lung beyond the obstruction. Any of these accidents may be superimposed on what would otherwise be an insignificant depression of respiratory exchange due to the central action of sedative drugs or of general anesthetic agents. Granted that such partial respiratory obstruction did persist during this operation, the cells of the centers governing respiration would suffer from lack of oxygen and from acidosis caused by accumulated carbon dioxide. The physiologic mechanism for the maintenance of normal breathing is dependent on these two factors, the tension of oxygen and of carbon dioxide. The possibility of such disturbances resulting in serious harm or even in death is appreciated by the experienced anesthetist.

In answering the specific questions as accurately as may be, page references are made to the book *Fundamentals of Anesthesia* published by the American Medical Association Press, 1942.

1 The effective dose of morphine varies with individuals. Rarely is an eighth of a grain found to cause alarming symptoms even in a 5 year old child (p 32 and following of *Fundamentals*).

2 Apnea or depletion of carbon dioxide can cause death only through the failure of breathing. Artificial respiration is the remedy. The opposite condition, sometimes called hypercapnia is much more likely during general anesthesia (p 21 and following).

3 Death during the administration of chloroform is possible but not under the circumstances described.

4 Atropine in usual doses is not a likely cause of respiratory depression. It increases the rate of breathing and decreases the depth. It tends slightly to decrease the respiratory depression from morphine for this reason (top p 37).

5 Whether morphine is used to advantage before inhalation anesthesia depends on the time interval, on the dosage and on recognition by the anesthetist of its pharmacologic effects (p 32). It may accomplish tranquility and allay fear. It carries the patient toward anesthesia, and the quantity of other drugs needed (ether for example) is reduced. The time of its maximum depressant effect on respiration is roughly ninety minutes after hypodermic administration. Hence it is rarely given within one hour of induction of inhalation anesthesia, so that depression of ether may not be superimposed on an unexpected depression from the opiate. However respiratory depression from the morphine may decrease respiratory exchange sufficiently to make saturation of the patient with ether difficult (pp 133, 134 and 135 of *Fundamentals*).

6 Death from apnea is likely only if respiration ceases in the presence of hypoxia and artificial respiration is not instituted.

7 Cheyne-Stokes respiration during ether anesthesia is usually due to hypoxia following respiratory depression or obstruction, usually the latter (p 19).

8 Similar accidents have been observed and recorded. They have often been considered the result of long continued obstruction to respiration and an inadequate supply of oxygen. The sudden relief of obstruction without adequate excess oxygen in the atmosphere and in the presence of drug depression of the respiratory centers results in a complicated physiologic condition which may be fatal.

9 The use of an atmosphere rich in oxygen might have been very useful in this case. It seems justifiable to believe that the use of oxygen or artificial respiration during the apneic periods and the establishment of free exchange by means of an artificial airway might have changed the outcome. Whether carbon dioxide would be of added value is a debatable point.

10 It is probable that neither lobeline, nikethamide nor any other stimulant would have had a beneficial result. Many anesthetists prefer artificial respiration to stimulating drugs because it is efficient and instantly available (chapter VIII, p 151).

11 During crying deep breaths alternate with breath holding. Irregularity of dosage results. Anesthetic drugs are administered to crying children without accidents. It is perhaps cruel but not 'dangerous' if proper safeguards are taken. To avoid the necessity of doing so many anesthetists administer to children sedative drugs preoperatively in rather large doses.

12 Some anesthetists consider it advisable to administer non-volatile drugs to children before tonsillectomy. Others do not. Factors other than age and weight must influence the dosage of depressant drugs administered to children (pp 51 and 52).

13 It cannot be said that morphine is safer than one of the derivatives of barbituric acid. One ought to be familiar with the pharmacologic effects of the drugs which one uses and choose drugs and doses which will produce effects desirable in the patient to whom they are administered (pp 32 and 38).

14 Since acapnia results from excessive elimination of carbon dioxide (hyperpnea), administration of this gas should overcome the acapnia. However, rarely during inhalation anesthesia does excessive elimination of carbon dioxide occur. On the other hand, an accumulation of carbon dioxide in the blood and body tissues during anesthesia is almost impossible to prevent because depression and obstruction of respiration are so frequently present (p 23)

PROGNOSIS AFTER CORONARY OCCLUSION AND DEVITALIZED TEETH

To the Editor—A man aged 40 had a nearly fatal anterior coronary occlusion in December. Since that time he has been making as much recovery as we think could be expected and with the exception of occasional pain and some limitation is going about his business. Some years ago three Caldwell-Luc operations were performed on his right antrum. Since that time he has had a sensory disturbance of his right upper lip and the right lower part of his nose. The internist who took care of the patient during his cardiac difficulty advised that all foci be checked and removed. Two upper teeth on the right side of his head, bicuspid and first molar, have never given any known trouble and are perfectly sound to inspection and to x ray examination but will not give any response to vitality tests. The question which the dentist, internist and I do not feel competent to answer is: Should these two teeth be extracted or should they be left in? The patient, while perfectly willing to cooperate, is not anxious to have the teeth extracted unless there is very good reason for it, since their loss would require replacement by dentures in order to leave enough teeth for chewing. How good would you judge this patient's prognosis for life? The electrocardiogram following the attack showed definite changes in the chest leads. The limb leads showed no changes for several weeks and then showed a decreased amplitude of the R wave in the first lead and coving and inversion of the T waves in all leads. Since that time the limb leads have appeared normal except for some decreased amplitude. There never was any appreciable disturbance in the take-off of the ST segment in the limb leads. There was considerable such disturbance in the chest leads.

M D, Kansas

ANSWER—Despite the fact that some residual angina pectoris is suggested by the statement in the second sentence of the query and the necessarily guarded prognosis in any case of coronary heart disease, it is possible that this man may feel perfectly well after a few more months and live for a good many years if his heart is not appreciably enlarged and if he has the usual luck and takes reasonable care of himself. His age is in his favor. The electrocardiogram, although of some importance, should not be the preponderant factor in prognosis. It is not apparent that there exists the necessity to have the teeth removed for the sake either of his heart or of his face, simply because they are devitalized, though the heart would probably stand the operative procedure.

FAMILIAL ONYCHOLYSIS

To the Editor—A 6 months old child had two toenails on each foot grow away from the nail floor instead of adhering to it. The mother has had a similar condition all her life and it has proved a nuisance. Is there any way of so directing the growth of the nail by strapping or any other method that will eventually make it grow normally?

E T Wilkes, M D, Sunnyside, L I, N Y

ANSWER—Onycholysis, separation of the nail plate from its bed for a part of its extent, is one of the commoner diseases of the nails. It is most often secondary to skin disease, such as psoriasis, eczema, syphilis or verruca, involving the nail folds or nail bed, or to trauma and maceration as in the series of occupational cases reported by Templeton (H J Onycholysis, an Industrial Dermatitis, THE JOURNAL, Dec 26, 1931, p 1950). There are reports, however, of onycholysis of familial origin. These cases are frequently ascribed to familial endocrine disturbance, for onycholysis has been seen in hyperthyroidism and hypothyroidism, hypogonadism and hypopituitarism. Thyroid disturbances seem to cause it much oftener than the other endocrine dysfunctions, and E C Fox has given an excellent report of a series of such cases (Diseases of the Nails. Report of Cases of Onycholysis, Arch Dermat & Syph 41 98 [Jan] 1940). Of his 30 cases, 28 occurred in women, most of them with low basal metabolism. Of these 3 were secondary to psoriasis or lichen planus, and 3 others could not be observed long enough to judge the effect of the treatment. Of those who were treated adequately with thyroid, 3 failed to improve, 21 showed definite improvement and several of these relapsed when the treatment was stopped. Definite signs of deficiency of the thyroid may be wanting, yet the patient improves when given thyroid therapy.

Concerning the possibility of mechanical aid to correct this condition, the only reference which has been found was the recommendation of J Heller (Onycholysis, Handb d Haut- u Geschlechtskr, Berlin, Julius Springer, 1927, p 113) to bind

the nails with strong preparations of tar, ichthammol or salicylic acid. No report of the success or failure of such measures has been discovered.

OIL SOLUBLE SUBSTANCES FOR INTRAMUSCULAR INJECTION

To the Editor—Will you please tell me what is known regarding the absorbability of medical agents dissolved in oil and injected hypodermically or intramuscularly? For instance, can any dependence be placed in the acutely stimulating effect of camphor dissolved in oil and injected? Mexican doctors in general use this agent by this method in cases in which an acute stimulant is required, and I contend that it is an erroneous procedure.

J A King, M D, Santiago Papasquiaro, Mexico

ANSWER—There are in general three classes of oil soluble substances which are used for intramuscular injection. The first is soluble in oil but is insoluble in water and in tissue fluids. The second is soluble in oil and in tissue fluids but is insoluble in water. The third class is oil soluble volatile substances.

In the first case the substance is precipitated in the tissues and absorption is poor. It generally causes a local fibrosis, and painful nodules may result.

In the second class, as illustrated by mercuric salicylate and bismuth subsalicylate, the substance is soluble in the tissue fluids. They are carried through the lymph spaces and reach the interstices in the muscles, where they form droplets and may become almost encysted. The oil is later digested and the substance is gradually absorbed over a period of weeks. This gives a reservoir of the drug for continued absorption. Such drugs are usually given once a week.

In the third class volatile substances such as camphor may be absorbed independent of the oil. However, ampules of camphor have recently been omitted from N N R (THE JOURNAL, Feb 6, 1943, p 431).

POSITIVE SEROLOGIC TEST FOR SYPHILIS WITHOUT PHYSICAL SIGNS

To the Editor—A man aged 30 on routine preemployment examination was found to have a 4 plus Kahn and Wassermann reaction at a reliable laboratory. Careful physical examination, including x ray of chest and careful questioning, reveal no evidence of syphilis. Repeated blood serologic tests after several days remain positive. Assuming that this could be a false positive reaction, what is the maximum length of time I am ethically justified in waiting to start active treatment? It has been my observation and the opinion of several of my colleagues that many if not the majority of physicians in this locality would start active treatment immediately. Would I be legally liable if this person should develop a tertiary lesion in the interval of waiting to see if this reaction becomes negative?

M D, Missouri

ANSWER—A suggested method of study of the problem of biologic false positive serologic tests is contained in an article by Joseph Earle Moore, Harry Eagle and Charles F Mohr (Biologic False Positive Serologic Tests for Syphilis. III A Suggested Method of Approach to Their Clinical Study, THE JOURNAL, Nov 9, 1940, p 1602).

Among the points suggested in that paper is the performance of serial quantitatively titered blood serologic tests over a period of time in order to determine whether the reagin titer is falling, as would be expected in most biologic false positive tests, or alternatively remaining stationary or rising, as would be expected in syphilis. Assuming that this type of observation is carried out, together with the other points mentioned in the article referred to, it is justifiable to wait for six months to start active treatment.

So far as is known, the question of legal liability in the event of development of a syphilitic lesion during the interval of waiting has never been determined. No opinion could be expressed of the action of a hypothetical court if and when such a case ever came to trial.

OPTIC ATROPHY NOT DERIVED FROM ATABRINE

To the Editor—Have you any information on the possibility of atabrine causing progressive optic atrophy? We have at present a soldier with optic atrophy which we believe may be due to this drug which he was taking while on Guadalcanal. All other tests have been negative. I shall appreciate any information which you may be able to give me pertaining to this subject.

Captain, M C, A U S

ANSWER—There are no recorded instances of any individual developing progressive optic atrophy following the use of atabrine. Complete observations are available on large immediate dosages as well as prolonged administration of the drug. It is probable that such a condition develops independently and is not associated with the drug.

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PENICILLIN IN THE TREATMENT OF INFECTIONS

A REPORT OF 500 CASES

STATEMENT BY THE COMMITTEE ON CHEMOTHERAPEUTIC
AND OTHER AGENTS, DIVISION OF MEDICAL SCIENCES,
NATIONAL RESEARCH COUNCIL

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Our purpose in this report is to acquaint the medical profession with the results that have been obtained in the treatment of 500 cases of various infections with penicillin. All these cases have been treated by twenty-two groups of investigators¹ accredited to the Committee on Chemotherapeutic and Other Agents of the National Research Council, and the results of the treatment have been collected and summarized by the chairman of the committee, who acted for it and for the Committee on Medical Research. All the penicillin used in this study was provided by Merck & Company, E R Squibb & Sons and the Charles F Pfizer Company. The costs of the penicillin were covered by a contract of the Office of Scientific Research and Development on the recommendation of the Committee on Medical Research. A recent statement of the progress of efforts with respect to penicillin has been published in THE JOURNAL by Dr A N Richards, chairman of the Committee on Medical Research of the Office of Scientific Research and Development.²

The discussion of these 500 cases will be concerned with the over-all results in various groups of cases. Separate and detailed reports of cases will be made by the individual groups of investigators in due course of time.

SELECTION OF CASES FOR STUDY

In order to conserve valuable material and to gather as much information as possible in the shortest period of time, the committee restricted the use of penicillin to the treatment of the infections listed. It was necessary to limit both the number of patients treated and

the types of infection to be studied, since only small amounts of penicillin were available for clinical investigation. It was the responsibility of the committee to direct the study toward those infections that are most likely to occur in our armed forces and to those that are resistant to the sulfonamides. The infections selected were:

- 1 Staphylococcus aureus bacteremia
- 2 Local Staph aureus infections failing to respond to the sulfonamides
- 3 Streptococcal infections failing to respond to the sulfonamides
- 4 Pneumococcal, streptococcal and staphylococcal meningitis or empyema
- 5 Pneumococcal pneumonia failing to respond to the sulfonamides
- 6 Sulfonamide resistant gonococcal infections
- 7 Subacute bacterial endocarditis

MODE OF ADMINISTRATION

In the present investigation solutions of penicillin were given intravenously, intramuscularly and topically, including local injection into the pleura, pericardium and joints and into the subarachnoid space. In giving penicillin intravenously, constant infusions were used in many cases, whereas repeated injections at two, three or four hour intervals were employed in others. When it became necessary to continue treatment over a period of several weeks, it was necessary in many cases to use various routes of administration, including constant intravenous infusion and repeated intravenous or intramuscular injections. Some patients tolerated intramuscular injections better than repeated intravenous injections, others did not.

In the treatment of meningitis, empyema and surface burns of limited extent, penicillin was used topically, that is, injected directly into the subarachnoid space or the pleural cavity or applied locally.

CONCENTRATION AND VOLUME OF PENICILLIN

For intravenous use, concentrations of 1,000 Oxford units per cubic centimeter or less were used at each injection. When a constant intravenous infusion was used the concentration was varied, depending on the total dosage during a twenty-four hour period. The rate of injection in some cases varied from 5,000 to 10,000 units an hour day and night, that is, 120,000 to 240,000 units every twenty-four hours. In others smaller amounts of solution were injected. This was regulated so that the rate of delivery was between 75 and 100 cc an hour. The penicillin was dissolved in saline solution or 5 per cent dextrose solution and allowed to run into the veins slowly or injected directly into the rubber tubing at periodic intervals.

¹ Accredited clinical investigators of the Committee on Chemotherapeutic and Other Agents, National Research Council: Dr W A Altmeier Cincinnati; Dr Francis G Blake New Haven Conn.; Dr A L Bloomfield San Francisco; Dr M H Dawson New York; Dr Robert Elman St Louis; Dr John Hirshfeld Detroit; Dr Frank Horsfall New York; Lieut Comdr Adolph Hutter Bethesda Md.; Dr Chester S Keefer Boston; Dr J S Lockwood Philadelphia; Dr Champ Lyons Boston; Dr J F Mahoney Staten Island; Dr Roy D McClure Detroit; Dr C F McKhann Ann Arbor Mich.; Dr Frank L Meloney New York; Dr R A Nelson Baltimore; Dr E A Park Baltimore; Dr D W Richards New York; Major George Robb Washington D C; Dr David Smith Durham N C; Dr Weyley W Spink Minneapolis; Dr W S Tillet New York; Dr Barry Wood St Louis.

² Richards A N. Penicillin. J A M A 122 235 (May 22) 1943.

With intramuscular injections it is important to keep the volume as low as possible in order to avoid local discomfort at the site of injection. The usual practice has been to employ a concentration of 5,000 units per cubic centimeter. In general there was no local reaction, but there may be some local soreness at the site of injection in some patients.

DOSAGE

The total amount of penicillin administered in Oxford units has varied tremendously from one case to another. There were also many variations in the total amount given with each injection, the interval of time between injections and the total duration of the treatment. These are natural variables in the investigation of any new drug, especially when information is being accumulated with only a limited supply of valuable material in several different infections. At the beginning of our studies it was common practice to give 5,000 units intravenously every four hours day and night, that is, 30,000 Oxford units every twenty-four hours. This amount was found to be adequate in some infections but was totally inadequate in others. Indeed, the dosage schedule varied from 1,000 to 25,000 units per hour, depending on the kind and severity of infection. In view of the variation in the dosage schedule it will be well to outline the practice at the present time. Before presenting the details it should be said that the question of adequate or optimum dosage has not been clearly defined. The objective in treatment should be the maintenance of a sufficient concentration of penicillin in the blood to inhibit completely the growth of the individual infecting organism.

Various methods have been used to titrate penicillin in the blood serum and body fluids and exudates (Fleming,³ Florey⁴ and Rammelkamp⁵). They all have as their objective the determination of the amount of penicillin that will inhibit the growth of a constant number of a standard strain of hemolytic streptococcus or *Staph aureus* or of the patient's own strain of infecting organism. When facilities are available, such methods should be employed in the treatment of individual cases in order to determine whether sufficient amounts of penicillin are being administered.

Other methods of assessing adequate dosage are the signs of clinical response. These must be followed with great care and should include not only the response of the temperature and pulse rate but also the change in constitutional symptoms, the results of blood culture and the effect on the local infection.

ABSORPTION, EXCRETION AND DISTRIBUTION

The absorption, excretion and distribution of penicillin has been studied by Rammelkamp and Keefer,⁶ and the literature on the subject has also been reviewed by them. Blood concentrations of penicillin and urinary excretion of penicillin were determined after the administration of 5,000 to 40,000 Oxford units by various routes. Their summary was as follows:

Intravenous injection of penicillin resulted in high initial concentration in the blood plasma, which was followed by an

abrupt fall. Traces of penicillin were found in the blood for thirty to two hundred and ten minutes after the injection, the length of time depending on the amount administered. The sharp fall noted in the serum concentration immediately after the injection was associated with an increased excretion in the urine. The average excretion after intravenous injection was 58 per cent of the administered dose.

Penicillin was rapidly absorbed when given intramuscularly and slowly absorbed after subcutaneous injections. Excretion in the urine was rapid following intramuscular injections and delayed after subcutaneous injections.

Absorption from the body cavities was delayed, and this was reflected in the slow excretion of penicillin by the kidneys. The total amount found in the urine was somewhat lower than that obtained following intravenous injection. Fluid aspirated from the pleural and joint cavities twenty-two and thirteen hours after the injection showed appreciable amounts of penicillin remaining.

Administration of penicillin by enteral routes showed that absorption from the duodenum was rapid, whereas oral and rectal doses were poorly absorbed. These findings may be explained by the inactivating effect on penicillin of acid and *Escherichia coli*. After oral, intraduodenal and rectal administration, the average amount excreted in the urine was extremely small.

In the presence of renal failure penicillin was not excreted rapidly, and as a result high concentrations were maintained in the blood stream after intravenous injections.

Studies on the distribution of penicillin showed that the substance failed to penetrate the red cells in significant amounts. In general the average concentration found in erythrocytes was less than 10 per cent of the plasma concentration. No penicillin was found in the spinal fluid, saliva or tears in subjects receiving it intravenously.

Rammelkamp and Helm⁷ have shown that human saliva, bile and succus entericus do not inactivate penicillin, but gastric juice destroys it rapidly at body temperature. The destructive action appears to be due to hydrochloric acid and not to pepsin. In 2 patients with pernicious anemia and achylia gastrica the absorption of penicillin, when administered by mouth, was greater than that of normal subjects.

Aside from the excretion of penicillin in the urine, there is good evidence that it is excreted by the liver, since it can be found in the bile in higher concentration than in the blood stream. None has been demonstrated in the gastric juice.

INTRATHECAL INJECTION

With regard to the intrathecal injection of penicillin, in normal subjects the substance is slowly absorbed and slowly excreted in the urine following the injection of 5,000 or 10,000 Oxford units.⁸ It may be detected in the spinal fluid for at least 31.5 hours after the injection of 10,000 Oxford units. There is some evidence that penicillin is slightly irritating to the normal meninges, and the injection of 10,000 Oxford units into the subarachnoid space may be followed by headache, vomiting, increased intrathecal pressure and pleocytosis in the spinal fluid. Smaller amounts cause less intense symptoms.

In patients with meningitis, absorption of penicillin from the intrathecal space is more rapid than in normal subjects, and a greater amount of that injection is excreted in the urine. Penicillin can be detected in the spinal fluid twenty-four hours after its injection.

3 Fleming, Alexander. An Antibacterial Action of Cultures of Penicillium, with Special Reference to Their Use in Isolation of B. Influenzae, Brit J Exper Path 10 226 236 (June) 1929.

4 Abraham, E. P., Chain, E., Fletcher, C. M., Gardner, A. D., Heatley, N. G., Jennings, M. A., and Florey, H. W. Further Observations on Penicillin, Lancet 2 177 189 (Aug 16) 1941.

5 Rammelkamp, Charles H. A Method for Determining the Concentration of Penicillin in Body Fluids and Exudates, Proc Soc Exper Biol & Med 51 950 (Oct) 1942.

6 Rammelkamp, C. H., and Keefer, C. S. The Absorption, Excretion and Distribution of Penicillin, J Clin Investigation 22 425 (May) 1943.

7 Rammelkamp, C. H. and Helm, J. D. Studies on the Absorption of Penicillin from the Stomach, Proc Soc Exper Biol & Med to be published.

8 Rammelkamp, Charles H. and Keefer, Chester S. The Absorption, Excretion and Toxicity of Penicillin Administered by Intrathecal Injection, Am J M Sc 205 342 350 (March) 1943.

We have been unable to detect penicillin in the cerebrospinal fluid after intravenous or intramuscular injection, for this reason it is well for the time being at least to use penicillin both intravenously and intrathecally in the treatment of meningitis

PENICILLIN RESISTANT STRAINS

It has been demonstrated by Rammelkamp and Maxon⁹ that various freshly isolated strains of *Staph aureus* vary only slightly in their susceptibility to the antibacterial action of penicillin. When however a given strain of *Staph aureus* was grown in increasing concentrations of penicillin over a long period of time it was possible to make the organism resistant. These investigators were also able to demonstrate that an increase in the resistance of *Staph aureus* may also occur during the course of penicillin therapy for localized infections in man. Similar observations have been made by Florey and his collaborators⁴ and by Blake¹⁰.

Others¹¹ have shown that strains of pneumococci, staphylococci and hemolytic streptococci may be made resistant to penicillin by exposing them to it continuously for a long period of time both in vitro and in vivo. It is of considerable interest that penicillin fast strains of pneumococci are susceptible to the sulfonamides and that sulfonamide resistant strains of pneumococci are susceptible to penicillin. Moreover McKee and Houck¹² have shown that an increase in the resistance of organisms to penicillin is associated with a proportional loss of virulence, an observation that is in striking contrast to the retention of virulence by sulfonamide resistant cultures.

Obviously more information is needed concerning penicillin resistant strains and their mode of production, since it may aid one in interpreting the clinical results or failure. It should be reemphasized that, once a strain increases in resistance, it loses its virulence and seems to be changed permanently as far as penicillin is concerned, but it remains susceptible to the sulfonamides. Also resistance is produced only after continuous exposure to the action of penicillin.

METHOD OF PREPARING PENICILLIN FOR TREATMENT

Penicillin is supplied in ampules of 5,000 units, 10,000 units, 25,000 units, 100,000 units and 1,000,000 units. As penicillin is extremely soluble, it may be dissolved in small amounts of sterile, distilled, pyrogen free water, in sterile isotonic solution of sodium chloride or in 5 per cent dextrose solution. When large unit sizes are being used in hospitals, the contents of the ampule should be dissolved in water or saline solution so that the final concentration is 5,000 units per cubic centimeter. This solution should be stored under aseptic precautions in an ice box and made up freshly every day. Solutions for local or parenteral use may be diluted further, depending on the concentration desired.

9 Rammelkamp, Charles H. and Maxon, Thelma. Resistance of *Staphylococcus Aureus* to the Action of Penicillin, *Proc Soc Exper Biol & Med* 51: 386-389 (Dec.) 1942.

10 Blake, Francis G. Personal communication to the Committee on Chemotherapeutics and Other Agents, National Research Council.

11 McKee, C. M. and Houck, C. L. Induced Resistance to Penicillin of Cultures of *Staphylococci*, *Pneumococci* and *Streptococci*. *Proc Soc Exper Biol & Med* 52: 33 (May) 1943. Schmidt, L. H. and Seiler, C. L. Development of Resistance to Penicillin by *Pneumococci*. *Proc Soc Exper Biol & Med* 52: 353 (April) 1943.

12 McKee, C. M. and Houck, C. L. Induced Penicillin Resistance in a *Pneumococcus* Type III Culture. *Federation Proceedings* 2: 100 (March 16) 1943.

A For intravenous injection

1 The dry powder may be dissolved in sterile isotonic solution of sodium chloride in concentrations of 1,000 to 5,000 units per cubic centimeter for direct injection through a syringe.

2 The dry powder may be dissolved in sterile saline solution or 5 per cent dextrose solution in lower dilution (25 to 50 units per cubic centimeter) for constant intravenous therapy.

B For intramuscular injection

1 The total volume of injections should be small, that is 5,000 units per cubic centimeter of isotonic solution of sodium chloride.

C For topical application

1 The powdered form of the sodium salt is irritating to wound surfaces and should not be used.

2 Solutions in isotonic solution of sodium chloride with a concentration of 250 units per cubic centimeter are satisfactory. For resistant or more intense infections this concentration may be increased to 500 units.

RESULTS OF TREATMENT

Staphylococcus Aureus Infections with Bacteremia—

There were 91 patients with *Staph aureus* bacteremia. Death occurred in 34 cases (37 per cent) and no demonstrable effect was reported in 3 (3 per cent). In the remaining 54 cases there was complete recovery or striking improvement. All treated cases were included regardless of the amount of penicillin administered or the duration of the treatment. By present standards of treatment we know that many of these patients were inadequately treated with respect both to the total amount of penicillin they received and to the total duration of the treatment. A number of the patients were treated early in the course of our studies when very small amounts of material were available and when less was known about the dosage. It is well, therefore, to discuss separately the patients who recovered or improved and those who died or failed to improve.

It is well known that *Staph aureus* infections with bacteremia are always serious and carry a high fatality rate. The outcome in any instance is influenced somewhat by the age of the patient, the site of the infection and its accessibility to surgical drainage, and the presence or absence of other debilitating diseases.

Patients with the most favorable outlook, then, are those under 40 years of age who have an infection localized in an area that can be drained surgically. Patients with the most unfavorable outlook are those over 40 years of age or with an infection that fails to localize or cannot be drained surgically, and those with other associated diseases. Another important point in prognosis is the duration of the illness. It is well established that in most cases of fatal staphylococcal infection death occurs within ten to fourteen days after the onset of the bacteremia.

With this information as a background, it might be expected that the patients who will receive the greatest benefit from penicillin are those under 40 years of age without complicating diseases who are treated intensively early in the course of their infection.

Cases with Recovery or Improvement—Fifty-four (60 per cent) of the 91 patients in this group recovered or improved in a striking manner during treatment, so that recovery followed later. Thirty-six of these patients were under 40 years of age and 42 were under 50 years of age. The fatality rate in patients under

40 was 34 per cent, whereas in those over 40 it was 50 per cent. Forty-seven patients received penicillin for seven to twenty-one days, the average amount given being in the neighborhood of 500,000 Oxford units and the extreme ranges being 100,000 units in several infants and 3,465,000 units in some adults. As shown in table 2, there was recovery or improvement in 18 of 22 patients with acute osteomyelitis, in 9 of 10 patients with bacteremia without obvious port of entry, and in all 10 patients with infections of the skin and subcutaneous tissues. There were a number of other serious staphylococcic infections with bacteremia in which recovery or improvement took place (pneumonia, epidural abscess, burns, cavernous sinus thrombosis and meningitis).

Fatal Cases—There were 34 fatal cases of *Staph aureus* bacteremia. Fifteen of these patients (44 per cent) were over 40 years of age. Nine patients had acute bacterial endocarditis established at the beginning of treatment. They were treated over varying periods of time from four to fifty-two days and received from 270,000 to 2,340,000 units of penicillin. In no case was there even temporary improvement. In no case of *Staph aureus* infection reported so far has endocarditis developed after treatment has been started.

Three of the patients who died had bilateral suppurative pyelonephritis. They were all elderly. One of them had diabetes and bilateral perinephric abscesses and was treated only two days before death. Another patient received only 35,000 units on the day of death.

Three patients had extensive burns—that is, more than 50 per cent of the body surface—with infection and bacteremia. There were a wide variety of disorders in which the staphylococcic infection was only contributory and was controlled by the penicillin but in which death resulted from the primary disorder (aplastic anemia, uremia from sulfadiazine administration, pulmonary embolism, cancer of rectum and so on).

These fatal cases emphasize once again the seriousness of *Staph aureus* bacteremia in patients over 40 years of age, those with bacterial endocarditis and those with debilitating diseases. They also serve to stress the fact that early and adequate treatment is necessary to control infection.

Conclusions—In brief, 60 per cent of 91 patients with *Staph aureus* bacteremia recovered or improved under treatment, so that recovery followed later. Death occurred in 37 per cent, and no effect was observed in 3 per cent. In a group of such infections in which the fatality rate is so high, these results are very impressive, since the over-all fatality rate in this group without penicillin or sulfonamides is usually about 85 per cent. The results of penicillin treatment become more impressive when one remembers that among the fatal cases there were 9 cases of endocarditis and that 15 of the patients received treatment for less than seven days. Many were treated late in the course of the disease or received an inadequate amount of penicillin according to present standards of dosage. The failures only serve to emphasize the great importance of early diagnosis and immediate and adequate treatment. Adequate treatment should consist in giving enough penicillin to sterilize the blood and localize the infection, and in continuing it until signs of active infection disappear. This frequently requires between 500,000 and 1,000,000 units given over a period of seven to fourteen days or longer.

STAPHYLOCOCCUS AUREUS INFECTIONS WITHOUT BACTEREMIA

There were 137 patients with local staphylococcic infections without bacteremia treated with penicillin. Of these, 109 (80 per cent) recovered or improved, 11 (8 per cent) died and 17 (12 per cent) showed no demonstrable effect.

The various groups represented herein will be discussed separately.

Osteomyelitis—Of the 55 patients with osteomyelitis, 48 recovered or improved and 7 showed no effect. By "recovered or improved" it is meant that the wounds and sinuses healed completely while under treatment or the exudate was sterilized of staphylococci and the lesion was healing. In some cases the lesions have remained healed, in others they have recurred. The precise details and the number of recurrences will have to await the full reports of investigators and the passage of time, since no one who has had any experience with the treatment of acute and chronic osteomyelitis would be rash enough to make any final statements concerning the ultimate outcome of these cases until several years have passed.

One is justified in making the following statements. Following penicillin treatment the exudate decreases greatly in amount within a few days and organisms are quickly reduced in number. In a few cases the exudate obtained from the wounds is sterile within a period of a few days to a week and healing progresses rapidly, so that sinuses that have been present for months or years heal completely in two to three weeks.

Various routes of administration have been used, including constant intravenous injections, repeated intravenous or intramuscular injections and local treatment.

Empyema—Seven of the 9 patients with staphylococcic empyema improved or recovered following penicillin treatment. One patient showed no effect and another patient died. The latter received only two injections into the pleural cavity, totaling only 28,000 units, and was only 3 weeks old.

In the patients who recovered or improved, it was possible to sterilize the pleural exudate over a period of several days by injecting between 40,000 and 50,000 Oxford units directly into the pleural cavity. It is important not to use penicillin as an irrigating solution, since it requires contact between the organism and the penicillin over a period of several hours for a maximum effect to take place. Even when the exudate is sterilized, it is often so thick that it is necessary to employ thoracotomy for adequate drainage. Once an empyema cavity is drained, it can be kept sterile by injecting penicillin into it daily. It has not been possible in the experience recorded to date to sterilize empyema cavities by the intramuscular or intravenous route.

As an aid in the treatment of staphylococcic empyema penicillin is one of the best remedies available.

Infections of the Skin and Subcutaneous Tissues—In the discussion of staphylococcic infections of the skin and subcutaneous tissues with bacteremia it was pointed out that all 10 of the patients recovered. In this group of 23 patients 19 were greatly improved or recovered completely.

Of the patients who failed to show improvement, 1 had an abscess of the thigh, treated locally, 1 had extensive psoriasis with local staphylococcic infection of the lesions, 1 had a chronic ulcer of the skin and 1 had a chronic sinus of the skin, treated locally.

Of the 19 patients who recovered or improved, 7 received only local treatment varying from three to six days, with solutions of penicillin in concentration of 200 to 250 units per cubic centimeter on moist dressings. The total amount of penicillin used was small and varied from 2,000 to 25,000 Oxford units. The others received intravenous or intramuscular treatment for three to twenty-one days, and since most of them were over 50 years of age, with carbuncles or other serious infections, the results were impressive.

Parenteral and local treatment may be combined in many of these local infections but parenteral injections for any but the most superficial lesions are to be preferred. Early and intensive treatment is also desirable.

Burns—In the treatment of 9 patients with burns penicillin was used intravenously and locally. Local applications were used in preparation for skin grafting in order to reduce the number of organisms or sterilize the surface. Parenteral treatment was employed to prevent invasive infections. In the 4 fatal cases the treatment was given for four to seven days for extensive burns of the body and extremities.

Fatal Cases—The 11 deaths in this group were from empyema with pyopneumothorax (1 case), brain abscess (2 cases), burns (4 cases), multiple lung abscesses (1 case), reticulum cell carcinoma (1 case) and meningitis (2 cases). All these patients were desperately ill when penicillin was started, and in some the prognosis was definitely poor when one excluded the staphylococcal infection, such as the cases of extensive burns, the patient with the reticulum cell sarcoma and the patient with pyopneumothorax following resection of the esophagus.

STREPTOCOCCIC INFECTIONS OTHER THAN BACTERIAL ENDOCARDITIS

Thirty-three cases of streptococcal infections that were resistant to sulfonamide therapy were treated with penicillin. There were 23 due to the hemolytic streptococcus infections, 6 due to anaerobic streptococcus infections and 4 due to nonhemolytic streptococcus infections.

Hemolytic Streptococcus Infections—In vitro studies show that hemolytic streptococci are more susceptible to the action of penicillin than is *Staph aureus*. Of the 23 patients treated, 13 recovered or were greatly improved under treatment, 7 died, and no effect was observed in 3.

Two patients died following infections of the throat, with thrombophlebitis of the deep cervical veins (post-anginal sepsis). Two patients had meningitis, 1 had cirrhosis of the liver and 1 had chronic nephritis. In the latter 2 cases the blood stream was sterilized but death followed from the primary disease. In the seventh case there was a large subphrenic abscess and a deep abscess of the muscles of the chest wall following a stab wound.

Of the 3 patients in whom no effect was observed, there were multiple ulcers of the skin associated with group C hemolytic streptococci in 1, another was a carrier, and a third had numerous ulcers of the skin due to the microaerophilic streptococcus.

Anaerobic Streptococcus Infections—Of the 6 patients in this group 5 had anaerobic streptococcus infections of the uterus, 3 of these recovered and 2 died, 1 of a pulmonary embolus and the other of multiple abscesses of the lungs. The sixth patient had a skull fracture with meningitis and recovered.

Nonhemolytic Streptococcus Infections—There were 3 deaths in this group and 1 patient showed no effect. Of the patients who died, 2 had a brain abscess, 1 of them with meningitis following a chronic empyema, and the third had multiple abscesses of the tissues. The patient who showed no improvement had pyelonephritis with endocarditis.

PNEUMOCOCCIC INFECTIONS

The pneumococcus is extremely sensitive to the action of penicillin. The results of treatment of 76 cases of pneumococcal infection are listed in table 2. Most of the cases of pneumonia were treated by Dr W S Tillett who will report his results in detail elsewhere. It is plain from the reported cases that penicillin is another potent weapon in the treatment of pneumococcal pneumonia and many patients have recovered on less than 100,000 units given over a period of two to three days. Others have required more penicillin.

The results in the treatment of pneumococcal endocarditis were, on the whole disappointing, although 1 patient treated under our direction recovered. The evidence for a bacterial endocarditis in this case was good since an aortic insufficiency developed several days

TABLE 1—Summary of 100 Cases

Diagnosis	No. of Cases	Recovery or Improvement	Death	No Effect
Staphylococcus aureus infections	223			
With bacteremia	91	54	34	3
Without bacteremia	137	109	11	17
Streptococcal infections	33			
Hemolytic streptococcus	23	13	7	3
Nonhemolytic streptococcus	4	0	3	1
Anaerobic streptococcus	6	4	2	
Pneumococcal infections	76	45	20	3
Subacute bacterial endocarditis	17	3	4	10
Gonococcal infections	129	129		
Meningococcal infections	5	4	1	
Miscellaneous infections	12	5	3	4
Totals	500	263	94	40

after bacteremia was detected, and the bacteremia persisted for several days after treatment was begun.

The results in the treatment of pneumococcal meningitis showed only 7 recoveries among 23 patients (30 per cent). In 2 the meningitis was accompanied by endocarditis. In many of the 16 fatal cases (70 per cent) the treatment was carried out with small doses given over a short period of time, and not all of them received penicillin intrathecally or intracisternally. Since Rammelkamp and Keefer³ have reported that penicillin does not penetrate the subarachnoid space, and since the most striking results have been obtained in patients who received both intravenous and intrathecal treatment there are good reasons for believing that better results will be obtained in the future, when patients are treated earlier in the course of the disease and when large amounts of penicillin are exhibited intravenously and intrathecally.

In the treatment of pneumococcal empyema the best results are obtained by injecting penicillin directly into the pleural cavity. Here sterilization of the exudate may be obtained, although the exudate may be reabsorbed very slowly. In some cases the process of reabsorption may be accelerated by aspiration or drainage of the cavity.

GNOCOCCIC INFECTIONS

The results of penicillin treatment of gonococcal infections have been extraordinarily good. Most of the 129 cases were treated by Dr J F Mahoney and his asso-

ciates of the United States Public Health Service and are being reported by them. The results were satisfactory in 125 cases, that is to say, there was freedom from symptoms and they were bacteriologically negative within nine to forty-eight hours after treatment with between 100,000 and 160,000 units. The dosage varied from 10,000 units every three hours for sixteen doses to 20,000 units every three hours for five doses or 25,000 units every three hours for three doses. The precise details of treatment of these cases are being studied in order to define the minimum dosage and the

so striking that only a few patients have been treated with penicillin. Five patients have been treated, with one death (20 per cent). The patient who died received no penicillin intrathecally. One patient who recovered received only parenteral therapy. The number of cases of meningococcal infection treated so far is so small that no definite conclusion can be drawn concerning the effectiveness of penicillin. The results are suggestive, however, that intravenous or intramuscular treatment is followed in some cases by recovery. It is likely that better results may be obtained by both parenteral and

TABLE 2—Detailed Summary of 500 Cases

Diagnosis	No of Cases	Recovery or Improve-ment	Death	No Effect
Staphylococcus aureus infection				
With bacteremia				
Sepsis without obvious port of entry	10	9		1
Acute osteomyelitis	22	18	2	2
Pyelonephritis	5	2	3	
Infections of skin and subcutaneous tissues, including carbuncles, furuncles and cellulitis	10	10		
Thrombophlebitis with or without pulmonary embolism	3	2	1	
Burns	5	2	3	
Pneumonia	5	3	2	
Arthritis	1	1		
Subarachnoid abscess	1	1		
Meningitis	2	1	1	
Cavernous sinus thrombosis	2	1	1	
Postoperative wound infection	3	1	2	
Epidural abscess	2	2		
Orbital cellulitis	1	1		
Endocarditis	9		9	
Pansinusitis	1		1	
Dissecting aneurysm of aorta	1		1	
Cancer of rectum	1		1	
Uremia from sulfadiazine	1		1	
Aplastic anemia	2		2	
Multiple abscesses	4		4	
Totals	91	54	34	3
Without bacteremia				
Osteomyelitis	55	48		7
Empyema	9	7	1	1
Postpartum sepsis	2	2		
Infections of the skin and subcutaneous tissues	23	19		4
Laryngotracheitis	1	1		
Brain abscess	3	1	2	
Burns	9	5	4	
Mastitis	5	5		
Pneumonia	3	3		
Lung abscess	3	2	1	
Wound infection	1	1		
Parotitis	1	1		
Epidural abscess	1	1		
Postoperative infection	4	3		1
Abscess, 1 case each (neck, abdominal wall, throat right lower quadrant of abdomen, retroperitoneum mouth, submentum, cheek, scalp)	9	6		3
Arthritis	1	1		
Reticulum cell carcinoma	1		1	
Meningitis	3	1	2	
Prostatitis	2	2		
Totals	137	109	11	16
Streptococcal infections other than bacterial endocarditis				
Hemolytic streptococcus (23 cases)				
Postabortion sepsis	1	1		
Bacteremia with meningitis	1	1		
Conjunctivitis	1	1		
Osteomyelitis of spine	2	2		
Mastoiditis with bacteremia	1	1		
Ulcer of skin	3	2		1
Microaerophilic ulcers of skin	1			1
Multiple abscesses of skin	1	1		
Skin infection and subphrenic abscess	1			
Empyema	2	2	1	
Mastoiditis and pericarditis	1	1		
Abscess of axilla	1	1		
Post tonsillitis sepsis	2		2	
Cirrhosis of liver	1		1	
Meningitis	2		2	
Chronic nephritis	1		1	
Carrier	1			1
Nonhemolytic streptococcus (4 cases)				
Pyelonephritis with endocarditis	1			1
Brain abscess	2		2	
Multiple abscesses	1		1	
Anaerobic streptococcus (6 cases)				
Septic abortion	5	3	2	
Skull fracture, meningitis	1	1		
Totals	33	17	12	4
Pneumococcal infections				
Pneumonia	42	35	6	1
Meningitis	21	7	14	
Meningitis with endocarditis	2		2	
Endocarditis	6	1	5	
Pericarditis	1		1	
Pneumonia with empyema	2		1	1
Empyema	2	2		
Totals	76	45	29	2
Gonococcal infections	129	129*		
Meningococcal infections	5	4	1	
Subacute bacterial endocarditis	17	3	4	10
Miscellaneous infections				
Atypical pneumonia	1			1
Moniliasis	1			1
Agranulocytosis	1	1		
Micrococcus tetragenus sepsis	1	1		
Ulcerative colitis	1	1		
Actinomycosis	3	1	2	
Micrococcus aurantius sepsis	1			1
Escherichia coli—nonhemolytic streptococcus abscesses	1			1
Subscapular abscess—mixed infection	1	1		
Putrid abscess	1		1	
Totals	12	6	3	4

* Four of these cases showed only temporary improvement

minimum time required to achieve the best results. It should be stressed that all these cases that responded to penicillin were those of sulfonamide resistant gonorrhea. Here, then, is a most potent weapon in the treatment of sulfonamide resistant gonorrhea, and it is not too much to predict that penicillin will prove to be one of the most effective agents in the treatment of a disease that causes great ineffectiveness in the armed forces and in the civilian population.

Meningococcal Infections—The meningococcus, like the gonococcus, is extremely susceptible to the action of penicillin in vitro. The results of treatment of meningococcal meningitis with the sulfonamides have been

intrathecal treatment. Additional experience is needed before any statements concerning the usefulness of penicillin in the treatment of these infections can be defined with assurance.

SUBACUTE BACTERIAL ENDOCARDITIS

At the beginning of this study our committee realized that the requests for penicillin for the treatment of subacute bacterial endocarditis would be numerous. We were anxious to give it a thorough trial in a limited number of cases in order to determine whether it was effective in controlling the infection. It was decided therefore that 10 cases would be thoroughly treated

a pilot experiment, and if the results were not promising the experiments would be discontinued until larger amounts of penicillin became available. This policy was adopted because it was the opinion of the committee that the penicillin that was available should be conserved for the clinical investigation of cases of infection most likely to occur in wounded soldiers and sailors and in those infections in which penicillin was most effective.

Up to the present time 17 patients with bacterial endocarditis have been treated. There were 4 deaths (23 per cent). No appreciable effect on the course of the disease was noted in 10 of them (59 per cent). Three patients improved temporarily while under treatment, although 2 of these soon relapsed after treatment was discontinued. The amounts of penicillin used varied from 240,000 to 1,760,000 units over a period of from nine to twenty-six days. There is good evidence that some strains of organisms are slightly more susceptible to penicillin than others and there is also evidence that the blood stream can be sterilized temporarily, at least in some cases. On the whole, however, the results in the few cases treated were disappointing. It is possible that some of these infections with susceptible strains of organisms may be influenced favorably if treatment is started early in the course of the disease and carried on in an intensive manner. This our committee hopes to be able to do when much larger amounts of penicillin become available for clinical investigation.

MISCELLANEOUS INFECTIONS

There were 12 cases of miscellaneous infections treated with penicillin. There was no effect in 1 case of atypical pneumonia, in 1 case of multiple subcutaneous abscesses due to *Escherichia coli* and non-hemolytic streptococci and in 1 case of moniliasis. Two patients with actinomycosis and 1 patient with a putrid abscess of the lung died. One patient with agranulocytosis and 1 with *Micrococcus tetragenus* sepsis recovered. One patient with ulcerative colitis was improved temporarily, and a patient with a mixed infection in a subscapular abscess improved following local use of penicillin.

GENERAL COMMENT

From the experience recorded so far, penicillin has been found to be extremely useful in the treatment of infections due to the staphylococcus, the hemolytic streptococcus, the pneumococcus and the gonococcus. It has been tested most extensively in the treatment of staphylococcal and gonococcal infections. The staphylococcal infections have included infections with and without bacteremia, acute and chronic osteomyelitis, cellulitis, carbuncles of the lip and face, suppurative arthritis, pneumonia, empyema, septic compound fractures, burns and epidural abscesses. It has been of great benefit in those cases of infection that are resistant to the sulfonamides. Experimentally it is a potent agent in gas bacillus infections, but up to the present time there are no studies on human cases. It has not been effective in the treatment of subacute bacterial endocarditis.

To obtain the best results it is necessary to inject penicillin continuously or at frequent intervals for at least seven to fourteen days or longer. This is necessary because penicillin is excreted rapidly in the urine and a large part of that injected is lost within a few hours. To keep organisms in infected areas exposed

to the action of penicillin, then it is essential that enough be given so that this objective is attained. Experience shows that the amount needed and the frequency of injection will vary from one patient to another and from one infection to another.

With respect to dosage the following schedule has been found useful in the various infections and for the present is the one that is being recommended by our committee. These suggestions are subject to change depending on individual circumstances and cases.

DOSAGE SCHEDULE IN VARIOUS INFECTIONS

A *In Serious Infections Due to the Hemolytic Streptococcus, Staphylococcus Aureus or Pneumococcus With or Without Bacteremia*—An initial dose of 15,000 to 20,000 Oxford units should be given, with continuing dosage as follows:

1 Five thousand units every hour injected into the tubing of an indwelling intravenous set or

2 Constant intravenous injection of a solution at a rate designed to deliver 5,000 to 10,000 units per hour. In a few cases it may be necessary to use larger doses.

3 After the temperature has returned to normal, the total dose in a twenty-four hour period may be reduced by half, but it should be continued for at least seven days after the temperature is normal.

TABLE 3—Reactions

Type of Reaction	No. of Cases
1 Fever	5
2 Chills and fever	12
3 Thrombophlebitis at site of injection	19
4 Urticaria	14
5 Gluteal tenderness at site of injection	5
6 Headache flushing of face	10
7 Tingling in testes	2
8 Pains in muscles	2

B *In Chronically Infected Compound Injuries Such as Infected Compound Fractures or Septic Infections of the Soft Parts*—An initial dose of 10,000 Oxford units should be followed by 10,000 units every two hours or 15,000 units every three hours parenterally, with local treatment as indicated. This schedule may have to be increased or decreased, depending on the seriousness of the infection and the response to treatment.

C *Sulfonamide Resistant Gonorrhea*—The minimum dosage schedule has not been worked out completely, 10,000 Oxford units every three hours intramuscularly or intravenously for twelve doses has been used with success. It is not unlikely that the same effect may be obtained with 20,000 units every three hours for five doses. The results of treatment should be controlled by culture of the exudate.

D *Empyema—Streptococcal, Pneumococcal and Staphylococcal*—Penicillin in isotonic solution or sodium chloride should be injected directly into the empyema cavity after aspiration or pus or fluid. This should be done once or twice daily, using 30,000 or 40,000 units, depending on the size of the cavity, the type of infection and the number of organisms. Penicillin solutions should not be used for irrigation. It requires at least six to eight hours for a maximum effect of penicillin, so that continuous action is needed.

E *Meningitis—Staphylococcal, Pneumococcal and Streptococcal*—Penicillin does not penetrate the subarachnoid space in appreciable amounts so that it is

necessary to inject penicillin into the subarachnoid space or intracisternally in order to produce the desired effect. Ten thousand units diluted in isotonic solution of sodium chloride in a concentration of 1,000 units per cubic centimeter should be injected once or twice daily, depending on the clinical course and the presence of organisms. Intravenous or intramuscular injections should be carried on at the same time.

F Pneumonia—The dosage schedule for pneumococcal pneumonia has not been worked out satisfactorily, but for the present it is well to give between 60,000 and 90,000 units a day for three to seven days. Recovery has followed with smaller doses, but the foregoing schedule seems necessary, at least in some cases.

TOXICITY AND REACTIONS

One of the remarkable features of penicillin is its relatively low toxicity and the extremely low incidence of a systemic nature. This is all the more remarkable in view of the fact that the material that is available for clinical testing at present is perhaps not more than 10 to 15 per cent pure penicillin. The reactions observed in the 500 cases are listed in table 3.

Chills and Fever—These were recorded in 12 cases and fever in 5. In several it was difficult to attribute these reactions to the penicillin, since chills and irregular fever were present before treatment was started and they continued for a short period following treatment. In others, however, it was plain that these reactions were definitely related to the injection of penicillin. This statement is supported by the observation that the injection of 10,000 units of penicillin from some lots caused chills and fever, whereas the injection of 5,000 units from the same lot caused no reaction. These reactions were transitory, and aside from the temporary discomfort to the patient they caused no difficulty. In a few patients who were afebrile before treatment was begun low grade fever varying from 100 to 101 F would occasionally occur and last for several days. This was noticeable particularly in those patients who were receiving penicillin in large amounts continuously.

Urticaria—Urticarial eruptions were reported in 14 cases. Their cause remains obscure, since in some of the cases the urticaria did not appear for several days after penicillin was discontinued, in others it did not recur when penicillin was again injected, and in still others it developed during the exhibition of it. Whether these reactions are due to some impurity in the penicillin cannot be stated at present. In several cases in which penicillin has been given after an attack of urticaria there have been no signs of recurrence. The urticaria usually disappears temporarily following the injection of epinephrine.

Thrombophlebitis—This complication at the site of injection was recorded in 19 cases. It has been noted with certain lots of material and is likely to occur when injections are made repeatedly and when concentrated solutions are used. There is also some individual susceptibility to thrombophlebitis, since in several of the reported cases penicillin from the same lot injected into 1 patient would be followed by thrombophlebitis, whereas it would cause no reaction in a second patient. Pain along the course of the vein during the injection of material has been complained of by some patients.

Miscellaneous Complaints—Transitory attacks of throbbing pain in the head, flushing of the face, tingling

in the testes, pains in the muscles and constriction in the chest have been observed. All these complaints last only a few minutes and disappear spontaneously. It has been found that some impurity carried over from the extraction process used to remove pyrogens was responsible for these reactions. Passing the solutions through a Seitz filter removed the substances, and recent lots of penicillin have not caused these reactions.

Aside from the patients who developed urticaria, there have been none who have developed any signs of sensitivity to penicillin. A number of patients have received several prolonged courses of penicillin at varying intervals of time, and in none of them so far have any reactions been observed to a second or even a third course of treatment.

SUMMARY AND CONCLUSIONS

From the study of 500 cases of infection treated with penicillin the following conclusions are justified.

Penicillin is a remarkably potent antibacterial agent which can be given intravenously, intramuscularly or topically. It is ineffective when given by mouth.

Following intravenous or intramuscular injection it is excreted rapidly in the urine, so that in order to obtain an adequate amount of potent material in the circulating blood and tissues it is necessary to inject penicillin continuously or at frequent intervals, that is, every three to four hours.

Penicillin has been found to be most effective in the treatment of staphylococcal, gonococcal, pneumococcal and hemolytic streptococcus infections. It has been disappointing in the treatment of bacterial endocarditis. Its effect is particularly striking in sulfonamide resistant gonococcal infections.

While the dosage schedule requires additional investigation, it seems clear that the average patient requiring intravenous or intramuscular injections for serious staphylococcal infections requires a total of between 500,000 and 1,000,000 Oxford units, and the best results have been observed when treatment is continued for at least ten days to two weeks. At least 10,000 units should be given every two to three hours at the beginning of treatment, either by continuous intravenous injection or by interrupted intravenous or intramuscular injections.

Satisfactory results are obtained in sulfonamide resistant cases of gonorrhea following the injection of 100,000 to 160,000 units over a period of forty-eight hours.

Patients with pneumococcal pneumonia frequently recover following the use of 100,000 units given over a period of three days. This is especially important in sulfonamide resistant pneumococcal infections. It may be necessary to give between 60,000 and 90,000 Oxford units daily for four to seven days to get a maximum effect.

In the treatment of empyema or meningitis it is advisable to use penicillin topically by injecting it directly into the pleural cavity or the subarachnoid space.

Toxic effects are extremely rare. Occasional chills with fever, or headache and flushing of the face have been noted. Urticaria has been reported and thrombophlebitis at the site of injection has been described.

65 East Newton Street

MODIFIED PROTAMINE ZINC INSULIN
AN IMPROVEMENT ON STANDARD
PROTAMINE ZINC INSULINCOMPARATIVE STUDIES ON SIXTY-TWO
DIABETIC PATIENTS

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The protamine zinc insulin now generally employed has proved valuable in the treatment of diabetes, but it has become increasingly evident that for many diabetic patients it is not ideal for maintenance therapy. This paper is the report of clinical investigations with a new form of modified protamine zinc insulin which has revealed distinct advantages in a series of 62 patients.

The use of the slow acting standard protamine zinc insulin has permitted a reduction in the number of injections necessary in the great majority of cases of diabetes. It has also diminished the wide fluctuations in the blood sugar occurring with several daily injections of regular insulin. It was hoped that good maintenance therapy in nearly all cases of diabetes could be established with a single daily injection of protamine zinc insulin. This hope has not been realized. In the six years since its introduction in February 1937 much has been learned about the degree of diabetic control possible with this form of modified insulin. When given once daily, protamine zinc insulin exerts a relatively constant effect on the blood sugar operating in practically uniform degree throughout the twenty-four hours, but it does not have sufficiently rapid activity after injection to control the rise in blood sugar occurring after intake of food.¹ The time of injection of the daily dose of protamine zinc insulin and the relationship of the time of injection to meals have relatively little to do with the shape of the twenty-four hour blood sugar curve. The highest blood sugar values occur during the day after the intake of food, while the lowest levels are found during the fasting period of the night or early morning. In patients with mild diabetes requiring 40 units of insulin or less per day the rise in the blood sugar after meals may not be sufficient to be important. In many such cases a single dose of protamine zinc insulin daily establishes good control. When the diabetes is more severe, however, it is usually not possible to give enough protamine zinc insulin to prevent hyperglycemia after meals without causing hypoglycemia during the fasting hours of the night or early morning. Since a single injection of protamine zinc insulin may exert some effect for forty-eight hours or longer, the total amount of insulin acting at any one time is the sum of that being absorbed from two or three depots in which the precipitated material has been subcutaneously injected. The constant absorption of the insulin proceeds at the same rate during the night as during the day. In patients with severe diabetes the rise in the blood sugar level after meals is great and rapid. In the majority of such cases if enough of the slowly absorbed protamine zinc insulin is given daily

hyperglycemia after food intake may be prevented, but the total insulin effect will be excessive with resultant hypoglycemia during the night. If the total daily carbohydrate allowance should be divided into six equal parts and the patient fed every four hours day and night, wide fluctuations in the blood sugar could be prevented. With this program, food absorption would be slower and more uniform to correspond with the slowly and uniformly absorbed insulin. Since such frequent feeding is not practical, an approach to it has been widely adopted, four meals a day being given instead of three, the last at 9 or 10 p. m. Small night meals, containing some protein and from 10 to 30 per cent of the day's carbohydrate have made it possible to control the majority of patients with relatively mild diabetes with a single daily injection of protamine zinc insulin.

COMBINED THERAPY A COMPROMISE

Diabetes that is moderate or severe, however, usually cannot be controlled with a single daily injection of protamine zinc insulin, even when a relatively large night feeding is employed. This problem has been met in a fairly satisfactory manner by ourselves and others² by giving a large dose of protamine zinc insulin and a smaller dose of regular or crystalline insulin in separate injections before breakfast daily. Thus the prolonged activity of protamine zinc insulin is utilized to prevent nocturnal hyperglycemia, while the regular insulin tends to control the rise in the blood sugar after meals. It is usually possible to adjust the dose of protamine zinc insulin so that it will not be large enough to cause insulin reactions at night or so small as to permit nocturnal hyperglycemia. Although this method of "combined therapy," using both a slow acting insulin and a rapid acting insulin, works well in the great majority of relatively severe cases, two very serious objections can be brought against it. 1 It is a compromise method, still requiring two injections a day, even though both can be given before breakfast. One of the chief advantages of protamine zinc insulin is thereby partly nullified. 2 Combined therapy requires the manipulation by the patient of two very different forms of insulin, thus increasing the possibilities of error. One of the insulins is precipitated and must be mixed and for large doses is usually used in 80 unit strength, the other is clear, is given in smaller doses and is usually employed in 40 unit concentration. Therefore two different syringes with dissimilar calibrations are often necessary.

We have analyzed the histories of all the patients we followed and regarded as satisfactorily regulated during the three year period from Jan. 1, 1940 to Jan. 1, 1943. Patients who could not be brought under good maintenance control were not included in this group. Of the 219 patients who could be satisfactorily regulated 131 (60 per cent) needed only a single daily injection of protamine zinc insulin, while 88 (40 per cent) required combined treatment with separate injections of protamine zinc and regular insulin before breakfast daily. The average dose needed in the 131 cases controlled with protamine zinc insulin alone was 24 units. The average total daily insulin requirement of the

2 Mosenthal H. O. Protamine Zinc Insulin. Clinical Application. J. A. M. A. 110: 87-90 (Jan. 8) 1933. Root H. F. White, Priscilla Marble, Alexander and Joslin E. P. Protamine Zinc Insulin. M. Clin. North America 22: 711-735 (May) 1933. Lawrence R. D. Zinc Protamine Insulin in Diabetes. Treatment by One Daily Injection. Brit. M. J. 1: 1077-1080 (May 27) 1939. MacBryde C. M. and Roberts H. K. Three to One Modified Protamine Zinc Insulin. An Improvement on Maaet Protamine Zinc Insulin. Proc. Central Soc. Clin. Research 15: 7-8 (Nov.) 1942.

From the Department of Internal Medicine, Washington University School of Medicine, the Barnes Hospital and the Washington University Clinics.
1 Ricketts H. T. Constancy of Action of Protamine Zinc Insulin. Am. J. M. Sc. 201: 51-59 (Jan.) 1941.

88 cases needing combined treatment was 62 units. During the last half of the three year period we have become increasingly dissatisfied with the degree of control obtainable in severe diabetes with a single dose of protamine insulin daily. Of the last 154 cases (regulated in the past eighteen months) 81 (53 per cent) were maintained with protamine zinc insulin alone, while 73 (47 per cent) required combined therapy.

It is evident that treatment could be greatly simplified for a large proportion of diabetic patients if a form of insulin was devised which would as the result of a single injection, exert an influence on the blood sugar similar to that exerted by a larger dose of protamine zinc insulin and a separate smaller injection of regular or crystalline insulin. This highly desirable insulin should have activity prolonged enough to control nocturnal hyperglycemia plus sufficient rapid activity to prevent excessive increase in the blood sugar following food intake during the day.

INVESTIGATIONS OF "INTERMEDIATE" INSULINS

A number of forms of modified insulin have been studied with the hope that one of them would prove to have just the proper proportion of prolonged to rapid activity, so that a single injection might take the place of the two separate injections now required for the great majority of patients with severe diabetes. Some of these modified insulins have shown characteristics more or less intermediate between those of market protamine zinc insulin and regular insulin. Among these are histone zinc insulin, clear (soluble or acid) protamine zinc insulin and globin insulin. A review of the clinical studies with these and the other forms of modified insulin so far investigated³ reveals that, in general, market protamine zinc insulin gives better control throughout the twenty-four hours and is more predictable and reliable. We have recently completed a carefully controlled series of comparative studies,⁴ with these conclusions. When compared on 18 patients, histone zinc insulin gave poorer diabetic control than that obtainable with market protamine zinc insulin. The desirable more rapid action was insufficient and there was less prolonged effect. Comparative studies on 11 patients with clear (acid) protamine zinc insulin revealed less satisfactory diabetic control than was secured with market protamine zinc insulin.

Since these forms of modified insulin were proving so disappointing, and because of the interesting observations of Wauchope⁵ and of Ulrich,⁶ we returned to the study of the modified protamine zinc insulins which can be prepared by combining protamine zinc insulin and regular insulin. In common with these and other workers we previously had found that, when the two forms of insulin are mixed in the proportions usually employed in separate injections in the combined method of therapy, all or practically all of the insulin is precipitated by the excess of protamine present. As a rule the doses of protamine zinc insulin utilized clinically when both types of insulin are employed are several

times as large as the doses of regular insulin. Thus, when 45 units of protamine zinc insulin is mixed with 15 units of regular insulin the resultant insulin preparation actually contains 60 units of protamine zinc insulin. Ulrich, however, demonstrated that when regular or crystalline insulin is combined with equal or smaller amounts of protamine zinc insulin the resultant insulin preparations have unmistakably more rapid action than protamine zinc insulin. The results obtained by these workers and our own studies led us to conclude that, by combining various proportions of protamine zinc and regular insulin, modified insulins may be prepared with various degrees of intermediate activity. This concept was supported by assays performed in the laboratories of Eli Lilly & Co., since reported by Peck,⁷ which revealed that, the larger the proportion of regular to protamine insulin used in preparing the modified insulin, the more prompt and intense and the less prolonged are the effects.

These premises were then adopted. 1 Since a graded scale of intermediate types of insulin can be produced by adding regular or crystalline insulin to standard protamine zinc insulin, the most widely applicable of such preparations should be selected for careful study. 2 Such a preparation should be standard and should not be varied from patient to patient, to keep the therapy of diabetes as simple as possible. 3 The desirable proportion of slow (protamine zinc) insulin effect to rapid (regular) insulin effect could be ascertained by determining the proportions found necessary to establish good control in those patients requiring combined therapy.

THE DESIRABLE PROPORTIONAL EFFECT

Eighty-eight of the 219 well regulated patients required combined therapy. The average ratio between the separately injected two forms of insulin was protamine zinc insulin 3 to regular insulin 1. More than 80 per cent of the patients were best controlled with a proportion between 2:1 and 4:1, and more than 60 per cent with a proportion between 2.5:1 and 3.5:1. It is interesting and important to note that Joslin⁸ also found that a large proportion (more than 50 per cent of those on insulin therapy) of a recently analyzed series of diabetic patients required combined therapy and that the average doses needed were 39 units of protamine zinc insulin and 13 units of regular insulin. Here again the ratio required is 3:1. Our studies and those of other investigators indicated that an insulin having 3 parts slow action to 1 part rapid effect would be widely useful.

It was decided to prepare, if possible, an insulin having 75 per cent slow activity and 25 per cent rapid activity and to compare the control of diabetes obtainable with such a preparation with that secured with the forms of insulin therapy now generally employed.

PREPARATION AND CHARACTERISTICS OF THE SPECIALLY MODIFIED PROTAMINE ZINC INSULIN

It was found that several preparations with approximately the desired proportional effects could be made by mixing various amounts of protamine zinc insulin and regular insulin. The resultant proportions of soluble to precipitated insulin, and therefore the relative rapidity of action, depend on the excess of protamine present, the amounts of the two insulins used and the

3 Bailey, C. C., and Marble, Alexander. Histone Zinc Insulin, Globin (Zinc) Insulin and Clear Protamine Zinc Insulin. A Comparative Study of Their Action, *J. A. M. A.* **118**: 683-690 (Feb. 28) 1942. Colwell, A. R., Izzo, J. L., and Stryker, W. A. Intermediate Action of Mixtures of Soluble Insulin and Protamine Zinc Insulin, *Arch. Int. Med.* **69**: 931-951 (June) 1942.

4 MacBryde, C. M., and Roberts, H. K. A New Modified Protamine Zinc Insulin. Comparison with Histone Zinc Insulin. Clear and Turbid Protamine Zinc Insulin, *J. Clin. Investigation*, to be published.

5 Wauchope, G. M. Zinc Protamine Insulin and Soluble Insulin Interaction in Combined Doses, *Lancet* **1**: 962-966 (May 25) 1940.

6 Ulrich, Helmuth. Clinical Experiments with Mixtures of Standard and Protamine Zinc Insulins, *Ann. Int. Med.* **14**: 1166-1179 (Jan.) 1941.

7 Peck, F. B. Action of Insulins, *Proc. Am. Diabetes A.* **2**: 67-83, 1942.

8 Joslin, E. P. Treatment of Diabetes Mellitus, ed. 7. Philadelphia, Lea & Febiger, revised, 1940. p. 246.

p_H Standard protamine zinc insulin contains in excess of about 40 per cent protamine zinc. Mixture of equal parts of the two insulins should therefore insure the combination of all this excess, leaving 60 per cent of the regular insulin (or 30 per cent of the total units in the mixture of equal parts) in soluble form. Centrifugation of such a mixture, however, reveals that all of the insulin is precipitated since the p_H is close to 5, the isoelectric point of insulin, as the result of combining regular insulin (p_H 3) with protamine zinc insulin (p_H 7.2). Slight changes either to the acid or alkaline side of p_H 5 result in an unknown amount of the insulin returning to soluble form.

To avoid this uncertainty, and since an insulin with the p_H of body tissues seems desirable, equal parts of protamine zinc insulin and regular insulin were mixed with the p_H adjusted to 7.2. It was then found that an amount of soluble insulin closely approximating 25 per cent of the total insulin was present in the supernatant fluid after centrifugation. Chart 1 shows the effect of injection of the supernatant fluid from such a preparation made from 30 units of protamine zinc insulin and 30 units of regular insulin. The activity was in all respects similar to that exhibited by 15 units of regular insulin given to the same patient. Fifteen units of the special insulin preparation (25 per cent of the total 60 units) was in soluble form, while 45 units (75 per cent) was in the precipitate. Modified protamine zinc insulin so prepared was selected because of these desirable characteristics for comparative studies on patients with diabetes. After storage for many months its activity was unchanged, so it appears to be stable.

METHOD OF INVESTIGATION

Patients—Diabetic patients were chosen for study who were not suffering from any complications which would disturb regulation of the blood sugar. Comparative observations with the various types of insulin therapy were made on 24 patients in the hospital, each patient remaining in the metabolism ward for several weeks. When it was found that good results were being obtained with the special modified protamine zinc insulin, investigation was started on office and clinic patients. Thirty-eight outpatients served as subjects for comparative observations. Patients with mild diabetes were included, but a special effort was made to include a large number of patients with the more severe grades of the disease, since the best test of the new insulin would be on these patients. A carefully weighed diet was given to the patients in the hospital, the diet for each patient being unchanged throughout the period of study. Likewise, no appreciable variation in the activity of each patient was permitted during the observations. The only factor altered from one period to another was the character of the insulin. Similar efforts were made to control the diet and activity of the outpatients. Regulation in the latter group is necessarily much less accurate than that obtained under the close supervision of the staff of the metabolism ward. However, the control secured in ambulatory outpatients engaged in their usual occupations will reflect more exactly the clinical usefulness of any form of insulin. The ages of the 62 patients ranged from 18 to 74 years, averaging 46 years.

Diets—The diets used were those thought to be best for each patient, according to the individual age, size, nutritional status, activity and total caloric requirement. Protein allowances per day ranged from 56 to 110 Gm.

fat from 30 to 180 Gm and carbohydrate from 140 to 220 Gm. In nearly all cases a night feeding was given at 9:30 or 10 o'clock containing approximately 20 per cent of the carbohydrate, the remaining 80 per cent being divided equally among the three main meals. In certain cases in which a definite indication was present a somewhat larger proportion was given at lunch and supper. The average patient received 150 Gm of carbohydrate daily, distributed as 40 Gm each at breakfast, lunch and supper and 30 Gm in the night feeding.

Insulins—The special modified protamine zinc insulin was prepared for us in the laboratories of Eli Lilly & Co. It is made by admixture of equal parts of protamine zinc and regular insulin at p_H 7.2. The effect of the supernatant fluid (soluble insulin) by rabbit assay is approximately 10 units to each 30 units of precipitated insulin effect. For convenience and clarity in the remainder of this paper, this special modified protamine zinc insulin with 75 per cent slow effect and 25 per cent rapid effect will be referred to as 3:1 insulin. The Lilly Company has labeled this insulin for experimental purposes 'Special Protamine Zinc Insulin' 40 or 80 units per cubic centimeter.

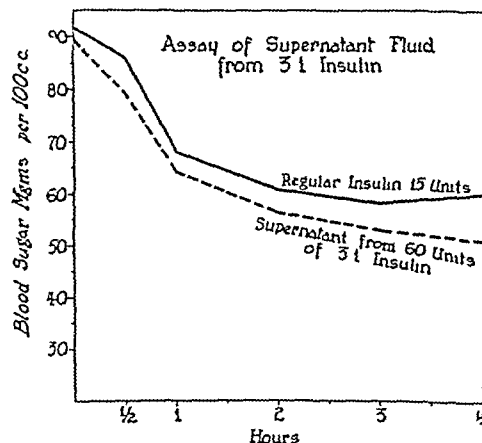


Chart 1—Comparison on nondiabetic patients of effect of 15 units of regular insulin with that of the supernatant fluid from 60 units of the 3:1 modified protamine zinc insulin. The blood sugar curves are similar.

Comparative observations of the control of diabetes secured with 3:1 insulin with that obtainable with protamine zinc insulin alone or when supplemented with regular insulin, were made in each case.

METABOLISM WARD STUDIES

Each patient was as carefully regulated as possible with diet and insulin. If the diabetes could not be controlled with a single daily dose of protamine zinc insulin, separate daily injections of protamine zinc insulin and regular insulin before breakfast were employed. Frequent blood sugar determinations were obtained, and careful quantitative urine sugar measurements were made in four separate periods daily: 7 to 11 a.m., 11 a.m. to 4 p.m., 4 to 9 p.m., and 9 p.m. to 7 a.m. Meals were given at 8 a.m., 12 noon and 5 p.m. Glycosuria was eliminated as completely as possible and an effort was made to bring the blood sugar within normal limits. All conditions were then kept constant including diet, activity and insulin dosage. If any complication appeared such as fever, infection, change in activity, mistake in diet or unaccountable change in tolerance, the data were discarded. After at least four to seven days of relatively stable blood

sugar levels, twenty-four hour blood sugar curves were determined. Blood for sugar determinations was taken at 7 30 a m (fasting), 10 30 a m, 2 30 p m, 7 30 p m, 12 midnight and again at 7 30 a m (fasting). The blood sugar values at 10 30 a m, 2 30 p m, 7 30 p m and at midnight each represent the level present two and one-half hours after the preceding meal. The constancy of these intervals lends meaning

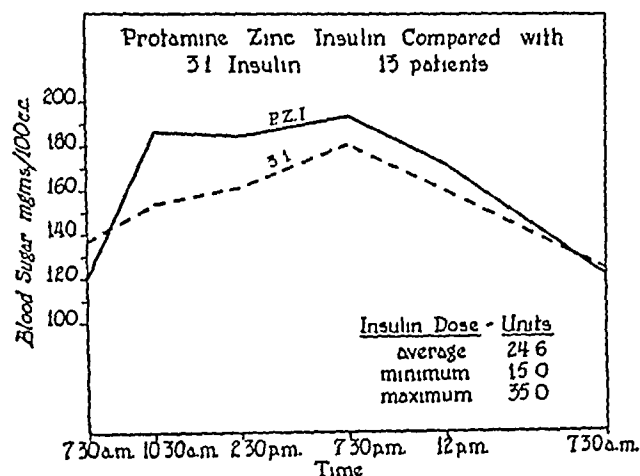


Chart 2—Composite blood sugar curves showing better control of diabetes obtainable with the modified protamine zinc insulin

and importance to the twenty-four hour curves constructed from such determinations. If the fasting blood sugar levels at the beginning and at the end of each curve were not within reasonable proximity, it was concluded that stabilization with that particular program was not satisfactory and such curves were not included.

When all criteria had been met, reasonable stability obtained and a twenty-four hour blood sugar curve secured which represented the control obtainable with protamine zinc insulin alone, or with combined therapy employing separate morning doses of protamine zinc and regular insulin, an equivalent dose of 3 1 insulin was begun, all other conditions being left constant. A similar period was allowed for stabilization with the 3 1 insulin, and when this had been accomplished a twenty-four hour curve was obtained reflecting the control obtained with the 3 1 modification.

RESULTS

1 *Standard Protamine Zinc Insulin Alone Compared with 3 1 Modified Protamine Zinc Insulin*—Comparison of 13 patients studied in the hospital revealed better control in 10 of the cases throughout the twenty-four hours with 3 1 insulin than with standard protamine zinc insulin. In 2 cases the control was equally good with the two insulins, while in 1 case the standard protamine zinc insulin gave a better twenty-four hour curve. Statistical analysis of the individual figures obtained with the two insulins at 10 30 a m and 2 30 p m, at which times the greatest differences occurred, show a probable significance favoring 3 1 insulin of 0.969.⁹ At 10 30 a m the average of the blood sugar values obtained with 3 1 insulin was 23 mg per hundred cubic centimeters lower than the average after standard protamine zinc insulin, and at 2 30 p m the average was 22 mg lower. Blood sugar values were consistently lower with 3 1 insulin throughout the day and at midnight, but the level of the fasting blood sugars was slightly higher (table 1). The characteristics exhibited by the new insulin modification are

desirable. The soluble insulin content resulted in somewhat lower blood sugars during the day after the intake of food. The fasting blood sugars were the same or slightly higher, showing that the fasting period during the night is adequately controlled, while there is less tendency to produce hypoglycemia than occurs with standard protamine zinc insulin. The 3 1 insulin did not produce a single instance of nocturnal hypoglycemia. The equal doses of standard protamine zinc insulin and of 3 1 insulin which were compared were 35 units in 3 instances, 30 units in 3 cases, 25 units twice and 15 units 5 times. The average dose was 24.6 units. Not only was there less variation in the blood sugar levels throughout the day with 3 1 insulin but the total insulin effect was greater. It seemed to be more effective unit for unit than standard protamine zinc insulin. No doubt this resulted from the fact that there was less fluctuation of the blood sugar, and less of the insulin effect was spent in bringing back an abnormally high blood sugar value toward normal. Similarly, fewer units per day are needed with standard protamine zinc insulin than are necessary with multiple injections of regular insulin, because of the greater relative stability of the blood sugar. Composite comparative curves have been constructed from the mean values of the blood sugar determinations secured throughout the twenty-four hours with standard protamine zinc insulin and with 3 1 insulin (chart 2). In this group of cases the 3 1 insulin gave definitely superior regulation.

2 *Combined Therapy Compared with 3 1 Modified Protamine Zinc Insulin*—The control secured with separate injections of protamine zinc insulin and regular insulin should theoretically be identical with that obtainable with the 3 1 modified protamine zinc insulin if the proportions of the protamine zinc insulin and regular insulin are 3 to 1. Although the average doses used for the 11 patients in the hospital were 45 units of protamine zinc insulin and 13 units of regular insulin (ratio 2.9 1), the individual doses employed ranged from 60 and 10 (6 1) to 35 and 15 (2.3 1). Table 2 shows the blood sugar values obtained throughout the

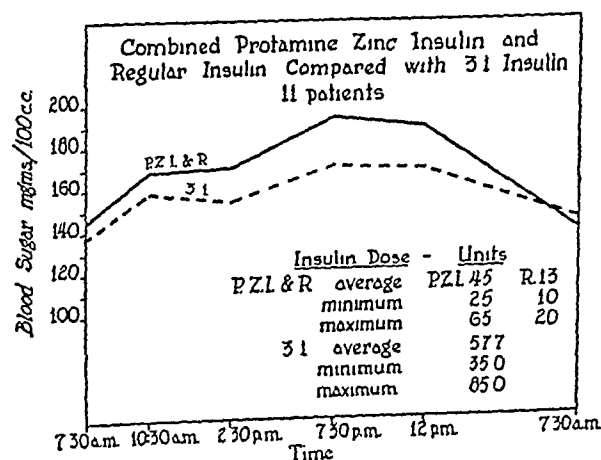


Chart 3—Composite blood sugar curves showing better control of diabetes obtainable with the modified protamine zinc insulin than with "combined therapy"

twenty-four hours with separate doses of protamine zinc and regular insulin as compared with those obtained with 3 1 insulin, the doses of the latter being equal to the combined number of units used with the two separate injections. In 7 of the 11 cases the regulation was better with 3 1 insulin, in 3 instances the control was better with combined therapy and in 1 instance the effects were approximately equal. The composite curves (chart 3) show similar contours, illustrating that the

⁹ The statistical analyses were done according to Fisher's formula. A result of 0.95 or greater indicates significance in the statistical sense which could not be due to error in random sampling.

desired effect of securing from a single injection results like those following separate injections of the two different insulins has been obtained. The fact that 3 I insulin gave even better control, with somewhat lower blood sugars and less glycosuria throughout the twenty-

of insulin, the diet and all other conditions being kept as constant as possible. After a week the urine tests were compared with those obtained on the previous program, and sugar determinations were done on the fasting blood and that obtained two and one-half hours after exactly the same breakfast.

TABLE 1—Protamine Zinc Insulin Compared with 3 I Insulin

Case	Insulin	Units	7 30	10 30	2 30	7 30	12	7 30
1	PZI	15	157	205	219	138	200	161
	3 I	15	153	203	221	204	191	162
2	PZI	15	171	181	210	201	146	141
	3 I	15	154	176	218	260	192	155
3	PZI	15	89	175	214	213	140	165
	3 I	15	107	112	166	220	186	107
4	PZI	15	105	95	215	176	197	135
	3 I	15	117	224	220	189	117	144
5	PZI	15	93	159	145	162	190	123
	3 I	15	119	122	136	114	140	120
6	PZI	35	157	250	195	217	161	137
	3 I	35	129	197	143	223	137	132
7	PZI	30	79	140	208	209	211	100
	3 I	30	91	181	164	194	175	123
8	PZI	35	95	145	121	105	81	83
	3 I	35	142	155	138	209	132	111
9	PZI	35	150	220	178	255	157	157
	3 I	35	136	155	143	160	145	119
10	PZI	30	153	270	210	164	209	150
	3 I	30	155	155	143	96	144	85
11	PZI	25	137	235	214	237	201	100
	3 I	25	123	157	197	132	182	109
12	PZI	25	66	99	137	120	86	60
	3 I	25	74	103	135	191	141	94
13	PZI	30	146	150	113	148	162	92
	3 I	30	126	57	85	158	175	115

four hours in the majority of cases, was somewhat unexpected. No doubt this can be explained by the greater uniformity of the insulin action and by the fact that the 3 I proportion actually met the needs of the patients better than the various proportions individually employed in the combined therapy. Statistically the probable significance favoring the 3 I insulin was 0.958.

OUTPATIENT STUDIES

The hospital studies, which were performed first, showed that it would be safe to change outpatients from the usual forms of regulation to 3 I modified protamine zinc regulation if the fact was kept in mind that the 3 I insulin is somewhat more effective unit for unit. It had also been learned that the 3 I insulin could be used in relatively large doses, 85 units for example, being substituted for amounts as great as protamine zinc insulin 65 units and regular insulin 20 units (cases 1 and 5, table 2). It was evident that the most important test of the new insulin would occur when it was used instead of the usual forms of insulin treatment for patients requiring large doses and engaged in their normal occupations. Comparative studies were done on 38 outpatients who were housewives, business men, mechanics, laborers and students ranging in age from 18 to 62. Quantitative urine sugar determinations were not possible in the outpatient group. Patients were instructed to record fasting, late morning and before supper urine tests as negative or 1 to 4 plus qualitative Benedict's reactions. In each case the best possible regulation was first secured with standard protamine zinc insulin alone, or with protamine zinc and regular insulin in separate daily injections before breakfast. After at least one week of relatively stable conditions, as illustrated by the patient's urine test record, blood for sugar determination was taken fasting and again two and one-half hours after the patient's usual breakfast. Then 3 I insulin was substituted for the previous form

RESULTS

1 *Standard Protamine Zinc Insulin Alone Compared with 3 I Modified Protamine Zinc Insulin*—Comparison of these two forms of insulin in equal doses on 8 outpatients revealed better regulation with the new insulin modification in all cases, as shown by decreased glycosuria, less tendency to high blood sugar values after breakfast and less fluctuation in control. The fasting blood sugar levels were somewhat higher in 6 of the 8 cases, showing the less prolonged action of 3 I insulin. The blood sugar values after breakfast were lower in every case when 3 I insulin was used, illustrating the desirable more rapid effect. The average blood sugar rise after standard protamine zinc insulin when determined two and one-half hours after breakfast was 81 mg, while that after 3 I insulin was only 16 mg per hundred cubic centimeters (table 3).

2 *Combined Therapy Compared with 3 I Modified Protamine Zinc Insulin*—Thirty outpatients were studied in this group, and in 26 of the 30 cases control obtained with 3 I insulin was as good as or better than that secured with separate injections of protamine zinc insulin and regular insulin. In 4 patients the control was somewhat better with standard protamine zinc insulin. Theoretically the control should be identical if the proportion used in the combined therapy was exactly 3 I and if the same doses of 3 I insulin were used as the total employed in each case in the combined therapy. The doses employed were not exactly the same. Somewhat smaller doses of 3 I insulin were used in some cases because of its greater effectiveness per unit. In the cases requiring 80 or more units

TABLE 2—Combined Therapy Compared with 3 I Insulin Control

Case	Insulin	Units	7 30	10 30	2 30	7 30	12	7 30
1	PZI 60 & R	20	159	181	197	218	220	115
	3 I	85	123	99	107	149	165	153
2	PZI 60 & R	10	81	117	156	194	261	140
	3 I	70	61	145	135	134	179	116
3	PZI 25 & R	10	123	167	95	144	119	109
	3 I	35	142	155	138	209	132	111
4	PZI 25 & R	10	157	148	155	148	112	135
	3 I	35	131	117	87	159	155	127
5	PZI 60 & R	25	159	265	235	212	211	147
	3 I	85	113	164	219	180	97	
6	PZI 40 & R	10	211	274	243	265	251	216
	3 I	50	197	249	222	242	235	212
7	PZI 35 & R	15	127	181	162	221	189	120
	3 I	50	83	87	144	151	130	93
8	PZI 60 & R	10	141	84	115	102	176	112
	3 I	70	166	138	123	164	136	131
9	PZI 35 & R	10	75	76	151	184	123	64
	3 I	45	135	202	192	74	184	174
10	PZI 20 & R	10	95	91	131	193	203	120
	3 I	40	139	173	147	204	233	163
11	PZI 60 & R	10	257	263	219	240	213	246
	3 I	70	213	204	155	175	133	191

total under the combined treatment, amounts from 5 to 15 units less were employed when the change was made to 3 I insulin. There were 10 such cases among the 30, from 70 to 75 units of 3 I insulin being substituted for from 80 to 95 units of total insulin in the combined treatment, according to individual indications. The 30 patients selected for this comparative

study had the most severe diabetes under good regulation we have observed. Their cooperation was secured largely through the hope that one injection of the new insulin might be substituted for the two morning injections which all of them had needed.

The average dose of protamine zinc insulin required in the 30 cases was 51.3 units (range 30 to 70), and the average regular insulin needed was 16.6 units (range 10 to 25). The average ratio in this group was 3.1:1, corresponding closely with the average ratios in all our other groups of patients requiring combined therapy. The range of the ratios between the two forms of insulin required was 4.5:1 to 2.8:1. The average total protamine zinc insulin plus regular insulin requirement was 67.9 units (ranging from 40 to 95 units), while the average dose of 3.1 insulin substituted for the combined therapy was 65.6 units (ranging from 40 to 95 units). In spite of the fact that somewhat smaller doses were used in one third of the cases, the 3.1 insulin control was better than that obtained with combined treatment in 13 of the 30 cases, just as good in another 13 cases and less effective in only 4 instances. With the com-

TABLE 3—Protamine Zinc Insulin Compared with 3.1 Insulin on Eight Outpatients

Insulin	Average Dose, Units	Average Blood Sugars 7.30 A. M. (Fasting)	Mg. per 100 Cc 10.30 A. M. (2½ Hours After Eating)
PZI	39	121	202
3.1	39	129	147

TABLE 4—Protamine Zinc Insulin and Regular Insulin Regulation (Combined Therapy) Compared with 3.1 Insulin Control on Thirty Outpatients

Insulin	Average Dose, Units	Average Blood Sugars 7.30 A. M. (Fasting)	Mg. per 100 Cc 10.30 A. M. (2½ Hours After Eating)
PZI & R	67.9	139.2	167
3.1	65.6	139	157.5

combined treatment the average blood sugar level two and one-half hours after breakfast was only 28 mg. per hundred cubic centimeters higher than the fasting level, indicating good control. With the 3.1 insulin, however, the rapid part of the insulin action was even more effective, since the average 10.30 a. m. blood sugar value was only 18 mg. per hundred cubic centimeters higher than the average fasting blood sugar level. The fasting blood sugar values were satisfactory with both types of insulin therapy, averaging almost exactly the same, 139 mg. The blood sugar values in individual instances were very close also at 10.30 a. m., averaging 9.5 mg. per hundred cubic centimeters lower with 3.1 insulin than with the combined treatment (table 4).

COMMENT

The better regulation secured with the special form of modified protamine zinc insulin having 75 per cent slow effect and 25 per cent rapid effect can be explained by the fact that the characteristics of this insulin are designed to meet the requirements of a large proportion of diabetic patients. It seemed likely that this insulin, prepared especially for patients with severe diabetes requiring separate daily doses of protamine zinc insulin and regular insulin, would produce effects similar to those produced by the combined therapy. As shown by these studies, the results were similar, a

single dose of the 3.1 insulin not only giving control as good as that obtained by combined therapy but giving better regulation in most cases.

Less expected were the better effects of 3.1 insulin when compared with protamine zinc insulin regulation alone in milder diabetes. Decreased glycosuria and more stable blood sugar resulted in most of these cases. In no case was hypoglycemia observed. Hypoglycemia might have occurred had the rapid effect of the 3.1 insulin been excessive and would probably have been evident as low 10.30 a. m. blood sugar values. No such tendency was detected. Even when patients had been relatively well controlled with small doses of protamine zinc insulin the use of 3.1 insulin usually improved the regulation. Thus of the 5 cases requiring 15 units each in table 1 (cases 1 through 5) 3 showed better control with 3.1 insulin, while in the other 2 the control was as good as that obtained with standard protamine zinc insulin. The rapid insulin effect of 3.1 insulin in the 15 unit dose is 25 per cent of 15, or 3.75 units. When the 3.1 insulin was substituted for larger doses of protamine zinc insulin, the rapid insulin effect increased proportionately. For example, patients requiring 40 units got approximately 30 units slow effect and 10 units rapid effect, which for most patients seemed to be a convenient proportion and improved the regulation.

Colwell, Izzo and Stryker³ have obtained encouraging results with an insulin modification made by mixing 2 parts of crystalline insulin with 1 part of protamine zinc insulin, without readjustment of the p_H . In such a preparation all of the insulin is precipitated, but the activity is more rapid than that of protamine zinc insulin. Changes in the p_H , however, result in considerable alteration in the amount of soluble insulin which may be released in such a mixture. If mixed at p_H 7.2, for example, 50 per cent of the total insulin present is released in the soluble, quickly absorbable form. Since the p_H of the body tissues is approximately 7.2, there would seem to be danger of sudden absorption of a large amount of rapid acting insulin, with resultant hypoglycemia. We have observed this in a few patients treated with such a preparation. It seems safer to use 3.1 insulin, with the known p_H of 7.2, which is unchanged after injection. With 3.1 insulin the proportion of the precipitated to the soluble insulin is the same in the insulin vial as the proportion of the physiologic activities of the precipitated and soluble fractions after injection.

CLINICAL REGULATION SIMPLIFIED

To be of value clinically, a new insulin modification should not complicate the regulation of diabetes and should if possible simplify it. Treatment was greatly simplified in 34 of the 41 cases on combined therapy, since in these cases previously requiring two injections daily it was possible to substitute one injection of the modified 3.1 protamine zinc insulin. Clinical regulation is carried out as with standard protamine zinc insulin. The presence or absence of glycosuria before breakfast and before lunch and supper gives the most information. When combined therapy is used the absence of early morning glycosuria usually means that enough or too much protamine zinc insulin is being given. Glycosuria before breakfast usually suggests the need for an increase in the protamine zinc insulin dose. Absence of glycosuria before lunch and supper usually means that enough or too much regular insulin is being used. Glycosuria during the day requires an increase

in the regular insulin dose. With the specially modified 3:1 protamine zinc insulin, however, the fasting and postprandial urine tests are apt to change together rather than separately. When the amount of 3:1 insulin given is sufficient to prevent glycosuria at night there is apt to be little or no glycosuria during the day because of the proportional rapid insulin effect. Whenever glycosuria occurs during one part of the day while there is no sugar in the urine during most of the day, a slight change in the distribution of the carbohydrate allowance will usually suffice to reduce or abolish the glycosuria.

The 3:1 modified protamine zinc insulin was substituted with advantage both in cases requiring relatively small doses of insulin (usually protamine zinc insulin alone) and in cases requiring large doses of insulin (usually separate injections of protamine zinc insulin and regular insulin). Among the total of 62 patients there were 20 requiring 40 units or less of insulin daily, 14 requiring from 40 to 60, 18 from 60 to 80 and 10 from 80 to 95 units. Better control was obtained in all these groups with 3:1 modified protamine zinc insulin than with the usual methods of insulin regulation.

SUMMARY

A study covering three years and including 219 well controlled cases showed that a single injection of protamine zinc insulin as a rule established good regulation only in mild diabetes. The successful regulation of moderate or severe diabetes usually required separate daily injections of protamine zinc insulin and regular insulin ("combined therapy"). The proportion most widely useful was 3 parts protamine zinc insulin to 1 part regular insulin. Therefore a modified protamine zinc insulin with 3 parts prolonged action to 1 part rapid action was prepared. It is made by admixture of equal parts of protamine zinc insulin and regular insulin at pH 7.2. Comparative studies of the new insulin were done on 62 patients. These showed that a single injection of this 3:1 insulin modification gave a good control or better control than that obtained with combined therapy in 34 of 41 cases. In 20 of 21 milder cases the new insulin modification gave results as good as or better than those secured with a daily injection of protamine zinc insulin.

CONCLUSIONS

1. A modified protamine zinc insulin having 75 per cent slow or precipitated insulin effect to 25 per cent rapid or soluble insulin effect can be substituted with advantage for the forms of insulin now employed in maintenance therapy of diabetes. Since the effects of this insulin are more closely adjusted to the requirements of most patients with diabetes, better control is possible with it than with standard protamine zinc insulin. A single injection daily should permit good regulation in the great majority of cases.

2. The use of multiple forms of insulin should be discouraged. Good therapy of diabetes requires simplicity. Two forms of insulin should be sufficient. (a) A modified protamine zinc insulin such as that used in these studies. Such a modified insulin might well be substituted for the standard protamine zinc insulin now used, because of the better results in controlling uncomplicated diabetes. (b) Regular (or crystalline) insulin for use in diabetic emergencies and whenever supplementary insulin is required.

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PROTAMINE ZINC INSULIN MODIFIED FOR ACCELERATED ACTION

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In the routine treatment of diabetes mellitus it is often necessary to use simultaneously two types of insulin with different timing and intensity qualities of action. Protamine zinc insulin with its desirable slow, weak and prolonged effects must often be supplemented by separate injection of soluble insulin with its equally desirable prompt, intense and brief effects.¹ The separate use of these two types is often necessary in severe diabetes because protamine zinc insulin in dosage low enough to avoid hypoglycemia between meals or at night usually permits glycosuria after meals. Supplementary injection of insulin in solution either "regular" (amorphous) insulin or solution of zinc insulin crystals, helps to control postprandial glycosuria and is less likely to cause insulin shock during sleep because of its brief action. In small amounts it cannot be mixed with protamine zinc insulin because it is precipitated with loss of prompt effectiveness.

The use of two insulins simultaneously is confusing and involves multiple subcutaneous injections. It is necessary because the prolonged timing and intensity characteristics of protamine zinc insulin were not analyzed carefully enough in the course of its commercial development. Modification of it into an ideal preparation for daily use is a simple matter. In such an improved form therapeutic results are far more satisfactory than with orthodox methods. The reasons for this point of view are the subject of the present report. In preface it may be profitable to review some of the important factors leading to the development of protamine zinc insulin in its present commercial form.

PROTAMINE ZINC INSULIN

Composition.—Hagedorn's² original selection of a protamine to precipitate insulin into a suspension suitable for depot injection was based on the presumption that the greater its insolubility the more useful it would be in treatment. Therefore he chose a protamine which, when precipitated by insulin, is least soluble at the hydrogen ion concentration of human serum of all the protamines studied.

Proportions of insulin and protamine were selected which would yield complete precipitation of insulin at the point of least solubility of the compound. In fact an excess of protamine was and is used to insure maximum insolubility. This excess may vary somewhat in the products of different manufacturers. American products contain about double the amount necessary for complete precipitation when buffered to a pH of 7.2 to 7.3 or from 0.75 to 1.25 mg. per hundred units of insulin.³ Thus a preparation of greatest possible insolubility is formed which releases insulin for one to three days from a single depot.

From the Department of Medicine, Northwestern University Medical School, Chicago, and the Evanston Hospital.

1. Campbell, W. R., Fletcher, A. A., and Kerr, R. B. Protamine Insulin in the Treatment of Diabetes Mellitus. *Am. J. M. Sc.* **192**: 589 (Nov.) 1936. Joslin, E. P., Root, H. F., Marble, Alexander, White, Priscilla, Joslin, A. P., and Lauen, G. W. Protamine Insulin. *New England J. Med.* **214**: 1079-1085 (May 28) 1936. Joslin, E. P. Protamine Insulin. *V. A. M. J.* **109**: 497-503 (Aug. 1-4) 1937. Ward, J. H., and Shaver, N. R. Protamine Insulin in the Treatment of Diabetes Mellitus. *J. Indiana M. A.* **30**: 323-332 (July) 1937. McEathal, H. O. Protamine Zinc Insulin. *Clinical Application J. V. A. M. J.* **110**: 87-90 (Jan. 8) 1938.

2. Hagedorn, H. C., Jensen, B. N., Krarup, N. B., and Wodstrup, I. Protamine Insulin. *V. A. M. J.* **106**: 177-180 (Jan. 18) 1936.

3. Protamine Zinc Insulin. U.S. Nat. and Acad. Medical Remed. **1941**, p. 291.

The addition of zinc to protamine insulin, used primarily for the purpose of increasing its stability and preventing cohesiveness of the precipitate in heat, prolongs its action still further. As shown by Scott and Fisher and others,⁴ zinc and other heavy metals possess the property of prolonging the effect of any insulin mixture. Thus protamine insulin, originally designed for maximum insolubility, was made even more insoluble with zinc, its present marketed form containing about 0.2 mg of zinc per hundred units.⁵

Therapeutic Virtues and Faults—The practical application of such a suspension in diabetic therapy certainly involves many advantages. By its use multiple injections are reduced, glycosuria is better controlled on the average, violent insulin shock is less frequent, acidosis is less likely to occur, and general health and nutrition in severe diabetes are improved.⁶ Yet experience reveals certain well defined disadvantages inherent in a preparation of such insolubility, all due to slow or uncertain absorption.

Because of its slow, weak and prolonged effect extending over a period of several days, daily depots yield a continuous

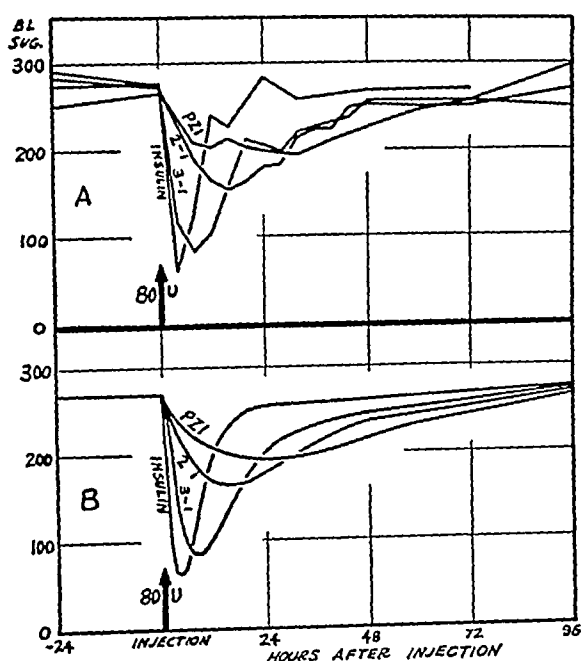


Chart 1—Variable timing and intensity characteristics of soluble (regular) insulin, insoluble (protamine zinc) insulin, and modifications of protamine zinc insulin containing less protamine in proportion to the insulin. The lower series of curves are arbitrarily smoothed replicas of the actual curves shown above. The modification marked 2-1 is the one chosen for therapeutic trial in the group of 60 cases reported.

supply of insulin at undulating basic levels characteristic of the individual and dosage. Two difficulties arise from this source.

First, the continuous supply fails to allow for intermittent feeding and fasting habits, so that glycosuria tends to follow meals and hypoglycemia tends to appear during fasting, particularly at night or if the morning meal is delayed.⁶

Supplementary injection of soluble insulin partially corrects these faults, but multiple injections again are involved, the very thing that protamine zinc insulin was designed to avoid. Small supplementary doses of soluble insulin are ineffective if mixed with larger amounts of protamine zinc insulin because the excess of protamine in the latter immediately precipitates insulin added to it, thus increasing the dose of protamine zinc insulin by the amount of insulin added.⁷

Second, even though the dosage is constant, the action is often unpredictably variable. Probably because of variations in rates of absorption from different depots, unexpected waves of glycosuria or hypoglycemia tend to appear, causing an undulating type of control in spite of constant conditions of therapy.⁸ Because these irregularities are unpredictable, they are not manageable by supplementary injections of soluble insulin. Too often they magnify the characteristic action of protamine zinc insulin, i. e., nocturnal fasting hypoglycemia or postprandial glycosuria.

MODIFICATION OF PROTAMINE ZINC INSULIN

Both in Denmark and in this country early investigators had insight into these timing factors. Most of the preliminary studies by Hagedorn and his colleagues were made with preparations containing no added zinc but excesses of protamine. Even when injected twice a day in efforts to adjust to feeding and fasting, these slightly less insoluble preparations permitted greater reduction of sugar during the night and poorer control after meals.² Appreciating their probable disadvantages, Krarup⁹ reported a single experiment with insulin 341 "the effect of which is both quick and of long duration. It is prepared so as to contain in the same volume twice as many units of insulin as are ordinarily used." This was the first reported action of a protamine mixture with intermediate action comparable to that of similar modifications to be reported.

Root, White, Marble and Stotz¹⁰ also pointed out that "it would be advantageous to have an insulin preparation—perhaps a slightly less insoluble protamine insulinate than the one now used—the action of which combines the desirable effects of both the 'old' and the 'new' insulin." Dr. Hagedorn writes that active work along this line is being continued in his laboratory.

These early suggestions have been followed up by Ulrich using mixtures containing 3 parts of soluble insulin and 2 parts of protamine zinc insulin,¹¹ and by ourselves using greater excesses of soluble insulin.¹² It is possible to modify the action of commercial protamine zinc insulin by the addition to it of excesses of soluble insulin. Its action is thereby accelerated to the extent that daily morning injections yield more insulin when needed during the feeding period of the day and less at night during fasting. Because such modifications are more soluble than standard protamine zinc insulin they also are somewhat more uniform in the effect of repeated single injections, although not so much so as soluble insulin. Thereby unpredictable variations in consistency of control are reduced and clinical usefulness is improved. Composite blood sugar curves in stabilized diabetic patients illustrating the action of single doses of protamine zinc insulin, soluble insulin and two intermediate mixtures of the two containing excesses of the latter are shown in chart 1.

Comparison of Mixtures Made with Crystalline and Regular Insulin—Subsequent study of intermediate preparations confirms the essential timing and intensity properties previously reported for such modifications in many cases. Because of its eight to sixteen hour peak

4 Scott, D. A., and Fisher, A. M. Studies on Insulin with Protamine, *J. Pharmacol. & Exper. Therap.* 58: 78-92 (Sept.) 1936. Kerr, R. B., Best, C. H., Campbell, W. R., and Fletcher, A. A. Protamine Insulin, *Canad. M. A. J.* 34: 400-401 (April) 1936. Rabinowitch, I. M., Foster, J. S., Fowler, A. F., and Corcoran, A. C. Clinical Experiences with Protamine Zinc Insulin and Other Mixtures of Zinc and Insulin in Diabetes Mellitus, *ibid.* 35: 239-252 (Sept.) 1936.
5 Joslin, E. P. Protamine Insulin and Its Advantages, *New England J. Med.* 215: 1166-1168 (Dec. 17) 1936.
6 Joslin, E. P. Difficulties in the Use of Protamine Zinc Insulin, *J. A. M. A.* 110: 90-91 (Jan. 8) 1938.
7 Sprague, R. G., Blum, B. B., Osterberg, A. E., Kepler, E. J., and Wilder, R. M. Clinical Observations with Insulin Protamine Compound, *J. A. M. A.* 106: 1701-1705 (May 16) 1936. Masters, T. D. The Use of the Newer Insulins, *Illinois M. J.* 78: 319-323 (Oct.) 1940.

8 Kepler, E. J. Clinical Experience with Protamine Zinc Insulin, *J. A. M. A.* 110: 92-96 (Jan. 8) 1938.
9 Krarup, H. B. Clinical Investigations into the Action of Protamine Insulinate, Copenhagen, G. E. C. Gad 1935, p. 52.
10 Root, H. F., White, Priscilla, Marble, Alexander, and Stotz, E. H. Clinical Experience with Protamine Insulinate, *J. A. M. A.* 100: 137-183 (Jan. 18) 1936.
11 Ulrich, Helmut. Clinical Experiments with Mixtures of Standard and Protamine Zinc Insulins, *Ann. Int. Med.* 14: 1166-1179 (Jan.) 1941.
12 Colwell, A. R., Izzo, J. L., and Stryker, W. A. Intermediate Action of Mixtures of Soluble Insulin and Protamine Zinc Insulin, *Arch. Int. Med.* 69: 1-21 (June) 1942.

action and satisfactory twenty-four hour intensity, the modification made by mixing 2 parts of soluble and 1 part of protamine zinc insulin (2 to 1 mixture) was selected for detailed study and therapeutic trial.

The curves shown in chart 2 illustrate the response of the blood sugar concentration to single doses of two variations of this modification. Three patients with mild diabetes were fed every four hours night and day. Meals of approximately equal value eventually led to relatively constant high preabsorptive blood sugar levels. When such constancy was established, single injections of the insulin to be tested were given and the blood sugar was determined every four hours until the effects waned.

Twelve observations were made with mixtures containing 2 parts of regular insulin and 1 part of protamine zinc insulin. These responses were compared with sixteen other observations of mixtures containing 2 parts of solution of zinc insulin crystals and 1 part of protamine zinc insulin. Both preparations were used in the U-80 strength only, and all ingredients were products of the same manufacturer.¹³ Previous study has demonstrated the stability of such modifications when mixed in the ampule prior to injection¹² so all mixtures were prepared in that manner. The first three sets of curves represent averages for two to six responses to identical doses of the same preparation in the same patient.

Because of slight variations in control levels, all values were calculated in percentage of control levels for each modification and are averaged as shown in the lowest curve.

The results show a slight but measurable difference in the intensity of the two preparations containing the same proportions of soluble and protamine zinc insulin. Those made with regular insulin were slightly more prompt and 10 to 20 per cent more intense eight to sixteen hours after injection than those made with crystalline insulin. A measurable difference does not appear at twenty-four hours or thereafter. Judging from other unreported studies, the preparation made with 2 parts of regular insulin appears to resemble one containing about $2\frac{1}{2}$ parts of crystalline insulin and 1 part of protamine zinc insulin.

This slightly more intense peak action of mixtures made from regular insulin can be explained on the basis of its content of inert protein, as suggested by Peck.¹⁴ "Regular" or amorphous insulin yields only about 22 units per milligram on assay compared with 26 units per milligram from purified crystalline products. This is because amorphous insulin contains 10 to 20 per cent inert protein not contained in crystalline insulin. Protamine is a general protein precipitant. Therefore part of the excess protamine entering amorphous insulin mixtures precipitates the small fraction of inert protein, thus reducing the amount of protamine available for insulin precipitation. The net result is more soluble insulin and more intense action than in mixtures made with recrystallized insulin, in which all available excess protamine precipitates insulin, slowing and weakening the action of the mixture.

This difference is probably not of much practical importance. We have used both modifications in clinical therapy, frequently comparing their effects by transfer from one to the other in the same patient. With the regular 2 to 1 preparation there is a slightly greater

tendency to afternoon hypoglycemia than with the crystalline 2 to 1 mixture and in some patients better control of postprandial glycosuria. But these differences are negligible compared with the smoothness and consistency of control obtained with either of them contrasted with protamine zinc insulin or any combination of it with soluble insulin by separate injection.

THERAPEUTIC APPLICATION OF IMPROVED PROTAMINE ZINC INSULIN

These two insulins containing 2 parts of soluble (regular or crystalline) insulin and 1 part of protamine zinc insulin, varying only slightly in their accelerated action, were used for routine treatment of a group of 60 patients with severe diabetes mellitus for variable periods up to more than a year. The results appear to justify the use of such a modification in severe diabetes, in which the faults of ordinary protamine zinc insulin are most apparent. The advantages are equally applicable, although less essential, in the more easily controlled, milder forms of the disease.

METHOD OF TREATMENT

Patients.—Sixty diabetic patients were selected for therapeutic tests with the modified insulin. Almost all had established diabetes of greater than average severity. Two thirds were less than 40 years of age, about one fourth less than 20, the youngest was 2 years of age and the oldest 73. The average duration of diabetes for the group was 9.1 years.

Previous Adjustment.—More than 40 of the 60 patients previously had used more than 40 units of insulin daily. The average daily dosage for the entire group was 53 units. Fifty-two of the 60 had used protamine zinc insulin in a single morning dose. Thirty-eight of these had used small supplementary doses of soluble insulin in addition, usually in a single morning injection, rarely twice daily.

Their diets provided maintenance calories and protein and intermediate carbohydrate to fat ratios of about 1 to 1 in grams. For the most part they were weighed. Roughly three fourths of the patients were faithful to their diets. Two or 3 were exceedingly careless. Distribution of food into meals was planned according to individual tastes and habits. Most often the meals were approximately equal. A lunch at bedtime usually had been included by patients using larger amounts of protamine zinc insulin.

Previous Control.—Only 3 of the group of 60 had been able to avoid glycosuria with these orthodox methods of management. In half of them glycosuria had been intermittently excessive. Sixty per cent of the group had had frequent or severe

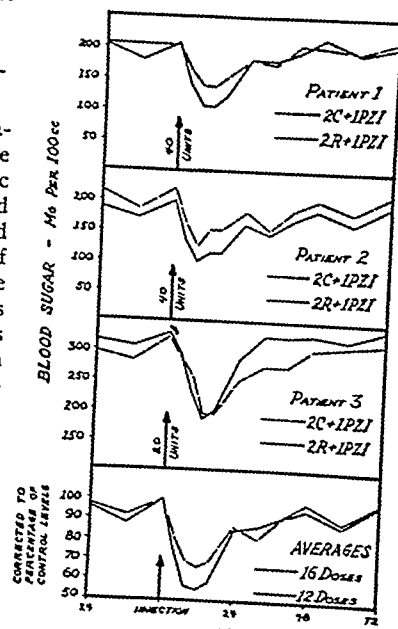


Chart 2—Comparison of action of 2 to 1 modifications made with regular (amorphous) and crystalline insulin. Both modifications contained only one third of the protamine and zinc present in commercial protamine zinc insulin. The slight difference in action is probably due to inactivation of protamine by foreign protein contained in amorphous insulin. It is not of practical importance. The values obtained in 3 cases are averaged in the lowest curves in terms of percentage of control values without insulin. Peak action at eight to sixteen hours with waning but not exhausted action at twenty-four hours were shown in all cases. These qualities are characteristic of this modification and were the basis for its selection for therapeutic trial.

¹³ Eli Lilly & Co., Indianapolis
¹⁴ Peck, F. B.

Personal communication to the authors

hypoglycemic symptoms on routine management, often while asleep

In the majority of cases this tendency to intermittent glycosuria or hypoglycemia was striking enough to lead to dissatisfaction with standard methods of control on the part of patient and physician alike Fully two thirds of the patients

for insulin in solution After standing, even when buffered to pH 7.2, there is little increase in supernatant insulin This is surprising in view of the fact that precipitated insulin redissolves on buffering to this point This property will be the subject of a subsequent report It suggests the probability of a compound which does not depend on a component of simple precipitated insulin for its accelerated effect when prepared under the conditions described

Adjustment of the diabetes on the modified insulin was accomplished under quantitative conditions in the Evanston Hospital in most cases Simple substitution of the modified insulin for previous therapy did not as a rule lead to major fluctuation in control As with commercial protamine zinc insulin, its substitution for soluble insulin previously used alone tended to permit glycosuria for a day or two unless soluble insulin was tapered off

In all cases the bedtime feeding previously used with protamine zinc insulin was omitted and a midafternoon feeding added Minor adjustments of the size of the meals frequently were necessary, usually in the form of increased noon or evening meals and reduced breakfasts Such changes in the detail of the diets, along with adjustments in the size of the dose, usually compensated for individual variations in response to this modification in a single morning dose More difficulty was anticipated than was experienced from this source In 3 instances better control was obtained with two doses daily, the smaller at bedtime

RESULTS

Except for 1 child in whom a respiratory infection developed at the time of transfer, control in all patients was at least as good and usually better with the modification compared with previous standard therapeutic methods On account of the size of the group, individual quantitative data cannot be presented It was available for appraisal and was analyzed in the following manner On the basis of a 4 plus maximum each patient was judged from three standpoints, viz, average amount of glycosuria, frequency and severity of insulin shock and irregularity of control Appraisal of these indexes of control was intentionally conservative Chart 3 presents such qualitative data and the dosages used, contrasting the results of the orthodox method with those of the improved methods The accompanying table summarizes the data

Comparison of Control Obtained with Usual and Modified Methods of Insulin Dosage in Group of Sixty Diabetic Patients

	Number of Patients Showing Defects of Control			Average Insulin Dose Units
	Glycosuria	Insulin Shock	Irregularity	
Previous insulin therapy	57	39	36	5
Modified protamine zinc insulin	14	30	20	19
Corrected	36	4	7	
Improved	7*	6*	9	
Unchanged			75	50
Corrected or improved, per cent	83	87		

* One patient worse

Amount of Glycosuria—Only 7 of the 57 patients previously showing glycosuria failed to excrete less sugar Six patients previously unable to keep the urine sugar free without insulin shock were able to do so on a single daily dose of the improved preparation Twenty-two others showed improvement in glycosuria along with elimination of insulin shock In the majority the amount of glycosuria was substantially reduced

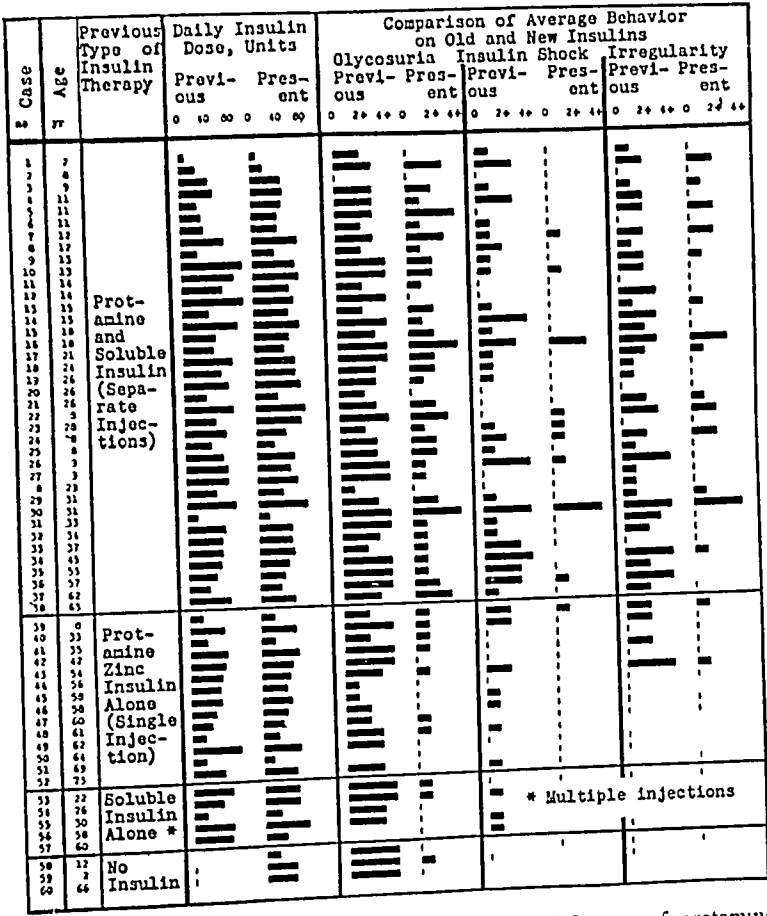


Chart 3—Results of treatment with a single modification of protamine zinc insulin, usually in one dose daily injected before breakfast Most of the 60 patients with severe diabetes showed improvement in constancy of control, glycosuria and hypoglycemic shock with the modified insulin (present) as compared with their previous experience with standard insulins, usually in multiple daily injection (previous) There was a slight reduction, on the average, in required insulin

using protamine zinc insulin exhibited this inconstant behavior For the most part, those who failed to do so had mild or early diabetes and were older

Chart 3 presents the details of the data just summarized

Improved Protamine Zinc Insulin—All patients used the modifications described, which contained 2 parts of crystalline or regular insulin and 1 part of protamine zinc insulin, both in the U-80 strength All except 3 used only one dose daily before breakfast Forty-two used a 2 to 1 crystalline mixture (T-1662) mixed in quantity weeks before use and dispensed in ampules¹⁵ Ten patients used a 2 to 1 regular mixture premixed by us in ampules from market supplies Most of the latter could also be satisfactorily adjusted with the crystalline mixture A few patients mixed insulins in the same proportions in the syringe at the time of injection No significant differences in results from these various technics were observed This modification, as shown by chart 2 and the 2 to 1 curve in chart 1, exerts its peak action at eight to sixteen hours after injection, corresponding to the hours of feeding when injected before breakfast Its effect wanes appreciably after twelve to sixteen hours, corresponding to the hours of sleep Yet a detectable effect persists into the second day For these reasons it was selected for routine use

This modification is stable at ordinary temperatures when premixed Its pH is just under 6.0, which is near the isoelectric point for insulin Its suspension is as easily rendered homogeneous by shaking as protamine zinc insulin Its crystals are indistinguishable microscopically from those of ordinary protamine zinc insulin Its supernatant activity is negligible

15 Mixed and supplied for us for clinical trial by Eli Lilly & Co

Chart 3 reflects this improvement graphically, a summary is given in the table

Hypoglycemic Symptoms—Improvement was even more striking in this respect (chart 3 and the table). Thirty patients became free from symptoms of excess insulin after adjustment on the improved modification. In only 9 did such symptoms persist when present previously, and in only 2 of these were they of such consequence as to warrant change of type or management.

Almost no nocturnal insulin shock was observed. That which occurred was mild and was easily recognized and stopped. As might be anticipated late afternoon symptoms were most common. They were avoided by increases in the size of the lunch or afternoon feeding or both. Evening symptoms were rare, even in the absence of bedtime feedings.

Irregularity of Control—Improvement in constancy of control was roughly parallel to improvement in glycosuria and hypoglycemic symptoms as described. Of 10 patients previously showing decided irregularities, only 2 continued to do so. These were exceptionally severe "brittle" young patients with diabetes of long standing who were extremely sensitive to insulin and to minor deviations in controlling factors such as exercise and timing of food and insulin. They could not be adjusted satisfactorily on any other combination of protamine zinc insulin and insulin by separate injection. Multiple injections of soluble insulin, including a small dose during the normal sleeping hours, finally produced satisfactory control in them.

Recent experience indicates that this most severe type of diabetes may be controlled even better with one of the intermediate modifications of protamine zinc insulin in two doses daily, a larger dose before breakfast and a smaller one at bedtime. Three similar cases were well controlled on such a program after single doses daily failed to cause consistently good control.

Dosage—The average dosage required by previous orthodox methods of control was 53 units daily, usually in at least two separate injections. With the modified insulin 49 units daily, on the average, was required by this group. Only 3 patients injected more than one dose daily. It is probable that several others, including the 2 failures, could have been balanced better on two doses daily.

This slight reduction in average required dosage may have been due to fresh quantitative control under hospital conditions. However, it was maintained, as a rule, on return to normal living conditions. It was frequently apparent immediately on transfer from old to new insulins, even though the diet was weighed in both cases. Any common change in feeding conditions was usually in the direction of more generous carbohydrate with the improved insulin owing to the frequent insertion of an afternoon feeding or increase in the size of the noon and evening meals in fear of insulin shock.

Judged conservatively it would seem that the 8 per cent improvement in required insulin is significant and due to greater efficiency of the modified protamine zinc insulin. This is even more impressive in view of the fact that multiple injections were avoided as a rule, glycosuria decreased and a single modification with uniform timing qualities was used in a good sized diversified group of patients with stabilized severe diabetes.

COMMENT

Integration of Time and Intensity Characteristics of Various Protamine Insulins—Analysis of the timing and intensity properties of the series of variable insulins illustrated in chart 1 demonstrates certain clearcut qualities of each. From the extremes of ordinary insulin at one end of the series to protamine zinc insulin at the other each preparation shows differences in four major qualities of action viz, promptness, intensity, duration and uniformity of effect of repeated identical doses. These four qualities bear a constant relationship in each of the different insulins in the series. Other tested intermediate preparations not illustrated fit accurately into the picture.

Soluble insulin acts the most briefly of any in the series. It is also the most prompt and intense in action. Observations not illustrated in this report demonstrate repeated identical doses to be the most uniform in effect¹² as would be expected in view of its greatest solubility and quickest rate of absorption. These observations are amply confirmed by clinical experience.

As more and more protamine insulin is added to ordinary insulin, the sugar reducing effect is prolonged. Correspondingly, promptness and intensity of action are successively reduced and constancy is sacrificed, as could be expected in view of the fact that solubility and hence absorption rates are decreased.

Protamine zinc insulin as now marketed commercially represents the other extreme, exhibiting the greatest duration of action of the series. Likewise it possesses the qualities of least promptness and intensity and greatest inconstancy of action of repeated doses of the same size, because of greatest insolubility and slowest rate of absorption. Herein lie its chief disadvantages for routine clinical use. Its action is so slow, weak, prolonged and inconstant from dose to dose that glycosuria tends to appear during food absorption and hypoglycemia during fasting, and inconsistent or undulating control tends to follow inconstant absorption of repeated overlapping doses. These characteristics, like those of soluble insulin, are also confirmed by ordinary clinical experience.

The Ideal Combination of Timing and Intensity Qualities—In the light of these practical pharmacologic properties of such a series of insulins, it is possible to specify which of them should be the ideal preparation for routine daily use. On purely theoretical grounds the ideal insulin is one whose solubility and hence rate of insulin release is such that it acts promptly and intensely enough to control the glycosuria following meals but does not cause hypoglycemia between meals. In order to avoid injections more often than once a day it must act long enough to control overnight hyperglycemia but also wane rapidly enough to avoid nocturnal hypoglycemia. It should possess the greatest possible constancy of action from dose to dose without sacrificing suitable prolongation of effect.

By these standards protamine zinc insulin as now prepared commercially acts unnecessarily long, thereby sacrificing desirable promptness, intensity and uniform absorption capacity. These qualities appear to explain its faults making it necessary to give supplementary soluble insulin for partial correction or them.

The modification used in the present study corrects those faults automatically by more efficient timing. Its rate of insulin release is such that its strongest effect, when injected before breakfast, covers the feeding period of the day and its waning effect coincides with

fasting during sleep. Yet at twenty-four hours it is still sufficiently active in most cases to avoid the necessity of more than one injection daily. Because of these intermediate properties it is more constant in action on repeated injection than protamine zinc insulin, although not as much as soluble insulin. Thus it retains the advantages of each extreme of the series, largely eliminating the disadvantages of each. It is undoubtedly for these reasons that it permits better control than commercial protamine zinc insulin.

One might object that these considerations may hold true for any given type of diabetes but that sensitivity to insulin varies so widely in different diabetic patients that preconceived properties such as those outlined cannot be fixed arbitrarily. This, in fact, was our expectation when we attempted treatment with a single preparation in a group of patients selected at random. One preparation was used in the hope of realizing simplicity as well as to test the feasibility of treating all patients alike.

We were surprised to discover that the responses were not variable enough to lead to major difficulties in this group of 60 patients representing practically all grades of severity among insulin treated subjects. Better control of almost all patients was established easily with only minor adjustments of the dosage and diet. No variation of the mixture was necessary or even desirable. In only 5 cases of the most severe and "brittle" type adjustment could not be satisfactorily made on a single daily dose of this preparation. They were equally unmanageable on any other combination of protamine zinc insulin and insulin. In 3 of them good balance was obtained with multiple injections of soluble insulin, including 1 during the hours of sleep, proving their inconsistencies due to defects of timing of depot insulins in general rather than to endogenous factors. Three of the 5 difficult cases recently have been satisfactorily balanced on two doses daily of the improved protamine zinc insulin. It seems probable that other similar cases might respond to this variation. If so, another advantage of this modified insulin would be demonstrated.

Extemporaneous Mixtures—Granting the clinical usefulness of insulins with intermediate timing and intensity qualities, Peck¹⁶ has suggested the expedient of their extemporaneous preparation by mixing in the syringe at the time of injection. In this manner, standard insulins now on the market can be mixed by the patient in the proportions best suited to his particular diabetes. Growing familiarity with the action of mixtures makes this technic fairly common practice among clinicians. Peck has prepared an ingenious table showing the approximate components of ordinary and protamine zinc insulin thought to be contained in such extemporaneous mixtures prepared with various proportions of standard insulins.¹⁶

There are several valid objections to this technic. First, many patients find it technically difficult to prepare such mixtures in the syringe.¹⁷ They are confused by the use of two insulins with different properties forming another which differs from both. Second, inaccuracies of measurement in a syringe are inevitable. Third, slight variations in excess protamine in protamine zinc insulin of different strengths prepared by different manufacturers would produce major variations

in time-intensity effect of comparable mixtures. Finally, a single intermediate preparation apparently satisfies the requirements of the vast majority of diabetic patients and in two daily doses may satisfy all, as just reported. Individualization may be accomplished easily by means of adjustments of the diet and frequency and dosage of a single modification which most nearly satisfies the requirements of the largest number of patients.

SUMMARY

1 Protamine zinc insulin as now prepared commercially possesses inherent faults of timing, owing to slow or uncertain release of insulin from its injection depots. These are seen in diabetic practice as tendencies to glycosuria following meals, to hypoglycemia during fasting, especially at night, and as unpredictable undulations in insulin intensity. For these reasons it is frequently necessary to supplement its action by separate injection of soluble insulin, and even then those tendencies are only partially avoided.

2 The timing and intensity properties of the ideal insulin for routine daily use were analyzed. A modification containing about one third of the protamine and zinc contained in commercial protamine zinc insulin fulfils those requirements most satisfactorily. In actual practice it eliminates the faults of protamine zinc insulin to a large extent. This modification may be prepared from insulins now on the market by mixing 2 parts of soluble insulin with 1 part of protamine zinc insulin, both in the U-80 strength. The time of mixing does not affect the action appreciably. It is stable for months. Slightly more intense action is obtained from mixtures made with regular insulin than with crystalline insulin, probably because of the inert protein content of the former.

3 In most diabetic patients protamine zinc insulin modified in this manner releases insulin from morning depots at a rate which causes moderate increases in intensity when needed during hours of feeding. It also allows decreases when desirable during the hours of sleeping. Therefore better control is obtained with single injections daily than with standard insulins injected more often. Occasional insulin sensitive patients obtain better control with two doses daily, the smaller at bedtime. Successive identical doses are more constant in action than with protamine zinc insulin because of accelerated solubility. Required daily dosage is about 10 per cent less than with ordinary methods because of improved efficiency.

Modification of protamine zinc insulin in this manner results in an insulin which retains all the advantages of protamine zinc insulin and eliminates many of its inadequacies.

636 Church Street

Principal Drugs of Addiction—The principal drugs of addiction are opium and its derivatives, morphine and heroin, alcohol, cannabis and cocaine. To this group may be added the barbiturates, paraldehyde, chloral and other depressants, all of which in large dosage over a long period of time may in some persons produce addiction. Of lesser power to cause addiction (or habituation) are such commonly used drugs as nicotine (tobacco), caffeine (coffee, tea, cola drinks), aspirin, acetanilid and bromides. There are, however, a host of compounds and mixtures, many of them proprietary, which are used repeatedly and habitually.—Krause, Samuel H. *The Therapy of the Neuroses and Psychoses*, Philadelphia, Lea & Febiger, 1943.

¹⁶ Peck, F. B. Action of Insulins, *Proc. Am. Diabetes A* 2: 69-83, 1942.

¹⁷ Marble, Alexander. The Treatment of Diabetes with Diet and Insulin, *New England J. Med.* 224: 583-586 (April 3) 1941.

CHROMOMYCOSIS (CHROMOBLASTOMYCOSIS)

REPORT OF TWO CASES

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ZOLA K COOPER, PH D
AND
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Chromomycosis (chromoblastomycosis), or dermatitis verrucosa, presents a confusing picture at times and consequently a diagnostic problem. The clinical similarity of this disease to syphilis, tuberculosis, neoplasms and other specific and nonspecific granulomas is well known. Although considered to be a disease of the extremities presenting a nodular verrucoid papular or granulomatous appearance, reports have shown that the face, neck, chest, shoulders and buttocks also may be affected. Two cases are reported here first because of the varied diagnostic possibilities that they presented and second because of the unusual location of the lesion in 1—the helix of the ear. *Phialophora verrucosa* was isolated from the first case which was of several years' duration. Owing to the smallness of the infected area on the ear in the second case and because of a clinical diagnosis of carcinoma the whole lesion was removed and placed in a fixative. Consequently the organism could not be isolated.

REPORT OF CASES

CASE 1—History—C A C, a white man aged 30 born in Salem Mo, presented himself in May 1942 at the skin clinic of the Barnard Free Skin and Cancer Hospital complaining of an eruption on the wrist. The patient's family history and past history were irrelevant. His illness had its beginning five years previously as a small wart which had gradually increased in size, slightly more rapidly over the past two years. There had been some pruritus for the past six months. No treatment had been attempted, although he had consulted several local physicians. These physicians had referred to the condition as 'due to nerves'. At the time the lesion developed, he had been working as a farmer. For the past five years he had been working as a pipe fitter.

Examination—On admission the patient appeared to be well developed and well nourished. He was of small build weighing 125 pounds (57 Kg) and measuring 5 feet 5 inches (165 cm) in height. He was cooperative and intelligent. The ocular and general reflexes were normal. The ears, nose, abdomen, genitalia and extremities were normal. In the right flank he had a well healed scar measuring 8 cm. His teeth were dirty and covered with tartar. There was some pyorrhea with receding of the gums. The tonsils were atrophic. The lungs were clear to percussion and auscultation. The heart tones were equal regular and without murmurs. The blood pressure was 124 systolic and 86 diastolic.

On the external surface of the left forearm just above the wrist was a circinate broken plaque 2.5 cm in diameter infiltrated and having a depressed atrophic scar in the center (fig 1). The elevated granulomatous lesion was a reddish pink and had a slightly scaly surface. The diagnoses considered were tuberculosis, verrucosa cutis, syphilis, granuloma annulare and porokeratosis.

Laboratory Examination—Urinalysis was negative. The Kahn reaction was negative. The blood showed 4,890,000 red blood cells, 5,700 white blood cells and 96 per cent hemoglobin. There were 72 polymorphonuclear neutrophils, 26 lymphocytes and 2 mononuclears per hundred white cells.

Studies, observations and reports from the Department of Dermatology, Laboratory for Mycology and Department of Pathology, of the Barnard Free Skin and Cancer Hospital, service of M F Engman, Sr MD.

Microscopically sections of a biopsy specimen showed epithelial hyperplasia, hyperkeratosis and acanthosis with distortion and fusion of the rete pegs. In the upper half of the dermis there was a dense infiltrate made up of lymphocytes, epithelioid cells and many giant cells. In places the epithelioid cells were arranged in nests surrounded by lymphocytes presenting a picture which was suggestive of tubercle formation. Scattered throughout the infiltrate and within some of the giant cells however there were numerous, large dark brown, thick walled, spherical or irregular organisms. Some occurred singly, others in clumps. These were the characteristic fungi of chromomycosis.

Because of the difficulty in expressing any material from the lesion a large section of the growth was excised for the purpose of taking a culture. Approximately two thirds of the remaining lesion was removed. This was cut up into small pieces and planted on Czapek's and Sabouraud's dextrose and maltose agars. After four days small black colonies appeared.

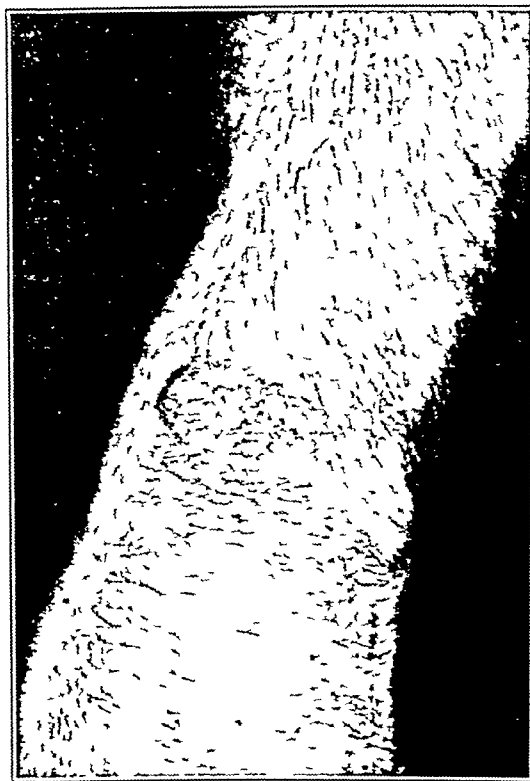


Fig 1 (case 1)—Verrucous chromomycosis of the wrist of five years duration.

on and around the implanted tissue. The fungus was identified as *Phialophora verrucosa*.

CASE 2—History—C E D, a white man aged 38, a farmer who had been born and had continuously lived in Missouri, presented himself in May 1942 at the Barnard Free Skin and Cancer Hospital complaining of a 'sore' on the right ear. He was assigned to the surgical clinic by the admitting officer. The family history was irrelevant. His past history was essentially negative and did not relate to his complaint on admission. On physical examination his respiratory, cardiovascular and gastrointestinal systems were normal. His present illness had begun two months before at which time he noticed an eruption on the helix of his right ear. This had slowly increased in size.

Examination—Just inside the helix of the right ear there was a slightly raised ulcerative area measuring 1.5 by 0.6 cm. There were no palpable nodes in the neck. The clinical diagnosis was squamous cell carcinoma. An excision of the entire lesion and part of the cartilage was recommended. On June 1, 1942, a cautery excision of the lesion including a segment of the cartilage, was made.

Laboratory Examination—The surgical specimen consisted of an ellipse of skin measuring 25 by 15 cm. It showed a nodular, crusted lesion which on section appeared to be woody hard. The process did not involve the underlying cartilage.

Microscopically, a section of the tissue showed epidermal hyperplasia, extensive hyperkeratosis, parakeratosis and acanthosis with a lengthening and distortion of the rete pegs. Extending throughout the upper two thirds of the dermis was an extensive infiltrate made up of lymphocytes, eosinophils, polymorphonuclear leukocytes and numerous giant cells. In the giant cells and also scattered throughout the infiltrate were numerous brown, thick walled organisms. In some of the organisms cross walls could be seen. These were the characteristic organisms of chromomycosis.

HISTORY OF THE DISEASE

The discovery of chromomycosis is attributed to Pedroso, who in 1911 described the first case from Brazil. He called it "black blastomycosis" because of



Fig 2 (case 1)—Section through lesion. Note acanthosis and infiltrate in corium, with giant cell formation. Hematoxylin and eosin stain, reduced from a photomicrograph with a magnification of 145 diameters.

the finding of dark brown cells in the sections of the diseased tissue. In 1920 Pedroso and Gomes¹ published a report of this case with 3 others from Brazil. The organism of each case was named *Phialophora verrucosa* on the basis of the organism described by Thaxter from the first case reported in the United States in 1915 by Lane² and Medlar³.

Since 1920, numerous cases of chromomycosis have been reported throughout the world. These have been

reviewed by de Almeida,⁴ Moore and Mapother⁵ and recently by Weidman and Rosenthal.⁶ The last named authors compiled a great deal of the known data on the published cases, listing them as to geographic and anatomic distribution. Of special interest since the review of Weidman and Rosenthal is the publication of Pardo-Castello, Leon and Trespalacios⁷ in which 31 cases were reported not only on the extremities but also on the chest, buttock and shoulder.

In spite of the large number of cases reported, including the 2 described here, only 6 have been shown to be due to *Phialophora*. Of these a Brazilian case was due to *Phialophora macrospora* and the 5 others were caused by *P. verrucosa*. In 1915 Lane and also Medlar reported the first case of chromomycosis caused by *P. verrucosa*, the organism being established taxonomically by Thaxter with a new generic and species determination. The patient was an Italian aged 19 living in the environs of Boston. The organism was isolated from verrucous, nodular lesions on the buttock.

In 1920 Pedroso and Gomes published reports of their 4 cases gathered over a period of several years. Of these 4 cases the 1 described by Pedroso in 1911 showed extensive scarring—the syphiloid type of Pardo-Castello, Leon and Trespalacios—plus verrucous areas, the second showed verrucous, papillomatous lesions with perhaps autoinoculation on the neck, the third showed involvement of the foot with a verrucous patch on the heel, and the fourth showed an extensive involvement of the foot with the lesion extending above the knee to produce the verrucous type with elephantiasis. An organism isolated from one of these cases was shown to be *P. macrospora* by Moore and de Almeida.⁸

In 1933 Wilson, Hulsey and Weidman⁹ described a lesion on the right foot of a 67 year old farmer from Fort Worth, Texas. The lesion had shown a development from a papular to a nodular and verrucous stage with some elephantiasis. The organism isolated from this case was *P. verrucosa*. In the following year MacKinnon¹⁰ described a case from Montevideo, Uruguay, due to *P. verrucosa*. The lesion was papular and papillomatous and was located in the region of the anatomic snuffbox of the right hand.

The report of the fourth case in the United States was published by Moore and Mapother. The lesion was crusted, raised and ulcerating, with a pearly border and was located on the right side of the face of a man aged 67. The fungus isolated was *P. verrucosa*.

The fifth case caused by *P. verrucosa* and the sixth caused by the genus are described in this paper.

The number of cases occurring in continental United States, with reports published and unpublished, now totals 9. These are listed in the accompanying table.

4 de Almeida F P. *Mycologia Medica. Estudo das mycoses humanas e de seus cogumelos*, São Paulo, Companhia Melhoramentos, 1939, p 583.

5 Moore Morris and Mapother Paul. *Chromomycosis of the Face. Report of a Case and a Study of the Causative Organism, Phialophora Verrucosa*. Arch Dermat & Syph 41: 42 (Jan) 1940.

6 Weidman, F D, and Rosenthal L H. *Chromoblastomycosis. A New and Important Blastomycosis of North America. Report of a Case in Philadelphia*, Arch Dermat & Syph 43: 62 (Jan) 1941.

7 Pardo-Castello, V, Leon E Rio, and Trespalacios F. *Chromoblastomycosis in Cuba*, Arch Dermat & Syph 15: 19 (Jan) 1942.

8 Moore Morris, and de Almeida F P. *Etiologic Agents of Chromomycosis (Chromoblastomycosis) of Terra Torres, da Fonseca and Area Leão (1922) of North and South America*. Rev biol e hyg 6: 94 (Dec) 1935. *New Organisms of Chromomycosis*. Ann Missouri Bot Garden 23: 543, 1936.

9 Wilson, S J, Hulsey, Sim and Weidman F D. *Chromoblastomycosis in Texas*, Arch Dermat & Syph 27: 107 (Jan) 1933.

10 MacKinnon, J E. *Estudios del primer caso uruguayo de cromoblastomycosis y revista critica sobre la enfermedad*, Arch urug de med, cir y especialid 5: 201 (Aug) 1934.

1 Pedroso, A, and Gomes, J M. *Sobre quatro casos de dermatite verrucosa produzida pela Phialophora verrucosa*, Ann paulist de med e cir 11: 53, 1920.

2 Lane, C G. *A Cutaneous Infection Caused by a New Fungus (Phialophora Verrucosa)*, J Cutan Dis 33: 840, 1915.

3 Medlar E M. *A Cutaneous Infection Caused by a New Fungus, Phialophora Verrucosa, with a Study of the Fungus*, J M Research 32: 507, 1915. *A New Fungus, Phialophora Verrucosa, Pathogenic to Man*, Mycologia 7: 200, 1915.

DESCRIPTION OF ORGANISM

Owing to the fact that a clinical diagnosis of squamous cell carcinoma was made in the second case and the lesion completely excised and placed in a fixative it was impossible to obtain any cultures. Cultures from the first case, however, were obtained by seeding tubes of medium with finely cut up tissue obtained by biopsy.

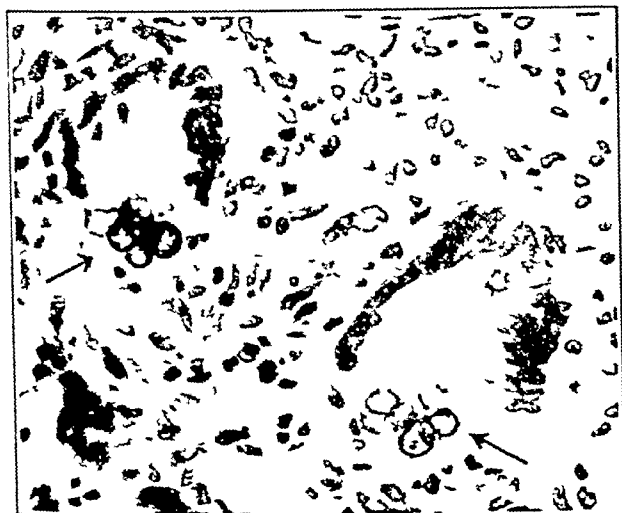


Fig. 3 (case 1)—Brown thick walled cells of *Phialophora verrucosa* in giant cells. Hematoxylin and eosin stain reduced from a photomicrograph with a magnification of 710 diameters.

The organism when seen in tissue consists of spherical or irregular sclerotic cells which are thick walled dark brown or chestnut colored and simple or multiple appearing in clusters. The cells reproduce by enlargement and septum formation to produce the mulberry-like groups. Budding of these fungi is not a characteristic form of reproduction in tissue. These cells may be seen distributed throughout the affected tissue, in microabscesses surrounded by polymorphonuclear



Fig. 4 (case 2)—Section through ear lesion. Note thickening of tissue due to hyperplasia with acanthosis. Hematoxylin and eosin stain reduced from a photomicrograph with a magnification of 10 diameters.

leukocytes or engulfed by giant cells. In old lesions or necrotic tissue the cells may occasionally germinate to produce short filaments.

Tissue implants on Czapek's and Sabouraud's dextrose and maltose mediums resulted in small black colonies which appeared after four days on and around the inoculum. When the colonies developed to a suitable size, subcultures were made on various mediums.

The organism microscopically was identified as *Phialophora verrucosa*.

The growth of *P. verrucosa* on artificial mediums both macroscopically and microscopically has been well described. The strain isolated here is essentially similar microscopically to the strains isolated from Boston, Fort Worth, Montevideo and St. Louis.

In culture the thick walled brown cells germinate to form multiseptate hyphae. These vary in form and size from 2 to 5 microns in diameter depending on the medium on which the fungus is growing. As the organism grows it forms various morphologic structures which are modified by the ingredients of the medium. The hyphae are seen as multiseptate filaments occurring singly or in bunches (coremoid) simple or somewhat branched. The cells are either elongated or short. The latter may be seen also in chains as spherical cells, moniliform in appearance. This type of cell formation is characteristically found growing in all mediums but



Fig. 5 (case 2)—Section through ear lesion showing protuberant cellular infiltrate with organisms, giant cells and many leukocytes. Hematoxylin and eosin stain reduced from a photomicrograph with a magnification of 145 diameters.

is a prominent feature on sugar mediums. Chlamydo-spores may also be seen. These either occur terminally or may be found intercalary. They are thick walled, large and spherical and simulate those seen in the infected tissue. On certain mediums, such as Loeffler's agar, these cells assume a close similarity to the sclerotic forms seen in sections of diseased tissue.

The reproductive organs of *P. verrucosa* the phialides—cuplike structures with endogenous spore formation—develop in most mediums but are most prevalent on synthetic mediums such as Czapek's agar (fig. 7). These spore bearing structures develop terminally laterally or alternately on a hypha. They are single or multicelled simple or branched short or long. The spores or conidia arise endogenously and are expelled from the cuplike portion of the phialide. They collect at the

mouth of the phialide in a group and are held together by a mucilaginous material termed gloea. The phialospores or conidia are at first small, spherical to ovoid cells and then become elongated or fusiform to measure approximately 1 to 3 by 2 to 4 microns. These spores germinate to reproduce the structures noted.

Grossly, after fifteen days, growth on Czapek's agar *P. verrucosa* attained a colony size of 3.5 cm in diameter (1, fig. 8). A central button was formed with the mycelium both aerial and subsurface. The color varied from an olivaceous brown to blue-black. On corn meal agar, after the same period of growth, the colony reached a diameter of 3.2 cm (2, fig. 8). A central button with sector formation was produced. The color was dark gray to black. On the peptone agar growth was comparatively slow, with a diameter of 1.5 cm after fifteen days (3, fig. 8). The colony was compact and showed aerial mycelium which was a dark gray, but the compact portion of the growth was black. On Sabouraud's medium, both dextrose and maltose, the growth was essentially similar. The colony on the dextrose medium reached a diameter of 2.8 cm

may occur on almost all parts of the human skin. These include, in addition to the hands and feet, the wrist, arm, shoulder, neck, face, ear, chest, abdominal region, thigh, knee and leg. However, the greater number of cases show the lesions on the extremities. The reason for this is that the primary lesion in many instances has apparently been the result of a traumatic infection with contaminated material. The larger number of patients were farmers, workers of the soil or its products. This has certainly been true of the 3 patients observed in St. Louis.

Clinically, chromomycosis presents lesions which may be papular, verrucous or papillomatous, nodular, ulcerative, psoriasiform, granulomatous, with or without abscess formation and with rarely any suppuration except when due to secondary infection with bacteria. Scaliness is often a feature. Pain or pruritus rarely occurs. Visceral or skin metastases have been reported only in 2 cases, 1 from Algeria¹¹ and one from Puerto Rico¹². Systemic invasion is not a feature of chromomycosis. Bone involvement likewise has not been reported. Lymphangitis and adenopathy (regional)

Chromomycosis in Continental United States

Geographic Location	Color and Sex	Age	Occupation	Anatomic Location	Type of Lesion	Duration, Years	Organism	Year Seen	Authors
Boston	White man	19	?	Buttock	Nodular verrucous, necrotic	1	<i>Phialophora verrucosa</i>	1915	Lane, ² Medlar ³
Fort Worth, Texas	White man	67	Farmer	Right foot	Warty, papular and nodular verrucous, elephantiasis	40	<i>Phialophora verrucosa</i>	1931	Wilson, Hulsey and Weldman ⁹
Durham, N. C.	Negro	47	Farmer	Left hand, arm	Nodular verrucous, elephantiasis	4	<i>Hormodendrum (Fonsecaea) pedrosoi</i>	1935	Martin, Baker Conant (Am J Trop Med 16: 293, 1936)
St. Louis	White man	67	Log hauler	Right side of face	Crusted, ulcerative, pearly border	10	<i>Phialophora verrucosa</i>	1938	Moore and Mapother ⁵
Miami, Fla.	Negro	43	Cook, but injury from car	Left hand, dorsum	Warty nodular, verrucous	30	?	1939	Sams—unreported
Atlanta, Ga.	White man	68	Farmer	Left wrist, dorsum	Raised, boggy mass, points of discharge	3 mos	<i>Fonsecaea pedrosoi</i>	1939	Emmons, Halley and Halley (J A M A 116: 25, 1941)
Philadelphia	Negro	44	?	Left ankle	Verrucous, granulomatous, with abscesses	7 or 8	<i>Fonsecaea pedrosoi</i>	1940	Weldman and Rosenthal ⁶
St. Louis	White man	30	Farmer	Left wrist	Granulomatous verrucous	5	<i>Phialophora verrucosa</i>	1942	Moore, Cooper and Weiss
St. Louis	White man	38	Farmer	Helix, right ear	Raised, ulcerative	2 mos		1942	Moore, Cooper and Weiss

(5, fig. 8), while on the maltose agar it was 2.5 cm (4, fig. 8). The cultures were sharply defined with some aerial growth. The color was slate gray to black. The growth on potato-dextrose agar measured 3 cm in diameter after fifteen days (6, fig. 8). The colony showed a central knob with evidence of slight concentric growth. The color varied from light to dark olivaceous gray.

CLINICAL FEATURES

Chromomycosis clinically is seldom recognized except perhaps in areas in which the disease flourishes and presents characteristic verrucous lesions on the extremities. With the exception of these typical cases, the disease has perhaps never been diagnosed clinically. The first indication of the correct determination has come from the pathologist, who found the sclerotic, dark brown, thick walled cells in the tissue section. Like blastomycosis, coccidioidomycosis, syphilis and neoplasms, this relatively recently recognized disease, chromomycosis, presents a number of gross clinical features which may be confusing and misleading.

Chromomycosis has generally been considered to be a disease of the extremities. Recent reports, including the 2 cases presented in this paper, indicate that lesions

may occur but are usually attributed to secondary infection. As the disease progresses and persists, there is cicatrization such as is found in blastomycosis. On the extremities the progressive formation of additional lesions accompanied by tissue reaction may result in elephantiasis. The enlargement of the foot in these cases resembles *Madura foot*.

On the basis of the reports in the literature and on their series of 31 cases, Pardo-Castello and his associates classified chromomycosis into five clinical types: 1. The verrucous or papillomatous type, which begins as a group of small nodules or papules with a scaly surface. These nodules increase in size and usually form large circular masses which tend to heal in the center with scar formation. Abscesses may be found in the area of granulation tissue, but suppuration does not result. The appearance is not unlike that of blastomycosis or tuberculosis verrucosa cutis. Case 1 is a good example of this most common type. 2. The tuberculoid type, which is in all probability an early

¹¹ Montpellier, J. and Catanei, A. Mycose humaine due à un champignon du genre *Hormodendron* H. algeriensis, nov. sp. Ann. de dermat. et syph. 8: 627 (Nov.) 1927.
¹² Carrion, A. L. and Koppisch, E. Observations on Dermatomyces in Puerto Rico. Report of a Case of Chromoblastomycosis, Puerto Rico J. Pub. Health & Trop. Med. 9: 169 (Dec.) 1933.

form of verrucous chromomycosis also resembles tuberculosis verrucosa cutis or sarcoid. The lesions begin as small patches or nodules with erythematous areolas and little scaling. 3 The syphilitic form which is nodular and scaly, with some erythema. The nodules are small, flattened and serpiginous, annular or arcuate

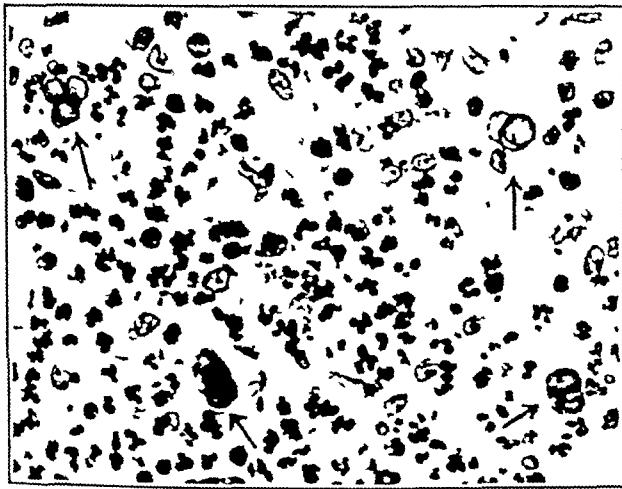


Fig 6 (case 2)—Section through ear lesion showing brown thick walled cells of the organism and many polymorphonuclear leukocytes. Hematoxylin and eosin stain reduced from a photomicrograph with a magnification of 910 diameters.

in their arrangement. The lesions may resemble a superficial late syphilitic ulceration with a hypertrophic base may be present due to granulation tissue. The surface may be covered with crusts. 4 The psoriasiform type, which consists of superficial inflammation and infiltration with the lesion covered with thick white adherent scales. Abscesses and verrucous patches are not observed and the lesion resembles psoriasis. 5 The fifth group, which is made up of those lesions which become cicatrized and those which result in the elephantiasic enlargement of the extremities. This group no doubt represents an end result or an advanced stage of chromomycosis, since scarring is found in lesions of long duration and swelling of the affected areas does occur when there is a multiplicity of lesions. The usual features of verrucosities, abscesses, ulceration and scaling may be present. The resemblance to Madura foot has been noted previously.

It would seem therefore that because of the varied appearance of the lesion, chromomycosis should be differentiated clinically from various mycotic granulomas, including coccidioid granuloma, blastomycosis and maduromycosis or Madura foot, from tuberculosis verrucosa cutis, syphilis, epithelioma, psoriasis, leishmaniasis¹³ and, as discussed by Carini,¹⁴ from sarcoid, pyoderma vegetans, yaws, porokeratosis, granuloma annulare, mossy foot and no doubt other clinical entities.

MICROSCOPIC OBSERVATIONS

A clinical diagnosis has seldom been made except in the case of typical lesions. The task of determining the cause of the infection has invariably fallen to the microscopist. The diagnosis is readily made by finding the characteristic fungous cells in the diseased tissue.

Microscopically, the lesions of chromomycosis show a number of features which are compatible with the

general picture seen in sections of blastomycosis, tuberculosis and other mycotic granulomas. There are, however, certain characteristics which may serve to differentiate the disease.

The epidermis shows hyperkeratosis and acanthosis with a thickening, broadening and elongation of the rete pegs. Within these pegs may be seen microscopic abscesses filled with polymorphonuclear leukocytes, cellular debris and the fungous cells. At times within these areas one may also find Langhans giant cells containing fungi.

The most pronounced changes are found in the dermis. Here one sees edema, a pronounced cellular infiltration and, in older lesions, evidence of fibrosis. The cellular infiltration is made up of polymorphonuclear leukocytes, lymphocytes, epithelioid cells, plasma cells, eosinophils and Russell's fuchsin bodies, which have been noted in tissue sections by others. Giant cells of the foreign body or Langhans type may be present as well as macrophages. There is sometimes a tendency to pseudotubercle formation in the infiltrate. Fibroblastic changes may occur. Necrosis and microabscesses such as are found in Gilchrist's disease are not prominent in chromomycosis. The sclerotic cells of the fungus are found scattered throughout the corium, especially in the abscesses or in giant cells. They occur either as single cells or in mulberry-like clusters.

A comparison of our 2 cases of chromomycosis is of interest. The first case, of five years' duration, presented a clinical picture which could easily have been mistaken for tuberculosis verrucosa cutis or syphilis (fig 1). Microscopically the picture presents the characteristics seen in typical chromomycosis (fig 2). Characteristically tubercle-like formation is seen. Distributed through these cellular masses, both free and in giant cells, are the fungous cells of *P. verrucosa* (fig 3).

In the second case, apparently of two months' duration, the physical examination revealed a slightly ulcer-



Fig 7—Six days growth of *Phialophora verrucosa* on Czapek's agar (subculture). Note phialides groups of spores and moniloid formation. Reduced from a photomicrograph with a magnification of 1160 diameters.

ated lesion somewhat infiltrated. The clinical diagnosis of squamous cell carcinoma indicates clearly the diagnostic difficulties. Microscopically, the section of tissue shows thickening and edema with hyperplasia, hyperkeratosis and acanthosis (fig 4). This lesion, representing an early infection, shows also the extensive infiltration with the various types of cells so noticeable

¹³ Terra F, Torres M, da Fonseca O, and Area Leao A. E. Novo tipo de dermatite verrucosa mycose por *Acrotheca* com associação de leishmaniose. *Brasil med* 2: 363 (Dec 9) 1922.
¹⁴ Carini A. Sur la dermatite verrucuse. *Bull Soc. path. exot.* 17: 227 (March) 1924.

in chromomycosis. Here, however, the granulomatous changes are not particularly prominent. Instead, there is seen a general infiltration of many types of cells, including some giant cells (fig 5). Fibrosis, so apparent in older, chronic lesions, is absent. Edema with consequent swelling is evident. Dispersed throughout this rich cellular infiltrate, of which the greater number of cells are polymorphonuclear leukocytes, are seen the sclerotic cells of the fungus (fig 6).

PROGNOSIS AND TREATMENT

Chromomycosis is not a fatal disease. It is a disease of slow evolution, as has been pointed out. The prognosis is good unless there is a secondary complica-

Mapother's patient showed good results with a rapid clearing of the lesion following the use of iodides by mouth. On the other hand, Pardo-Castello and his co-workers found no improvement in the majority of their cases after the administration of iodides by mouth or intravenously. Roentgen irradiation may be of great value in localized patches of chromomycosis. In the unpublished case of Sams, potassium iodide was given by mouth, 30 grains (2 Gm) three times a day, and filtered roentgen rays subintensively, 225 roentgens for four months at monthly intervals. The lesion responded very well, leaving a thin scar.

Pardo-Castello and his associates used intensive ray therapy, 600 to 1,200 roentgens filtered through 1 or 2 mm of aluminum, depending on the thickness of the lesion, with benefit. If the lesions are not too extensive, cauterization, electrocoagulation or surgical excision may be successfully employed. In 1 of our 2 cases surgical excision and complete removal of the lesion brought about an apparent cure.

The use of thymol internally, 1 Gm daily before breakfast, has been of no value. The various organic salts of antimony and copper, colloidal copper intravenously and the sulfonamide group of drugs were of no benefit in the cases in which these were tried by Pardo-Castello.

When the lesion is small, therefore, the treatment may be either iodides and roentgen radiation, electrocoagulation or surgical excision. When the lesion is extensive, it is a matter of experimentation. If the lesion results in elephantiasis of the extremity, perhaps the only recourse lies in amputation.

COMMENT

Chromomycosis is rapidly assuming a place of importance in dermatology. The discovery of many cases in the past few years does not necessarily mean that the incidence of the disease has become higher. Certainly in cases in which biopsy was not done routinely the clinical diagnoses of tuberculosis verrucosa cutis, blastomycosis or the various other previously mentioned entities could have been made. It may be that closer attention is now being paid to the microscopic and clinical features of chromomycosis by clinicians who have become better acquainted with the disease.

There are several additional features of chromomycosis which have not been mentioned but should receive just a few words in passing. In the first place, the disease is practically universal in its geographic distribution. Reports of chromomycosis have come from North, Central and South America, the West Indies, Europe, Asia and Africa. It is not entirely a disease of the tropics, as was first thought. Two cases from Canada have recently come to the attention of one of us (Moore).

Chromomycosis occurs chiefly among farmers or those associated with farm produce. There have been some exceptions, but a careful search into the history of the particular patient has invariably disclosed some association with vegetation. The 2 cases presented here were no exceptions.

Age is not a causative factor in this disease. The patients have varied considerably in their ages. Dr Almeida listed 54 cases, of which 43 occurred between the ages of 10 and 80, the ages in the other 11 cases were not classified. Pardo-Castello and his associates found that the ages in their 31 cases varied from 14 to 70. Most of the lesions have occurred in the age

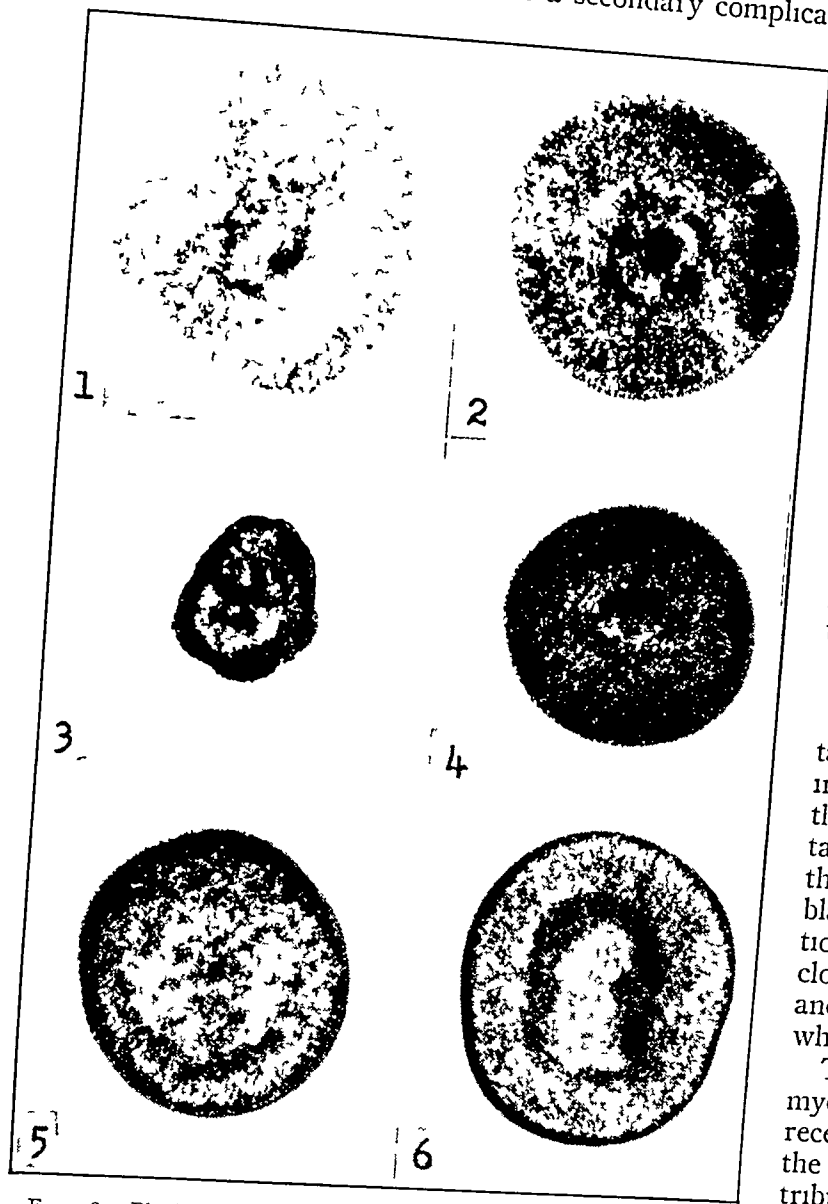


Fig 8—*Phialophora verrucosa*. Actual size after fifteen days' growth. 1 Czapek's agar 2 Corn meal agar 3 Peptone agar 4 Sabouraud's maltose agar 5 Sabouraud's dextrose agar 6 Potato dextrose agar

tion of tuberculosis, leishmaniasis, as in the case of Terra, Torres, da Fonseca and Arêa Leão, or some other fatal disease. Scar formation may result in loss of use of the affected limb, if the scarring is severe enough to cause retraction of the tissue. In the elephantiasis type of lesion there may result loss of use of the limb, either temporary or permanent, because of the excess weight and because of stiffening of the joints.

Therapy for chromomycosis has not been encouraging in most cases. Iodides by mouth or intravenously have not met with success in all cases. Usually this form of therapy has been supplemented with roentgen irradiation. In such instances it is difficult to evaluate the therapeutic agents individually. Moore and

range of 30 to 50 years. The disease is found chiefly among whites, with only 1 reported among negroes.¹⁵ The worldwide distribution of the disease indicates that all races and nationalities may be susceptible.

Chromomycosis has a slow evolution. Many of the cases reported by Pardo-Castello and his co-workers had a duration of twenty to twenty-five years. Wilson, Hulsey and Weidman's case had a duration of forty years.

It is agreed by all observers of the disease that it is not truly a blastomycosis. This has been emphasized in published articles stressing the fact that the fungus either in tissue or in culture does not bud but divides by cross wall or septum formation. The term chromoblastomycosis, as originally described by Terra, Torres da Fonseca and Arca Lcio, was therefore revised by Moore and de Almeida⁹ to chromomycosis. This name, besides being shorter, eliminates the possibility of confusing the disease with blastomycosis. The objection raised to retaining the term chromomycosis is that it may be confused with chromophytosis (pityriasis or tinea versicolor). However, "chromophytosis" is rarely used and should not, therefore, cause any concern to dermatologists, since they prefer the term pityriasis (tinea) versicolor. It is obvious that unless the term chromoblastomycosis is abandoned the confusion of this disease with blastomycosis must be expected.

SUMMARY AND CONCLUSIONS

The 2 cases of chromomycosis presented are the eighth and ninth cases respectively occurring in continental United States. One was of five years' duration and was caused by *Phialophora verrucosa*. This represents the sixth case due to the genus *Phialophora* and the fifth caused by *P. verrucosa*.

The lesion in the first case occurred on the left wrist, was verrucous and granulomatous and was difficult to differentiate clinically from tuberculosis verrucosa cutis, syphilis, granuloma annulare, parakeratosis and blastomycosis. The microscopic features of chromomycosis in general and of this lesion in particular were examined. An analysis of the histopathologic features indicates that the infection had all the characteristics of a granulomatous lesion of chromomycosis with tubercle-like formation. The organisms were profuse in the infected tissue.

The infection in the second case was primary on the helix of the right ear and was of two months' duration. The lesion was raised and ulcerative and clinically was diagnosed squamous cell carcinoma. A cautery excision of the lesion was done. Since the excised tissue was placed in a fixative, the causative agent could not be cultured. Microscopically, the section of tissue showed features characteristic of chromomycosis. However, instead of the granulomatous tissue changes so noticeable in the sections of the first case, an infiltration of various types of cells, chiefly polymorphonuclear leukocytes, was present. Dispersed throughout this infiltrate were many fungous cells.

The organism is similar microscopically to other strains isolated at Boston, Fort Worth, Montevideo and St. Louis.

Washington and Theresa avenues

METABOLIC STUDIES IN PATIENTS WITH CANCER OF THE GASTRO- INTESTINAL TRACT

V. PANCREATIC INSUFFICIENCY IN A PATIENT
TREATED SURGICALLY FOR CARCINOMA OF
THE AMPULLA OF VATER

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The exclusion of the pancreatic juice from the intestine resultant to resection of the duodenum or of the head of the pancreas frequently is followed by a disorder marked by an increase in the quantity of nitrogen, fat and starch eliminated in the feces.¹ Whereas it would be supposed that the disorder could be controlled by the administration of pancreatic secretions, the results of the small numbers of reported studies of the procedure are not uniform.

A patient has been studied who had undergone a resection of the duodenum for carcinoma of the ampulla

TABLE 1—The Excretion of Nitrogen in the Stools and the Urine and the Excretion of Fat in the Stools of the Patient Under Study

Days	Daily Diet			Feces			Urinary Nitrogen Gm per Day
	Fat Gm	Protein Nitrogen Gm	Calories	Fat Gm per Day	Fat, per Cent of That Ingested	Nitrogen Gm per Day	
9	26	10.1	2,400	32.7	25	4.9	5.2
9	40	10.0	2,400	39.5	57.5	3.9	3.2

of Vater and who presented the clinical picture of pancreatic deficiency. The results of this study suggest an effective therapeutic procedure, which may be useful in the management of other cases of this type.

MATERIAL

The patient was a woman aged 39 who originally was admitted to the hospital with jaundice, acholic stools, bile in the urine and an abdominal mass. The first stage of the operation consisted of a cholecystogastrostomy. In the second stage a gastroenterostomy was made, the head of the pancreas was resected, the pancreatic ducts and the common bile duct (distal to the cystic duct) were ligated and excised, and finally the pylorus with the duodenum and ampulla of Vater was resected. During the one year interval before she was readmitted to the hospital her stools always were voluminous, soft and gray but not acholic. There was a loss of weight of 15 pounds (6.8 Kg.).

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The authors received assistance from the Jane Coffin Childs Memorial Fund for Medical Research, the Standard Brands, Inc., and the National Cancer Institute.

1. Beazell J. M., Schmidt R. C. and Ivy A. C. The Diagnosis and Treatment of Achylia Pancreatica. *J. A. M. A.* 116: 2735-2739 (June 21) 1941. Coffey R. J., Mann F. C. and Bollman J. L. The Influence of the Pancreas on the Utilization of Foodstuffs. *Am. J. Digest. Dis.* 7: 144-149 (April) 19-0.

2. Whipple A. O. and Bauman L. Observations on the Pathologic Physiology of the Insular and External Secretory Functions of the Human Pancreas. *Am. J. M. Sc.* 201: 629-636 (May) 1941.

15. Tschernjowski J. Chromoblastomycosis. *Arch. f. Dermat. u. Syph.* 157: 196 (1929). Kano Kwauchiro. Ueber die Chromoblastomycose durch einen noch nicht als pathogene beschriebenen Pilz. *Hormiscum dermatidis* n. sp. *ibid.* 176: 282 (1937). Merime Jacques. A propos de la clinique de la chromomycose. Cas de chromomycose de la peau avec lesion des ganglions lymphatiques regionaux. *Ann. de dermat. et syph.* 9: 122 (Feb.) 1938. Weidman and Rosenthal.*

Six hospitalized subjects were studied as controls. They were admitted for the treatment of disorders entirely unrelated to the gastrointestinal tract.

METHODS

The diets fed to all the subjects during the period of study contained constant, known amounts of fat, protein and carbohydrate, taken in three equal meals daily. A single source of meat was used. The protein and fat contents of the diets of the patient and of two of the controls (L. D. and A. F.) were established by analysis.³ The intakes of the other persons studied were calculated from tabulated values (tables 1 and 2). During the period of observation no gastrointestinal disorders were noted in the control subjects. The control subjects and the patient were kept on the constant intake

RESULTS

The control subjects were observed over periods which varied in length from four to seventy days. None excreted in the stool a daily average of more than 5.6 Gm of fat or 1.5 Gm of nitrogen (table 2). The findings in the patient were strikingly abnormal.⁴ During two separate control periods of eight and nine days (table 1) the average daily amounts of fat excreted in the feces were 39.5 and 32.7 Gm, and the average amounts of nitrogen 3.9 and 4.9 Gm daily. Thus, from 87.5 to 95 per cent of the fat and from 39 to 48 per cent of the nitrogen ingested was lost in the feces. The excess of nitrogen excreted in the feces of the patient under study readily was demonstrated to be of dietary origin. When the diet was altered to contain only 0.2 Gm of protein nitrogen for a period of nine

TABLE 2—The Excretion of Nitrogen in the Stools and the Urine and the Excretion of Fat in the Stools of the Control Subjects

Subject	Disorder	Days	Daily Diet			Feces				Urinary Nitrogen, Gm per Day
			Fat, Gm	Protein Nitrogen, Gm	Calories	Fat, Gm per Day	Fat, per Cent of That Ingested	Nitrogen, Gm per Day	Nitrogen, per Cent of That Ingested	
L. D.	Oral leukoplakia	4	35	10.1	2,400	4.2	12	1.0	10	9.0
A. F.	Hemangioma of foot	7	35	11.2	2,400	3.3	9.5	0.85	8	10.35
F. P.	Plantar wart	4	135	16.0	2,580	5.6	4	1.5	9	14.6
P. R.	Varicose veins	7	105	14.4	2,130	3.9	4	0.7	5	13.8
A. S.	Osteitis fibrosa cystica	48	75	18.0	1,800	2.1	3			
I. D. V.	Xeroderma pigmentosa	70	60	12.0	1,228	3.0	5			

TABLE 3—The Decrease in Fecal Nitrogen Following a Low Protein Intake, the Effect of the Addition of Amino Nitrogen Supplements on the Excretion of Nitrogen by the Patient Under Study

Days	Daily Diet			Supplement	Feces				Urinary Nitrogen, Gm per Day
	Fat, Gm	Protein Nitrogen, Gm	Calories		Fat, Gm per Day	Fat, per Cent of That Ingested	Nitrogen, Gm per Day	Nitrogen, per Cent of That Ingested	
9	89	0.2	2,600		48	56.5	2.2		3.1
9*	36	10.1	2,400		32.7	95	4.9	48	5.2
8*	45	10.0	2,400		39.5	87.5	3.9	39	3.2
7	34	9.5	2,470	6 Gm amino acid nitrogen	35.3	104	4.1	49	5.7

* Basal

TABLE 4—The Effect of the Addition of Bile Salts, of Lipocaine and of Pancreatic Digestive Enzymes to the Diet on the Excretion of Fat and Nitrogen by the Patient Under Study

Days	Daily Diet			Supplement	Feces				Urinary Nitrogen, Gm per Day
	Fat, Gm	Protein Nitrogen, Gm	Calories		Fat, Gm per Day	Fat, per Cent of That Ingested	Nitrogen, Gm per Day	Nitrogen, per Cent of That Ingested	
4	36	10.3	2,400	Bile salts, 1.8 Gm	41.9	117	7.0	68	4.0
6	34.5	9.85	2,300	Lipocaine, 6 Gm	36.1	105	4.55	45	2.9
2	45	10.0	2,400	Pancreas extract, 25 Gm	24.2	54	2.4	24	8.0
2	43	9.0	2,200	Pancreas extract, 25 Gm	17.2	40	1.9	20	8.8
2	45	10.1	2,400	Pancreas extract, 25 Gm	13.7	32	0.3	3	7.5

for five days before the collection of stools and urine was begun. In the course of the study certain dietary supplements were added. The methods used for the collection of stools and of urine and for the determination of stool lipid have been described in a previous publication of this series.^{3a} The stool lipid content was calculated in terms of the "stearin equivalent" and is expressed throughout this communication as "stool fat." The nitrogen in the stools and the urine was determined by means of a micro-Kjeldahl technique.^{3b}

days the output of nitrogen in the feces rapidly decreased to an average daily value of 2.2 Gm. The addition of 6 Gm of amino acid nitrogen⁵ per day during another period of seven days did not increase significantly the fecal output. This observation indicated that the digestion of protein was unpaired and not the absorption of the simple end products of protein breakdown (table 3). It was not feasible to study in a similar fashion the effects of decreasing the fat content of the diet. In view of the considerable surgical reconstruction of the patient's gastrointestinal tract, two possible causes

3 (a) Rekers, P. E., Abels, J. C., and Rhoads, C. P. Metabolic Studies in Patients with Cancer of the Gastrointestinal Tract. IV. Fat Metabolism, A Method of Study, J. Clin. Investigation, to be published. (b) Robinson, H. W., Price, J. W., and Hodgen, C. G. The Estimation of Albumin and Globulin in Serum, J. Biol. Chem. 120: 481-498 (Sept) 1937.

4 For the purpose of clarity, the experimental periods of this patient are not presented in chronological order.

5 Amino acids, Frederick Stearns & Co., Detroit.

existed for the functional disorder the exclusion of extrinsic pancreatic secretion and the altered flow of bile into the intestine. Accordingly, 18 Gm of bile salts* was administered daily for four days, but this induced only diarrhea and greater excretion of both fat and nitrogen (table 4)

TABLE 5—The Effects of the Addition of Dietary Protein and Fat Supplements on the Excretion of Fat and Nitrogen by the Patient Under Study

Feces								
Daily Diet				Fat Gm per Day	Fat per Cent of That In- gested	Nitro- gen Gm per Day	Nitro- gen per Cent of That In- gested	Urinary Nitro- gen Gm per Day
Days	Fat Gm.	Protein Nitrogen Gm	Calories					
6	30	10.1	2400	3.7	5	4.9	48	5.2
8	45	10.0	2400	29.5	87.5	3.9	29	3.2
7	33	23.0	3600	31.1	33.5	1.5	28	3.5
9	33	0.2	2600	45.0	50.5	2.2		2.1

* Ba al.

Pancreatic enzymes were next tested. The daily ingestion of 6 Gm of lipocain, a material obtained from pancreas which has to do with certain phases of the internal metabolism of fat, was without significant effect. As a source of enzymes of the external secretions of the pancreas, 25 Gm of Pancreatin⁸ then was administered each day for six days. The daily excretion of fat in the stool fell rapidly and progressively from an average basal level of 36.1 Gm to only 13.7 Gm, or from 91 to 32 per cent of the amount ingested. Likewise the daily fecal output of nitrogen decreased progressively from an average basal level of 4.4 to 0.3 Gm, or from 44.5 per cent to 3 per cent of that ingested as protein (table 4). Associated with this striking change, the frequency, the bulk and the foul odor of the stools were reduced.

The daily dose of pancreas extract was decreased to 12 Gm per day for the next twenty days, and definite clinical improvement occurred. It was not feasible during that period to make further determinations.

During the course of this study it was possible to ascertain certain relationships between the fat and nitrogen contents of the diet and the amounts of those substances excreted. The administration of a supplement of 53 Gm of fat and 13 Gm of protein nitrogen (table 5) with the constant diet resulted in a relative decrease in the excretion of both these substances. The daily absorption of the total amount of fat increased from about 4 to 62 Gm and of nitrogen from about 5.6 to 16.5 Gm. When nitrogen intake was decreased the total amount of fat excreted increased, which suggested that at least part of the effect noted in the preceding period might have been due to the high protein content of the diet.

COMMENT

Pronounced loss of fat and nitrogen was observed in a patient whose pancreatic ducts had been ligated during resection of the head of the pancreas and duodenum. The possible causes for the excess excretion were considered to be (a) an inability to digest fat and nitrogen into those compounds which could be absorbed, (b) an inability to absorb even simple fat and nitrogen compounds or (c) an excess intestinal secretion of fat and nitrogen compounds.

Oral administration of protein split products (amino acids) did not increase the nitrogen content of the feces, and a lower protein intake was followed by a definite reduction. Hence it appears that the abnormal output of stool nitrogen, at least, is due to the inability of the patient to digest protein.

Of the therapeutic materials which seemed likely to be useful for this patient, external pancreatic enzymes were by far the best, whereas lipocain and bile salts were without effect. A regimen based on a diet composed of the easily absorbed foodstuffs, namely amino acids, fatty acids and simple monosaccharides, is not practicable. The use of a diet high in its content of fat and protein apparently did increase the patient's ability to absorb these foodstuffs, but it increased the bulk of the stools and the discomfort of the patient.

SUMMARY

A patient who had had the duodenum and the head of the pancreas resected and the pancreatic ducts ligated presented the clinical picture of pancreatic insufficiency. The administration of large quantities of pancreatic enzymes was followed by conspicuous clinical benefit and by a significant decrease in the amounts of fat and nitrogen excreted in the feces. An increase in the protein content of the diet resulted in increased absorption of fat. An increase of the fat content of the diet resulted in an increase of fat absorbed but no lessening of fat lost.

Clinical Notes, Suggestions and New Instruments

MENINGOMYELITIS

A COMPLICATION OF PRIMARY ATYPICAL PNEUMONIA

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Numerous reports have appeared in the literature of the last two years pertaining to an acute pulmonary infection characterized by cough, general malaise and hyperpyrexia associated with a relative leukopenia. The mortality rate is low and the physical findings are described as minimal. Roentgenograms uniformly reveal patchy veil-like shadows involving areas of the lung much greater in area than would be suspected from the physical examination. Various names have been applied to this syndrome, such as "pneumonitis" and "virus pneumonia." More recently the descriptive title "pneumonia, primary, atypical etiology unknown" has been adopted as official nomenclature by the Medical Departments of both the Army and the Navy.

A survey of the current literature indicates that complications of this increasingly prevalent pulmonary infection are few, the disease tending to run a self-limited course without sequelae. This observation is further confirmed by a review of 150 cases admitted to the Medical Division of the hospital at which we are stationed. It is our purpose in this report to describe the occurrence of an unusual and serious involvement of the central nervous system apparently developing as a direct sequel to primary atypical pneumonia.

The patient, a naval officer aged 37, was in good health until Sept. 20, 1942, when he began to complain of headache, chills and general malaise. The following day the temperature rose to 101 F and he developed a paroxysmal hacking cough productive of a moderate amount of mucopurulent sputum and frequently followed by regurgitation of food. He was ordered to bed by his physician and was treated symptomatically. He

⁶ Bilean Abbott Laboratories Chicago
⁷ Lipocain Eli Lilly and Company prepared according to the method of Dragstedt.
⁸ Pancreatin Parke Davis & Company enteric coated.

This article has been released for publication by the Division of Publications of the Bureau of Medicine and Surgery of the U. S. Navy. The opinions and views set forth in this article are those of the writers and are not to be considered as reflecting the policies of the Navy Department.

responded well enough to be placed on light duty about one week after the onset of his illness. The second day out of bed, however, his symptoms recurred and once again he developed chills, fever and extreme weakness.

On the tenth day after onset he entered the hospital, ambulatory, and did not appear to be seriously ill. His temperature was 102 F, the pulse rate 95 per minute and respiratory rate 18 per minute. Physical examination revealed that the pharynx was injected, the nose obstructed and an inspiratory lag was present on the left side of the chest with slight impairment and decrease in breath sounds at the left base. It was noted that the reflexes were equal and active and that no Babinski reflex was present. The leukocytes numbered 11,700 with 72 per cent neutrophils, the sedimentation rate was very rapid (29 in 30 minutes), the sputum showed a few diplococci and the blood culture was sterile. X-ray examination of the chest revealed mottled and homogeneous densities in both lower lung fields, consistent with a primary, atypical pneumonia.

The patient was treated symptomatically with salicylates, gargles and ephedrine nasal spray.

The second evening in the hospital the patient's temperature rose to 104 F and he became extremely prostrated and vomited repeatedly. It was noted that the cough was incessant but the coughing effort weak and nonproductive. The bladder was found to be much distended although the patient experienced no discomfort whatever from this source. One thousand cc of urine was obtained on catheterization. There was also a temporary loss of control of the rectal sphincter.

A neurologic examination revealed that the patient was slightly irrational, his voice feeble and his cough reflex considerably diminished. His respirations were entirely abdominal with no apparent movement of the intercostal muscles. The cranial nerves were intact and the sensory system unimpaired. There was extreme motor weakness of both extremities. The knee and ankle reflexes were hyperactive on both sides. Reflexes in the upper extremities were equal and active. There were bilateral Babinski and Chaddock signs, and the abdominal and cremasteric reflexes were absent. A lumbar puncture was done at this time and a slightly cloudy fluid under pressure of 250 mm was obtained. The cell count was 221 with 87 per cent lymphocytes, total protein was 40 mg, sugar was 90.9 mg and the Kahn reaction and colloidal gold test were negative. Bacteriologic study of the fluid was negative. The patient apparently had a meningomyelitis of the lower lumbar region with patchy involvement of the spinal cord at higher levels. The findings indicated that the pathologic changes were limited to the motor system of the anterior and lateral columns of the cord, hence the absence of sensory findings. The etiologic agent was possibly blood borne via the anterior and ventral spinal arteries and their corona vasorum. The type of involvement is comparable to that noted in poliomyelitis except for the presence of hyperactive deep tendon reflexes (a sign pathognomonic of involvement of the pyramidal or corticospinal pathway in the lateral columns). The pronounced distention of the urinary bladder without subjective symptoms of discomfort and without evidence of obstruction of the lower urogenital tract could be explained only on the basis of bladder atony secondary to cord involvement.

Respiration became increasingly difficult and, in the absence of a mechanical respirator, the special watch was increased to provide personnel for continuous artificial respiration. The urinary retention was overcome by the installation of a retention catheter, and the bladder was irrigated twice daily.

In addition, repeated injections of hypertonic dextrose (25 per cent solution) were given and oxygen was administered continuously by means of the B. L. B. mask.

During the next twenty-four hour period there was definite improvement in respiration and a noticeable decrease in the signs and symptoms of general toxemia.

On the fifth hospital day the patient appeared to be greatly improved. His temperature was 100 F, respirations were normal and slight movement of his legs was noticed. Massage and passive motion were instituted to maintain tonicity and circulation of the muscles. He continued to improve gradually, and one week after admission a spinal fluid examination showed that the cell count had decreased from 221 to 41, protein from 40 to 25 mg and sugar from 90.9 mg to 64.5 mg.

Specimens of spinal fluid and blood were submitted to the Department of Infectious Diseases of the National Institute of Health. The report indicated that no recognizable virus was demonstrated by animal inoculation, although special search was made for the various neurotropic viruses, influenza A and B and Q fever.

On the eighth hospital day the retention catheter was removed and the patient gradually regained the ability to void spontaneously. At this time the paralysis of his legs began to disappear rapidly and he soon regained voluntary control of the muscles.

The deep and superficial reflexes of the trunk and lower extremities returned to normal coincidentally with the disappearance of the motor paralysis.

Except for a mild cystitis, his recovery proceeded uneventfully and he was discharged from the hospital one month after admission. After return to duty slight weakness in the legs and paresthesia of the toes were noted for a short time.

COMMENT

Myelitis is a not uncommon complication of severe infections such as syphilis, tuberculosis, typhus, diphtheria, typhoid and smallpox. The deleterious effects on the cord may be produced by direct action of the bacteria or by their toxins. During World War I and in the decade following this period a number of reports are to be found in the literature¹ which describe the occurrence of myelitis secondary to respiratory infections of various types.

In these cases the onset of the disease was marked by an upper respiratory infection, pain in the chest and severe generalized muscular pains. Later paresis developed in one or more of the extremities with pronounced reduction or abolition of the deep tendon reflexes. There were a concomitant disturbance of sphincter control and objective sensory disturbances both deep and superficial. The spinal fluids were uniformly reported as normal. The majority of these patients recovered in thirty to sixty days without any residual symptoms. As the study of these cases did not include roentgenograms of the chest it is possible that some, at least, were examples of primary atypical pneumonia.

A review of the literature has failed to reveal a report of myelitis occurring as a complication in a proved case of primary atypical pneumonia.

The complete recovery of the patients described in the 1917-1925 reports paralleled the situation in our own case and was in decided contrast to the types of myelitis produced by known bacterial infections, which usually result in prolonged illness and often leave the patient with permanent motor and sensory disabilities.

The case here described differs from those previously reported in the following features: (a) It occurred in a proved primary, atypical pneumonia, (b) there was no sensory involvement which could be objectively demonstrated, (c) the spinal fluid was distinctly abnormal. The symptomatology, spinal fluid findings and clinical course of the disease were closely comparable to those of other conditions known to be produced by virus invasion of the central nervous system. If this assumption is correct, it tends in a limited way to support current views with regard to the etiology of primary atypical pneumonia.

SUMMARY

- 1 A severe but transient meningomyelitis occurred as a complication of primary atypical pneumonia.
- 2 The character of the primary disease was established by physical and roentgen examinations and by the clinical course.
- 3 The principal neurologic manifestations were interference with the muscles of respiration, bladder atony, loss of sphincter control and paralysis of the lower extremities, all developing on the twelfth day of the disease.
- 4 The patient subsequently recovered without evidence of residual neurologic disability.

¹ Holmes, Gordon. Acute Febrile Polyneuritis. *Brit. M. J.* 2: 37 (July 14) 1917. Bradford and others. Acute Infective Polyneuritis. *Quart. J. Med.* 12: 89 (Oct.) 1918. Strauss, Israel and Rabiner. Myelodysplasia. *Arch. Neurol. & Psychiat.* 23: 240 (Feb.) 1930. A. M. Myelodysplasia. *Arch. Neurol. & Psychiat.* 23: 240 (Feb.) 1930. Sands, I. J. Acute Benign Infectious Myelitis. *J. A. M. A.* 66: 23 (Jan. 3) 1931. Greenfield, J. G. Acute Disseminated Encephalomyelitis as a sequel to "Influenza." *J. Path. & Bact.* 33: 453 (April) 1930.

Council on Industrial Health

THE COUNCIL ON INDUSTRIAL HEALTH HAS PREPARED THE FOLLOWING REPORT AS AN AID TO PHYSICIANS IN INDUSTRY AND TO COMMITTEES ON INDUSTRIAL HEALTH IN STATE AND COUNTY MEDICAL SOCIETIES CALLED ON TO FORMULATE STANDING ORDERS FOR INDUSTRIAL NURSES

C. M. PETERSON, M.D., Secretary

STANDING ORDERS FOR NURSES IN INDUSTRY

For some time the medical and nursing professions have been concerned about the employment of nurses in industry without adequate medical supervision. The Council on Industrial Health has therefore been requested to formulate standing orders for industrial nurses which can be adapted to meet the requirements of individual industrial medical departments. If no responsible industrial medical authority exists it is recommended that the nurse request helpful instruction in this regard from the committee on industrial health of the appropriate county or state medical society.

GENERAL RELATIONSHIPS

Standing orders represent a preliminary understanding between physician and assisting personnel about routine conduct of a medical service. In establishing such orders in an industrial medical department, several considerations need to be borne in mind:

- 1 The greater the amount of personal supervision exercised by the physician directly in the industrial environment the better is the industrial health service.
- 2 Standing orders cannot be written to meet every situation likely to arise in industry. They must be modified to meet specific requirements and in accordance with the training and professional competence of the assisting personnel. They should be signed by the supervising medical authority and posted prominently in the medical department.
- 3 The nurse in industry should assume no responsibility for service outside the field of her professional training. This applies particularly to individual case management, from which the nurse should rigidly abstain except:
 - (a) In emergencies demanding immediate independent judgment and action.
 - (b) Procedures of preliminary or first aid nature routinely required by reason of the nature of the work and which are clearly stipulated in the standing orders.

This statement confines itself mainly to these last named aspects of mediconursing relations in industry. Additional reports on other functions of industrial nurses will follow as needed.

EMERGENCY PROCEDURE IN INDUSTRY

General principles which operate in all emergency situations apply to industry as well. They are:

- 1 Call a physician immediately.
- 2 Stop bleeding.
- 3 Restore breathing.
- 4 Prevent shock and infection.
- 5 Do no more than is actually needed.

The supervising physician should assure himself that these instructions are thoroughly understood and should institute special training when necessary. Nurses in industry should qualify as first aid instructors.

Emergency Supplies—Emergency packs with essential sterile supplies should be available at all times in the medical department and in first aid kits suitably located throughout the plant. Regular inspection is necessary.

Hemorrhage—Bleeding calls for immediate attention. The nurse should notify the physician and, until he arrives, proceed as follows:

- 1 Expose the wound.
- 2 Remove obvious foreign matter.
- 3 Apply pressure.

Direct manual or bandage pressure firmly applied over sterile gauze packing at the bleeding site will effectively control mod-

erate hemorrhage. Indirect compression is indicated in excessive bleeding not controllable by direct methods. Digital compression over the vessel against underlying structures either adjacent to the wound or at the nearest pressure point will usually suffice until the physician arrives. Indirect pressure should be applied proximal or distal to the wound, in keeping with the arterial or venous character of the bleeding. Hemostats or clamps should be applied whenever the emergency warrants it.

Avoid applying a tourniquet if possible. If severe bleeding in an extremity suggests the use of a tourniquet, apply a blood pressure cuff.

The nurse should remember that:

- 1 A direct pressure bandage should not act as a tourniquet.
- 2 A tourniquet must be periodically released at least every fifteen minutes.
- 3 No dressing should be applied over a tourniquet.
- 4 Asepsis must be observed at all times.

Asphyria—Cessation of breathing from any cause demands:

- 1 Artificial respiration *at once and at the site of the accident*.
- 2 Notification of the physician.
- 3 Maintenance of body warmth. Avoid excessive heating.

All industrial nurses should demonstrate ability to apply artificial respiration by the prone pressure method and should realize the need for its continuous application until breathing is restored or until careful repeated medical examination advises otherwise.

Shock—*Early and adequate shock treatment is life saving. Do not delay.*

Common symptoms of shock following injury are pallor, perspiration and rapid thready pulse. Emergency management by the nurse should include:

- 1 Notification of the physician.
- 2 Removal of cause. If shock is due to hemorrhage, control it. If it is due to trauma not associated with bleeding, all active treatment of injury should be deferred until shock management has been instituted. Wounds should be covered with sterile dressings to prevent infection.
- 3 Relief of pain. $\frac{1}{6}$ to $\frac{1}{4}$ grain (0010 to 0016 Gm.) of morphine sulfate, repeated if necessary or barbiturates as routinely ordered except in injuries to the head or trunk.
- 4 Keeping the patient warm, dry, and on his back with his head low. Avoid overheating.

ROUTINE NURSING CARE OF INJURIES

Successful medical management of industrial injuries depends on:

- 1 Prompt treatment.
- 2 Meticulous cleansing and dressing.
- 3 Examination of deep as well as of superficial structures.

To accomplish these aims the routine functions of the nurse should be confined to care of minor wounds as follows:

- 1 Protect wound with sterile gauze while adjacent area is cleansed with soap and water or solvent.
- 2 Discard protective dressing and clean wound margins.
- 3 Irrigate wound with sterile water or isotonic solution of sodium chloride.
- 4 Apply antiseptic or physician's choice.
- 5 Apply dry sterile dressing interlacing as little as possible with tunction. Sterile dressings should be covered with protective material for use at work. The worker should be instructed not to remove the dressing but to return to the medical department if it becomes loosened or uncomfortable.

The nurse should do no more than is actually needed. The following conditions require direct medical supervision:

- 1 Wounds requiring debridement.
- 2 Those with obvious or suspected involvement of deep structures.
- 3 Wounds with edges which do not approximate.
- 4 Wounds about the head and face.
- 5 Contaminated wounds requiring tetanus prophylaxis.

Management of Common Injuries—Injuries most likely to be encountered in industry include the following conditions

- 1 Abrasions Clean and apply dry dressing Extensive or deep loss of skin, especially about the fingers and hands, needs medical attention
- 2 Contusions Treat with cold compresses directly following injury, later with moist heat If soreness or disability persists or if deep involvement is suspected, refer to the physician
- 3 Lacerations Clean and apply dressing as directed Any possibility of injury to joints, nerves or tendons should be brought to the physician's attention at once
- 4 Puncture Wounds Puncture wounds through the skin need direct medical supervision to avoid or treat severe infection If superficial, clean and apply sterile dressing
- 5 Slivers and Splinters Penetration through the skin by slivers or splinters always carries the risk of an infected puncture wound and should be treated as such Those lodged superficially and easily removed without added trauma or incision may be extracted aseptically by the nurse
- 6 Burns and Scalds Clean minor burns with soap and water Apply petrolatum or 5 per cent boric acid ointment, bandaging firmly without interfering with function Leave blisters alone
In all other cases
 - (a) Notify the physician
 - (b) Cover the burned area with a sterile dressing or sheet moistened with isotonic solution of sodium chloride or 5 per cent sodium bicarbonate solution
 - (c) Combat pain and shock

In the absence of specific orders, chemical burns should be treated by irrigation or immersion in water for at least twenty minutes and then by dressing

- 7 Sprains and Strains Treat first with cold compresses, elevation of the part and rest A physician's advice is necessary regarding strapping, other methods of support or fixation, further examination or special therapy

FRACTURES

Preliminary steps for the nurse are

- 1 Call a physician at once
- 2 Keep the patient quiet and warm
- 3 Immobilize before any movement is attempted
- 4 Do not attempt reduction
- 5 If the fracture is compounded, cover the site of the fracture with a dry sterile dressing *Do not cleanse or reduce*

Special instruction in splinting should be provided every industrial nurse

EYE INJURIES

Rigid aseptic technic must be scrupulously observed in all eye conditions Never attend consecutive patients without sterilization of instruments and careful hand washing Remember that early symptoms of infection simulate foreign body

Minor Burns—Do not apply ointments to minor burns of the skin about the eye Apply a sterile dressing and refer to the physician

Burns of the Eye—1 Chemical Burns Irrigate chemical burns of the eye *copiously* and *at once* with water, preferably by immersion Neutralizing solutions are usually inadequate or unavailable The rapidity with which the irrigation occurs is more important than the type of solution used Continue to irrigate at least twenty minutes by the clock

2 Hot Metal Burns Apply a sterile pad and refer at once to the physician Do not irrigate An anesthetic should be applied as ordered by the doctor

Every burn of the eye should receive competent medical attention early

Foreign Bodies—The nurse should attempt to remove only those foreign bodies of the eye which can be readily located and which can be easily washed out or removed with a dry

sterile cotton applicator An antiseptic may be applied if the physician so orders

Direct medical care is essential

- 1 If the foreign body cannot readily be located Stains to aid in the location of foreign bodies should be used only on specific medical order

- 2 If removal requires any instrumentation

- 3 If irritation or pain persists after removal

No person with an eye injury should be discharged without examination by a physician

"Flash" Injury—First aid treatment should include

- 1 Local anesthetic as ordered

- 2 Cold compresses

- 3 Sedatives

Persistent pain following flash needs medical examination and treatment

Conjunctivitis—Conjunctivitis or other forms of conjunctival irritation should be referred routinely to the physician or ophthalmologist

HEAD INJURIES

Until the physician takes over, the nurse should

- 1 Keep the patient lying down

- 2 Elevate the head

- 3 Apply ice cap or cold compress *No sedatives*

- 4 Record pulse and respiration every ten minutes

Clip or shave and cleanse areas adjacent to scalp lacerations, and cover with a sterile pad

CHEST AND ABDOMINAL INJURIES

Contusions of the chest and abdomen with or without external evidence of injury may result in trauma to underlying organs Until seen by the physician, such patients must be

- 1 Kept warm and quiet

- 2 Allowed no sedatives

- 3 Have pulse, temperature and respiration recorded frequently

- 4 Suitably bandaged to avoid contamination

In case of abdominal injury give nothing by mouth

NONOCCUPATIONAL ILLNESS

Treatment of injury or illness which has no relation to occupation is not a function of the industrial medical department except

- 1 First aid for emergency sickness Such measures as the situation demands must be taken until notification of the family physician discharges responsibility

- 2 For minor ailments which temporarily interfere with an employee's comfort or ability to complete a shift and for the relief of which a physician would not ordinarily be consulted

In all relationships of this kind, judgment and tact are required of the industrial nurse Several principles apply

- 1 Before giving any treatment, the temperature, pulse, general appearance and a history of the presenting complaint should be recorded

- 2 Palliative treatment, especially for chronic or recurring disorders, should not be repeated

Every properly trained nurse understands the difference between attention of this kind and systematic treatment

CARE OF MINOR ILLNESS AND SYMPTOMS

Persistent or augmenting symptoms of irritation, discomfort or disability suggest faulty work environment The nurse should not hesitate to ask for medical examination of workers and of the premises

Fever—A rise in temperature of 1 degree suggests medical consultation before work is resumed Findings should be checked by repeated thermometer recordings

Headache—Record temperature If headache is accompanied by dizziness, nausea, vomiting, stiff neck, injury, history of recurrence, fever, general malaise or other symptoms the patient

needs medical attention. It not give an analgesic as ordered by the physician.

Remember that headache or dizziness may be preliminary signs of intoxication.

Unconsciousness—1 Fainting. Usual symptoms are pallor, with shallow breathing, slow and weak pulse. Period of unconsciousness is of short duration.

Keep the patient lying down with head lowered until fully recovered. Be sure the patient has plenty of fresh air. Clothing should be loosened and stimulating inhalants used such as ammonia or smelling salts.

2 Other causes. If other signs are present or if unconsciousness persists longer than a few minutes, call for medical assistance. *Give nothing by mouth.*

Toothache—If there is a cavity, the nurse may pack it with cotton dipped in oil of cloves for temporary relief. For further examination and treatment refer to a dentist.

Nosebleed—Spontaneous nosebleed may be treated by cold packs or pinching the sides of the nose against the septum. Keep the patient sitting erect or standing and loosen the collar if it tends to constrict the neck. Advise the patient not to breathe or blow through the nose for an hour or two after bleeding has stopped.

Bear in mind that certain occupational exposures are manifested by nasal damage and bleeding.

Sore Throat—Patients with sore throat may be given a hot saline gargle if they have a normal temperature. Do not "paint" the throat. Any persistent sore throat or one associated with fever needs medical care at home.

Respiratory Irritation or Infection—Repeated or persistent signs of bronchial or chest irritation without associated infection suggests an unfavorable occupational exposure. A plant hygiene survey is indicated.

Persons having acute respiratory infections with elevated temperature, cough, sneezing or nasal discharge should be sent home for proper segregation, rest and medical attention. In mild infections work may be continued if under medical or nursing supervision simple measures will control symptoms and prevent spread.

Available medical evidence at the present time cannot support routine administration of cold vaccines or vitamin preparations as methods of reducing the incidence or severity of acute respiratory infections.

Frequent colds or chronic respiratory conditions require special medical consideration.

Abdominal Distress—Early signs of occupational intoxication may be abdominal in character. In any case abdominal distress, nausea or pain, especially if severe or persistent, requires competent medical diagnosis and management.

Laxatives should never be dispensed from an industrial medical department.

Dysmenorrhea—Painful menstruation not associated with fever or gastrointestinal disturbances may be treated with an analgesic ordered by the physician and the patient placed at rest with heat to the lower part of the abdomen. If there is no relief or if other signs or symptoms present themselves she should be referred to her physician.

Patients with recurrent severe dysmenorrhea should not be given palliative treatment. They should be referred for examination and treatment.

DERMATITIS

Management of skin disorders in industry depends on cause.

Specific Irritants—Materials or processes in the plant capable of causing skin disease should be identified and special orders provided for control. Competent dermatologic consultation is essential in all obscure or refractory situations.

Nonspecific Skin Disease—Nonspecific skin irritation in industry is almost entirely assignable to faulty personal hygiene. The nurse can do much to improve washing routine, the use of dependable protective coverings, the wearing of clean work clothing, maintenance of satisfactory housekeeping in the plant and the general maintenance of accepted hygienic procedure.

PREGNANCY

A definite policy regarding employment during pregnancy should embrace the following recommendations:

- 1 The employee should notify the proper authority in industry about her pregnancy within the first trimester.
- 2 She should obtain a statement from her own physician—
(a) That her work is not contraindicated.
(b) Regarding the length of time she should work.
- 3 Special attention should be given to the nature of the work. Pulling, pushing and lifting must be kept within safe limits. Rest periods will tend to minimize emotional and physical instability during pregnancy.
- 4 Ordinarily work should terminate by the thirty-second week (within six weeks of term). If contraindications arise within this period, the employment should stop.
- 5 Return to work is inadvisable before six weeks after delivery and then only on notification of the employer by the physician.

EQUIPMENT AND SUPPLIES

Space which can command privacy and which can be kept clean and properly prepared for emergency and routine services by the nurse should be provided in the plant. Special attention should be given to heating, light, ventilation and accessibility.

Furnishings and Supplies

General Furnishings

- | | |
|--------------------------|------------------------|
| 1 Sink | 9 Foot pedal waste can |
| 2 Instrument cabinet | 10 Waste basket |
| 3 Sterilizer | 11 Storage cabinets |
| 4 Dressing table | 12 Paper towel rack |
| 5 Leg rest | 13 Adhesive rack |
| 6 Cot | 14 Record file |
| 7 Stretcher | 15 Scale |
| 8 Mirror 10 by 12 inches | |

Instruments and Supplies

- | | |
|---------------------------------|-----------------------------|
| 1 Scalpels | 13 Adhesive plaster |
| 2 Splinter forceps | 14 Cotton |
| 3 Tissue forceps | 15 Applicators |
| 4 Hemostatic forceps | 16 Assorted sutures |
| 5 Bandage scissors | 17 Assorted splints |
| 6 Surgical scissors | 18 Assorted jars and basins |
| 7 Hand magnifying glass | 19 Test tubes |
| 8 Syringes | 20 Safety razor and blades |
| 9 Assorted hypodermic needles | 21 Hot water bottle |
| 10 Assorted "surgeon's" needles | 22 Ice cap |
| 11 Needle holder | 23 Crutches |
| 12 Assorted bandages | 24 Tourniquet |

Drugs (as ordered by the physician or medical adviser)

- | | |
|---------------|----------------------------|
| 1 A stimulant | 3 Analgesics and sedatives |
| 2 An emetic | 4 Antiseptics |

The accompanying check list of furnishings and supplies suitable for a small plant dispensary should be augmented by equipment for emergency treatment or other special medical requirements as ordered by the plant physician or other medical adviser.

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- (g) Recognition and Prevention of Industrial Dermatitis.

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SATURDAY, AUGUST 28, 1943

INSECT VECTORS OF POLIOMYELITIS

In 1911 Flexner and Clark¹ allowed flies to feed on the spinal cords of monkeys which had died of experimental poliomyelitis. Insects thus contaminated harbored infectious doses of the virus for at least forty-eight hours. This observation was followed by a long series of experiments by other investigators² in which unsuccessful attempts were made to transmit poliomyelitis to rhesus monkeys by houseflies, biting flies, body lice, head lice, bedbugs, fleas and mosquitoes. In face of these repeated failures, supplemented by the growing belief that poliomyelitis is a "respiratory disease," entering the body only through the olfactory nerves, many clinicians believed that it was "unnecessary" to try to bring insects into the epidemiologic picture.

Twenty years later, however, following a shift of clinical interest to the possibility that human feces and sewage might be the main sources of infection, insect vectors again became of logical interest. Rosenow³ reported that flies collected during the 1935 Kentucky epidemic harbored infectious doses of poliomyelitis virus, typical paralysis developing in 1 out of his 3 rhesus monkeys inoculated intracerebrally with fly filtrates. These results were challenged by other investigators,⁴ who reported only negative results with houseflies, mosquitoes and other insects collected during other epidemics.

Methods of detecting poliomyelitis virus in stools and sewage have been greatly improved since that time, the most important improvement being the substitution of highly susceptible Java monkeys (*cynomolgus*) for

the more resistant rhesus and green African monkeys previously used. Adopting these newer methods, three groups of investigators⁴ reported positive results with fieldflies collected in epidemic areas. A detailed account of the results obtained by one of these groups is currently reported by the late Dr. James D. Trask and his colleagues⁵ of the Department of Pediatrics of Yale University.

During the 1941 epidemic of poliomyelitis the Yale investigators caught numerous samples of nonbiting fieldflies in traps set within the yard near the privy or near a house in which 1 or more cases of poliomyelitis had occurred. Samples of biting insects were also collected from the backs or sides of cows tethered in the epidemic areas. The flies were usually transferred to glass jars and stored at refrigeration temperature for a period of three to seven days before using. Two types of inoculums were prepared from these insects. In the first type 100 to 600 dead flies together with the inside contaminated surface of the glass container were washed with 50 cc of distilled water. The washings were centrifuged at low speed and the midlayer set aside for nasal instillations. Fifteen per cent ether was added to the remaining parts of the washings for bactericidal purposes. The etherized sample was used for intra-abdominal injections. In their second type of inoculums from 100 to 500 flies were emulsified in 200 cc of distilled water. The resulting emulsions were centrifuged and prepared in the same way for inoculation tests.

Thirty-nine washings or emulsions representing 19 different fly samples were each inoculated into 1 monkey. In most cases the inoculation was made by two routes: 2 cc given intranasally on each of three successive days, and 10 to 20 cc of the etherized preparation given intra-abdominally as one dose. Animals subsequently showing signs of poliomyelitis were killed and studied microscopically, and attempts were made to pass the virus to a second generation by means of multiple intracerebral inoculations. Briefly summarized, poliomyelitis virus was definitely isolated and identified from 4 of the 19 different fly samples, with "equivocal" results from a fifth sample. Positive results were obtained with doses representing as few as 14 flies (average 70 flies). All positive results were obtained with *cynomolgus* monkeys, all tests with rhesus and green African monkeys being negative. No positive takes were obtained with the mosquitoes and biting flies similarly tested.

The nonbiting fly species showing positive results did not differ from those giving negative reactions. The dominant species in each group were green bottleflies and blowflies, the common housefly being present in small numbers in only 2 of the 4 positive specimens.

1 Flexner, Simon, and Clark, P. F. Contamination of the Fly with Poliomyelitis Virus, *J A M A* 56: 1717 (June 10) 1911.

2 Kling, C., Pettersson, A., and Wernstedt, W. *Com Inst med Etat Stockholm* 28: 833 (May 2) 1913. Clark, P. F., Fraser, F. R., and Amoss, A. L. *J Exper Med* 19: 223, 1914. Sawyer, W. A., and Hermis, W. B. Attempts to Transmit Poliomyelitis by Means of the Stable Fly (*Stomoxys calcitrans*), *J A M A* 61: 461 (Aug 16) 1913. Noguchi, Hideyo, and Kudo, R. *J Exper Med* 26: 49 (July) 1917.

3 Rosenow, E. C., Smith, L. H., and McCormack, A. T. *Kentucky M J* 35: 437 (Sept) 1937.

4 Toney, J. A., Takacs, W. S., and Tischer, Linda A. *Proc Soc Exper Biol & Med* 48: 637 (Dec) 1941. Paul, J. R., Trask, J. D., Bishop, M. B., Melnick, J. L., and Casey, A. E. *Science* 94: 395 (Oct 24) 1941. Sabin, A. B., and Ward, Robert. *Science* 94: 590 (Dec 19) 1941.

5 Trask, J. D., Paul, J. R., and Melnick, J. L. *J Exper Med* 77: 531, 545 (June) 1943. Dr. Trask died on May 24, 1942.

Practically the same results had been previously reported by Sabin and Ward⁶ who were able to isolate poliovirus from 8 of 15 samples of houseflies collected during 1941 outbreaks of the disease. Their positive results also were obtained with cynomolgus monkeys. Their fly pools also usually consisted mainly of green bottleflies and black blowflies. Loomer, however, reported one successful take with a rhesus monkey inoculated intracerebrally with an emulsion of houseflies trapped near an open sewer during the same epidemic.

Trask's positive results were all from fly samples collected near a potential (though not proved) source of virus in the form of exposed human feces of recent origin. The Yale investigators, however, warn against reading an epidemiologic implication into their results, since the presence of virus in their positive samples might be merely a resultant and not a "causal factor" in the local epidemic. Whether or not the virus can multiply on or within the contaminated flies has not yet been determined.

OBSTETRIC AND PEDIATRIC CARE OF WIVES AND INFANTS OF ENLISTED MEN

California and Western Medicine for August 1943 takes to task the action of the federal Children's Bureau in providing payment for the obstetric care of the wives of enlisted men and for the care of their children. objection is not made to the payment or to the care but to the technic and rate of payment. Incidentally, the editorial in *California and Western Medicine* asks why the "national mouthpiece of organized medicine" has made no editorial comment and calls attention to what are said to be the only two items on the subject which appeared in *THE JOURNAL*. Elsewhere in this issue (Organization Section, page 1257) appears some of the correspondence on the subject between Dr. George H. Kress, Secretary-Editor of the California Medical Association, and Dr. Olm West, Secretary of the American Medical Association.¹

The readers of *California and Western Medicine* should have the accurate information here published.

The article by Dr. Edwin F. Daily in *THE JOURNAL* for July 31, 1943 indicates that the program which received its first special appropriation in March 1943 was already operating by July 31 in thirty-seven states, Hawaii, Alaska and the District of Columbia and that the health agencies of several of the remaining eleven states were at the time completing their plans for

administering the program. More than 95 per cent of payments were for maternity care and less than 5 per cent for pediatric care. It will be observed that under this program plans are developed and administered by state health agencies and then approved by the chief of the Children's Bureau.²

At the meeting of the House of Delegates held this year in Chicago several resolutions were introduced relating to this activity of the Children's Bureau. The House of Delegates was confronted with a proposal from the state of New York to the effect that the federal security law be changed in such manner as to assure payment of the physician and with another resolution presented by Dr. John H. Fitzgibbon of Oregon to the effect that approval be expressed of federal assistance to the wives and children of servicemen provided that any funds allocated for professional services be given to the wives of enlisted men, such patients then to secure the services of physicians as they themselves deemed proper and the fees for professional services to be decided by mutual agreement between the patients and the attending physicians. The reference committee of the House of Delegates brought in a report that the action of the federal government in making funds available for maternity and infant care for the wives of enlisted men be approved and that adoption be urged of a plan under which the federal government will provide for the wives of enlisted men a stated allotment for medical, hospital, maternity and infant care similar to the allotments already provided for the maintenance of dependents, leaving the actual arrangements with respect to fees to be fixed by mutual agreement with the wife and the physician or her choice. The reference committee at the same time disapproved the resolution from the state of New York because it involves the introduction of a third party—a party coming between the patient and the physician.

In his editorial Dr. Kress asks "Is it fair to a small group of constituent state medical associations to make them carry on this battle against governmental intrusion into the domain of private medical practice? On a subject of national scope, is it not to be expected that the national organization will point the way?" Certainly the detailed statement of Dr. Olm West sent to Dr. Kress, which Dr. Kress says will be placed in the files, indicates how definitely the national association has pointed the way, indicates how certainly the House of Delegates has acted in the matter, indicates finally that the editor of *California and Western Medicine* went to press with his periodical before he received sufficient factual information to warrant the statements that are made.

2. California was allocated \$20,000 during the first and second quarters of 1943 under the federal Social Security Act to be used for maternal and child health. Sufficient maternal and child health funds were still available in the state for such services during the third quarter of 1943. Fifty thousand dollars was being requested by California for the fourth quarter of 1943.

⁶ Sabin, A. B. and Ward, Robert. *Science* 95: 300 (March 20) 1942.

1. Dr. Kress wrote to Dr. West on August 6 that letter was received in the office of Dr. West on August 9 at 8:23 in the morning and was answered by a letter sent on the afternoon of August 10. The communication written by Dr. Kress on August 17, received in the headquarters office on August 20 at 10:37 a. m. states: "Dr. West's reply was received too late to be of use in my August editorials for *California and Western Medicine*. I am very glad to have this information for our files [sic]."

Never before in the history of our country or of the world has there been such unrest as is now apparent among medical men and among some of the constituent state organizations of the American Medical Association. The unrest appears to be stimulated by fears related to proposed national legislation—such as the Wagner-Murray-Dingell bill, S. 1161—and efforts on the part of various agencies of the government to take over medical practice. Such efforts are not new, they have been persistent since 1928. During the fifteen years that have elapsed the maximum accomplishment in the way of legislation injurious to the quality of medical practice for the American people has been permissive legislation for some agencies of the government to utilize the services of osteopaths and some activities on the part of various government bureaus utilizing their own regulations, which have gone beyond the powers granted to them by the acts under which they operate.

The wives of enlisted men who need obstetric service should certainly be able to obtain good obstetric service and, when funds are not available, to receive aid for that purpose. This applies equally to the pediatric care necessary for the children of enlisted men. The service that these men render to the nation in offering their lives in its defense merits the most that the nation can give them. In many instances, no doubt, enlisted men are the possessors of considerable funds accumulated previously to their enlistment. In many instances, no doubt, these men married during the period of enlistment and their wives are still residents in the home of parents well able to care for their every need. In a proposed army of more than ten million men, however, those financially competent to this extent would probably constitute a minority. Moreover, those who are financially competent are not in the vast majority of cases availing themselves of the fees established by or the money provided by the federal Children's Bureau. They are now choosing, as they have in the past, the obstetrician and hospital of their choice, and they are paying the sums requested by such obstetricians for their services. Even this, however, should not weigh against the fundamental principle reiterated by the House of Delegates in the action taken at the meeting in June 1943. It was the belief of the House of Delegates that the funds available should be paid to the patient and that the matter of payment to be rendered was a matter for determination between the patient and the physician.

Notwithstanding these principles, many physicians and many state departments of health have accepted the proposals of the Children's Bureau and are giving obstetric and pediatric services in accordance with the plans that have been described. The medical societies of Michigan, Oregon, Ohio and California have recorded themselves as opposed to such plans.³ The opposition,

as stated by the Michigan State Medical Society, is based on the belief that this will encourage the development of a poor quality of obstetric and pediatric care, establish a precedent for further extension of governmental interest into the private practice of medicine, commit to such governmental activities those members of the medical profession who are in the military service and who have not had opportunity to express their opinions, and open the door to governmental medical service for all, without economic distinction or determination of need and establish a fee schedule. The real test of opposition to the program is the extent to which the individual physician will refuse to participate in its operation and the extent to which state medical organizations will express officially their unwillingness to approve. In this connection Dr. Daily concludes his article with this statement: "The cooperation of practicing physicians and hospital administrators, on whom much of the burden of the program ultimately rests, has made it possible for most of the state health agencies to establish these statewide services for the wives and infants of enlisted men in the armed forces."

Current Comment

ANTIBACTERIAL SUBSTANCES FROM ASPERGILLUS MOLDS

The remarkable effects of penicillin in certain bacterial infections have aroused interest in the production of antibacterial substances by fungi other than *Penicillium notatum*. Wiesner¹ found that strains of *Aspergillus clavatus* produced a substance which had bacterial as well as bacteriostatic effects on organisms not attacked by penicillin. Waksman and his associates² report the results of studies of antibiotic or antibacterial substances obtained from cultures of *Aspergillus fumigatus* and *Aspergillus clavatus*, isolated from soils, stable manure and composts. Grown in a glucose-nitrate medium *A. fumigatus* produces an extractable, crystallizable, antibacterial substance called fumigacin, which is active against gram positive bacteria but has only little effect on gram negative organisms or fungi. *Aspergillus clavatus* also produces an antibacterial substance on synthetic mediums. This substance is called clavacin. It differs from fumigacin both chemically and in its antibiotic actions, being almost as active against gram negative as against gram positive bacteria. It has not as yet been isolated in crystalline form. Only six of fifteen strains of *A. clavatus* produced clavacin in considerable amounts. Waksman and Schatz² caution against too hasty generalizations of the power of certain fungi to produce antibacterial substances based on the results of the study of single strains of a given fungus. Fumigacin and clavacin are notable

¹ Wiesner, H. P. Bactericidal Effects of *Aspergillus Clavatus* Nature **149** 356 (March 28) 1942

² Waksman, S. A., and Schatz, Albert. Strain Specificity and Production of Antibiotic Substances. Proc. Nat. Acad. Sc. **29** 74 (Feb.) 1943. Waksman, S. A., Horning, Elizabeth S., and Spencer, E. L. Two Antagonistic Fungi, *Aspergillus Fumigatus* and *Aspergillus Clavatus*, and Their Antibiotic Substances. J. Bact. **45** 233 (March) 1943

³ A statesmanlike letter by the president of the Ohio State Medical Association, Dr. C. C. Sherburne, indicates that the whole subject was thrown into the political arena in Ohio, and this made the position of the medical profession most difficult.

additions to the antibiotic agents derived from fungi. They differ in many respects from penicillin. Both are fairly toxic to animals.¹ Whether their selectively bacteriostatic and bactericidal properties can be used to advantage in treatment remains to be determined.

MERCURIALS AS "PRESERVATIVES"

In a recent study of protein sulphydryl groups Hellerman, Chinard and Deitz¹ point out that organometallic compounds of the type R-Hg-X, such as phenylmercuric hydroxide and its derivatives form poorly dissociated protein mercaptides by combination of the organic mercurial with protein thiol groups. According to Fildes² the formation of such mercaptides is the basis for the bacteriostatic action of mercury. Such sulphydryl groups are present however not only in bacteria but in plasma and other proteins. Bacteriostatic action of such organomercuric compounds in the presence of serum is therefore largely prevented by competition of reactive groups on the serum proteins for the mercury. This presumably is the basis of the finding³ that the 'activity of a mercurial antiseptic in serum is reduced to 0.33-0.007 per cent of its activity in saline.' Ignoring of these simple chemical facts can be responsible for very serious occurrences, such as the arrival in England of plasma "preserved" with 1:10,000 merthiolate containing viable micro-organisms. Johnson and Melenev⁴ conclude

In our experience 1:10,000 merthiolate has not been able to insure the sterility of stored liquid plasma. The contaminations reported in this paper in plasma-saline mixture containing 1:10,000 merthiolate are sufficient to be an argument against its use. The material found to be contaminated when tested after its arrival in England is further evidence that 1:10,000 merthiolate cannot be considered the ideal preservative for plasma. Further research work in this field is indicated.

POLIOMYELITIC DEGENERATION OF MOTOR END PLATES

Cellular and vascular reactions in the central nervous system during the acute stages of poliomyelitis have been exhaustively studied. Report has not thus far been made, however, of the preceding or accompanying morphologic changes in the peripheral motor nerve endings and muscle fibers. To supply this deficiency, Carev¹ of the Department of Anatomy, Marquette University School of Medicine, has studied the microscopic changes in these peripheral structures. The results promise to be of clinical interest. Eight to twenty days after rhesus monkeys were inoculated intracerebrally with the Lansing strain of poliomyelitis virus (first to

fourth day of paralysis) the animals were chlorotormed, parts of each paralyzed muscle were fixed and stained with a modified gold method. Carefully teased pieces of the impregnated muscles were photographed under low magnification corresponding muscles from normal monkeys being used as controls. The photographs showed a 20 per cent reduction in the number of motor end plates by the first day of recognized paralysis, with residual end plates often retracted into ball-like masses or swollen and granular. By the second to fourth day approximately 50 per cent of the end plates had disappeared with retraction of the completely denuded axis cylinders. The rates of degeneration were not equal in different parts of the same muscle, certain areas showing a total absence of motor end plates. During the early paralytic stages, masses of auripilous inclusion bodies were present at the site of the original myoneural junction of many muscles. These ephemeral inclusion masses usually disappear by the seventh day of paralysis. The end plate studies are being continued on a larger series of experimental animals.

HYPOTRYPTOPHANIC STERILITY

Failure of farm animals to reproduce when placed on low protein diets¹ is of major economic interest. Study of the physiology of this nutritional sterility was facilitated when it was found that female rats placed on a low protein diet also would not reproduce. Albanese and his colleagues² of Johns Hopkins University attribute this reproductive failure to an inadequate intake of certain amino acids. Normal adult male and female rats, for example, were reared on a stock diet and then mated. As soon as vaginal smears showed the presence of sperm, half of the females were segregated in individual cages and fed a tryptophan deficient diet ad libitum, an equal number of inseminated females being maintained as controls on the stock diet. After a gestation period of twenty-two to twenty-four days each normally fed control female gave birth to a litter of from 4 to 10 young (average 7 young). None of the inseminated females placed on the deficiency diet gave birth to young, the deficiency group showing a 100 per cent reproductive failure. A second group of inseminated females were killed on the ninth, eleventh, thirteenth and fourteenth days after being placed on the deficiency diet. Embryos of normal size and appearance were present on the ninth day, but by the fourteenth day almost complete resorption had taken place. From these experiments it would seem that tryptophan is an essential dietary factor for normal gestation in rats and that the available reserves of this amino acid in maternal tissues is depleted within ten days on a tryptophan deficient diet. Whether or not reproductive failure of domestic animals on low protein diet is due solely to tryptophan deficiency, however has not yet been determined.

¹ Carev, E. J. *Am. J. Path.* **15** 237 (March) 1942.

² Food and Fure, U. S. Dept. of Agric. 1939 pp. 46-49.

³ Guilbert, H. R. and Goss, Harold. *J. Nutrition* **5** 231 (1931).

⁴ Albanese, A. A., Randall, R. M. and Hot, L. E., Jr. *Science* **97** 312 (April 2) 1943.

¹ Hellerman, Leslie, Chinard, F. P. and Deitz, V. R. Protein Sulphydryl Groups and the Reversible Inactivation of the Enzyme Urease. The Reducing Groups of Egg Albumin and of Urea. *J. Biol. Chem.* **147** 443 (Feb.) 1943.

² Fildes, Paul. Mechanism of the Antibacterial Action of Mercury. *Brit. J. Exper. Path.* **21** 67 (April) 1940.

³ Smith, Dorothea E., Czarnetzky, E. J. and Mudd, Stuart. The Mechanism of Inactivation of Mercurial Antiseptics by Serum and Its Implications Regarding the Possibility of Intravenous Antisepsis. *Am. J. M. Sc.* **192** 790 (Dec.) 1936.

⁴ Johnson, B. A. and Melenev, F. L. Bacteriological Control of the Preparation of Plasma in Blood Substitutes and Blood Transfusion. Edited by Stuart Mudd and William Thalhimer. Springfield, Ill. Charles C. Thomas, 1942. p. 103.

⁵ Carev, E. J. *Proc. Soc. Exper. Biol. & Med.* **53** 3 (May) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

ARMY

COLONEL JENSEN APPOINTED DEPUTY AIR SURGEON

Col Walter S Jensen of the Medical Corps has been appointed Deputy Air Surgeon of the Army Air Forces, Brig Gen David N W Grant, Air Surgeon, has announced. Colonel Jensen vacated the position of executive officer and was succeeded by Col Henry C Chenault, formerly chief, Professional Division, Air Surgeon's Office. Colonel Chenault's vacancy was taken by Lieut Col George L Ball.

THE ETOUSA SOCIETY OF OPHTHALMOLOGY

The Etousa Society of Ophthalmology was conceived by United States Army ophthalmologists on the occasion of the British Congress of Ophthalmology. Under the direction of Lieut Col Derrick T Vail, a preliminary meeting was held in the London Senior Officer's Mess on May 1 at which Brigadier Sir Stewart Duke-Elder was guest of honor. Plans were made for bimonthly meetings to be held at a different general hospital and it was decided to publish a bimonthly journal.

The first scientific meeting of the society was held at the Second General Hospital near Oxford, England, on July 10, attended by thirty American and two Canadian army officers, Lieut Comdr Edwin Dunphy of the Navy and one civilian, all ophthalmologists. The program arranged by Capt F P Calhoun included five papers in the morning, the climax of which was "War Gas Injuries of the Eyes" by Lieutenant Commander Dunphy. In the afternoon there were exhibits of photographs, drawings and movies with the presentation of 8 cases. The meeting ended with a dinner-dance given by the nurses. The next meeting will be held at the Fifth General Hospital in September.

PHARMACY CORPS ESTABLISHED IN MEDICAL DEPARTMENT

The Seventy-Eighth Congress passed Public Law No 130 establishing a Pharmacy Corps in the Medical Department of the Army to consist of seventy-two officers in grades from colonel to second lieutenant. Appointments in the Pharmacy Corps will be made in the grades of second lieutenant from pharmacists between 21 and 32 years of age who are graduates of recognized pharmacy schools requiring four years of instruction, under such regulations as the Secretary of War shall prescribe. Officers of the Pharmacy Corps will be promoted to first lieutenant after three years' service, to captain after six years' service, to major after twelve years' service, to lieutenant colonel after twenty years' service and to colonel after twenty-six years' service, provided officers in the Regular Army holding commissions in the Medical Administrative Corps on the date this law was enacted shall be transferred to the Pharmacy Corps and commissioned in grade in that corps in addition to the seventy-two officers authorized for the Pharmacy Corps. The act was approved on July 12.

AVIATION PHYSIOLOGISTS

A routine course of instruction for aviation physiologists began on August 2 at the School of Aviation Medicine, Randolph Field, Texas. Among the students enrolled are First Lieuts Aaron Grossman, Morton McMichael, Emanuel Marcus and Frederick S Spiegel.

MORE PHYSICAL THERAPY AIDES WANTED

Physical therapy aides are now serving in 140 army hospitals in the United States and in 32 overseas. The administration of physical therapy requires knowledge of anatomy, physiology and pathology. It includes treatment by means of massage, exercise, electricity, water and various forms of heat. The Medical Department has expanded its training program so that student physical therapy aides are being trained at Walter Reed General Hospital, Washington, D C, Fitzsimons General Hospital, Denver, Brooke General Hospital, Fort Sam Houston, Texas, Army and Navy General Hospital, Hot Springs, Ark, and O'Reilly General Hospital, Springfield, Mo. Over twenty civilian institutions are also cooperating in training physical therapy aides. Many of these courses have been intensified and reduced to courses of six months' duration to meet the emergency. Civilian hospitals conducting such courses are Children's Hospital, Los Angeles, College of Medical Evangelists, Los Angeles, University of California Hospital, San Francisco, Stanford University, Palo Alto, Calif, Northwestern University Medical School, Chicago, State University of Iowa Medical School, Iowa City, Bouve-Boston School of Physical Education, Boston, Harvard Medical School, Cambridge, Mass, Boston University-Sargent College of Physical Education, Boston, University of Minnesota, Minneapolis, Mayo Clinic, Rochester, Minn, Barnes Hospital, St Louis, St Louis University School of Nursing, St Louis, University of Buffalo School of Nursing, Buffalo, Hospital for Special Surgery, New York, New York University, New York, Cleveland Clinic Foundation Hospital, Cleveland, D T Watson School of Physio-Therapy, Leetsdale, Pa, Graduate Hospital of the University of Pennsylvania, Philadelphia, Richmond Professional Institute, Richmond, Va, University of Wisconsin Medical School, Madison.

To be eligible for appointment as a Medical Department physical therapy aide on a military status an applicant must have completed two years in an approved college with emphasis on physical education or biologic science, or graduated from an accredited course in nursing, and, in addition to one of the foregoing, completed a training course in physical therapy approved by the Surgeon General. She must be at least 5 feet tall and weigh 105 pounds, must not have passed her 45th birthday, must be a citizen of the United States or of a cobelligerent or friendly country, must meet the physical requirements as prescribed in Army Regulations and have no dependent children under 14 years of age.

Current Army needs are for 1,000 additional trained physical therapy aides. They are being recruited through the Officer Procurement Service, located in each of the nine service commands of the Army and in the large cities.

On Dec 22, 1942 the President signed Public Law No 828, which brought physical therapy aides into the Army on the same basis as Army nurses. Under the act the aides receive an initial issue of clothing, including six regulation white uniforms and caps, a woolen street uniform, woolen cape, shoes, purse and other articles. The only difference in the appearance of Army nurses and physical therapy aides is in the insignia worn. Army nurses have the letter N on the caduceus while physical therapy aides have the letter PT on the caduceus.

NAVY

NEW DISPENSARY HOSPITAL UNITS

The Bureau of Medicine and Surgery of the Navy has announced that new dispensary hospital units have been completed at six auxiliary airfields in Florida each containing ward facilities for 42 patients x-ray equipment complete laboratory facilities flight surgeons instruments examining room and the usual medical surgical and pharmacy facilities. Three medical and two dental officers will be assigned to each unit.

ISLAND NATIVES GIVE TO RED CROSS

Forty-four chiefs and headmen of native tribes on an island in the Solomon Islands have contributed \$194.62 to the American Red Cross the money having been forwarded through the Navy which has a base on the island. The natives have been treated on a voluntary basis in cases of illness or injury by navy medical officers and exhibit a friendly feeling toward America. Lieut F V Best Chaplain Corps U S N R Conway S C presented the check for \$194.62 to Mr John Carney director of the American Red Cross for the South Pacific Area.

MEDICAL KITS FOR PATROL BOATS AND SUBMARINE CHASERS

The Medical and Surgical Relief Committee of America 420 Lexington Avenue New York, had on August 16 completed the second round of shipments of emergency medical kits to the thirteen naval districts of the Coast Guard for use on patrol boats. The committee has to date distributed three hundred and sixty-two patrol boat sets to the Coast Guard and has donated one hundred and ninety-one similar medical kits to Navy submarine chasers sending them directly to the commanding officer of the individual ships.

The submarine chaser or patrol boat medical kit is a compact case containing essential drugs and instruments and was especially designed by committee physicians to provide emergency treatment to casualties until the ship reaches a base hospital. The kit has proved to be particularly useful when patrol boats pick up shipwreck survivors.

The Medical and Surgical Relief Committee which is celebrating its third birthday is conducted by a nationwide group of physicians for the purpose of sending medical aid to the armed and civilian forces of America and her allies so far the committee has donated \$562,000 worth of medicines vitamins surgical equipment and other supplies to military units needy hospitals, welfare agencies in the war zone and civilian defense posts.

NAVY PROMOTIONS

The following officers have been promoted to captain (MC), U S N

Paul T Crosby
Raymond B Storch
Robert E. S Kelley
Frederic B Brian
Emil J Stelter
Harry J Scholtes
Herbert L Pugh
Oliver A Smith
Edward P Kunkel
E M Harris Jr
Winfred P Danna

Robert M Gillett
Henry D Templeton
Dwight I Wharton
Arthur P Morton
Harvey E Robins
John W Owsley
Arna B Chesser
Lloyd R Newhouse
Thomas F Cooper
Carl M Dumbauld
Walter F J Karbach

The following officers have been promoted to commander (MC), U S N

Charles L Ferguson
Cecil H Coggins
Walter H Schwartz
Alfred W Eyer (detached)

James B Butler
Charles D Bell
Alton R Higgins

POSTHUMOUS AWARD TO LIEUT MILES

The President of the United States on August 5 awarded the Silver Star Medal posthumously to Lieut. (jg) Samuel S Miles (MC), U S N R, for service as set forth in the following citation:

For conspicuous gallantry and intrepidity while attached to Headquarters Company, First Marine Raider Battalion during the attack on enemy Japanese forces on Tulagi, Solomon Islands, on Aug 7, 1942. Knowing that three men of another company had been killed and numerous others wounded Lieut. Miles, with utter disregard for his own personal safety, attempted to cross a zone swept by hostile fire in order to administer first aid to the wounded and isolated men and was killed by the enemy. His great personal valor and heroic devotion to duty were in keeping with the highest traditions of the United States Naval Service. He gallantly gave up his life in the defense of his country.

NAVY PERSONALS

Lieut Comdr Charles F Gell has reported to the Bureau of Medicine and Surgery and has been assigned for duty to the Bureau of Aeronautics in the Navy Department.

Capt. Fred W Muller and Lieuts Martin Buehler and Evan C Stone reported for duty at the Bureau of Medicine and Surgery, Washington, D C, in June.

Lieut Comdr Charles Wheatley (MC), U S N, Ret, has been promoted to the rank of commander on the retired list.

CIVILIAN DEFENSE

SHORT COURSES IN OREGON ON CHEMICAL WARFARE

The Oregon State Medical Society University of Oregon Medical School and Oregon State Defense Council jointly are sponsoring a series of short courses to assist physicians of the state in keeping informed on the latest medical aspects of chemical warfare especially as it pertains to civilians. These courses have been or will be given in Portland Marshfield Salem Eugene and Astoria. Among the subjects of lectures were the symptoms and treatment of lacrimators sternutators systemic poisons and lung irritants and the symptoms physiology pathology and treatment of vesicants. The lecturers were Edward S West Ph D Charles W Wilson M D Charles E Gurney, M D, all of the University of Oregon Medical School and Vernon A Douglas M D director of the Emergency Medical Service Oregon State Defense Council. Some of the initial series of these courses have already been finished. The course at Salem was given at 6:30 p m July 30 at Eugene August 13 and at Astoria August 20. The course at Portland will be given September 27. Additional information can be obtained from the Oregon State Medical Society Medical-Dental Building, Portland, Oregon.

APPOINTMENT OF NEW REGIONAL MEDICAL OFFICERS

The Office of Civilian Defense Washington D C announced on August 9 the appointment of Dr Harrison A Walker Miami Beach Fla as regional medical officer in the Fourth Civilian Defense Region with headquarters in Atlanta to succeed Dr Burt A Dyer who is now living in Custer S D. Dr Walker graduated from Indiana University School of Medicine in 1917 and later was an instructor in surgery at his alma mater. Since 1925 he has practiced in Florida where he was a member of the surgical staffs of the James M Jackson Memorial Hospital in Miami and the St. Francis Hospital in Miami Beach.

Dr Ozro T Woods Dallas Texas has been appointed regional medical officer of the Eighth Civilian Defense Region to succeed Dr Witten B Russ. Dr Woods graduated from the University of Nebraska College of Medicine in 1924 since which time he has been a member of the faculty of Baylor University School of Medicine in Dallas where since 1928 he has been associated with the Dallas Medical and Surgical Clinic.

UNIFORMS OF U S CADET NURSE CORPS

A Molly Parnis wardrobe was selected as the official street uniform of the U S Cadet Nurse Corps by a jury of thirty-two fashion editors of national magazines, newspapers, radio and movies at a luncheon sponsored by the National Nursing Council for War Service at the Waldorf Astoria in New York City on August 16. The winning entrant consists of wool suit,

Maltese cross will be worn on the upper left sleeve of the cadet nurse corps uniform. The Maltese cross, historically associated with the profession of nursing since it was worn by the Knights Hospitalers in the first crusade, is silver against a dark red background.

Assurance that women in essential industries will be released for the United States Cadet Nurse Corps, just as they are for WAC, WAVES, SPARS and Woman Marines, was brought



Insignia of the United States Public Health Service to be worn by members of the U S Cadet Nurse Corps on the beret, the sleeve and the lapel.

top coat, striped cotton summer suit, raincoat and round necked blouses, to be worn with a beret modeled after that of General Montgomery. The basic color is a soft dark gray.

The official insignia of the U S Public Health Service will be worn by the U S Cadet Nurse Corps. The cap device consists of the fouled anchor (denoting distress) of the Navy Medical Corps and the caduceus of the Army Medical Corps, crossed behind the American shield and surmounted by a spread eagle. Buttons and lapel ornaments carry the crossed anchor and caduceus. These insignia were first adopted in 1798. The

the guests by Dr. Parran from the director of the War Manpower Commission. Other guests were Mrs. Frances P. Bolton, Congresswoman from Ohio, Miss Sophie Nelson, vice chairman of the National Nursing Council for War Service, Miss Lucile Petry, director, U S Cadet Nurse Corps, Asst. Surg. Gen. Charles C. Hillman, Army Medical Corps, Mrs. Herbert H. Lehman, Federal Security Agency, Rear Admiral K. C. Mellhorn of the Navy, Col. Florence A. Blanchfield, superintendent of the Army Nurse Corps, and Dr. George Baehr, chief medical officer, Office of Civilian Defense.

FREE TRAINING FOR NURSES

Allotments totaling \$836,461 to six nursing schools offering free nurse training in conjunction with the program of the U S Cadet Nurse Corps were approved on August 16 by Dr. Thomas Parran, Surgeon General, U S Public Health Service. The funds will be used to accelerate the training of nurses for essential civilian and military service during the war emergency. Students receive tuition, fees, stipends and uniforms from these allocations.

The schools to which funds were allotted include:

Children's Hospital School of Nursing, Boston, \$44,960, affecting about 64 nurses in training and 25 to enroll.

Bridgeport Hospital School of Nursing, Bridgeport, Conn., \$88,436, affecting about 80 nurses in training and 80 to enroll.

Christ Hospital School of Nursing, Cincinnati, \$144,068, affecting about 124 nurses in training and 128 to enroll.

Highland School of Nursing, Oakland, Calif., \$161,754, affecting about 171 nurses in training and 80 to enroll.

Presentation School of Nursing in four units with headquarters at Aberdeen, S. D., and units at Sioux Falls and Mitchell, also in South Dakota and Miles City, Mont., \$280,459, affecting about 278 nurses in training and 115 to enroll.

Cook County School of Nursing, Chicago, \$116,784, affecting about 96 nurses in training and 130 to enroll.

The program of the United States Cadet Nurse Corps was approved at the last session of Congress, and its objective is to enroll 65,000 student nurses immediately.

CEILING PRICES FOR SYNTHETIC RUBBER DRUG SUNDRIES

As hot water bottles and combination syringes made of synthetic rubber for use in hospitals have been coming on the retail market for the first time, the Office of Price Administration on August 12 gave them retail selling prices in line with the prewar prices for the same grade when made of crude rubber.

Today's maximum retail price for the Victory line hospital grade molded hot water bottles made of synthetic rubber is \$1.30, retail ceilings for two lower grades, which were in the regulation already, are \$1 and 75 cents respectively. The retail ceilings for three types of the Victory line hospital grade combination syringes range from \$1.65 to \$2.20. Combination syringes of the lower grade, already priced in the regulation, range from \$1.10 to \$1.90. No price increase is represented by the ceilings set for the hospital grade on sales in the retail market because they are at the same level that existed before the war for sales of the same grade when made of crude rubber; these prices have always been above those for hot water bottles and combination syringes of lower grades. The hospital grade is made to more stringent specifications and is more durable than those grades not made especially for use in hospitals.

This amendment became effective on August 19.

ORGANIZATION SECTION

OFFICIAL NOTES

WAR PARTICIPATION COMMITTEE

Meeting held in Washington, D C, July 30-31

Present Members Drs Edward R Cuniffe, Walter F Donaldson chairman, Morris Fishbein, William R Molony and James E Paullin, also Dr Roscoe L Sencovich and Lieut Col Harold C. Lucht

Questions introduced for discussion were

Are present methods of obtaining medical personnel the best that can be devised?

The Procurement and Assignment Service for Physicians, Dentists and Veterinarians is in need of aid in securing replacements in civilian areas

Since it is reported that some 1600 physicians have been discharged from the armed forces are present methods of utilizing physicians discharged from the service satisfactory?

What will be the effect of the present Army and Navy specialized training program on the future of medical education?

Is the Army utilizing physicians to the best advantage?

It was decided that the latter two questions should be introduced at the joint session with the Directing Board of Procurement and Assignment Service and the Surgeon Generals of the Army, Navy and Public Health Service also a request for clarification of the order covering men between the ages of 38 to 44 recently issued by the Adjutant General's Office

Other questions to be raised were agreed on as follows

A What pressures may be agreed on toward encouraging recruitment of medical officers?

B What are the current standards of 'essentiality' and 'availability'?

C Can recruitment be encouraged by further modifying the physical requirements?

D Is there any hope of gaining additional recruits through physical rehabilitation?

E What is the status of men now classified as 'essential in research'?

Formal action was taken by which the War Participation Committee requests the Board of Trustees of the American Medical Association to recommend to the Association's Postwar Planning Committee the development of plans for (1) continuing education including internship residencies and refresher courses for physicians discharged from the armed forces also (2) consideration to be given to the relocation of physicians emerging from the armed forces and such other aid as may be given to ex-service physicians on request It was suggested that the Postwar Planning Committee submit its program for these purposes to the next meeting of the House of Delegates

Subsequently the committee also decided to submit to the Board of Trustees of the American Medical Association for appropriate action the following

That the American Medical Association ask the state and local medical societies to cooperate with the Procurement and Assignment Service in carrying out its obligations to the armed forces and the civilian population in procuring more physicians for the armed forces and effecting a better distribution of physicians

That the Board of Trustees of the American Medical Association utilize the activities of that association such as THE JOURNAL and other divisions in this program

The committee met at 9 a m at the Hotel Statler Present were Drs Edward R Cuniffe, Walter F Donaldson chairman, Morris Fishbein, Roger I Lee, William B Molony and Olin West

The committee reviewed the agenda that had been prepared at the session of the previous evening and approved its presentation to the Directing Board of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians

Following extended discussion the committee adjourned to meet at 11 a m with the Directing Board of the Procurement

and Assignment Service and with representatives of the Offices of the Surgeon Generals of the Army, Navy and Public Health Service, and the Officer Procurement Service in the New Social Security Building

The War Participation Committee offered the full cooperation of the American Medical Association in aiding the procurement of some 5,000 to 6,000 additional physicians required to meet quotas up to Jan 1 1944 Ways and means were discussed for aiding the recruitment of physicians in various areas

During the afternoon joint session a statement was made by the Hon Paul V McNutt, chairman of the War Manpower Commission relative to the needs for physicians Mr McNutt expressed his appreciation of the work of the Directing Board of the Procurement and Assignment Service and of the American Medical Association He felt that the medical profession was the only group authorized to conduct its own recruitment and the safeguarding of professional services in civilian life and that the task had been well done He discussed also proposals for aiding the procurement of physicians during the remainder of the year as well as many of the questions prepared by the Committee on War Participation

OBSTETRIC AND PEDIATRIC CARE FOR WIVES AND CHILDREN OF ENLISTED MEN

[See editorial this issue page 1251]

[Letter sent by Dr George H Kress, secretary-editor, California Medical Association, Aug 6, 1943]

Dear Doctor West

We continue to be much interested in the Federal Children's Bureau Plan

We have noted the following articles in THE JOURNAL

Maternity Care for Wives of Enlisted Men THE JOURNAL July 17 p 816
Daily E F Medical and Hospital Maternity and Infant Care *ibid* July 31 p 945

I am writing to ask if any other articles appeared in THE JOURNAL on the subject, and if so, will you kindly send me the references?

Thanking you for your prompt attention to this,

Cordially yours,

GEORGE H KRESS, M D, San Francisco

[Reply of Dr Olin West, Secretary, American Medical Association sent August 10]

Dear Doctor Kress

Your letter of August 6 was received on August 9, since which time I have had prepared a list of references to items pertaining to obstetric and pediatric care for the wives and children of service men that have appeared in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

I presume you know that the program of the Children's Bureau for providing obstetric service was initiated in the state of Washington in 1941 and was extended to other states beginning in August 1942

In the Federal Legislative Bulletin No 19 of our Bureau of Legal Medicine and Legislation, dated Sept 1 1942, there was a three page discussion of legislation introduced at the request of the President of the United States proposing an additional appropriation for the Children's Bureau Part of this appropriation was to be used to provide maternity services for the wives of service men This bulletin was sent to the officers of all state medical associations

On page 47 of THE JOURNAL for Sept 5 1942 there appeared an editorial comment on the two bills that had been introduced at the request of the President It was pointed out in the editorial comment that part of the appropriation provided for in the bills was to be used for maternity care for the wives of service men In the same issue of THE JOURNAL, on page 58,

there was a brief reference to the introduction of these two bills, neither of which was enacted

In *THE JOURNAL* for Nov 14, 1942 on page 846 there was an item under the title "Medical Care for Wives and Infants of Men in Military Service" in which reference was made to the program of the Children's Bureau and to the fact that funds had been set aside by the bureau from its appropriation for the fiscal year 1943 in the amount of \$198,000

In *THE JOURNAL* for Nov 21, 1942 on page 974 there was a news item descriptive of the plan being put into operation in the state of Missouri for providing medical and hospital obstetric and pediatric care for the families of men serving in the armed forces

On page 603 of *THE JOURNAL* for Feb 20, 1943 reference was made to a supplemental estimate that had been submitted to the Seventy-Seventh Congress by the President asking for an appropriation of \$1,200,000 to be used by the Children's Bureau in making grants to states to provide medical, nursing and hospital maternity and infant care for wives and babies of enlisted men of certain grades serving in the armed forces. In the Federal Legislative Bulletin No 25, dated March 1, 1943 reference was made to this supplemental estimate that had been submitted to Congress and to the fact that the House Committee on Appropriations had refused to include the estimate in the deficiency appropriation bill, H R 1975

On page 872 of *THE JOURNAL* for March 13, 1943 reference was made to a bill introduced by Representative Keefe, H R 2041, proposing to authorize an appropriation of \$6,000,000 for each fiscal year during the war and for six months thereafter to provide obstetric and pediatric care for the wives and infants of service men. This bill, as I am informed, is still in the hands of the House Committee on Education and Labor

In the Federal Legislative Bulletin No 25, dated April 5, 1943 reference was made to the fact that when the deficiency appropriation bill, H R 1975, came before the Senate for consideration there was included in the bill the appropriation requested by the President, and that the House thereafter agreed to this appropriation and the President signed the bill. In this same issue of the Bulletin reference was made to the bill introduced by Representative Keefe

On page 1231 of *THE JOURNAL* for April 10, 1943 there was an item under the heading "Medical Care for the Wives and Children of Enlisted Men" which referred to the appropriation of \$1,200,000 that had been made available for obstetric and pediatric services, to the regulations that had been promulgated by the Department of Labor under date of March 26 for the allotment of this money and to the nature of the testimony given by the chief of the Children's Bureau before a subcommittee of the House Committee on Appropriations in support of the request for the appropriation

On page 1379 of *THE JOURNAL* for April 24, 1943 there appeared in the Report of the Board of Trustees a reference to the federal program here under discussion

On page 382 of *THE JOURNAL* for June 5, 1943 there was an item under the title "Maternity Care for Wives of Certain Grades of Enlisted Men" summarizing the extent to which the plan had been put into operation

There appeared in *THE JOURNAL* for June 26, 1943 on page 628 a reference to H R 2935, the Labor Department-Federal Security Agency appropriation bill for the fiscal year ending June 30, 1944, which contained at that time provision for the appropriation of \$4,000,000 for the use of the Children's Bureau in carrying out the program under discussion. This sum was increased before the appropriation bill was enacted to \$4,400,000

On page 621 of the same issue of *THE JOURNAL* reference was made to the action taken by the House of Delegates of the American Medical Association in approving generally the action of the federal government in making funds available for maternity and infant care for the wives and infants of enlisted men but recommending that allotments be paid directly to the wives

In the Federal Legislative Bulletin No 28 under date of July 15, 1943 reference was made to the enactment of the Labor Department-Federal Security Agency appropriation bill authorizing the appropriation of \$4,400,000 for grants to states to provide obstetric and pediatric care

On page 816 of *THE JOURNAL* for July 17, 1943 there appeared a statement which was in the nature of a summary of the report issued by the Secretary of Labor on the progress made in the several states in carrying out the program of the Children's Bureau

In *THE JOURNAL* for July 31, 1943, beginning on page 945, there appeared a special article by Dr Edwin F Daily, director of the Division of Health Services of the Children's Bureau. There have been other references in special legislative bulletins sent to all state medical associations by our Bureau of Legal Medicine and Legislation pertaining to the proviso

included in the appropriations bill H R 2935 which places certain restrictions on the Children's Bureau

There seems to have developed an impression on the part of many that the plans of the Children's Bureau for providing obstetric and pediatric services for the wives and infants of enlisted men were not initiated until March 18, 1943, on which date the President signed the deficiency appropriation bill in which was included provision for the appropriation of \$1,200,000 to finance the program of the Children's Bureau for the remainder of the fiscal year. The fact is that the program of the Children's Bureau was initiated in 1941 after the department of health of the state of Washington had petitioned the Children's Bureau for financial assistance to help in providing obstetric and pediatric service for the wives and children of enlisted men stationed at Fort Lewis. That was the first project started, and no other similar project was put into operation until August 1942. In the time between August 1942 and February 1943, programs quite similar to the one initiated in the state of Washington became effective in twenty-seven states, and the Children's Bureau made available the sum of \$390,177 to be used in financing the programs in those states. These funds were set aside by the bureau from the regular appropriation authorized for maternal and child health services under part 1 of title V of the Social Security Act. Our information is to the effect that other states than the twenty-seven referred to made application for funds to be similarly used, which could not be granted because the bureau had no additional funds available

In view of the fact that at least twenty-seven states collaborated in the program of the Children's Bureau over a considerable period of time, it is a little surprising that no state medical association found the program so objectionable as to induce the filing of any complaints with the American Medical Association. I have heard that the program was approved in some states, though I have no official advices to that effect. However, articles appeared in some state medical journals that were entirely favorable to the bureau program. In the *Journal of the Medical Society of New Jersey* for November 1942 there appeared a two page statement in which it was stated that the Medical Society of New Jersey had agreed to participate in the program and the reasons for that decision were given. A somewhat similar statement appeared in the *Journal of the Missouri State Medical Association* for November 1942

I presume that by this time you have received a release from our Bureau of Legal Medicine and Legislation pertaining to the opinion of the Attorney General of the United States with respect to the effect of the provisos that were included in the appropriation bill for the Department of Labor, of which the Children's Bureau is a part

It will no doubt interest you to know that I had a visit a few days ago from the health officer of one of our larger Middle West states, who stated that applications for obstetric and pediatric service for the wives and children of soldiers were coming into his office at the rate of one thousand a month and that the tentative estimate indicated that the cost of such service in that one state under the Children's Bureau program probably would amount to \$1,250,000 a year. In that particular state, I understand, the fee for obstetric service including antepartum and postpartum care will be fixed at \$45. Our visitor made a very interesting point when he stated that in many if not in most instances the wives of soldiers demand that they have the services of the best qualified obstetricians, who are already overwhelmed with work, and he expressed a fear that the obstetricians would be put in a bad light if they refused to serve the wives of soldiers under the Children's Bureau-State Health Department program even though their own private practice demanded every minute of their time

If this service is to cost a million and a quarter in one state, the appropriation of \$4,400,000 will be exhausted very rapidly

With most cordial good wishes, I am

Very sincerely yours,
OLIN WEST

[Letter from Dr George H Kress, secretary-editor, California Medical Association, sent Aug 17, 1943]

Dear Doctor West

Many thanks for your courtesy in sending to me your letter of August 10 with its information concerning references in *THE JOURNAL* on maternity-pediatric care

The letter was received too late to be of use in my August editorials for *California and Western Medicine*

I am very glad to have this information for our files

Cordially yours,
GEORGE H KRESS, M D, Secretary-Editor

Medical News

(PHYSICIANS WILL CO-OPERATE BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

COLORADO

First Case of Typhus—On July 3 a Denver physician reported a case of typhus. According to the Colorado State Board of Health *Bulletin* this is the first instance on record in which typhus has occurred in Colorado. The patient was a man who has been a long time resident of Denver with a history of not leaving the city for a considerable period of time.

University News—Dr Lloyd J Florio, associate professor of public health and laboratory diagnosis, University of Colorado School of Medicine, Denver, has been granted a leave of absence to study tropical medicine in Central America under a grant from the Markle Foundation. Newspapers reported on June 2 Dr. John M Lyon and Robert W Davis have been appointed assistant professors of psychiatry at the school and Dr Merrill C Jobe named assistant professor of surgery, all of Denver.

FLORIDA

Annual Graduate Course—The eleventh annual graduate short course for physicians was held in Jacksonville, June 21-26 under the auspices of the state medical association. The instructors were:

Dr Robert W Wilkins, Boston, Medicine
Dr Alton Ochsner, New Orleans, Surgery
Dr Samuel F Ravenel, Greenboro, N C, Pediatrics
Dr M Pierce Rucker, Richmond, Va, Obstetrics
Dr Clayton T Beecham, Philadelphia, Gynecology
Dr Arthur A Deibert, Hot Springs, National Park, Ark, Venereal Diseases

IDAHO

Hospital News—Plans are being considered to turn over to the Army and Navy the partly completed state tuberculosis hospital at Gooding.

State Medical Meeting—The fifty-first annual meeting of the Idaho State Medical Association will be held at the Owyhee Hotel, Boise, August 30-31. The tentative program includes the following speakers:

Lieut. Col Frank B Queen, National Guard, Penicillin Laboratory, Diagnosis of Tropical Diseases
Lieut. Col James S Sweeney, M C A U S, Clinical Interpretation of Blood Pressure, Peptic Ulcer Syndrome
Lieut. Col Henry G Hollenberg, M C A U S, Recent Advances in Vascular Surgery, The Acute Surgical Abdomen
Major Max T C Schmitzer, M C A U S, Diagnosis and Treatment of Acute Head Injuries and Peripheral Injuries
Major Ernest E Myers, M C A U S, Pitfalls in Treatment of Fractures, Amputations
Lieut. Col Oliver B Chamberlain, M C A U S, Concepts of Psychosomatic Medicine, Acute Episodes Simulating Psychoses

ILLINOIS

New Species of Mosquito Found in State—Among more than 200,000 mosquitoes collected and identified by sanitary engineers and entomologists connected with Illinois projects for malaria control in war areas there were found four species that had never been known to exist in the state. According to the *Illinois Health Messenger*, among them was *Aedes aegypti*, the species that transmits yellow fever.

Chicago

Course in Otolaryngology—The department of otolaryngology of the University of Illinois College of Medicine will conduct the second of its series of short refresher courses the program to include one week of didactic instruction, September 27-October 2, and three days of clinical conferences, October 4-6. The fee for the course will be \$50. Registration will be by application through the department of otolaryngology at the medical school.

Grant for Research in Penicillin—The Schenley Distillers Corporation through its president Louis Rosenstiel has made available to Northwestern University Medical School a grant for research on penicillin to include the production of the product and its application in cases of disease. A special

committee has been established to control this research. The committee includes Chester J Farmer, M A, chairman, Dr Alexander A Day, Dr Sumner L Koch, Dr Walter S Priest, Henry B Bull, Ph D, Dr Guy P Youmans and Mr Samuel E Thomason.

New Pharmacology Department at Loyola—With the appointment of Dr Amedeo S Marrazzi, assistant professor of pharmacology, New York University College of Medicine, effective September 1, as professor and head of the department of pharmacology, a new pharmacologic unit will be launched at Loyola University School of Medicine. Pharmacology and the department of physiology have been operating under the direction of Dr Theodore Boyd, who under the new arrangement will continue as professor and head of the department of physiology. Dr Edward Piszczek, health commissioner of Cook County, has been made acting chairman of the department of bacteriology and public health.

KANSAS

Personal—Dr Samuel A Mallison, El Dorado, has resigned as health officer of Butler County to become superintendent of the Southern Illinois Health District with offices in Harrisburg, Ill.—Dr William T Grove, Eureka, has been appointed health officer of Greenwood County to succeed Dr Walter S Moonlight. Eureka resigned.—Dr Charles W Jones, Olathe, has been appointed a member of the state board of medical registration and examination to succeed Dr James E Hanshall Osborne.

Courses on Lung Disease—On August 28 a postgraduate course in lung disease will start in Kansas City under the auspices of the University of Kansas School of Medicine, Lawrence-Kansas City, the state board of health, the Kansas Tuberculosis and Health Association and the state medical society. The program will be offered in Parsons on August 30, Wichita September 1, Salina September 2 and Emporia September 4. Three sessions will be held in each town. Drs Carl C Birkelo, Detroit, and Henry C Sweany, Chicago, will be the instructors.

KENTUCKY

Rocky Mountain Spotted Fever—One death from Rocky Mountain spotted fever occurred in Bracken County early in August, newspapers report. In the last three years 3 cases of the disease have appeared in the county, all in children, 2 of which were fatal.

LOUISIANA

Dr Trufant III Wins Walter Reed Award—Dr Samuel Adams Trufant III, who graduated this year at the Tulane University of Louisiana School of Medicine, New Orleans, has been presented with the Walter Reed Memorial Award for his thesis entitled 'Sylvatic Plague'. The award is given by the Louisiana State Medical Society to a senior student at Tulane or the University of Louisiana School of Medicine. Ultimately a medal will signify the award but thus far, since the first presentation in 1942, the prize has been represented by a certificate of award.

Dr Duncan Named Professor of Anatomy—Donald Duncan, Ph D, professor and head of the department of anatomy at the University of Buffalo School of Medicine, Buffalo, has been appointed professor of anatomy at Louisiana State University School of Medicine, New Orleans. Dr Duncan received his Ph D at the University of Minnesota, Minneapolis, in 1929. Later he served for a time at the University of Utah, Salt Lake, as assistant professor of anatomy and at the University of Texas Medical Branch, Galveston, as associate professor of anatomy. His appointment to the Louisiana faculty will take effect on October 1.

MAINE

Personal—Dr Emanuel Levy, chief of the medical service of the Veterans Administration Facility, Bronx, N Y, has been appointed chief medical officer at the Veterans Administration Facility in Togus.

Medicolegal Officers Named—New officers of the Maine Medico-Legal Society, elected at the annual meeting in Augusta, June 20, are Dr Delbert M Stewart, South Paris, president; Benjamin Butler Farmington, vice president; Dr George L Pratt, Farmington, secretary; and Dr Walter S Sturckfield, Showhegan, treasurer.

MASSACHUSETTS

Bequest for Hospital Laboratories—Brooks Hospital, Brookline, will receive \$300,000 and the residue of the estate for the maintenance of its laboratories through a provision in the will of the late Miss Alice E. Sias, Boston. The hospital will also receive \$25,000 for general use. The bequest for the laboratories, which were established by Mrs. Sias several years ago as a memorial to her husband, will be set up in a trust fund.

Dr. Hale Retires at Harvard—Dr. William Worth Hale, since 1918 associate professor of pharmacology and assistant dean of the faculty of medicine, Harvard University, Boston, will retire from his teaching activities at the university on August 31. Dr. Hale, who graduated at the University of Michigan Medical School, Ann Arbor, in 1904, served for a time as assistant surgeon with the Granite Mining Hospital, Montana, assistant in pharmacology at the University of Michigan and from 1908 to 1913 as assistant pharmacologist with the U. S. Public Health Service. He joined the faculty of medicine at Harvard in 1913 as assistant professor of pharmacology. He will continue as assistant dean of the faculty of medicine and chairman of the committee on admissions. This spring students of the graduating class dedicated their yearbook "The 1943 Aesculapiad" to Dr. Hale.

MICHIGAN

Chapter of Soviet Medical Society—The Detroit chapter of the American-Soviet Medical Society was launched at a meeting, August 18, at which Dr. Vladimir V. Lebedenko of the department of surgery, First Moscow Medical Institute, was the principal speaker, discussing his experiences with Soviet war medicine. Dr. Warren B. Cooksey, head of the Michigan Blood Bank, presided. The American-Soviet Medical Society was recently organized to stimulate the exchange of medical information between the United States and the Soviet Union (THE JOURNAL, June 12, p. 457).

Society Asked to Curb Advertising Clinics—A drive to stamp out advertising clinics, sanatoriums and such like which profess to be able to "cure everything, but which in reality are nothing but unadulterated fakers," was announced on July 3 by George F. Addes, secretary-treasurer of the U. A. W.-C. I. O. and director of its medical research, health and accident department, according to the Detroit News. In letters to the Michigan State Medical Society and the Wayne County Medical Society, Addes asked that they make investigations and "take immediate steps to stop the many trick devices that are being used to lure money away from the workers through false pretenses."

NEW JERSEY

Dr. Vail Observes Ninety-Eighth Birthday—Dr. William H. Vail, Newark, the oldest living alumnus of Princeton University, celebrated his ninety-eighth birthday, August 4. Recently the university took title to the house occupied by Dr. Vail so that he could live there "as long as he may desire" (THE JOURNAL, June 19, p. 552). Dr. Vail, who was a member of Princeton's class of 1865, is also said to be the oldest living alumnus of the College of Physicians and Surgeons of Columbia College, New York, where he graduated in 1869.

NEW YORK

Personal—Dr. Richard Nauen, senior tuberculosis physician of the New York State Hospital, Ray Brook, has been appointed tuberculosis control director of Cattaraugus County and superintendent of the county sanatorium.—Dr. Nicholas J. Colao, Peekskill, was chosen president of the city board of education, July 6, for the ensuing year.

New York City

Venereal Disease Activities—The bureau of social hygiene of the New York City Department of Health now has facilities for darkfield examinations for syphilis at seventeen social hygiene diagnostic centers. The service is offered without charge to physicians to aid in the diagnosis of early syphilis. New York physicians are eligible for the clinical refresher course in modern methods of diagnosis and treatment of venereal disease conducted during the summer at the city department of health under the direction of Dr. Louis Chargin. The bureau of social hygiene is also making available a number of pamphlets designed to keep the general practitioner up to date on modern methods of the diagnosis and treatment of venereal diseases.

Graduate Courses in Neurology and Psychiatry—Graduate courses are offered in neurology and psychiatry by Columbia University College of Physicians and Surgeons and cooperating institutes, beginning October 4 and ending December 10. These courses are designed for physicians interested in neurology and psychiatry. In addition to the clinical survey, they aim to cover, in part, the sociological and educational fields. Among these sources of clinical material are the psychiatric and neurologic outpatient departments of the Vanderbilt Clinic, the Psychiatric Institute and Hospital and the Neurological Institute of New York. The courses consist of lectures, laboratory work, demonstrations and practical clinical courses. Any individual course (except clinical assignments in neurology and psychiatry) may be taken singly. Arrangements may be made for an extensive course in neuropathology. The major part of the time is spent in practical laboratory work in the department of neuropathology of the psychiatric institute. Information may be obtained by applying to the Dean of the Faculty of Medicine, Columbia University, 630 West 168th Street, New York 32.

NORTH DAKOTA

Changes in State Health Department—Dr. Mary E. W. Soules, assistant director of maternal and child hygiene for the North Dakota State Department of Public Health, Bismarck, has been named director, effective August 1, to succeed Dr. Robert G. White, who has been appointed director of the Burke-Momot-Ward district health unit. Dr. George F. Campana, formerly assistant district state health officer in New York, and recently of Albany, N. Y., has been appointed state epidemiologist and director of the division of preventable diseases for North Dakota.

OREGON

State Medical Meeting—The Oregon State Medical Society will conduct its annual meeting at the University of Oregon Medical School, Portland, September 4-5. The banquet will be in the Benson Hotel, Sunday evening. Many officers from the armed services will participate in the program, which will cover tropical medicine, industrial medicine and military medicine for civilian and combat areas.

SOUTH CAROLINA

Refresher Course—The Medical College of the State of South Carolina, Charleston, will conduct a refresher course for practicing physicians, November 3-4. The program was inaugurated last year at the request of alumni. Those participating in the course will include Drs. Leroy U. Gardner, Saratoga Lake, N. Y., Alfred Blalock, Baltimore, Roy R. Kracke, Emory University, Ga., Charles Christian Wolferth, Philadelphia, Virgil P. W. Sydenstricker, Augusta, Ga., John Theodore King, Colonel, M. C. A. U. S., Harrison F. Flippin, Philadelphia, and George W. Thorn, Boston.

Dr. Boozer Resigns as Secretary of State Board—Dr. Albert E. Boozer, Columbia, has resigned as secretary of the South Carolina State Board of Medical Examiners, a position he has held since 1911. He has been a member since 1909. The board recently adopted a resolution acknowledging his able services. Dr. Nathaniel B. Hevward, Columbia, is the new secretary of the board. Dr. Boozer graduated at the University of Pennsylvania School of Medicine, Philadelphia, in 1892. He began private practice in Columbia the same year and was on the first board of physicians of Columbia Hospital. A few years ago he resigned as medical director and examiner for the Carolina Life Insurance Company, a position he held for about twenty years. According to the state medical journal, Dr. Boozer was assistant medical referee with the Mutual Life Insurance Company and the medical referee of the Missouri Life Insurance Company, serving as examiner for twenty-five other life insurance companies.

TEXAS

Community Honors Physician—Dr. Thomas E. Winford, Dallas, was presented with the W. H. Adamson child welfare trophy for 1943 on July 13. The award, which is given annually to the person in Oak Cliff adjudged to have done the most child welfare work during the previous year, went to Dr. Winford for his work for underprivileged children in the free eye, ear, nose and throat clinic operated at the Dallas Methodist Hospital under the auspices of the Oak Cliff Lions' Club.

Physician Sentenced for Draft Evasion—Federal Judge T. Whitfield Davidson overruled a motion for a suspended sentence for Dr. Lawrence E. Arnold, Dallas, who is under a two-year sentence for draft evasion, newspapers reported. It was

stated that the superintendent of a local hospital and numerous physicians joined in the plea for a suspended sentence because of the service that Dr. Arnold has been performing in treating patients since his sentence and since the departure of so many of the local physicians for the armed services.

WEST VIRGINIA

New Education Plan Begins at West Virginia University—The fall term of the West Virginia University School of Medicine is scheduled to start September 27 and end December 17. Twenty-five sophomore students, including two women, will complete their work at the end of the term. Of this number, twenty will immediately transfer to the Medical College of Virginia, Richmond, under the provisions of the medical education plan recently agreed to by both schools (*THE JOURNAL*, March 13, p. 877). The other five members of the class have been accepted at the medical schools of the University of Pennsylvania, University of Cincinnati, Temple University and Jefferson Medical College.

WISCONSIN

Found Guilty of Improperly Using Title "Doctor"—Fred Neukom, 63 Wmota, Minn., was freed of a charge of practicing medicine without a license in the state of Wisconsin but was found guilty of improperly using the title "doctor" by a municipal court jury in Racine on June 4. According to the *Wisconsin Medical Journal*, the charge under which Mr. Neukom was tried was brought as the result of a complaint signed by an investigator for the state board of medical examiners, who had testified that he had been treated by Mr. Neukom on January 27.

Advisory Committee Named to Study Problems of State Institutions—At the request of the state board of public welfare, Dr. Russell M. Kurten, Racine, president of the State Medical Society of Wisconsin, appointed an advisory committee to meet with the board members and study existing problems and policies affecting the state institutions. The new advisory committee made up of Drs. Horace Kent, Tenney Jr. and Henry L. Greene, Madison; Elwood W. Mason and John L. Garvey, Milwaukee; and Wayne A. Munn, Janesville, held its first session on June 24 in Union Grove.

Personal—Dr. Albert Popp, Milwaukee, has been appointed a police physician and surgeon, succeeding the late Dr. David D. Michigan. Dr. Edward P. Evans, Milwaukee, was guest of honor at a luncheon recently marking his retirement as medical examiner of the Equitable Life Assurance Society of the United States after eighteen years in the position. Dr. Erwin C. Cary, Reedsville, has been reappointed health officer for the village of Reedsville and also for the towns of Rockland and Franklin. He was recently reelected president of the Manitowoc County Health Officers' Association.

Waukesha Springs Sanitarium Ends Service—The recent retirement of Dr. Byron M. Caples as head of the Waukesha Springs Sanitarium and the sale of part of the sanatorium property to Carroll College, Waukesha, marks the end of the operation of the institution. The sanatorium was established by Dr. Caples in 1898. He plans to continue his practice in Waukesha and to run a 30-acre farm on the outskirts of the city. The transfer of the property to Carroll College was brought about when the college experienced a housing shortage after cadets of the army air corps had been assigned to the college.

GENERAL

Reprints on Psychosomatic Medicine and Psychiatry Available—The Josiah Macy Jr. Foundation, New York, has made it possible for the National Committee for Mental Hygiene to distribute a limited number of reproductions or reprints of selected scientific articles bearing on war problems in the field of psychosomatic medicine and psychiatry to medical officers in the armed forces of the United Nations. Medical officers who wish to receive such articles should notify the National Committee for Mental Hygiene, 1790 Broadway, New York 19.

Chinese Medical Journal Resumes Publication—The *Chinese Medical Journal*, which suspended publication when the Japanese took over the offices of the Chinese Medical Association in Peking in December 1941, is now being issued at P. O. Box 6096, Washington, D. C., as a quarterly since printing and circulation facilities in Free China are inadequate. However, the medical profession in China still has its Chinese edition. The publication of the journal in the United States has been made possible by the assistance of the Chinese Foundation.

Microfilm and Slide Hand Viewer—A hand viewer for reading, strip films and viewing 2 by 2 slides is now in production and will be on the market within a few weeks. This viewer was designed especially for the use of the medical services of the armed forces through the efforts of the Army Medical Library. Full information with regard to obtaining the viewer, which magnifies approximately ten times and which is definitely in the low price class, will be supplied on request by addressing the Photoduplication Service, Army Medical Library, 7th and Independence Avenue S.W., Washington 25, D. C.

Eye Health and Safety News—The National Society for the Prevention of Blindness is now publishing a bimonthly newsletter entitled *Eye Health and Safety News* for free distribution among physicians, nurses, public health officials, social workers, educators, safety engineers, and others who are professionally interested in some aspect of sight conservation. Each issue of the *News* contains items on developments and new projects in the campaign for prevention of blindness. A regular feature is the reporting of activities in this field carried on by official voluntary state agencies. Those who are interested in receiving this new publication regularly are invited to write to the society, 1790 Broadway, New York 19.

Conference on Tuberculosis—The Mississippi Valley Conference on Tuberculosis and the Mississippi Valley Trudeau Society will hold their thirtieth annual meeting at the Edgewater Beach Hotel, Chicago, September 8-9, under the presidency of Dr. Charles H. Lerrigo, Topeka, Kan., and Dr. Frank L. Jennings, Indianapolis, respectively. In addition to general sessions, there will be discussions on health education, war problems, rehabilitation and an x-ray conference. Among the speakers will be:

Dr. George F. Parker, Greencastle, Ind., College Health Services and the War;
Clarence M. Sharp, surgeon, U. S. Public Health Service Reserve, Bethel, Me., Examination of Industrial Workers;
Dr. Adolph G. Kammer, Chicago, Tuberculosis in Industry;
Dr. Everett K. Geer, St. Paul, Transtent Infiltration of the Lung;
Parenchyma Associated with Eosinophilia;
Lieut. Comdr. Horatio B. Sweetser Jr. (MC), U. S. Naval Reserve, Rheumatic Fever in Young Adults;
Lieut. Col. Esmond R. Long, M. R. C., The Discovery and Disposition of Cases of Tuberculosis in the Army of the United States.

LATIN AMERICA

The Hospital Infantil—The first children's hospital built by the Mexican government was dedicated in Mexico City on May 29. The second hospital to be completed in the new medical center now under construction, the unit will be used as a teaching hospital for the medical school of the National University and has lecture rooms, class rooms and student laboratories located in the building. Of concrete construction, the building has six floors with a capacity of 550 beds for children of all ages from newborn infants up to 14 years of age. Facilities and services of the hospital include an outpatient clinic with adjoining laboratories for special diagnostic services, inpatient facilities for pediatrics, orthopedic surgery, general surgery, otolaryngology, ophthalmology, neurology and dermatology services, as well as special provisions for physical therapy, occupational therapy and educational and social services. One unit has been specially designed for the care of premature infants. There are also a breast milk station and a well equipped milk laboratory. The department of nutrition, which is responsible for the preparation of food for child patients and employees, is staffed by persons trained in dietetics and is furnished with mechanical refrigerators and other modern equipment. Experienced educational therapy workers will teach invalid or crippled children occupations that they will be able to continue after leaving the hospital, instruct them in their school subjects so that they need not fall behind and help them in other ways to spend the time in the hospital usefully and pleasantly. Dr. Federico Gomez, Mexico City, is in charge of the hospital and Dr. Juan Farill has been named chief of the orthopedic service.

CORRECTION

Academy of Medicine Receives Endowments—In a news item the *THE JOURNAL*, July 31, page 959, announcing the creation of an endowment in perpetuity at the New York Academy of Medicine by R. Thornton Wilson in honor of his wife, the name should have been Frances Elizabeth Wilson and not Frances Elizabeth Wilson.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 7, 1943

Science and the State

The necessities of war have led to science playing a more important part in national affairs than ever before. In a letter to the *Times* three leading scientists, R. H. Pickard, chairman of the Joint Council of Industrial Scientists, Alexander Findlay, president of the Royal Institute of Chemistry, and Prof. W. L. Bragg, president of the Institute of Physics, endorse the pleas now being made that scientific effort, so effective in the war, shall not be allowed to cease when peace returns but shall be applied to the problems of reconstruction. They object, however, to the exaggerations of many responsible scientists which often accompany reasonable claims. It is sometimes said that if some fraction of the national income was allocated to scientific research and if scientists were given a position of authority in the state, we would find ourselves in "an age of plenty." Such misleading of the community as to its resources can only foster illusions and bring disappointment. While we may hope that the improvement in our material comforts, which has marked the past fifty years, will be continued, it should be remembered that the fruits of research sometimes ripen slowly and that our material resources during the postwar period cannot be vastly greater than those we now possess.

The claim that the scientist as such is entitled to some position of exceptional authority in deciding the policies of governments is one which cannot be accepted in a democratic community. Social problems are too complex to be solved by any one type of mind. But the scientist can give valuable help in solving problems and could profitably be consulted more frequently. No social problem can be solved solely by the methods of science, for other values are involved than material ones.

Armored Vests for American Airmen

Armored vests to protect the crews of bombers of the United States Eighth Air Force against flak splinters and fragments of explosive shells have been designed and manufactured in England. They have already been worn in several raids and the results are regarded as extremely satisfactory. The vest is made of canvas on which are sewn squares of manganese steel so that they overlap slightly, giving complete protection to the chest and the back. An apron section, suspended from the vest by hooks, is also worn, giving cover as far as the knees. The vest and apron are made in two types, full width for men whose duties cause them to stand and tapered for others. The pilot and co-pilot wear a half vest providing protection only in front, since their backs are protected by armor plate fitted to the aircraft. A full vest weighs 16 pounds, a full apron 6½ pounds.

Col. M. C. Grow, surgeon of the United States Eighth Air Force, is responsible for the development of the idea. After months of operations he found that most of the wounded airmen were injured by low velocity missiles. Whereas armor which would stop everything was not practical, he believed that these low velocity missiles could be stopped by light armor. He went to the headquarters of bullet proof vests. He took a designer from this plant and got him to watch an experienced combat crew in a grounded flying fortress going through the motions of firing the guns and doing their respective jobs. In addition to affording protection, the armor had to meet three

specifications. It must not hamper operational efficiency, it must not be so heavy as to produce fatigue and it must be shed quickly in an emergency. The London firm, which has specialized in sword making since 1772, produced an experimental model that met all these specifications. Colonel Grow had the vest tested with a 0.45 caliber army pistol at 30 feet. The bullet did not penetrate even at the joints where the metal plates overlap. Colonel Grow is now working on a close fitting helmet having the same flexibility that the unjoined steel plates give the vest.

Diphtheria as a War Danger

The danger of invasion by diphtheria is mentioned in a report by the Medical Research Council. The history of diphtheria epidemics suggests that our epidemiologic invasion lines run from the south of Europe, and this has to be borne in mind now that North Africa has become a theater of war. Advocating immunization on the widest scale, the report says that, although its value was known almost a generation ago, diphtheria has continued to be a major cause of mortality, and there is reason to think that in certain sections of the population the danger has increased. Though there has been a decline of 60 per cent during the past forty years, it is short of what has been accomplished elsewhere. The mortality is declining more quickly at preschool than at school age. This is explained by the fact that in overcrowded areas the families have become smaller and less crowded owing to improved housing. Hence the children are less exposed to infection in their preschool life but more contract the disease in school life. It has been estimated that 2 to 5 per cent of London school children are carriers of virulent diphtheria organisms. Why they remain healthy in other respects has not been explained, or why some clinical cases always remain in the carrier state.

Postwar Blood Transfusion

The British Red Cross Society announces in its annual report its willingness to organize a national blood transfusion service to come into operation with the end of the war. A much greater demand for blood donors than ever known before in times of peace is expected to arise immediately after the war. The present emergency blood supply depots may cease to function and their places will have to be taken by local services. Conditions as uniform as possible will be necessary, so that donors may be able, when removing to another district, to transfer to the new service with the certainty of finding the same standard of skill, consideration and protection. For this a national organization such as exists in most other countries is necessary. Conferences have been held, at one of which representatives of the fighting services attended, to prepare the basis for this national service.

At the request of the Ministry of Home Security both men's and women's detachments of the Red Cross have been given instruction at military airdromes in the technicalities of giving first aid to crews of crashed aircraft. They have been taught the method of approaching the aircraft, how to get at trapped members of the crew, methods of releasing belts and harnesses, the types of rescue tools carried in the aircraft, where to look for the tools and how to use them, and fire risks. Already lives have been saved by this rescue service.

Mr. R. Watson-Jones Transfers to London

Mr. R. Watson-Jones, orthopedic surgeon, of Liverpool, is to transfer to London. He has accepted the invitation of the London Hospital to join the honorary staff as director of the new Accident and Orthopedic Department. The transfer to London of provincial surgeons has always been a very rare event.

Buenos Aires

(From Our Regular Correspondent)

April 16, 1943

Hypertensive Substance

Drs L F Leloir, J M Muñoz, A C Triguero, E Braun Menéndez and C Fariolo all of Buenos Aires, recently reported the results of investigations which were carried on with the aim of ascertaining the origin and mechanism of formation of hypertensive substances. Hypertensinogen is a globulin of the blood plasma which is obtained by a process of fractional precipitation in plasma by means of ammonium sulfate. These investigators do not accept Page and Helmer's theory concerning the presence of hypertensinogen in blood globules. Renin has an effect on hypertensinogen with consequent formation of hypertensin. The seat of origin and mechanism of destruction of hypertensinogen were unknown. Page and his collaborators believe that both the formation and the destruction of the substance occur in the liver and that the mechanism of destruction is similar to that of dextrose. Leloir confirms Page's statement but objects to Page's technique as the latter's studies were made on hepatectomized animals with kidneys which constitutes a cause of error. Leloir and his collaborators removed several organs which permitted them to identify with certainty the place of formation of the substance. They employed Muñoz's technique for determining the substance in citrated and centrifuged blood. Leloir's method was used for measuring the amount of renin. The authors found that the amount of hypertensinogen does not change in animals with abdominal evisceration. In animals in which hypertensinogen disappeared from the plasma because of an injection of renin the removal of the abdominal viscera with the exception of the liver results in reappearance of hypertensinogen in the plasma in normal quantities. Hypertensinogen is rapidly resynthesized if a plasmogenesis is performed in nephrectomized dogs but resynthesis does not occur after evisceration. These investigators conclude that hypertensinogen is formed and synthesized in the liver. The substance used by the liver in synthesizing hypertensinogen is not known. When the amount of hypertensinogen in the plasma is highly concentrated the liver stops production of the substance. Renin changes hypertensinogen into hypertensin which is eliminated through the kidney.

Congenital Tuberculosis

Dr Mario Wassmann made observations on 737 tuberculous women who were delivered in the Maternity Department of the Hospital Tornu of Buenos Aires. His observations extended from 1934 to 1942. In the whole group of infants of 737 tuberculous mothers 11 died from congenital tuberculosis (1.46 per cent). Probably the figures would have been higher if necropsy could have been performed systematically. The majority of children from tuberculous mothers grow normally. Congenital tuberculosis develops only when tuberculous lesions are present in the placenta. This occurrence is more frequent in patients with grave forms of tuberculosis than in patients with mild forms of the disease. Transplacental tuberculosis is not necessarily fatal. Dr Wassmann carried on careful observations on the embryofetal circulation. After the third month of intra-uterine life the volume of blood carried to the heart and lungs is considerably increased. That is why pulmonary tuberculosis is the predominant form of congenital tuberculosis. On the basis of the known facts concerning embryofetal circulation, the existence of congenital pulmonary tuberculosis cannot be denied. The differential diagnosis between congenital and acquired tuberculosis in infants is done by ascertaining whether or not the infant was separated from the mother immediately after birth and removed to a safe environment. The only possibility of protecting the infant against tuberculosis is separating it from a tuberculous environment.

Kenny Treatment of Poliomyelitis

An epidemic of poliomyelitis has existed for several months in Buenos Aires. A committee consisting of Dr Ruthertord L John, associate professor of orthopedic surgery of the University of Pennsylvania School of Medicine, and two nurses recently arrived in Buenos Aires for the purpose of teaching the application of the Kenny method. Various committees of South American physicians, surgeons and orthopedists and three poliomyelitis committees in Argentina organized to carry on the work. Practical sessions for teaching the application of the method were held in the Hospital de Niños and the Muñoz Hospital of Buenos Aires. Dr John has also given courses on the subject. Large numbers of South American physicians, surgeons and orthopedists were present. Dr John was especially invited to give lectures to the Argentine societies of pediatrics and orthopedic surgery.

Society Reunion

The first annual meeting of the Society of Rheumatology of Rio de la Plata was held in Montevideo, Dec 18 and 19, 1942, under the auspices of the Liga Uruguaya contra el Reumatismo. There was a large attendance of Argentine, Brazilian, Paraguayan and Uruguayan physicians. Resolutions were adopted (1) to consider rheumatic diseases a problem of public health for the government, (2) to ask the government for the organization and establishment of proper centers and hospitals for the prevention and therapy of heart disease and also for hospitalization of convalescents and (3) to give unanimous support to the organization and establishment of the Pan American League Against Rheumatism. A South American committee, the members of which are in charge of preparing a well coordinated terminology of rheumatic diseases was appointed. It was made up of Drs Rafael Bullrich, Pedro Cossio and Aníbal Ruiz Moreno of Argentina, Genival Soares of Brazil and Fernando Herrera Ramos and Bolívar Delgado Correa of Uruguay. The second annual meeting of the Society of Rheumatology of Rio de la Plata will be held in July 1944.

Inexpandable Lung

Drs Mariano R Castex and Egidio S Mazzei of the First Medical Clinic of the Faculty of Medicine of Buenos Aires confirmed by clinical observations the fact that artificial collapse therapy of pulmonary tuberculosis may be the cause of inexpandability of the lung with consequent chronic pneumothorax, pleurisy and some other diseases. Inexpandability may also follow pleurolysis and operation for empyema. In cases of inexpandability of the lung of intrinsic origin, respiration in mechanical chambers may produce an acceptable degree of reexpansion and prevent the need of a thoracoplasty. In cases of retention of secretions in the bronchi the therapy by the bronchial route is useful and may make operation unnecessary.

Brief Items

The government of Argentina made an allowance of 5,981,960 Argentine pesos for the 1943 budget of some university clinics and of some other scientific institutions. The budget of the Faculty of Medicine of Buenos Aires is for 3,713,340 pesos. That of a group of other scientific institutions is for a total amount of 2,268,620 pesos.

Dr Nicolás Romano of Buenos Aires was recently appointed to the chair of clinical medicine of the Faculty of Medicine of Buenos Aires which was made vacant through the resignation of Dr Rafael Bullrich. Dr Romano has been professor of the second chair of clinical medicine of the Faculty of Medicine of the University of La Plata since 1935. He is the president of the Argentine Medical Association and the author of various important books on clinical medicine, respiratory diseases and other subjects.

Bureau of Investigation

STIPULATIONS

Agreements Between Federal Trade Commission
and Promoters of Various Products

The following items are abstracts of stipulations in which promoters of "patent medicines," medical devices and cosmetics have cooperated with the Federal Trade Commission to the extent of agreeing to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

Amor Skin—That this product or any other preparation of substantially the same composition, whether sold under the same or a different name, will feed or nourish the skin or that its use will improve the structure or tissue of the skin or have any effect on the contour of the elbow, were misrepresentations which the Amor Skin Corporation of New York agreed to drop from their advertising in a stipulation that they signed in January 1943 with the Federal Trade Commission.

Beecham's Laxative Pills—Beecham's Pills, Inc., Bloomfield, N. J., and Atherton and Currier, Inc., New York advertising agency, stipulated with the Federal Trade Commission in October 1942 that they would discontinue any advertisement which failed to reveal that these pills should not be used when abdominal pain, nausea, stomach sickness or other symptoms of appendicitis are present provided, however, that such advertisements need only contain the statement, "Caution: Use only as directed," if the directions for use, wherever they appear on the label or in the labeling, contain a warning to the same effect.

Breosan Products—These are put out by a Paul Sturzenegger, trading as Breosan Laboratories, Long Island City, N. Y. In January 1943 Sturzenegger entered into a stipulation with the Federal Trade Commission in which he agreed to discontinue the following representations in his advertising: that the "Breosan Treatment" or "Breosan Suppositories" have any value in the treatment of hemorrhoids other than as an emollient and palliative, that "Breosan Solution" is prophylactic or antiseptic, will cause wounds to heal without scars or promote the growth of new tissue, is not a drug or has any beneficial effect in the treatment of wounds, abrasions, blood poisoning, boils or other ailments enumerated in his advertisements, or that either "Breosan Ointment" or "Breosan Lanolin" has any beneficial effect in the treatment of wounds of many kinds, burns, chapped hands or similar disorders.

Coates Tablets—These are alleged food preparations comprising "C8 Vegetable Tablets," "B5 Vegetable and Dulse Tablets," "B6 Tablets," "B3 Vegetable Tablets," "BA Vegetable Tablets," "C16 Vegetable Tablets" and "C11 Tablets." They are put out by a Bertha B. Johnson, trading as Coates Concentrates, Chicago. In January 1943 the Federal Trade Commission announced that it had accepted a stipulation from her in which she agreed to cease representing that these products will correct, prevent or overcome mineral or vitamin deficiencies, provide more minerals and vitamins than one would obtain from assimilating two pounds of fresh vegetables, that her nostrums will provide an alkaline balance or aid tissue building or rich in vitamins or minerals that they will provide a substantial amount of silicon for the enamel of bones and teeth that they will preserve youthfulness, relieve pain, balance weight, or heal, that they are a brain or nerve food or are important to the liver, kidneys, spleen or pancreas or provide laxative effects, that the C11 Tablets will relieve symptoms of high blood pressure or that the B6 Tablets are a tonic or will overcome "tired feeling." Bertha B. Johnson further agreed to discontinue any advertising which failed to reveal that her "C14 Tablets" and "Coates Concentrates C12 Laxative Tonic Tablets" should not be used when stomachache, nausea, vomiting or other symptoms of appendicitis are present, provided, however, that such advertisement need only contain the statement, "Caution: Use only as directed" if and when the directions for use in the labeling contain a warning to the same effect. The respondent further stipulated that she would discontinue representing that neither of these preparations contains drugs.

"Dr. Coleman" Mattresses—These and some studio couches bearing the same brand name, have been put out by the Gerson Bedding Company, Lowell, Mass. This concern, in January 1943, stipulated with the Federal Trade Commission that it would cease using the word "doctor" or the abbreviation "Dr." either alone or in connection with the name for any of its products so as to convey the impression that they have been made in accordance with the design of, or under the supervision of, a medical practitioner or that such products contain special scientific or health measures which are the result of medical determination or the services of a doctor of medicine, provided, however, that if the name "Dr. Coleman" is used in connection with the marking, branding, or labeling of mattresses made in accordance with the directions of, or under the supervision of, the named person, it shall be immediately accompanied by some other

word or words such as "Osteopath," "Osteopathic Physician" or "Doctor of Osteopathy" so as to indicate clearly that the named person is other than a medical practitioner. The concern further agreed to cease using the word "health" either alone or in connection with any other words, as descriptive of mattresses, so as to convey the belief that the products have therapeutic qualities which would be of value in connection with the cure or prevention of diseases or that they are of such nature as would guarantee or assure health to or the maintenance of health by their users.

Halex—In January 1943 one A. P. Klase, trading as Halex Company, Sappington, Mo., stipulated with the Federal Trade Commission that he would discontinue representing, among other things, that this product is of value for hay fever, asthma, catarrh, migraine, sinusitis, toothache, cold sores, drowsiness, fainting spells, lung colds, influenza or sore throat.

La Vida Mineral Water and La Vida Blue Label Water—These are put out by La Vida Bottling Company, Inc., Placentia, Calif. In January 1943 Paul G. Hausman, president, William N. Miller, vice president, and Alfred D. Mitchell, secretary, of this concern signed a stipulation with the Federal Trade Commission, agreeing to discontinue the following misrepresentations in their advertising: that the products named have any therapeutic effect other than that afforded by their sodium bicarbonate content or that they are competent remedies or effective treatments for kidney and gallstones, diabetes, neuritis, rheumatism, stomach ailments, liver and bladder troubles caused by excess acid, or the condition resulting from excessive indulgence in alcohol, or that the products attack any ailment at its very foundation or add any minerals to the system in adequate quantity. They also agreed to stop representing that the usual or ordinary diet is "highly acid forming", that cooking destroys the alkaline content of foods, or that the respondents' products can be depended on to restore alkaline balance.

Serature—Under this brand name are sold certain surgical supplies, including wound clips, by a Belle Propper and a Seymour Schumann, trading as Dr. Propper Manufacturing Company, New York. According to a release issued by the Federal Trade Commission in February 1943, these two persons signed a stipulation with the Commission in which they agreed to discontinue the word "Manufacturing" or the abbreviation "Mfg." or any other word or term of like meaning as part of their trade name. Further, they agreed not to use such word or term in any manner implying that they actually own, operate or directly control the factory in which the products which they sell are manufactured. The stipulation further provided that these persons would no longer use the abbreviation "Dr." or any other word or term of like meaning as part of their trade name, and that they would cease using such abbreviation in a manner which might tend to convey the belief that the wound clips were designed by or manufactured under the supervision of a physician.

Shampo Kolor—This was described by the Federal Trade Commission as a coal tar hair dye sold by Valligny Products Inc., New York. In December 1942 the Commission reported that it had accepted a stipulation from the Valligny concern in which the latter agreed to cease disseminating any advertisements which did not conspicuously carry the warning "Caution: This product contains ingredients which may cause skin irritation on certain individuals and a preliminary test according to accompanying directions should first be made. This product must not be used for dyeing the eyelashes or eyebrows, to do so may cause blindness." The stipulation provided, however, that such advertisement need contain only the statement, "Caution: Use only as directed on the label" if such label bears the first described caution conspicuously and the accompanying labeling bears adequate directions for such preliminary testing before each application. Incidentally, in April 1940 the Commission had definitely ordered the Valligny concern to discontinue certain representations in the sale of "Shampo Kolor." Among these were that the product is capable of coloring the roots of the hair or affecting the color of new growth hair, that the use of this product restores the color to the hair, that it is made in France and is "uniquely different or entirely revolutionary in methods or results."

Vitamalt and Natura Calcium Compound and Vitameal—These are sold by one Frank E. Carter, trading as Three Palms Pharmacy, Los Angeles. In January 1943 the Federal Trade Commission reported that this person had signed a stipulation with the Commission in which he agreed to desist from representing that either of these preparations has any reducing action, or that any weight loss resulting from following the directions for their use is other than such as would naturally result from a starvation diet or abstinence from food that these nostrums or the diet prescribed therewith can be depended on to bring about weight reduction of ten pounds in five days or that such diet will effectuate any weight reduction in excess of that resulting therefrom that the diet prescribed with "Vitameal" will not cause or result in weakness or hunger, that the use of either product with rich food has any building tendency or any practical significance from the standpoint of caloric intake that either will give new life or freshness to the skin or free it from pimples or blotches, keep the glands and nerves functioning or nourished, have any beneficial effect on the body metabolism, "vitalize the system" cause the pains of rheumatism, arthritis or lumbago to disappear or provide a competent treatment for nervousness, rheumatism, stomach trouble or constipation. Carter further agreed to cease representing that taking either product as directed will cause a weight reduction safely without lowering resistance to disease or otherwise endangering the health, that Vitameal is a tonic or that the "Vitameal Way" of allegedly reducing weight does not consist of fasting, that Vitameal supplies all the needed vitamins or that the specific function of vitamins is to feed the various glands of the body, that the administration of vitamins in excess of ordinary requirements will result in health, superior physical condition or strength, or increased resistance.

Correspondence

TUBEROUS SCLEROSIS AND TOXOPLASMIC ENCEPHALOMYELITIS

To the Editor—I agree with the opinion expressed by Drs Merritt and Aring in their communication to THE JOURNAL, July 24, page 892, with regard to the diagnosis of the rather and son described under the heading of 'Familial Tuberos Sclerosis (Epiloia) Without Adenoma Sebaceum' in the issue of June 12. The authors apparently have not only misinterpreted the significance of the ocular findings in case 1 but did not recognize the negative diagnostic importance of their absence in case 2.

The presence of ocular lesions with special reference to retinal and to chorioretinal morbid processes in tuberos sclerosis and in toxoplasmic encephalomyelitis (particularly the infantile, or congenital, form of the latter) respectively, in essentially all cases is high on the list of the established criteria for the clinical diagnosis of these disease entities (Koch, F. L. P., and Walsh, M. V. Syndrome of Tuberos Sclerosis *Arch Ophth* 21:465 [March] 1939; Koch, F. L. P., Wolf, Abner, Cowen, David, and Paige, Beryl H. Toxoplasmic Encephalomyelitis, *ibid* 29:1 [Jan.] 1943).

Typical retinal tumors not unlike the surface of an unripe mulberry in appearance invariably occur in tuberos sclerosis while in congenital or infantile toxoplasmic encephalomyelitis there are seen essentially without exception bilateral, more or less atrophic as well as pigmented central (or macular) as well as more peripheral, fairly extensive patches of chorioretinitis. It is most probable that the onset of these patches in their acute phases occurs prenatally or in infancy or in both but not in childhood or later. There is no reason however to suppose that they do not continue to exist throughout the life of the afflicted patient or that they do not remain diagnostically recognizable. The latter is equally true with regard to the characteristic tumors of the optic disk and of the retina in tuberos sclerosis, an entity in which chorioretinitis has not yet been observed as such probably for the very good reason that the tumors are not inflammatory or micro-organistic in origin.

It had been thought that these tumors manifested themselves primarily as proliferations of embryonal cell rests during the complex changes attendant on puberty and adolescence until Givner reported his case (Tuberos Sclerosis *ibid* 27:1234 [June] 1942). In the discussion following the presentation of that case I raised the question of differential diagnosis with respect to toxoplasmic encephalomyelitis, which at that time was under intensive investigation in the Columbia-Presbyterian Medical Center especially with regard to the diagnostic significance of the ocular lesions. It became obvious during the study not only that it was necessary to conduct entirely objective examinations of the eyes and of the eyegrounds but also that it was imperative to avoid the diagnostic pitfalls inherent in the tendency to relegate certain apparently associated diseases to a single clinical wastebasket merely to serve the false purposes of categorical simplification.

I refer particularly to the so-called phakomatoses of van der Hoeve (*Eye Symptoms in Phakomatoses Tr Ophth Soc U K* 52:380, 1932)—the 'related' neurocutaneous syndromes of tuberos sclerosis (diffuse neurospongiblastosis), von Recklinghausen's neurofibromatosis, von Hippel-Lindau's retinal and cerebral angiomas and Sturge-Weber's angiomatosis cerebri—none of which have a common clinicopathologic background except for the hypothesis that their occurrence might possibly support Cohnheim's embryonal cell rest theory. There is no valid reason for the clinical misrecognition of any one of these syndromes nor should there be interconfusion with toxoplasmic encephalomyelitis. The presence of the ocular lesions or their

absence, is pathognomonic in the main and, together with their correlation with the already full reported confirmatory findings inclusive of the usually informative history, should lead to accurate diagnoses in all instances.

FERDINAND L. P. KOCH, M.D., St. Paul
Department of Ophthalmology and Otolaryngology,
University of Minnesota Medical School

"PSYCHOANALYSIS AND THE SCIENTIFIC METHOD"

To the Editor—Will you permit me to comment on the important editorial 'Psychoanalysis and the Scientific Method' (THE JOURNAL, July 17). Taken as a whole, the article is correct. The obscure sentence that you quote from the psychoanalytic article is not only significant but typical. Any physician who will go to a medical library and read through four or five issues of psychoanalytic journals will find the same type of sentence—or even worse ones—over and over again. The conclusion is inescapable that to this involved and obscure language there must correspond an involved and obscure type of thinking. But it must be pointed out that this criticism does not apply to Freud himself. In expression in thinking and in style he was always clear and his greatest contribution is that he drew human problems into the range of scientific inquiry and gave tremendous impetus to the humanizing of psychiatry. It is a strange paradox of medical history that so many of his present day followers have become so unclear and needlessly esoteric.

The Association for the Advancement of Psychotherapy is making a serious attempt to develop Freud's ideas and methods along lines that appear to us more clinically practical and more scientific. One of our aims is to abbreviate the long procedure of psychoanalysis and to bring it into closer relationship with other branches of medicine and psychotherapy.

Constructive abbreviation of the long and expensive psychoanalytic procedures does not consist merely in shortening them, they must be changed as well. Such abbreviation is of great importance for many patients who otherwise cannot get the benefits of psychoanalysis at all and it also remedies to a large extent the two difficulties mentioned in your editorial, namely the treatment of members of the medical profession and the question of the training of psychoanalysts.

May I draw your attention to some books—Frink's *Morbid Fears and Compulsions*, Guthrie's *Language of the Dream* and Wertham's *Dark Legend*—which demonstrate that the most complex problems and facts of psychoanalysis can be simply and clearly expressed, so that any physician can understand and use them.

FREDERIC WERTHAM, M.D., New York
Director, Mental Hygiene Clinic, Queens General Hospital

PREVENTION OF DYSENTERY BY THE USE OF SULFAGUANIDINE

To the Editor—The account by Scott of the successful prophylactic use of sulfaguanidine against bacillary dysentery interested me because of a somewhat similar personal group experience.

On an earlier visit to Mexico all in our party suffered the discomfort or what appeared to be a very prevalent tourist affliction—dysentery. On a second visit in March 1942 the three of us took a prophylactic bedtime dose of only 0.5 Gm. of sulfaguanidine. (At this hour the drug would have the least dilution with bowel content and have the longest stay in the intestinal tract.) Despite what seemed a 90 per cent incidence of dysentery (some severe cases) in our fellow travelers, none of us had the slightest gastrointestinal symptoms.

S. H. IMBODEN, M.D., Reading, Pa.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts Suicide While Mentally Depressed Because of Effects of Industrial Injuries—During the course of his employment Barber fell astride a hopper, rupturing his urethra and injuring his bladder. Pain in the back and pelvic region, frequency of urination and sexual impotence developed. He became moody and despondent and about a year after the industrial accident committed suicide by slashing his wrists. His widow sought compensation under the workmen's compensation act of Wisconsin, alleging that the pain and loss of sexual powers resulting from the industrial accident produced a mental depression and caused the workman to commit suicide. The industrial commission of Wisconsin found that because of his physical condition, which was due to the industrial accident, the workman developed a psychosis, causing him to become devoid of normal judgment, that in all probability he would not have committed suicide had it not been for the results of the industrial accident but that he had rational knowledge of the consequences of his act and acted with conscious volition to produce his own death, that the suicide did not result from insanity of such violence as to cause him to produce death in a delirium or frenzy, nor while suffering severe pain, and that the workman's act in committing suicide was an intervening cause for death and that therefore suicide and death did not proximately result because of the industrial injury. Compensation was accordingly denied the widow. The circuit court, Dane county, in effect, affirmed the action of the commission and the widow appealed to the Supreme Court of Wisconsin.

The findings of the industrial commission, said the Supreme Court, indicate that the industrial injury to Barber produced certain physical disabilities, that the pain and humiliation involved in these disabilities created for him what was an intolerable condition, and that he became profoundly depressed. With full knowledge of what he was doing he chose deliberately to end his life as an escape from these intolerable conditions. His morbid mental condition had not, however, progressed to the state of insane frenzy. He still had moderately intelligent mental power, rational knowledge of the consequences of his act, and the capacity for conscious volition. On these facts, the commission and the trial court correctly denied compensation to the widow for two reasons. First, section 102.03(1), Stats (a section of the workmen's compensation act), excludes compensation for intentionally self-inflicted injuries. It is evident that death by suicide constitutes an intentionally self-inflicted injury, and where the insanity of the person so ending his life has not progressed to the stage of destroying capacity to entertain an intention, the statute plainly excludes compensation for the injury. Findings by the commission to the effect that Barber did not act on uncontrollable impulse or in a delirium of frenzy, but with conscious volition and in the exercise of a moderately intelligent mental power, with knowledge of the purpose and effect of his act, seem quite clearly to preclude recovery because of the exclusion of the section under discussion. Secondly, compensation must be denied the widow because the voluntary, wilful act of suicide resulting from a moderately intelligent power of choice is an independent intervening cause that precludes compensation. *Daniels v New York, etc Railroad*, 183 Mass 393, 67 N E 424. The physical injury sustained by Barber was not permanent in a physical sense. There was no physical injury of any sort to the brain itself. What happened was that Barber was unable to tolerate the pain, inconvenience and humiliation caused by his physical condition and deliberately chose to end his life. It was a morbid choice but was the deliberate choice of a person of moderately intelligent mental powers, with rational knowledge of the consequences, and the act itself was done with conscious volition.

The element of insane frenzy or ungovernable lunacy was wholly absent. The judgment adverse to the widow was accordingly affirmed.

However, in a strong dissent filed by Fowler, Justice, it was argued that the death was the direct "end result" of the injuries sustained in the accident. The condition caused by the accident, this justice said, caused the death. It is of no consequence that the industrial commission found that Barber was conscious that the cutting of his wrists would result in death or that the wounds were not inflicted in a delirium or frenzy without conscious volition. The effect of the bare facts of the case cannot be obviated whether Barber was sane or insane in a medical or psychologic sense or by the commission or the court adopting the view of one or another expert. Nor can such effect be obviated by calling the intervening act an intervening cause when it is not such. The slashing of the wrists was an intervening act but not an intervening cause. An intervening cause is one occurring entirely independent of a prior cause. When a first cause produces a second cause that produces a result, the first cause is a cause of that result. *Kramer v Chicago, M St P & P R Co*, 226 Wis 118, 276 N W 113, *Mokey v Lake Superior T & T Co*, 125 Wis 148, 103 N W 271. There is then a direct as distinguished from a broken sequence, and the first cause is a responsible and proximate cause of the result. This seems so plain as not to be set aside by any species of fine spun reasoning. Barber's act in slashing his wrists is no more an intervening cause of his death than is following the advice of a physician who is treating a plaintiff for injuries inflicted by the defendant, when so doing results in a condition to alleviate which the patient must take especial treatment not necessary or appropriate to treatment of his original injury, in which case the expense, loss and suffering caused by the especial treatment proximately result in the defendant's act, such as was held in *Sumner v Kinney*, Texas Civ App, 136 S W 1192. Under the bare facts of this case, in this judge's opinion, the original injuries by direct sequence of causation resulted in death, and liability under the workmen's compensation act follows whenever this sequence appears.

However, because of the opinion of the majority of the court, judgment against the widow was affirmed. *Barber v Burrell Engineering Co*, 6 N W (2d) 199 (Wis, 1942).

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology Chicago Oct 10-13 Dr W L Benedict 102 Second Ave S W, Rochester Minn., Secretary
- American Congress of Physical Therapy Chicago, Sept 8-11 Dr Richard Kovacs, 2 East 88th St, New York Secretary
- American Public Health Association, New York Oct 12-14 Dr Reginald M Atwater, 1790 Broadway New York, Executive Secretary
- Association of Military Surgeons of the United States Philadelphia Oct 21-23 Colonel James M Phalen, Army Medical Museum Washington, D C, Secretary
- Delaware Medical Society of, Wilmington Oct 12-13 Dr W O La Motte 601 Delaware Ave Wilmington Secretary
- District of Columbia, Medical Society of the Washington Sept 30-Oct 2 Mr Theodore Wiprud 1718 M St N W Washington Secretary
- Idaho State Medical Association Boise, Aug 29-31 Dr F B Jepsen, 105 North 8th St Boise Secretary
- Indiana State Medical Association Indianapolis Sept 25-30 Mr T A Hendricks 23 East Ohio St Indianapolis, Executive Secretary
- Kansas City Southwest Clinical Society Kansas City Mo Oct 1-6 Dr William M North 1115 Grand Ave Kansas City Mo Secretary
- Kentucky State Medical Association Louisville Oct 4-6 Dr P F Blackerby 620 South Third St Louisville Acting Secretary
- Michigan State Medical Society Detroit Sept 22-24 Dr I Fernald Foster, 2020 Olds Tower Lansing Secretary
- Mississippi Valley Medical Society Quincy Ill Sept 29-30 Dr Harld Swanberg, 510 Maine St Quincy Ill Secretary
- Oklahoma City Clinical Society, Oklahoma City Oct 19-21 Dr Clark H Hall, 117 North Broadway, Oklahoma City Secretary
- Oregon State Medical Society Portland Sept 4-5 Dr Thomas D Robertson, St Vincent's Hospital, Portland Secretary
- Pennsylvania, Medical Society of the State of Philadelphia Oct 5-7 Dr Walter F Donaldson, 500 Penn Ave Pittsburgh Secretary
- Wisconsin State Medical Society of Milwaukee Sept 13-15 Mr Charles H Crownhart, 110 East Main St, Madison Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1953 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 15 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but can be supplied on purchase order. Reprints as a rule are the property of authors and can be ordered for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

37 299-340 (May) 1943

- Experiment on Range of Dispersion of *Anopheles Quadrimaculatus* D. E. Eyles and L. K. Bishop—p. 239
Notes on Peruvian Sandflies with Descriptions of *Phlebotomus* *Batistini* N. Sp. and *P. Pecei* N. Sp. M. Hertig—p. 246
Notes on Cutaneous Leishmaniasis and *Phlebotomus* in the Province of Andahuaylas, Peru. H. Pece and L. Pardo G.—p. 255
Studies on Syphilis in Eastern Health District of Baltimore City. I. Principles Concerned in Measuring Frequency of Disease. T. B. Turner—p. 259
II. Discovery Rates as an Index of Trend. T. B. Turner, R. Dyar, E. G. Clark and Mary Footner Birkhead—p. 273
Serologic Studies on Mouse Strain of Dwarf Tapeworm *Hymenolepis Nana* Var. *Fraterna*. J. E. Larsh Jr.—p. 289
Effect of Subcutaneous Vaccination with Influenza Virus on Virus Inactivating Capacity of Nasal Secretions. T. Francis Jr., H. E. Pear and E. R. Sullivan and P. M. Brown—p. 294
Nomenclature of Pathogenic Rickettsiae. C. B. Philip—p. 301
Studies on Reducing Substances and Gas Formation in Cultures of *Endameba histolytica* and Single Species of Symbiotic Bacteria. T. von Brand, C. W. Reese, L. Jacobs and Lucy V. Reardon—p. 310
*Persistence of Poliomyelitis Virus in Flies. F. B. Bang and R. W. Glaser—p. 320
Further Studies of 3T Strain of *Plasmodium Cathemerium* in White Pekin Ducks. F. Wolfson—p. 325

Subcutaneous Vaccination with Influenza Virus. Francis and his co-workers show that the tendency has developed to consider that procedures which increase the level of antibodies enhance resistance in a parallel manner. In the acceptance of such conclusions little consideration has been given to the pathogenesis of the disease or to an explanation of the manner in which circulating antibodies can influence the resistance of the superficial respiratory epithelium which the virus of influenza initially and selectively attacks. The evidence presented by the authors shows that when subcutaneous vaccination of human subjects with active or inactive influenza virus induces a significant increase in the titer of neutralizing antibodies in the blood, the capacity of the nasal secretions to inactivate the virus is also enhanced. It is suggested that the influence of vaccination on the nasal secretions rather than on circulating antibodies as such, is the factor which determines the efficacy of vaccination in prevention of the natural disease.

Persistence of Poliomyelitis Virus in Flies. According to Bang and Glaser, increasing emphasis is placed on the intestinal route of infection by the virus of poliomyelitis. It is natural that attention should again be directed to the role of flies. The authors studied the infection of adults and larvae of the common housefly (*Musca domestica*), the green-bottle fly (*Lucilia lepida* [caesar]), the stable fly (*Muscina stabulans*), the blowfly (*Calliphora erythrocephala*) and the flesh fly (*Sarcophaga hemorrhoidalis*). The experiments were not undertaken with the purpose of yielding definitive data on the question of fly transmission of human poliomyelitis but rather to furnish a biologic background for such a study. The different results obtained with the two viruses (Theiler's virus and the Lansing virus) suggest that more work on human viruses must be done. The results are in agreement with the work of Howard and Clark, who in 1912 found that *Musca domestica* fed on monkey cord infected with a human strain of poliomyelitis would retain the virus for at least forty-eight hours and that this virus might be recovered from the viscera of the fly. The consistently negative attempts to isolate virus from adults when the larvae are infected suggest that infection of larvae in nature is not important in the spread of the virus. The virus may

be recovered from the adult fly only when the adult itself is infected by feeding. Theiler's virus may be recovered from *Musca domestica* as long as twelve days after infection, but the mouse adapted human strain survived only two days in the housefly. The authors were unable to recover the mouse adapted Lansing virus from the four other species tested, while results with the mouse poliomyelitis in these species did not differ essentially from those obtained with *Musca domestica*.

American Journal of Ophthalmology, Cincinnati

26 443-564 (May) 1943

- Walter B. Lancaster, M.D. Biographic Sketch and Bibliography 1897-1943. J. J. Regan—p. 443
Angiomatosis Retinae (von Hippel's Disease). Results Following Irradiation of Three Eyes. F. C. Cordes and O. C. Dickson—p. 454
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Lens Extraction Following Filtering Operations for Glaucoma. S. R. Clifford—p. 468
Aspects of Brazilian Ophthalmology. M. E. Alvaro—p. 474
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Severe Keratoiritis Due to Brucellosis. Successful Treatment with Brucella Abortus Vaccine. J. Green—p. 491
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Objectives of Orthoptic Examination and Treatment. A. Linksz—p. 552

Annals of Internal Medicine, Lancaster, Pa.

18 719-912 (May) 1943

- *Cancer of Stomach with Special Reference to Early Diagnosis. I. W. Held and I. Busch—p. 719
Leaven of Psychosomatic Medicine. E. A. Strecker—p. 736
*Severe Injury to Kidneys and Brain Following Sulfathiazole Administration. High Serum Sodium and Chloride Levels and Persistent Cerebral Damage. J. A. Luetcher Jr. and S. S. Blackman Jr.—p. 741
Leukemia. Relative Incidence of Its Various Forms and Their Response to Radiation Therapy. F. H. Bethell—p. 757
Experimental Studies on Heparin and Its Influence on Toxicity of Digitaloids. Congo Red, Cobra Venom and Other Drugs. D. I. Macht—p. 772
Sugar Alcohols. XIV. Metabolism of Sorbitol in Diabetes. F. W. Ellis and J. C. Krantz Jr.—p. 792
*Meniere's Syndrome and Migraine. Observations on Common Causal Relationship. M. Atkinson—p. 797
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New Trends in Treatment of Chronic Disease. Experience in Spa Therapy. W. S. McClellan—p. 825
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Some Probative Aspects of Early Germanic Codes. Carolina and Bambergensis. S. Polsky and S. Beresford—p. 841

Early Diagnosis of Cancer of Stomach. Held and Busch divide cases of cancer of the stomach into two groups: those in which the cancer develops in a healthy gastric mucosa and those in which the cancer develops on a previously diseased mucosa. Approximately 70 per cent of all cases belong to the first group. The slowly growing cancers that develop on a healthy gastric mucous membrane should be operated on even if a large palpable mass is present, because they do not exhibit a tendency to early metastasis. Lasting and good results may be expected. Without operative intervention the mortality is 100 per cent. It is difficult to retell the percentage of five year survivals or even cures in the aforementioned groups, but in the absence of metastases and with a successful operation the patient can go on for many years without recurrence. The medullary form of carcinoma of the stomach usually arises on a previously healthy mucous membrane, grows very rapidly, and has a tendency to early metastasis. The group in which the cancerous lesion develops on a previously diseased mucous membrane comprises 30 per cent of all cases and gastric complaints were present for many years before cancer developed.

while in others the growth of the cancer is so slow that the lesion remains localized for several years. The precancerous symptoms vary and are usually bizarre and noncharacteristic and are therefore interpreted mostly as neurogenic. There are three separate groups of clinical entities on the soil of which the cancer develops: (1) gastritis, (2) polyps and (3) gastric ulcer. Gastrosocopy has materially increased the percentage of early diagnosis of cancer. Cancer which develops on a previously diseased mucous membrane, as in the case of gastritis, polyposis or gastric ulcer, has a tendency to grow much slower, is more benign and, when diagnosed early, offers a chance for prolongation of life and even permanent cure. Individuals with ulcer symptoms without ulcer signs should be looked on with greater suspicion and more watchfulness for early cancer than those in whom ulcer is clinically and roentgenologically demonstrable. A high degree of anemia and the size of the palpable mass should not deter one from operative intervention, provided preoperative and postoperative treatment are carried out with the greatest care.

Sulfathiazole Injury to Kidneys and Brain.—Luetscher and Blackman give detailed histories of 3 patients with severe sulfathiazole intoxication and of 2 patients with probable sulfonamide poisoning. All the patients developed an unusual increase in serum sodium and chloride concentration. When continuous observations were made, the electrolyte disturbance appeared while oliguria and nitrogen retention diminished. The excessive height of the serum electrolyte concentration probably contributed to the death of 2 patients. The renal lesions found in 2 cases suggest that the dissociation of salt and water excretion may be related to changes in certain specific portions of the tubule. There were thrombi in the interlobular veins in 2 cases. In 1 of these, thrombi in both interlobular arteries and veins were numerous and probably produced the renal lesions. In both cases the thrombosed veins were associated with ruptured tubules and the proliferation of tubular epithelium in the thrombi. Both patients developed moderate hypertension. Clinically there was evidence of cerebral damage. In the 2 patients who survived the uremia and hyperchloremia, signs of injury to the central nervous system persisted with slow and incomplete recovery. In the examined brains areas of edema and gliosis were found together with small hemorrhages in 1 case.

Ménière's Syndrome and Migraine.—In an earlier report Atkinson demonstrated that cases of Ménière's syndrome can be divided into two groups by means of an intradermal histamine test. There is a small group which is sensitive to histamine and which presents a primary vasodilator or allergic basis. This group can be satisfactorily treated by desensitization to histamine or by elimination of the specific antigen. In a second group, which constitutes the large majority, there is no sensitivity to histamine and the attacks are the result of a primary vasospasm. In this group relief can generally be obtained by administration of vasodilator drugs, of which the most satisfactory is nicotinic acid. In migraine also there is evidence of a dual etiology of the same nature as in Ménière's syndrome. Allergy as a cause of migraine attacks has been generally accepted as applying to at least a portion of the cases. On the other hand, Wolff and his collaborators have shown that migraine attacks can be the result of a primary vasospastic process. Thus the syndrome of Ménière and migraine are identical as far as the mechanism of their production is concerned. They differ in the location of the impact—in the one case it is on the labyrinth, in the other on the cerebral hemisphere. What determines location or laterality is not apparent. The two syndromes differ too in the frequency of occurrence of the two groups. Whereas in Ménière's syndrome the primary vasodilator group is a relatively small one compared with the vasoconstrictor, in the migraine syndrome the position, if not reversed, is at least more nearly equal. Allergy as a cause of migraine is common, as a cause of paroxysmal vertigo is uncommon. This fits in with the age groups in which the two syndromes arise—paroxysmal headache is a condition of youth, like the vasodilatation which produces it, paroxysmal vertigo a condition of middle life or later, like the vasoconstriction which is its usual cause. Nicotinic acid is used in the treatment of the vasoconstrictor group not because it is a part of the vitamin B complex but because it is a power-

ful capillary vasodilator. It is this basic vascular mechanism which presumably explains the satisfactory results reported with such divergent substances as thiamine hydrochloride and estrogens—both have a certain vasodilator action apart from their specific replacement function. The author directs attention to the frequent association of migraine and Ménière's syndrome. He encountered migraine in 22 of 108 cases of Ménière's syndrome. Migraine attacks have been known to merge into Ménière attacks. Treatment which has proved successful in relieving the vertigo of patients with Ménière's syndrome has also relieved the migraine headache in those cases in which it also has been present. Treatment of this syndrome, whether characterized in the main by vertigo or by headache, to be successful depends on accurate grouping of cases. No single method will achieve success in all cases, for there is more than one cause.

Annals of Surgery, Philadelphia

117 641-800 (May) 1943

- *Lobectomy for Pulmonary Tuberculosis E D Churchill and R Klopstock —p 641
- Local Effect of Sulfanilamide, Sulfathiazole and Sulfadiazine on Hemolytic Staphylococcus Aureus Infections of Pleural Cavity R A Daniel Jr F T Billings and R R Crutcher —p 670
- Effect of Sulfanilamide, Sulfathiazole and Sulfadiazine on Peritoneum R R Crutcher, R A Daniel Jr and F T Billings —p 677
- *Prevention of Shock and Death by Immediate Application of Pressure Dressing to Severely Frozen Limbs of Dogs Experimental Study E H Fell and R Hanselman —p 686
- Blood Circulation in Pedicle Flaps Accurate Test for Determining Its Efficiency B Douglas and R R Buchholz —p 692
- Perforated Peptic Ulcer F V Timoney —p 710
- Atresia of Duodenum Case Successfully Treated by Duodenoduodenostomy C S Ward Jr and F W Cooper Jr —p 718
- Congenital Atresia of Common Bile Duct Case Report A Strauss, J Gross and S Kyman —p 723
- Cyst of Ampulla of Vater Case Report B Brooks and A Weinstein —p 728
- Hyperesthesia of Posterior Peritoneum (Objective Pain) in Appendicitis and Other Visceral Lesions R Capurro —p 735
- Metabolic Studies in Patients with Cancer of Gastrointestinal Tract I Ariel, Florence Jones, G T Pack and C P Rhoads —p 740
- Treatment of Postoperative Hypoproteinemia in Patients with Cancer of Colon and Rectum G E Binkley, J C Abels and C P Rhoads —p 748
- Accessory Spleen in Scrotum Review of Literature on Ectopic Spleens and Their Associated Surgical Significance J M Emmett and M L Dreyfuss —p 754
- Spontaneous Rupture of Urinary Bladder Report of Case of Second Rupture W B Marbury and W Fry —p 760
- Preoperative Scrubbing in Abdominal Surgery II Clinical Studies J K Berman —p 766
- Clinical Uses of Vitallium C S Venable and W G Stuck —p 772

Lobectomy for Pulmonary Tuberculosis.—Churchill and Klopstock report lobectomies performed for pulmonary tuberculosis. All of the patients had positive sputum. A preoperative diagnosis of tuberculosis was made in every instance. Resection of upper lobes by individual ligation technic have been routinely practiced at the authors' hospital since 1936 and total 21 in number. In this paper they review 6 cases, 3 presented orthodox indications for resection of the lesion by lobectomy. Three others presented the usual indications for thoracoplasty, but lobectomy was performed instead. Primary healing took place in all instances. Lobectomy provides a more selective and immediate method of eradicating certain tuberculous lesions than does collapse therapy. It may be resorted to subsequent to artificial pneumothorax.

Prevention of Shock and Death by Pressure Dressing.—Fell and Hanselman anesthetized 10 dogs with pentobarbital sodium and maintained them under light anesthesia for ten to twelve hours. The right hind extremities were immersed to the upper third of the thigh in a mixture of solidified carbon dioxide and 95 per cent alcohol, at -55°C for twenty minutes. The entire portion was frozen within two minutes. Five of the dogs received no treatment and their legs were allowed to thaw out at room temperature. To the frozen hind legs of the other 5 dogs two to three layers of sheet wadding were applied and over this a plaster encasement. All 5 of the untreated dogs developed clinical shock, 4 of them dying within thirteen hours. All the treated dogs lived. The maximum increase in the hematocrit was only about half as great as in the untreated group. The thawing out of the encased legs was extremely slow, they were cold and moist for twelve hours or longer. The plaster encasement affords a firm even pressure.

tion were on an average less responsive to antibody stimulation than the normal group, although after vaccination the serum of the patient with staphylococcal proctitis contained agglutinins and antitoxin in greater quantity than the average of the normal individuals. The use of staphylococcus vaccine-toxoid combined is a logical approach to the dual stimulation of antibacterial and antitoxic substances in the treatment of staphylococcal infections.

Journal of Lab and Clinical Medicine, St Louis

28 927-1052 (May) 1943

- Blood Pressure Fluctuations in Bronchial Asthma I Clinical Observations II Osgood—p 927
U Wave Patterns in Abnormal Electrocardiogram S D Solarz and S R Elek—p 936
Inactivation of Vaccinia Virus by Mild Antiseptics W B Dunham and W J MacNeal—p 947
Comparative Effectiveness of Arsenical Compounds and Sulfonamide Drugs Against Bacterial Infections E E Osgood—p 953
Evaluation of Antiseptics and Other Anti-Infectious Agents W J MacNeal and Nancy C Farnsworth—p 963
Spontaneous Rupture of Spleen Due to Acute Leukemia or Acute Leukemia Due to Trauma to Spleen Which Report of Case and Review of Literature A S Rubnitz, with Collaboration of E B Floersch—p 972

Journal-Lancet, Minneapolis

63 121-160 (May) 1943

- Pneumonia in Infancy Pathogenesis and Pathology J M Adams—p 121
Acute Bacterial Meningitis R Alway and E S Platou—p 125
Old Problems in New Settings E K Clarke and R A Jensen—p 129
Gastric Ulceration Complicating Erythroblastosis Fetalis Rena Crawford and C A Stewart—p 131
Experience with Hematogenous Osteomyelitis in Children at the University of Minnesota Hospitals C Dennis—p 134
Responsibilities of Physician in Problems of Rheumatic Fever in Children A E Hansen—p 138
Problems and Control of Dental Caries in Children J W Knutson and W D Armstrong—p 142
Chronic Constrictive Pericarditis W Sako, J Fleet and P Pizzalato—p 147
*Early Diagnosis of Poliomyelitis A V Stoesser—p 149

Early Diagnosis of Poliomyelitis—Recent interest in the Kenny treatment has made the early diagnosis of poliomyelitis important, since the treatment gives its best results when instituted as soon as muscle spasms appear. Stoesser presents a table of the early symptoms that were observed in a careful study of 259 acute cases admitted to the Minneapolis General Hospital during the past six years. The majority were children ranging in age from 1 to 14 years with the highest incidence appearing between 5 and 9 years. The average course of the disease was found to fall into the following phases: (1) fever, headache, nausea and vomiting, restlessness or irritability, (2) continued headache, stiff neck, pain on flexion of neck or spine, muscle pain especially on motion, (3) continued pain on flexion of neck and spine, drowsiness, muscle spasm and no motion. Spinal fluid examination may reveal little if the fluid is collected during the first phase, but during the second and third phases characteristic changes appear which may confirm the diagnosis. Some of the symptoms and signs may be more severe in 1 case than in another and lead to various types of onset—meningeal or cerebral, gastrointestinal and respiratory. Many diseases have been confused with poliomyelitis chiefly because some of their symptoms resemble the characteristic features of the various types of poliomyelitis. This is particularly true of acute upper respiratory infections. If no loss in muscle function occurs and a spinal fluid examination is normal, the diagnosis of poliomyelitis may be dropped. Meningitis may easily be confused with infantile paralysis. Occasionally a rather mild pharyngitis or tonsillitis will be followed by a symmetrical and bilateral loss of muscle function in the extremities. Although poliomyelitis is considered, this diagnosis is questioned because the motor impairment does not have the localized and asymmetrical distribution noted frequently in poliomyelitis. The onset of pneumococcal pneumonia in young children can simulate poliomyelitis. Encephalitis may be confused with the cerebral type of poliomyelitis when the latter progresses rapidly to the third phase and leads to extreme drowsiness. Careful inspection and palpation of the muscles, as recommended by Miss Kenny, reveal muscle spasm early in the course of the disease.

Public Health Reports, Washington, D C

58 689-720 (April 30) 1943

- Studies of Acute Diarrheal Diseases A V Hardy, W Burns and Thelma DeCapito—p 689
Species of Fleas on Rats Collected in States West of 102d Meridian and Their Relation to Dissemination of Plague F M Prince—p 700

58 721-756 (May 7) 1943

- Rocky Mountain Spotted Fever Spontaneous Infection in Tick Amblyomma Americanum R R Parker, G M Kohls and E A Steinhilber—p 721

Rhode Island Medical Journal, Providence

26 51-64 (April) 1943

- Bleeding in Head Following Injury Some Unusual Examples W Pickles—p 51

26 65-78 (May) 1943

- Inhalation Therapy M Saklad, E Saklad and Priscilla Sellman—p 65

Southern Medical Journal, Birmingham, Ala

36 393-466 (June) 1943

- *Control of Endemic and Epidemic Diarrhea Preliminary Report D M Kuhns—p 393
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Result of Meniscectomy (Knee Joint) in Soldiers A S Hamilton and H E Finklestein—p 406
Cholecystography Correlation of Roentgenologic, Surgical and Medical Findings in 355 Cases H J Walton and C N Davidson—p 411
Treatment of Amenorrhea with Progesterone and Anhydrohydroxyprogesterone W M Allen and S D Soule—p 415
Tuberculosis of Reproductive Organs of Women W N Jones—p 420
Influence of War on Obstetrics H Jenkins—p 422
Coronary Artery Disease W Baumgarten—p 426
Review of Hematology in 1942 R R Kracke—p 429
Patch Tests Their Practical Applications and Limitations L H Warren—p 435
Pellagra Developing in Patient Receiving Liver Extract Parenterally for Sprue O C Hansen Pruss—p 440
Resistance to Diseases in Childhood B B Jones—p 442
Compound Fractures of Skull C C Coleman—p 449
Ureteritis Complicating Nephropathy R Bell—p 451
Development of Esophageal Speech After Laryngectomy E T Gatewood—p 453
Public Health Hazards in Rural Communities C T McClintic and A M Price—p 455

Control of Endemic and Epidemic Diarrhea—Control of diarrhea and dysentery is a major concern of armies in training and on combat duty. The high incidence of diarrhea in army troops on maneuvers during 1941 and the sporadic recurrence of outbreaks in 1942 have indicated the danger of similar outbreaks occurring under combat conditions. Efforts have been made to acquaint troops in training with proper control and sanitary methods. In order to establish proper preventive and control measures for diarrheal diseases all cases of diarrhea should be examined for the specific etiologic agent. The following laboratory procedures should be carried out in every case of diarrhea: (a) A swab culture of the rectal mucosa for pathogenic bacteria which is inoculated directly into inhibitive and differential mediums at the bedside of the patient. (b) Direct microscopic examination of the stool to determine the type of exudate, the cellular constituents and the other diagnostic criteria. (c) Direct microscopic examination of the stool for parasites. The Hardy swab method of culturing by use of the rubber catheter and swab and improved inhibitory mediums have simplified and made available a more accurate method of obtaining positive cultures. The predominating enteric pathogens isolated and identified in the Fourth Service Command Laboratory during the past year were found to be members of the genus *Shigella* (99 per cent). Sulfaguanidine and succinylsulfathiazole were used to treat 244 persons with acute bacillary dysentery or convalescing from it, and 182 of these were available for culture following treatment. All were negative by the swab method of culture on one to three follow-up cultures. Cultures from 60 control cases in which treatment was not given were found to be positive at a similar length of time following recovery from dysentery. The culturing of flies and the improved inhibitory mediums present a new application of bacteriologic methods in the determination of the transmitting agent in bacillary dysentery.

FOREIGN

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British Journal of Radiology, London

16 157-186 (June) 1943

- Exposure of the Anterior with Review of Literature J. M. Flynn — p. 157
The Results of Fluoroscopic Examination of Stray X-Radiation Received
by Hospital X-Ray Personnel J. H. Clark and D. E. A. Jones
— p. 166
Radiologic Study of Pyloric Stenosis A. S. Johnstone — p. 169
Effect of X-Rays on Aqueous Solutions of Biologically Active Com-
pounds W. M. Dale — p. 171
Radiologic Diagnosis of Disproportion R. Williams — p. 173

British Medical Journal, London

1 655-684 (May 29) 1943

- Treatment of Pernicious Anemia with Experimental Proteolyzed Liver
Preparation Preliminary Observations I. J. Davis, L. S. P. David-
son, D. Riding and G. E. Shaw — p. 655
Relation of Sunlight to Deciduous Sores J. M. Henderson — p. 657
Lymphogranuloma Inguinale (Tropical Bubo) F. A. R. Stammers
— p. 660
Arterial Encephalopathy Complication Occurring During Treatment of
Syphilis R. B. Nelson, C. McGibbon and F. Glyn Hughes — p. 661
Hemorrhagic Encephalopathy Following Arterial Therapy Case J. P.
A. Halcrow — p. 663
Ethyl Chloride Analgesia J. D. Rochford and B. T. Broadbent — p. 664

Medical Journal of Australia, Sydney

1 385-410 (May 1) 1943

- Immunization Against Epidemic Influenza with Living Attenuated Virus
F. M. Burnet — p. 385
Experimental Immunization of Volunteers Against Influenza Virus B
Diana R. Bull and F. M. Burnet — p. 389
Intranasal Vaccination of Humans with Living Attenuated Influenza
Virus Strains Jessica Mawson and C. Swan — p. 394

Immunization Against Epidemic Influenza with Living Virus—The method of immunization used by Burnet was to spray into each nostril egg fluid containing a high concentration of three living attenuated strains of influenza virus representing the main antigenic types. About 0.25 cc of virus was used for each subject. The proportion of persons showing a rise in antibody level is greatest among those having the lower initial antibody levels. Of the 91 subjects whose serum was fully tested, 46 showed a rise regarded as significant against one or more components of the vaccine. These results are considerably inferior to those obtained by American workers with subcutaneous inoculations, but the intranasal vaccine can be expected to take only in subjects susceptible to influenza virus infection. In the pandemic of 1918 about 70 per cent of persons escaped clinical infection. Even with an ideal vaccine of this type, one would not expect more than 30 to 50 per cent of subjects to show a definite rise in antibody level against any one type. In one unit of about 7000 men it was possible to obtain information as to the effect of immunization on the incidence of respiratory tract infection during a proved influenza epidemic. Immunization was being carried on in this unit during the period of influenza prevalence, and only two weeks were available in which (a) the immunized group had been inoculated more than one week previously and (b) the influenza epidemic was still current. During these two weeks 44 per cent of the immunized reported sick with some form of upper respiratory tract infection, as against 663 per cent of those not immunized. This apparent 50 per cent advantage of the immunized must be treated with reserve. There was at most only a minor benefit in this epidemic. The intranasal method has disadvantages and potential dangers. The possibility that the immunizing infection will exacerbate an infection in the nasal sinuses must be considered.

Immunization Against Influenza Virus B—Bull and Burnet have consistently found that results with influenza virus B are more regular than those obtained with type A strains. The level of circulating antibody (Hirst's method) is a fairly accurate index of susceptibility to experimental infection with living attenuated influenza virus B. The authors tested some modifications in the method of administering the virus and determined whether a primary administration of virus produced resistance to a second administration some months later. A blood sample was taken from about 100 volunteers to select

those whose serum tested by Hirst's method had a low antibody level against influenza virus B. The virus was administered in the form of allantoic fluid from embryos inoculated with the thirty-ninth amniotic passage of influenza virus B. Twenty-three volunteers with a low level of influenza virus B antibody were inoculated intranasally with attenuated influenza virus B and after three to six months received a second similar inoculation. There are indications that the procedure may provide a substantial protection against natural influenza B by showing that a subsequent inoculation produces a much lower proportion of antibody responses and of virus reisolations than the first series. It indicates the complexity of the problems of influenza, however, when it is considered that the proportion of minor symptoms was greater after the second inoculation than after the first. Twenty-one members of the group showed a significant rise in antibody level after the first administration, only two members did so after the second. Some evidence has been obtained that allergic factors play a part in the production of symptoms.

Intranasal Vaccination with Living Influenza Virus—Mawson and Swan treated one hundred volunteers with a single dose of virus. The vaccine consisted of pooled allantoic fluids from chicken embryos infected with the W/S and Melbourne strains of influenza virus A and with the Lee strain of influenza virus B. Up to the time of writing (five months after vaccination) no epidemic of influenza had occurred in the community. The efficacy of the vaccine, therefore, has yet to be tested. The authors also investigated the effect of repeated vaccination on volunteers who showed no antibody response to the first spraying. They conclude that, as far as antibody increase is considered the administration of living, attenuated influenza virus strains by nasal spray appears to have no advantage over the subcutaneous injection. There is a possibility that the resultant mild infection of nasal tissues will lead to an increase in local resistance not obtained by subcutaneous injection. Although the average increase in antibody against each of the three strains in the vaccine was approximately twofold, the individual responses varied from no increase to a twenty-seven-fold increase. Unless all those subjects showing no increase in antibody were already immune, those people would be a source of danger in a community in which large scale vaccination was relied on in an epidemic. Repeated vaccination failed to raise the antibody levels in the majority of cases. It is probable that they fall in the 50 to 90 per cent or people who do not contract influenza even in pandemic periods and that conversely the people responding to the nasal vaccine will be just those who will prove susceptible to a respiratory infection like influenza.

1 411-432 (May 8) 1943

- *Experimental Mumps Transmission of Disease to Monkeys Attempts to Propagate the Virus in Developing Hen's Eggs C. Swan and Jessica Mawson — p. 411
Congenital Abnormalities Teratology and Embryology Some Evidence of Primitive Man's Knowledge as Expressed in Art and Lore in Oceania I. Brodsky — p. 417

Experimental Mumps in Monkeys Attempts to Propagate the Virus in Hen's Eggs—Swan and Mawson collected saliva from 36 patients usually within twenty-four hours of the onset of parotitis. They inoculated the saliva into monkeys but only the last 3 of 14 experiments were successful. All 3 positive results were obtained from a specimen of saliva which comprised the pooled saliva collected from 4 patients within four to twelve hours of the onset of parotitis. The incubation period in these animals was ten, thirteen and sixteen days respectively. By injecting suspensions of the excised parotid glands of the animals thus affected into further monkeys it was possible to transmit the disease in three passages. The incubation period in the passage animals was five or six days. By the use of specimens of the cerebrospinal fluid of 4 patients suffering from mumps meningoencephalitis six attempts were made to isolate the virus. Positive results were obtained from only 1 of the 4 patients. In this case again passage succeeded in several monkeys. Two of eight attempts to cultivate the virus of mumps in developing hen's eggs gave suggestive but not necessarily positive results. Rabbits, mice, guinea pigs and dogs remained well when inoculated with mumps virus by various routes.

Ophthalmologica, Basel

103 1-64 (Jan) 1942 Partial Index

- *Keratoplasty in Serpiginous and Other Ulcers of Cornea E A Tschet-schik Kunina —p 1
Causes of High Vitamin C Concentrations in Aqueous Fluid and Lens J H B M Huysmans and F P Fischer —p 21
Nonirritating Eye Drops H M Dikking and J P Byleveld —p 40

Keratoplasty in Serpiginous and Other Ulcers—Tschet-schik-Kunina employed penetrating keratoplasty in the treatment of 15 patients with serpiginous ulcer of the cornea (mostly pneumococcal). The results were satisfactory. Pain and inflammation ceased and infiltration and opacity quickly subsided. In three fourths of the severe cases the eye was saved and in half of these visual acuity was satisfactory. Opacity of the transplant and formation of anterior synechia, eventually with increased pressure, were complications. The author is of the opinion that if the operation was extended to less severe cases the results would be even better. The nonpenetrating lamellar keratoplasty is inadequate.

Revista Clínica Española, Madrid

8 143-218 (Feb 15) 1943 Partial Index

- Relation Between Intracranial Diseases and Gastroduodenal Ulcer H G Mogen —p 143
*Spinal and Cerebral Hydatidosis A Ley and J Pons Tordera —p 181
Syphilis of Esophagus J Corona Postigol —p 199
Vitaminized Oils in Therapy of Burns J Garcia Sala —p 201

Cerebral and Spinal Hydatidosis—Ley and Pons Tordera observed 3 cases of cerebral hydatidosis and 1 of spinal involvement among two groups of 200 intracranial tumors and 30 extramedullary spinal tumors. The patients in the first group were 2 women and a boy of 11 years. The clinical and neurologic symptoms were those of a benign intracranial tumor. Acute focal symptoms were present in all. The cerebrospinal fluid was normal. The operation consisted in a craniectomy, extirpation of the cyst and the membranes and irrigation of the operative field with a weak formaldehyde solution. The cysts proved to be primary and solitary in all of the cases. They were located in the posterior cerebral fossa in 2 cases and in the frontoparietal lobe in 1 case. The Wenberg and Cassoni tests performed after the operation gave a negative result in 2 cases and a slightly positive in 1. Eosinophilia was not observed. The cyst recurred in 2 cases. Extirpation of the recurrent cyst has been successful thus far four years and one year respectively after the operation. The patient with spinal hydatidosis showed symptoms and x-ray signs of medullary compression in the dorsal region. A hydatid cyst was found during the operation. It was successfully removed.

Deutsche medizinische Wochenschrift, Leipzig

68 133-156 (Feb 6) 1942 Partial Index

- Development of Intestinal Toxins in Intestinal Autointoxication E Becher —p 133
*Control of Diphtheria Immunity Several Years After Immunization F Farago —p 137
Is Hepatic Function Impaired by Vaccination with Bacterial Vaccines? (Treatment with Sulfonamides) H Wilde —p 139
Hypertension as Cerebral Function A Sturm —p 141
Casuistics on Arsphenamine Encephalitis R Tidow —p 146

Diphtheria Immunity—Farago says that immunization against diphtheria has been obligatory in Hungary since January 1938. It is induced with a toxoid precipitate during the second and seventh years of life. He investigated the question whether immunization with 1 cc of precipitate during the second year of life conferred adequate protection until the seventh year. The Schick test was performed on 23,393 immunized children. On the basis of these studies and on epidemiologic observations Farago concluded that immunization with toxoid precipitate has proved its value. The natural antigen stimulus, the latent infection, plays its part. A single immunization is adequate as long as the present epidemiologic conditions prevail. Presumably, as the immunity increases, the latent infection will decrease in the course of years. If later the basic immunity of children should decrease, the adequacy of a single immunization may again have to be tested.

Klinische Wochenschrift, Berlin

21 145-168 (Feb 14) 1942 Partial Index

- *Action of Immune Serums in Bacteriotoxic Inflammation G Saker —p 145
Effect of Gonadotropic Substance After Roentgen Therapy on Regeneration of Testis in Rats H von Wattenwyl —p 148
Importance of Erosion in Pathogenesis of Carcinoma of Pavement Epithelium of Cervix Uteri H Hinselmann —p 152
*Clinical Aspects of Typhoid W von Drigalski and H Martin —p 158
Experimental Demonstration of Resorption of Desoxycorticosterone and Desoxycorticosterone Acetate in Percutaneous or Peroral Administration W Hohlweg —p 160
Thymotropic Hormone of Anterior Lobe of Hypophysis and Thymus Hormone Remarks on Paper by Anselmino and Lotz C Bomskov —p 162

Immune Serums in Bacteriotoxic Inflammations—Saker found that intrathecal injection of cerebrospinal fluid from purulent cases of meningitis produces a severe inflammation of the arachnoid. Normal cerebrospinal fluid from sterile cases of meningitis does not cause any meningeal inflammation. He concludes that the infectious inflammation is caused quantitatively by certain inflammatory toxins of the bacteria and that these bacterial products originate in the area of infection and result in an inflammatory reaction. The intensity of inflammation depends directly on the quantity, the virulence and the production of toxins by the type of bacteria concerned in the focus of infection. Thus the degree of infection is in simple proportion to the bacteriotoxic damage of the tissues. The effect of an immune serum on the inflammatory toxin of the cerebrospinal fluid used in experiments was observed in intrathecal injection of a mixture of both these substances after an incubation period of two days. The action of the serum was investigated likewise in vivo. The commercial immune serums did not exert any action either in vitro or in vivo on the bacteriotoxic inflammation. No unspecific serum effect on the reactive tissue inflammation could be observed. The tissues did not become accustomed to and no "active immunity" of the tissues against the inflammation toxins was produced by the toxins themselves or by specific vaccine. Thus the inflammation toxins should be considered as simple cellular poisons without the antigen property, and serum therapy cannot be considered effective for passive protection against infection from bacteriotoxic inflammation.

Symptoms of Typhoid—Von Drigalski and Martin state that there is no one symptom present in all of the cases of typhoid. The temperature curve and eosinopenia are the most trustworthy. Leukopenia and the Gruber-Widal reaction are positive in about three fourths of all cases. Bacilli were demonstrated in feces and urine of about two thirds of the cases. Roseola was next in frequency, followed by enlargement of the spleen, Ehrlich's diazo reaction and bradycardia. Generalized enlargement of the lymph nodes, initial neuritis in the area of the left brachial plexus and pronounced splenomegaly in the absence of almost all important symptoms of typhoid were observed in individual cases. The clinical picture of typhoid may be atypical because of the absence of classic symptoms and because of the presence of unusual symptoms. It may present a picture entirely different from that given in textbooks.

Wiener klinische Wochenschrift, Vienna

55 161-180 (Feb 27) 1942 Partial Index

- Circulation and Metabolism O Muller —p 161
Hereditary Pathology and Sterilization Law M Gundel —p 168
*Increase in Perforation of Peptic Ulcer in Wartime A Slany —p 171
Can Desire of Practitioner for Unified Formula for Infants Be Fulfilled? A von Reuss —p 172

Increase in Perforation of Peptic Ulcer in Wartime—Surgical intervention for perforating peptic ulcer was performed at the General Hospital of Wiener Neustadt in from 3 to 4 cases per month after the outbreak of the war as contrasted with 1 to 2 operations in peacetime. Instances of perforation of peptic ulcer were nearly doubled. They were acute in the majority of the cases and occurred exclusively in men. Change of living habits resulting from wartime production, change from day to night shifts and vice versa, irregular and cold meals, close attention to work, and excitement caused by war affect the vegetative system. Perforations occurred predominantly in heavy smokers. Nicotine by its effect on the vegetative system may be of foremost importance in the pathogenesis of peptic ulcer.

Book Notices

Psychosomatic Medicine The Clinical Application of Psychopathology to General Medical Problems By Edward Weiler M.D. Professor of Clinical Medicine Temple University Medical School Philadelphia and O. Spar von Enllah M.D. Chief of Psychiatry Temple University Medical School Cloth Price \$8. 1p 687 with Illustrations Philadelphia C. London W. B. Saunders Company 1943

For the first time the subject of psychosomatic medicine has been brought before the medical profession in a clear, concise and informative discussion. The opening chapter gives the reader a concept of the problem. As the authors aptly point out in the summary, "The study and treatment of illness constitutes much more than the investigation and eradication of disease. The chapter on personality development and psychopathology is exceedingly well handled and instructive. From there on the authors take up the various systems of the body in relation to the emotional disturbances and the end results of hypertension and hypofunction. These manifestations are presented from the point of view of case history along with suitable discussions. The treatment is handled in a very composite manner. The book as a whole serves an important need of the medical profession and it should be of particular interest to teachers in medical schools who must become thoroughly familiar and imbued with the importance of psychosomatic medicine. Therefore it is highly recommended as one of the important contributions to the medical literature of the year."

Clinical Significance of the Blood in Tuberculosis By Gullit Lindh Muller M.D. Pathologist and Director of Laboratory New England Hospital for Women and Children Boston Cloth Price \$3.50 1p 316 with 19 Illustrations New York Commonwealth Fund London Oxford University Press 1943

This book, on the clinical significance of the blood in tuberculosis is more than a mere description and tabulation of the various hematologic manifestations of the disease. In fact, it often goes rather far afield in the discussions relating to such features as the sedimentation rate and the various hematologic indexes. However this is by no means a disadvantage since one may obtain in this book an exceedingly well documented and complete description including historical summaries, of the Arneeth count, the Schilling hemogram and the monocyte-lymphocyte ratio. Since good descriptions of these subjects are often obtainable only in scattered form elsewhere this is very helpful to the interested student.

Excellent descriptions of the bone marrow, the various cellular reactions to disease, the monocyte and other subjects are presented together with well balanced commentaries on the various indexes which have been offered as short cuts to the diagnosis and prognosis of tuberculosis. The attempts of Sabin, Doan and Cunningham to elevate the monocyte, supravital staining and the monocyte-lymphocyte ratio to high standing are thoroughly investigated, the conclusion being made that an increase, decrease or lack of change in the number of monocytes per se gives but little indication of the state of the tuberculous process. The status of the lymphocyte offers a somewhat better indication since these cells become increased with healing and vice versa. Supravital preparations—and this is the reviewer's experience as well—have been greatly overrated. They are furthermore stated to be time consuming, not permanent and limited as to time of observation.

All the numerous hematologic tricks which have been proposed for the study of tuberculous blood are thoroughly and wisely discussed such as eosinophilia, absolute vs. relative numbers of leukocytes, study of immature polymorphonuclears, toxic changes and the reaction of the blood to tuberculin. In addition the anemia, the leukemoid reactions which occasionally occur especially in miliary tuberculosis and hemorrhagic manifestations are discussed. The reviewer hastens to reemphasize Dr. Muller's statement that little (I would say nothing) can be gained by the use of expensive liver extracts in the treatment of the anemia of the disease. If this product should be used only for pernicious anemia which is really the sole disease in which liver extract is indicated, imagine how sharply the sales of the product would be curtailed.

A large section of the book is devoted to the sedimentation rate, fifty-five pages in all being given over to a general discussion of this important test. The numerous techniques are

adequately described and criticized, and a new correction table is presented. Unfortunately there is no general discussion of the value of the test in various phases of the disease. One also misses at the end of the book a general, over-all view of the value or lack of value of the various tests. In other words, the details are beautifully painted in, but there is lacking a general integration of the whole picture with the result that the reader does not get a unified conception of the author's conclusions. However of the various hematologic components listed—increased sedimentation rate, neutrophilia, shift to the left, monocytosis, lymphopenia and lymphocytosis, eosinopenia and eosinophilia—the most important to watch from a prognostic standpoint are the sedimentation rate, the shift to the left and the lymphocyte percentage.

The book is well written and printed. The studious and exhaustive nature of the monograph is attested by the excellent bibliography which contains six hundred and four complete references.

A Family of Thirty Million The Story of the Metropolitan Life Insurance Company By Louis I. Dublin M.D. Third Vice-President and Statistician Metropolitan Life Insurance Company Cloth Pp 496 with Illustrations New York Metropolitan Life Insurance Company 1943

This is the history of the Metropolitan Life Insurance Company but it is more than that. It is also the history of insurance and its growth with the growth of the nation, its troubles and trials, its shortcomings and its triumphs and, most of all, its contributions to the nation's financial stability, social development and public health. The author writes exhaustively of the growth and development of the Metropolitan but deals generously also with other companies competing in the same fields. The book reflects more than mere pride in financial success, though there is plenty of that, for the Metropolitan is not only the world's largest insurance organization but the world's largest financial corporation. Through the book shines the spirit of the men who made Metropolitan great because they were more than shrewd businessmen and canny financiers. They were that but they were men of broad vision too, who saw that nothing makes a man or an organization great more surely than to be of service to other men. The history of Metropolitan as set forth in this book could be summed up in one simple statement—it has consistently given more than it was compelled by contract to give to its policyholders and to the nation. This is manifested in repeated liberalization of contracts, often retroactive, in generous treatment of lapsed and reinstating policyholders, in prompt handling of claims and in a general attitude of liberality toward all proper claims.

Of special interest to physicians is the chapter on relationships to medical science and public health in which fields the Metropolitan has contributed generously through grants for research and demonstration and participation in numerous projects. The Welfare Division, making nursing services available to its millions of industrial group and intermediate policyholders and contributing billions of free pamphlets to health education as well as numerous exhibits, loan films and a help by correspondence service for school teachers is typical of the spirit of service which has been evident throughout the history of the Metropolitan. That this has been profitable in no way detracts from its significance since the mutualization of the company voluntarily carried through by its stockholders, the benefits of profitable operation have accrued to all the policyholders.

The book itself, aside from the history of a great institution which it portrays, is interesting. Dealing with numerous figures, many personalities out of the past and numerous matters which might easily have become dull, it nevertheless contrives to be interesting throughout and sometimes exciting. Every chapter, every paragraph hews to the line, telling a story or service. That the author has been a part or much of this history has rubbed shoulders with those who have made and are making it and has made some of it himself—the Statistical Department and its valuable publications, notably the *Statistical Bulletin* which is said to have more readers than any best seller—enables him to write with authority and enthusiasm.

The book is also a mine of information about insurance in terms which the inexperienced reader can readily understand.

It is, in addition, an important social document. It offers the institution of life insurance and collateral lines such as accident, health, hospital expense and surgical expense insurance as America's answer to the problem of social security. It demonstrates how even the poor man, through industrial or group insurance, can provide means to keep him off the relief roll and to maintain his self reliance and self respect. This philosophy is perhaps best stated in the words of the preface: "At this time in our history, when the desire for security is greater than ever before, it is hoped that this volume will reflect what the American people have done through life insurance to provide financial protection for themselves. They have achieved this security to a greater degree than any other people, achieved it voluntarily, and through institutions of their own making. This is an American tradition. They have not depended upon government subsidy but have themselves taken the initiative. Americans apparently prefer this method, which takes into account individual needs and relies on the sense of obligation of the head of the family to look after his own."

Kitchen Strategy Vitamin Values Made Easy By Leona M. Bayer M.D. Assistant Clinical Professor of Medicine, Stanford University School of Medicine San Francisco and Edith S. Green B.A. Paper Price, \$1.50 Pp 107 with illustrations by Antonio Soomijor San Francisco The Authors 1943

This is a ring binder looseleaf booklet dealing with the practical aspects of choosing, buying, preparing and cooking foods that will supply the essentials of good nutrition and still make the family think they are just eating food—a consummation devoutly to be wished in these diet conscious days. It is attractively embellished with cartoons. The section on menus for common ailments should either have been omitted or have been amplified. In the hands of the lay person, for whom this booklet is obviously intended, this section might suggest that these are the only menus, whereas they are samples. The author explains this, but the criticism holds nonetheless. There are excellent chapters on substituting more common for scarcer foods, these should prove invaluable if rationing really grows severe. All in all, the book may be recommended, with the possible exception of pages 33 to 41, for the reasons set forth.

Medical Biochemistry By Mark R. Everett Ph.D., Professor of Biochemistry University of Oklahoma School of Medicine Oklahoma City Medical Students' Series edited by Fred C. Zapffe Secretary Association of American Medical Colleges Chicago Cloth Price \$5.75 Pp 694 New York & London Paul B. Hoeber Inc., 1942

This book, which is one of several in the Medical Students' Series, is intended to present "a modern, concise and correlated survey of biochemical knowledge for students of medicine and allied subjects." It is supposed to be part of "a new approach to textbook writing," as is envisaged in the Medical Students' Series, books written specially for students rather than for academic didactics alone. The contents include discussions of acid-base relations, colloids, enzymes and oxidation, digestion, lipids, carbohydrates, proteins, prosthetic radicals of nucleoproteins and chromoproteins, inorganic substances, vitamins and avitaminoses, hormones and endocrinoses. An addendum offers a guide to biochemical literature. There are two indexes, a general index and an index to tables, both are quite complete and useful.

The editor of this series, Fred C. Zapffe, states "So much time, thought and effort have been put into this project that it should warrant a fair trial by all those who are competent to pass judgment—teachers and students in the fields covered." The preparation of books intended primarily for students is commendable, often there are too few textbooks with this objective in a given field. Sometimes, however, such textbooks present material which is best left for other sources, medical biochemistry is one of these. It presents many excellent digests on biochemical questions but occasionally borders too closely on problems such as avitaminoses and endocrinoses, which are best left to other special treatises. There is no denying that a knowledge of the chemistry of the body's functions is as essential as a knowledge of the pathologic changes and accepted treatments, otherwise it would be difficult to understand and treat properly many diseases, especially those due to deficiencies. However, if this book is "to offer the medical student a volume which presents the basis of the subject in such form and degree of detail as he can absorb in the time allotted," the contents

should be reserved for biochemical considerations with only sufficient reference to diseases and pathology to orient the student with the reasons for teaching and learning such subjects as biochemistry. Apart from this criticism, the book, if used as a book of this nature should be used, is one that can be useful for the teacher and student. It is easy to read and has a sufficient but not depressing number of formulas and tables to make clear most of the author's statements.

Cancer Control The What Whither How Edited by Channing C. Simmons Paper Price 50 cents Pp 86 Boston Massachusetts Department of Public Health Division of Adult Hygiene 1943

This is a publication of the Massachusetts Department of Public Health in close collaboration with the state medical society. It deals with the cancer control program in the state, with special attention to health education and its possible contribution to the solution of the cancer problem. The committee seems either to be at a loss what to say about health education and cancer control or unwilling to say what it thinks. Part III of the report, dealing with how cancer education should be conducted, "has not been written. It is hoped that several committees will devise outstanding educational methods which will warrant being included in this section."

Other chapters deal with cancer prevention as far as preventive measures are known, with methods of treatment and with research. This eminently erudite and dignified publication will have a small circle of interested—previously interested—readers but will not do much to bring knowledge of cancer to the man in the market place or his wife in the home or the factory—which is where cancer education has to go. It has to go there in much less dignified garb and in much plainer, easier, simpler, more understandable terms—and much briefer.

Biological Symposia A Series of Volumes Devoted to Current Symposia in the Field of Biology Edited by Jacques Cattell, Editor of the American Naturalist and American Men of Science Volume IX Sex Hormones Edited by F. C. Koch Frank P. Hixon Distinguished Service Professor and Chairman of the Department of Biochemistry of the University of Chicago and Philip E. Smith Professor, College of Physicians and Surgeons Columbia University New York Cloth Price \$2.50 Pp 146 with illustrations Lancaster Pennsylvania Jacques Cattell Press 1942

This book is the ninth in a series of volumes devoted to current symposiums in the field of biology. Edited by men renowned in the respective fields, the series is one that should be available in all reference libraries. The present volume, which includes the papers from the symposium on sex hormones presented at the fiftieth anniversary celebration of the University of Chicago in September 1941 and the symposium on hormonal factors in sex inversion presented at the annual meeting of the American Association of Anatomists in April 1942, adds to the credit of the series. The contents include discussions of the comparative biology of testicular and ovarian hormones by C. R. Moore, the comparative metabolic influences of the testicular and ovarian hormones by A. T. Kenyon, the metabolism of estrogens by E. A. Doisy, the excretion and metabolism of male sex hormones in health and disease by F. C. Koch, sex inversion in the plumage of birds by C. H. Danforth, sex inversion in the amphibia by R. R. Humphrey, the effects of sex hormones on embryonic sexual structures of the rat by R. R. Greene and hormones and experimental modification of sex in the opossum by R. K. Burns Jr. While the presentations are as general as would be expected in such symposiums, most of them can be read with interest and profit not only by the specialist in this field but by others if they possess even a spark of interest in endocrinology.

Nursing History in Brief By Minnie Goodnow R.N. Second edition Cloth Price \$2.25 Pp 338 with 103 illustrations Philadelphia & London W. B. Saunders Company 1943

This is designed as a textbook for short courses in nursing history (fifteen hours or less). It is well organized clearly and interestingly presented and well illustrated. It begins with the story of nursing efforts among primitive peoples and includes material as recent as the nursing records of the current war. A general historical chronology and a chronology of nursing history are given. Review questions are presented at the end of the book, not chapter by chapter. There is an excellent index.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

SKIN PEELING FOR ACNE

To the Editor—A young girl has severe acne which has resisted all routine therapy. A course of x-ray treatment left deep pitting of the lesions. The family has asked my advice concerning skin peeling. I intend to start with 3 per cent sulfur and salicylic acid beginning with a small area. I have a good idea of the technic but kindly inform me of the exact procedure and if there is any better medication than the one I have mentioned.

George H. Jantzen, M.D., Queens Village, N. Y.

To the Editor—A young girl in my practice has had serious scarring of her face from acne. She has had x-ray treatment and deep red scars are present. The question arises as to whether her face should be peeled after school is over. Would you please advise me as to what benefit might be expected from peeling her face after having gone through with x-ray treatment of her skin? Hubert B. Haywood, M.D., Raleigh, N. C.

ANSWER—Skin peeling is not used as generally in this country as in Europe because of the dangers. When done carefully it gives satisfactory results. The chief dangers include production of an acute dermatitis in a skin sensitized to one of the drugs used, or an overeffect causing a chronic erythema or even necrosis of the skin and of absorption of the drug resorcinol or betanaphthol harming the kidneys. These may be guarded against by preliminary patch tests by a cautious approach and by careful and repeated examination of the urine. Brocq's formula for a keratolytic slush for severe acne of the trunk is as follows:

	Gm. or Cc.
Re. resorcinol	
Camphor	aa 10.00
Potash soap	15.00
Precipitated sulfur	30.00
Prepared chalk	5.00
Petrolatum	30.00

Formulas for other mixtures may be found in *A Text Book of Dermatology*, by J. Darier (authorized translation of the second French edition, edited with notes by S. Pollitzer, Philadelphia and New York: Lea & Febiger, 1920, p. 732).

A good description of the technic is given by Kren (*Kosmetische Winke*, Vienna and Berlin, J. Springer, 1930, p. 25). He refuses to attempt this treatment for any one with impaired kidneys and insists on a careful urinalysis before each application of the exfoliating paste which is composed of:

	Gm. or Cc.
Betanaphthol	10.00
Flowers of sulfur	40.00
Green soap	
Petrolatum	aa 25.00

If the yellow mass turns brown because of the effect of light on the betanaphthol, no harm is done. Only part of the face should be treated at a time—cheeks and chin for instance, the first time; nose and forehead at a later time. The part to be treated is first washed with benzine to remove fat and then the paste is applied about 2 mm. thick. The clothing must be protected since the paste causes spots. A moderate burning sensation is experienced but it lasts only a few minutes. After the paste has remained for from twenty to thirty minutes it is removed with dry cotton or fine gauze, care being taken to remove it all. No water or soap is allowed. The skin will be slightly reddened but this clears in a few hours.

On the next day, or even after twelve hours the process is repeated and each day again until slight exfoliation begins. The urine should be examined repeatedly to guard against kidney irritation. If albumin or casts appear the treatment must be given up.

One per cent salicylic acid in alcohol applied night and morning is the only washing this part of the skin is allowed. After peeling begins, this solution is to be dabbed on several times a day. After about five days' use of the exfoliating paste the process will be complete in three or four days. Left on the skin too long the paste may cause ulceration. The whole procedure, applied to the whole face in two separate treatments, takes a little more than two weeks.

A milder, more easily controlled procedure has been used for a number of years for the same purpose with excellent results in many cases. This is the application of a slush or solidified

carbon dioxide and acetone. Recently sulfur has been added. Karp, Nieman and Lerner (*Cryotherapy for Acne and Its Scars*, *Arch. Dermat. & Syph.* 39:995 [June] 1939) describe the technic as follows:

The apparatus consists of a large clay mortar and pestle, solid carbon dioxide, acetone, precipitated sulfur, absorbent cotton, a square of gauze and a wooden tongue depressor. Approximately 5 ounces (140 Gm.) of solid carbon dioxide is placed in a large clay mortar and ground to a fine powder. Acetone (dimethylketone) is carefully added with constant stirring until a smooth paste is obtained. Then with a wooden spatula approximately $\frac{1}{4}$ ounce of precipitated sulfur is added until a light yellow mixture is formed. If necessary a few additional drops of acetone may be added.

About one third of the paste is placed on a tampon of absorbent cotton, covered with a square of gauze and applied under moderate pressure to the most prominent lesions. The tampon is then immersed a second time in the paste. At this stage the addition of a small amount of acetone is usually necessary. The carbon dioxide paste is now applied directly to the skin. The application is made without pressure, and the entire face is covered with rapid friction. The resulting deposit of sulfur is allowed to remain on the face for approximately twenty minutes after the treatment. Immediately after application erythema and slight edema appear, which last about two or three days and are followed by mild exfoliation of the epidermis. Applications are repeated at weekly intervals. Note: "Acetone is inflammable." They report excellent results but warn against the danger of using it on atrophic skin or on melanomas. Even when roentgen treatment has been mild it adds to the risk of excessive reaction to the cryotherapy. They believe that the improvement of scars is due to the lessening of their sharp outline and increase of circulation and skin tone.

Dobes and Keil (*Treatment of Acne Vulgaris by Cryotherapy* [Slush Method] *ibid.* 42:547 [Oct.] 1940), applying it generally had good results in 16 of their 69 papulopustular cases but by applying it locally to individual nodules in the cystic cases they cleared up a much larger proportion. They encountered some difficulties. Among their patients were two with cold allergy who responded to the treatment with immediate urticaria and a burning sensation lasting several hours. Another patient reacted to cold even cold weather with a new crop of pustules. A severe edema of the face occurred in 1 girl and lasted two days. A Negress developed a patch of depigmentation lasting for months. Deeply tanned white persons showed no such result. From a trial application of the slush 1 patient developed a blotchy purpuric erythema ending after a month in mixed hyperpigmentation and hypopigmentation. Thus the method has a limited field, taking the place of the old peeling methods because of its deeper action and greater ease of control. Dobes and Keil are not much impressed with the improvement of scars. They quote Karp's opinion that at least eight months of treatment is needed to show decided improvement of acne scars, while those resulting from smallpox should be given seventy-five to eighty treatments. They omit the sulfur from the slush for the treatment of scars.

So far no one has devised an objective method of measuring the results of treatment of multiple small scars such as those occurring as a consequence of acne. There is no doubt however that the impression that the scars are less noticeable in spite of the skepticism of the physician has a beneficial effect on many patients. Karp, Nieman and Lerner warn against the too energetic treatment of scars. Repeated mild treatments give the best results, and time must be allowed for the effects of one treatment to subside before repeating it. These rules should apply also to the chemical peeling process.

PROBABLE ALOPECIA AREATA OF BEARDED AREAS

To the Editor—A man aged 50 has an area of alopecia on each side of the cheek. The duration is about two years and the areas are gradually increasing in size localized to these two spots. The physical examination is essentially negative. Previous physicians consulted had informed the patient that there is no treatment effective. I shall appreciate advice as to investigation and treatment. Esther Tuttle, M.D., New York.

ANSWER—The inquirer does not give any details about the patches of alopecia. It is assumed that there has been neither scar formation nor atrophy produced and that there is no visible inflammation present. Without the presence of inflammation one can discard such possibilities as ringworm infection of the beard and coccogenous sycosis. Tertiary syphilis, lupus erythematosus and iatrus can be ruled out because there is no scarring or atrophy. The probable diagnosis therefore, is alopecia areata.

Alopecia areata is rather common on the scalp but appears less frequently at other sites. The bearded area however is

not rarely involved. The characteristics of the disease here are no different in any essentials from those on the scalp. The hair falls to leave a clean, noninflamed patch or patches and there is no progression to scar formation. The borders of the patches are fairly well defined and regular. In an actively forming area there may be found the well known "exclamation point" hairs showing narrowing at the base. One would not expect to find such hairs at the edges of patches of two years' duration.

Alopecia areata seems to take a course which often extends from several months to two years with extremes in some of much shorter and longer duration. Thus one must be careful not to draw unwarranted conclusion from the results following any special regimen in a particular case. In general the outlook for any patient depends on the extent of the alopecia and the age of the patient. Younger ones do better, so that a middle aged person such as the one under consideration would not be expected to do well. Those who get well have regrowth of hair in any one patch relatively early, though prolongation of the process takes place by new patches forming. In a middle aged man who has the same areas present without regrowth and with spreading of their borders the prognosis is bad. If there are any hairs present even to the finest lanugo, it is worth treating the patient. It is possible that this effort may help to stay the progress of the disease.

The entire patient should receive attention. Many believe that alopecia areata is mediated by mental stress or through nervous reflexes. This should be explained to the subject to gain his cooperation in the attempt to resolve worries and irritations. He may need rest and reduced responsibilities. Sources for reflex stimuli such as infections of sinuses or teeth should be hunted and eradicated. Anemia or indications for tonics may be present. Some observers laud hydrotherapy. Local measures include the application of materials to stimulate the sites of alopecia. A popular one is the painting with liquefied phenol. This produces a whitish parboiled appearance, at which time alcohol is quickly applied to neutralize the phenol. Recovery from the induced inflammation takes place in five days or a week, when the applications are remade. These reapplications may be given over a prolonged period. Cutler's fluid may be used instead of phenol. Cutler's fluid consists of equal parts of liquefied phenol, tincture of iodine and chloral hydrate. Numerous other applications of similar character are recommended, but these probably have no greater merit. Ultra-violet ray applications are useful and popular. Frequent shaving makes the patches over the beard less conspicuous.

THROMBOSIS OF SAPHENOUS VEIN AFTER HYSTERECTOMY

To the Editor—A hysterectomy was performed on March 24, 1943 on a woman who is 45 years of age. She developed phlebitis in her right internal saphenous vein. She had a slight elevation of temperature and palpable beating of that vein. The temperature subsided in about three days, and at present there is little tenderness along the saphenous vein, but she has a great deal of tenderness in the calf region of her leg. I treated her conservatively and we have a difference of opinion as to whether she is a proper subject for injection of procaine hydrochloride into the lumbar region on that side. Kindly advise me what is considered the best treatment for this condition today. M D, Connecticut

ANSWER—It is impossible to give a categorical answer to this query, since it is uncertain from the description as to what type of thrombosis developed after hysterectomy. Postoperative thrombosis affecting the saphenous vein alone is infrequent unless there are preexisting varicosities of the saphenous vein. If this should be the case, a ligation of the saphenous vein and its tributaries at the saphenous femoral junction is the method of choice. The pain in the calf demands the consideration of the possibility that the muscle veins of the calf may also be involved. This type of thrombosis often extends to the deep veins of the lower leg and may be the source of embolism. A slight cyanosis in the dependent position and pain in the calf or popliteal fossa on dorsiflexion of the foot are further suggestive findings of deep venous thrombosis of the lower leg. If facilities are available a radiopaque solution may be injected into a small superficial vein on the foot and the patency of the deep veins visualized. If a diagnosis of deep venous thrombosis of the lower leg can be made, the best current opinion is that a ligation of the femoral vein below the profunda is indicated since it prevents embolism. This is especially true of patients close to 50 years of age, since the incidence of embolism rises after the fifth decade. If prothrombin determinations can be made, the extract of spoiled sweet clover (dicumarol) can be cautiously administered to offset the increased clotting tendency of the blood and prevent further spread of thrombosis.

The procaine hydrochloride injection of the lumbar sympathetic chain relieves the pain and the acute edema of a deep thrombosis. It is most useful in the first few days after the onset and seems less and less useful after the early pain and edema have subsided. Its purpose is to inhibit a vasospasm of the small arterioles and venules, which is due to an autonomic reflex originating in the thrombosed vessel. If the thrombosis is chronic, if there is no pain and edema, the nerve block is unnecessary.

TREATMENT OF FRACTURES ABOUT ELBOW

To the Editor—I was taught to put up fractures around the elbow in the "Jones position" the arm acutely flexed, the thumb and fingers grasping the throat. This method, it seems to me, has objections. The hand cannot be used, and the amount of dressings required is considerable and some what difficult to apply and to keep in place. In the summer months such a dressing is hot and causes free perspiration followed by irritation of the skin, as well as some bad odor. The shoulder and hand cannot be exercised. In a small town I do not have the opportunity to see many injured elbows. However, I have recently seen a severe injury to the elbow in a 9 year old girl. I put her arm up according to my own ideas, and I got a perfect result—no deformity and complete restoration of function. Whether the method is old and I just haven't heard about it or seen it described in the textbooks, I don't know. The method is simplicity itself. I flexed her arm just as I would have done in the Jones method. I held it in this flexed position by passing an adhesive strip in such a way as to go round the forearm just below the wrist and the upper arm just below the axilla. I put a small piece of cotton in the fold of the elbow—and that was all there was to it. The patient could exercise her fingers and shoulder, could even use her hand for some things. The skin is easily reached for cleansing purposes, the dressing is easily and quickly applied and is a minimum of trouble to change. Free ventilation is allowed between the arm and the body. If this method is wrong, I should like to know it. If it is right and has not already been described, I should like others to know about it.

Emory R. Park, M.D., La Grange, Ga.

ANSWER—The "Jones position" of the forearm flexed directly over the arm as the axes of the two coincide is orthodox and widely used. It does not effect or maintain reduction of all types of fractures about the elbow. It is described in textbooks. The reduction procedure for supracondylar fractures of the humerus, mostly in adolescents, is slight extension of the forearm during traction on it, followed by flexion into position with axes superimposed. No effort is made to have the fingers clutch the throat, as that may cause rotation of the forearm and result in incomplete reduction. The reduction is checked by x-ray examination in two planes, anteroposterior and lateral, through the elbow. (See Primer on Fractures.) This position may be maintained by a posterior molded plaster splint from the upper arm to the base of the fingers, which leaves the shoulder free for motion and the arm for abduction. If the wrist is allowed too free motion it may cause displacement of the fragments of the humerus by rotation of the forearm. The arm, thus splinted, may be carried in a sling and need not cause skin irritation from sweating, as the whole arm can be lifted and held up in abduction without disturbing the reduction at the elbow. It is possible, in the small arm of a child, to hold this position with adhesive tape with a small sterile pad in the antecubital space, but the heavier arm of an adult may slip out of the adhesive or by its weight cause skin irritation. The method described in the query was perfectly adequate. It is not new and was popularized by Ashhurst thirty years ago. After any of these dressings, it must be known that the circulation (radial pulse) remains normal in the limb.

ACROCYANOSIS AND AUTOAGGLUTINATION OF RED CELLS

To the Editor—A case of clinical acrocyanosis recently came into our hospital. When a routine venipuncture was performed for blood studies it was noted that the blood clotted so quickly that examination of the blood was impossible. When blood was drawn into ordinary red blood cell and white blood cell pipets the same phenomenon occurred in the chamber of these pipets. Microscopic examination of these clumps of cells revealed that the red blood cells were massed together either in rouleau formation or simply massed together in nonrouleau formation. No fibrin was present. Heating the chamber of a pipet containing these clumps of red blood cells resulted in the disintegration of the clumps, and microscopic examination then revealed perfectly normal appearing erythrocytes and leukocytes. The red blood cell and white blood cell counts were normal. In examining the literature I have found no definite statement of the cause of acrocyanosis. I should appreciate information from you as to what is now considered the most likely explanation of acrocyanosis and whether the herein described phenomenon has ever been described in association with acrocyanosis. Lieutenant M. C., A. U. S.

ANSWER—Autoagglutination or "cold" agglutination of red blood cells has been observed in a number of persons (Walther *G. Folia haemat.* 38:281 [July] 1929). McCombs and G. *Folia haemat.* 38:281 [July] 1929. McElroy *Arch. Int. Med.* 59:107 [Jan] 1937 reported a case in which autoagglutination was associated with acrocyanosis.

and cited 5 additional cases from the literature. Two of the authors advanced the hypothesis of autogglutination as a cause of Raynaud's disease. Two more cases were reported by Benians and Feasby (Raynaud's Syndrome with Spontaneous Cold Hemagglutination, *Lancet* 2 479 [Oct 25] 1941). Autoagglutination in a patient with acquired hemolytic anemia has been observed. On exposure to cold, the face and hands become definitely cyanotic.

It is apparent that acrocyanosis which is usually considered to be due to vasospasm, may also be related to autoagglutination.

PENILE ULCERS

To the Editor—In a genitourinary clinic and genitourinary ward recently smears in 4 cases of extraurethral lesions were positive for gram negative diplococci. One patient had two small abscesses of the shaft of the penis and smears were repeatedly positive for gram negative diplococci. No history of previous gonorrhea or recent urethral discharge could be obtained. Cultures were oxydase positive. The second patient had small penile ulcers with repeated negative dark fields. Smears stained with Gram's stain showed gram negative intracellular diplococci. Culture from lesions gave positive oxydase and transplants to sugar mediums were positive for *Neisseria gonorrhoeae*. The third and fourth patients had penile ulcers from which smears showed extracellular gram negative diplococci. Cultures and further studies are being made. I am interested in opinions as to the possible causation of these acute penile ulcers. In all cases the lesions appeared from four to ten days after intercourse and this incubation period plus the data heretofore mentioned makes me feel that the gonococcus is the causative agent of many penile lesions previously classified as cause undetermined.

Captain M C A U S

ANSWER—Several cases similar to these have been reported in the British literature in which it was thought that the penile ulcers were due to *Neisseria gonorrhoeae*. However since gram positive cocci in certain lesions appear gram negative and even intracellular in gram stained smears it would appear that the lesions described may not be caused by *N. gonorrhoeae*. The positive oxydase reaction is also given by some types of micrococci and other bacteria. Small gram negative diplococci or coccobacilli formerly called Gurd's diplobacillus are occasionally found in eroded areas in the female vagina and can infect abraded areas on the shaft of the penis. One should subject the cultures of cocci to all determinative criteria before actually describing the condition as extraurethral gonococcal ulcers.

INTRAVENOUS INJECTION OF AIR

To the Editor—I should like to establish whether the blood stream of the average human being can absorb 1 cc. of air which is injected into it under 30 pounds of pressure. This question arises from certain inquiries about a new development project and it would be most desirable if an answer could be secured as soon as possible.

Clark D Bridges Industrial Hygienist Chicago

ANSWER—The effects of the injection of 1 cc. of air under 30 pounds pressure into the blood stream of the human being would obviously vary with the site of injection. Injection into one of the systemic veins would probably not give rise to serious consequences, since the oxygen would be taken up mainly by the hemoglobin and slightly by simple solution in the venous blood and the nitrogen would be filtered out by the pulmonary capillaries. However, rarely one or more bubbles of nitrogen will pass through the pulmonary circulation to the left heart chamber and if a nitrogen embolus should lodge in one of the coronary arteries or one of the arteries supplying the vital medullary centers the consequences would be serious or even fatal. Usually, however, much larger quantities of air intravenously are required to produce death by air embolism. Injection of the air into the left heart chamber would certainly afford good opportunity for coronary embolism and fair opportunity for medullary embolism. Likewise injection into one of the main carotid arteries would likewise entail definite risk of medullary embolism. Injection of the air into other systemic arteries would involve less risk. Obviously 1 cc. of air under a pressure of 30 pounds would expand to approximately 3 cc. when introduced into a vein and to only slightly less than 3 cc. if injected into an artery. The injection of the air under the pressure mentioned might lead to rupture of the vein or even the artery at the site of the injection although this would be unlikely. The absorption or solution of the nitrogen would be slow under normal circumstances, although previous denitrogenation of the human subject by the breathing of pure oxygen would, of course, permit rapid solution of the nitrogen in the blood and tissues.

INHERITANCE OF PSEUDOHYPERTROPHIC FORM OF MUSCULAR DYSTROPHY

To the Editor—A healthy white woman is gravid for the first time since her first pregnancy twelve years ago. Her first born son has a pseudohypertrophic form of muscular dystrophy. She fears that this offspring may be afflicted with the same condition. What is known about the hereditary aspect of this disease? What should one advise this patient about continuing her pregnancy?

M D, Virginia

ANSWER—The pseudohypertrophic form of muscular dystrophy is considered a hereditary disease. When it appears in successive generations in a family, it has mendelian dominant characteristics. In this type of inheritance the chances of it appearing in sibship is almost 50 per cent, the sexes usually being affected with equal frequency. If, on the other hand, the disease has not occurred in previous generations and thus may be looked on as a recessive factor, the chances of inheritance are less. In spasmodic cases of this type the disease is more prevalent in the male in a frequency of about three to one. In order, therefore, to estimate whether a second child would have pseudohypertrophic muscular dystrophy, when the first child was so afflicted the history of the disease in previous generations should be obtained. Advice with regard to continuance of the pregnancy cannot be given in a categorical manner. The facts however, as known may be placed before the family.

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DIAGNOSIS OF RECURRENT SKIN LESIONS IN WINTER

To the Editor—A man aged 51 states that twenty-five years ago following exposure to cold he sustained a severe case of frostbite involving the hands, forearms and both earlobes. Since that time starting in late September and extending to early May a dermatitis involving the hands, forearms and earlobes makes its appearance. The skin hardens, cracks easily and is reddened and there are scattered papular lesions. Glycerin applied to the exposed parts appears to offer systemic relief although it does not cause the skin lesions to disappear. Various possibilities such as occupational dermatitis, soap dermatitis and water dermatitis were considered. He has changed his occupation and at present is a supervisor and does not do manual labor. He does use a castile soap and avoids wetting his hands as much as is consistent with body cleanliness. The blood serologic reaction, sedimentation rate, platelet count, cell count and renal function tests are negative. Could you describe the physiologic basis for the disorder described and also plan a course of therapy? Is there merit to the therapy of ionization using salicylic acid, histidine or sodium chloride as an electrolytic base?

Charles S Mirkin M D New York

ANSWER—The possibility of a seasonally recurring dermatitis venenata or contact dermatitis has been entertained with good reason. The history of onset after freezing of the parts and the recurrence of the lesions during the colder seasons suggest the diagnosis of pernio. There are several varieties of pernio, two of which are called lupus pernio. The first or chilblain lupus with which Hutchinson's name is linked is a form of lupus erythematosus. It consists of infiltrated erythematous patches which become worse in the winter. The lesions are bluish red or violaceous which first resemble chilblains and discoid lupus erythematosus. The second type of lupus pernio the one associated with Besnier's name is classified with sarcoidosis. Its lesions occur symmetrically on the ears and face, hands and feet and are thickened bluish red patches. They show small brownish red nodules by diascopic pressure. Small dilated blood vessels are present and many manifestations of sarcoidosis may be associated such as changes in the small bones and enlargement of the lymph glands. Both kinds of lupus pernio do not disappear entirely in the summer though they may improve considerably. In the case under consideration the skin changes apparently disappear entirely during the warmer months. It is more likely, therefore, that the condition is ordinary pernio or chilblains. It disappears entirely in summer and is based on a poor circulation. The lesions are various shades of red, feel tender and may burn or itch. They feel cold to the touch.

This patient should be investigated for tuberculosis. His circulation should be improved by physical therapy, exercise and massage. Warm clothing should be worn and the parts protected by cotton batting and local applications. Dusting powders of borated talcum are useful or the parts may be painted with ichthammol. The administration of arsenic is helpful and may be given in the form of solution or potassium arsenite or the asiatic pill.

POSSIBLE KIDNEY DAMAGE AND LATE HYPERTENSION
FROM KEROSENE

To the Editor—A white, single woman aged 25 was seen four months ago for the first time because of an attack of dyspnea and nausea. She then weighed 185 pounds (84 Kg) and now weighs 170 pounds (77 Kg). She had an elevated blood pressure of 240/120, which has remained approximately the same. Her urine showed 4 plus albumin, intermittently since then the urine has been completely free from albumin. Blood chemistry showed nonprotein nitrogen of 42, creatine 1.3 and cholesterol 220 mg. I do not believe any hyperthyroidism exists, basal metabolic tests read plus 23 and plus 26. Cystoscopy showed a normal bladder and bladder mucus. A number 6 French catheter was inserted into each kidney pelvis without resistance, and no residual urine was found. Specimens were clear. A plain x-ray film showed no radiopaque stone in the kidney, ureter or bladder, and bilateral pyelograms were normal. Nothing has been found except the hypertension and the intermittent albumin in the urine. The family history on both sides is negative for hypertension. In the past history of the patient there is one factor which may have a bearing on the hypertension. When about 6 years old she drank an ounce or so of kerosene. Could the kerosene have damaged her kidneys at the time? Are there any studies on kerosene taken orally damaging the kidneys?

M D, South Carolina

ANSWER—Oral poisoning by kerosene usually is considered in conjunction with such other petroleum fractions as naphtha, gasoline and mineral spirits. Clinical manifestations are similar but not necessarily identical. The mortality from gasoline is much higher than from kerosene. At times the ingestion of sizable amounts (exact amounts frequently unknown) is followed by no untoward events. Conversely, smaller quantities have on occasion caused death. Early symptoms are chiefly related to the gastrointestinal tract, such as burning pain in the throat and stomach, vomiting, intestinal pain, diarrhea and great thirst, other effects are dyspnea, cyanosis, drowsiness, nephritis, cystitis and at times elevated temperature. Some survivors may exhibit prolonged significant sequelae. In the case mentioned, much depends on the extent of total damage soon after the kerosene ingestion. If extensive, it is permissible to assume that kidney damage probably existed at that time. Many reports have been made on this subject, not all of which mention nephritis.

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INCONTINENCE AFTER TEAR OF SPHINCTER FROM
CHILDBIRTH

To the Editor—In the case of some fistulas in ano it is said, and I have known this to be true, that the sphincter can be cut at any place in its circumference and at any angle and healing will occur without incontinence provided the area is not packed longer than twenty-four hours. Why will incontinence always occur after a tear through the sphincter following childbirth?

Major, M C, A U S

ANSWER—Incontinence follows a tear through the sphincter following childbirth because the perineal body is torn into which the sphincter muscles attach themselves anteriorly. This allows the sphincters to open when they contract rather than to make a closure. This results in incontinence.

CLEFT PALATE AT SIXTEEN

To the Editor—A patient aged 16 has a cleft palate. The posterior two thirds of the hard palate has an aperture about 1.5 cm wide. What would be the prognosis if corrective surgery should be attempted at this time and what improvement in speech defect might be expected?

A A Skemp, M D, La Crosse, Wis

ANSWER—The development of the musculature of the upper part of the pharynx will largely determine the result of a simple operation of closing the palate. In all probability the palate can be closed unless much tissue has been lost from previous operations.

Where the muscle action mentioned is deficient, a much better speech result can be obtained by special speech training or, if necessary, by lengthening the palate by further surgery. This had best be done by some one familiar with this work.

Some idea of the muscle activity can usually be gained by depressing the tongue and stimulating the posterior wall of the upper pharynx by pressing on it with a cotton applicator and observing the contraction at the junction of the nasopharynx with the oropharynx.

BLISTER BUGS AND CHIGGERS

To the Editor—In the August 7 issue of *The Journal*, page 1054, a lieutenant from the Medical Corps, Army of the United States, describes a vesicular eruption occurring presumably after the bite of an insect. In addition he asks whether there is any insect called a blister bug. In the reply the statement is made that no blister bug is known. In this region, bites are not infrequent from a beetle called locally a "blister beetle." These are of the family Meloidae, species *Cantharis vesicatoria*. More commonly these beetles are spoken of as a Spanish fly. The active irritant from this insect is cantharidin, which is a well known vesicant. The bite from this beetle is painful and results in an erythema and a cluster of vesicles. It is not impossible that the lesion described by the lieutenant may result from a bite by this beetle. As far as I know there is no specific treatment.

Ramsdell Gurney, Captain, M C, A U S

To the Editor—Some one asks if there is any insect called a "blister bug." Your editor replies "No blister bug is known, possibly that name might be applied to the chigger." This is utter nonsense, blister beetles are very common in this section. If my brother Will were here he would tell me the Latin name for them, they belong to the family Cantharidae, which ought to strike up a few associations in the mind of your esteemed dermatologic editor. They are a narrow, elongated beetle with a red thorax. Both the bite and the crushing of the insect against the skin cause pain, vesicle formation and itching. My sister has a half dozen vesicles on her leg at the present moment and my wife has one on her neck. Every farmer knows them, every rural doctor knows them, and I have a suspicion that one or two doctors in Chicago know them.

Karl Menninger, M D, Topeka

To the Editor—There are two organisms locally known or included under the name of "chigger"—originally spelled jigger. One is the larva of an arachnid which goes under the name of *Leptus autumnalis* or harvest mite, as you state. This is a relatively unimportant organism which is active in the fall of the year chiefly, hence the name harvest mite. The other one is an insect belonging to the fleas of the subfamily Sarcopsyllinae. It is a minute insect and is seldom seen even by its victims. It is only about 1/24 inch long. The female when pregnant buries herself in the skin. The active period of the insect is about sixty days beginning the latter part of June. It is so bad in this section of the country during July that some men give up their golf during the chigger season. It is a real problem both for the reason of the great discomfort it causes and from the fact that the bites sometimes become infected and lead to abscesses. The chigger gets on its victim from the grass, so that the application of any preventive must be as high as any grass which one is likely to come in contact with and must be applied to all parts of the body which will come in contact with grass. For example, picnickers should apply the preventive up to the waist if they are going to sit on the ground. The chigger attacks any part of the body it reaches. The feet are frequent sites of attack. The common preventives are kerosene and sulfur, which must be applied to the feet and legs as high as the grass, or higher.

I have experimented with several "chigger skoots." I found that an application of Kresol Dip ten drops to a cup of water, rubbed on my legs up to my knees would allow me freedom from chiggers even when hunting my ball in the rough. One difficulty with sulfur dusted in the hose or on the legs is that if one perspires freely, as one does on the golf course during the chigger season, the perspiration seems to wash off the sulfur. I have found that sublimed sulfur mixed with vanishing cream is a much better and surer preventive. With any preventive the application must be as high as the grass with which one comes in contact. The chigger bite is at first scarcely discernible and its presence is manifest by a mild itching, which becomes intense on scratching. The scratching seems to augment the edema, and before one realizes it one has denuded an area from 1 to 2 millimeters in diameter. The itching continues for about a week, especially when parts of the body covered by clothing are exposed to the air. Continued scratching enlarges the denuded areas until they are usually 5 mm in diameter or larger. The legs of country children are frequently dotted with these scabs during the chigger season.

The other statement in your answer that needs revision is in regard to the blister bug. You know that it is a common practice to call every insect that flies a fly, and every insect that crawls a bug. There is an insect, a beetle, that has been known since medieval times as the "blister beetle." It is also known as the Spanish fly. Of course, in the entomologic sense it is not a bug since this name is reserved for members of the Heteroptera, while beetles belong to the Coleoptera, therefore your answer is technically correct. But as said this beetle has been called the blister beetle, or blister bug, since medieval times. It gets its name from the fact that if the insect is dried and the powder made into a poultice and applied to the skin it will cause erythema or even vesiculation. It was once a valued item in the physician's armamentarium. It is reported that if this insect is mashed on the skin and the "juice" is not removed a "blister" will form in the site.

L A Turley, Ph D, Oklahoma City

Professor of Pathology, University of Oklahoma

LEFT HANDEDNESS

To the Editor—In *The Journal*, June 26, 1943, page 642, an inquiry and an answer appeared concerning lefthandedness. I disagree slightly with the advice given. Parents should not encourage the child to use the right hand in eating but permit her to work out her own salvation. She may find social embarrassment in left handed writing or left footed dancing. The persons answering the question properly stated that "ill effects may follow if a predominantly left handed child is forced to use the right hand." If a child is 3 years old it should not be difficult to determine the hand. If a child is voluntarily uses for eating and writing. There may be advantages in determining whether she has right or left eye dominance in determining her future education. At the present time however she should be permitted to have the complete emergence of her structural preference.

Ira S. Wile, M D, New York

JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE
DEPARTMENT, MAY-AUGUST 1943

Titles have been listed or abstracts made of important articles in the following journals in the Current Literature Department of THE JOURNAL during the past four months. Any of the journals, except those starred, will be lent by THE JOURNAL to subscribers in continental United States and Canada and to members of the American Medical Association for a period not exceeding three days. Three journals may be borrowed at a time. No journals are available prior to 1933. Requests for periodicals should be addressed to the Library of the American Medical Association and should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Thus most of these journals are accessible to the general practitioner.

- Accion Medica La Paz.
Acta Medica Rio de Janeiro
American Heart Journal St. Louis
American Journal of Clinical Pathology Baltimore
American Journal of Digestive Diseases Fort Wayne Ind
*American Journal of Diseases of Children A M A Chicago
American Journal of Hygiene Baltimore
American Journal of the Medical Sciences Philadelphia
American Journal of Obstetrics and Gynecology St. Louis
American Journal of Ophthalmology Cincinnati
American Journal of Orthopsychiatry New York
American Journal of Pathology Ann Arbor Mich
American Journal of Physiology Baltimore
American Journal of Psychiatry New York
American Journal of Public Health New York
American Journal of Roentgenol and Radium Therapy Springfield Ill
American Journal of Surgery New York
American Journal of Syphilis Gonorr and Venereal Diseases St. Louis
American Journal of Tropical Medicine Baltimore
American Review of Tuberculosis New York
Anais da Faculdade de medicina da Universidade de Sao Paulo Sao Paulo
Anales de la Catedra de clinica ginecologica Rosario
Anesthesiology New York
Annales Laidatriel Basel
Annals of Internal Medicine Lancaster Pa
Annals of Otolaryngology and Laryngology St. Louis
Annals of Surgery Philadelphia
*Archives of Dermatology and Syphilology A M A Chicago
Archives of Disease in Childhood London
*Archives of Internal Medicine A M A Chicago
*Archives of Neurology and Psychiatry A M A Chicago
*Archives of Ophthalmology A M A Chicago
*Archives of Otolaryngology A M A Chicago
*Archives of Pathology A M A Chicago
*Archives of Surgery A M A Chicago
Archivos argentinos de pediatria Buenos Aires
Archivos de medicina Infantil Havana
Army Medical Bulletin Washington D C
Boletin de la Sociedad Cubana de Pediatria Havana
Brain London
British Heart Journal London
British Journal of Children's Diseases Dorking England
British Journal of Dermatology and Syphilis London
British Journal of Experimental Pathology London
British Journal of Ophthalmology London
British Journal of Radiology London
British Journal of Surgery Bristol
British Journal of Tuberculosis London
British Journal of Urology London
British Medical Journal London
Bulletin of the Health Organization of the League of Nations Geneva
Bulletin of the Johns Hopkins Hospital Baltimore
Bulletin of the Los Angeles Neurological Society
Bulletin of the New York Academy of Medicine New York
California and Western Medicine San Francisco
Canadian Medical Association Journal Montreal
Canadian Public Health Journal Toronto
Cancer Research Baltimore
Confinia Neurologica Basel
Connecticut State Medical Journal Hartford
Delaware State Medical Journal Wilmington
Deutsche medizinische Wochenschrift Leipzig
Diseases of Chest Chicago
Edinburgh Medical Journal
Endocrinology Springfield Ill
Experimental Medicine and Surgery Brooklyn
Hawaii Medical Journal Honolulu
Helvetica medica acta Basel
Illinois Medical Journal Chicago
Journal of Allergy St. Louis
Journal of the Arkansas Medical Society Fort Smith
Journal of Bone and Joint Surgery Boston
Journal of Clinical Endocrinology Springfield Ill
Journal of Clinical Investigation Boston
Journal of Experimental Medicine New York
Journal of the Florida Medical Association Jacksonville
Journal of Immunology Baltimore
Journal of the Indiana State Medical Association Indianapolis
Journal of Industrial Hygiene and Toxicology Baltimore
Journal of Infectious Diseases Chicago
Journal of Investigative Dermatology Baltimore
Journal of the Iowa State Medical Society Des Moines
Journal of the Kansas Medical Society Topeka
Journal of Laboratory and Clinical Medicine St. Louis
Journal Lancet Minneapolis
Journal of the Maine Medical Association Portland
Journal of the Medical Association of the State of Alabama Montgomery
Journal of the Medical Association of Georgia Atlanta
Journal of the Medical Society of New Jersey Trenton
Journal of Mental Science London
Journal of the Michigan State Medical Society Lansing
Journal of the Missouri State Medical Association St. Louis
Journal of the Mount Sinai Hospital New York
Journal of the National Cancer Institute Washington D C
Journal of Nervous and Mental Disease New York
Journal of Neuropathology and Experimental Neurology Baltimore
Journal of Neurophysiology Springfield Ill
Journal of Nutrition Philadelphia
Journal of Obstetrics and Gynaecology of British Empire Manchester
Journal of the Oklahoma State Medical Association Oklahoma City
Journal of Pathology and Bacteriology Edinburgh
Journal of Pediatrics St. Louis
Journal of Pharmacology and Experimental Therapeutics Baltimore
Journal of Physiology Cambridge
Journal of Royal Army Medical Corps London
Journal of Royal Naval Medical Service London
Journal of the South Carolina Medical Association Florence
Journal of the Tennessee State Medical Association Nashville
Journal of Thoracic Surgery St. Louis
Journal of Urology Baltimore
Kentucky Medical Journal Bowling Green
Klinicheskaya meditsina Moscow
Klinische Wochenschrift Berlin
Lancet London
Laryngoscope St. Louis
Lekarz Wojkowy Edinburgh
Medical Annals of the District of Columbia Washington
Medical Journal of Australia Sydney
Medicina española Valencia
Military Surgeon Washington D C
Minnesota Medicine St. Paul
Münchener medizinische Wochenschrift Munich
Nature London
Nebraska State Medical Journal Lincoln
New England Journal of Medicine Boston
New Orleans Medical and Surgical Journal
New York State Journal of Medicine New York
North Carolina Medical Journal Winston Salem
Northwest Medicine Seattle
Ohio State Medical Journal Columbus
Ophthalmologica Basel
Pediatria de las Americas Mexico, D F
Pediatria e Puericultura Bahia
Pennsylvania Medical Journal Harrisburg
Physiological Reviews Baltimore
Practitioner London
Prensa Medica Argentina Buenos Aires
Presse medicale Paris
Psychosomatic Medicine Baltimore
Public Health Reports Washington D C
Quarterly Journal of Medicine Oxford
Radiologia Buenos Aires
Radiology Syracuse N Y
Review of Gastroenterology New York
Revista Argentina de neurologia y psiquiatria Rosario
Revista de la Asociacion Medica Argentina Buenos Aires
Revista clinica española Madrid

*Cannot be lent.

Revista médica de Chile Santiago
Revista médica latino americana Buenos Aires
Revista Médica de Rosario Rosario
Revista de neurología y psiquiatría de São Paulo São Paulo
Revista de neuro psiquiatría Lima
Revista Paulista de Medicina São Paulo
Revista de la Politécnica Caracas Caracas
Rhode Island Medical Journal Providence
Rocky Mountain Medical Journal Denver
Schweizerische medizinische Wochenschrift Basel
Schweizerische Zeitschrift für Pathologie und Bakteriologie Basel
Semana médica Buenos Aires
South African Medical Journal Cape Town
Southern Medical Journal Birmingham Ala
Southwestern Medicine Phoenix Ariz

Surgery St Louis
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Transactions of the Royal Society of Tropical Medicine and Hygiene London
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West Virginia Medical Journal Charleston
Wiener klinische Wochenschrift Vienna
Wisconsin Medical Journal Madison
Yale Journal of Biology and Medicine New Haven
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SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation; "E," Editorial; "C," Correspondence; "OS," Organization Section; "ab," abstracts; the star (*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: Book Notices, "Deaths," "Medicolegal Abstracts" and "Sociotics" are indexed under these titles at the end of the letters "B," "D," "M," and "S." State board examinations are entered under the general heading State Board Reports, and not under the names of the individual states. Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets, follows the subject entry.

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A—Association
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Conf—Conference
Cong—Congress
Conv—Convention
Dist—District
Hosp—Hospital
Internat—International
M—Medical
Med—Medicine
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